



**SZABIST** Shaheed Zulfikar Ali Bhutto  
Institute of Science & Technology  
KARACHI CAMPUS

Discover  
Yourself

# Course Catalogue 2019



We Just Don't Work Hard  
We Work Smart



MBA BE Mechatronics EMBA BS Biosciences BBA  
BA Ph.D LLB MBA BS Social Sciences MS Computing LLB  
MS Media Sciences BS Computing Ph.D BE Mechatronics  
BBA BS Computing MS Management Sciences BBA  
BS Media Sciences Business Studies (BABS) MS Media Sciences  
MBA BBAMBA Banking and Finance EMBA Ph.D  
BS Biosciences BS Social Sciences BS Biosciences  
EMBA BS Social Sciences BE Mechatronics MBA Banking and Finance  
BBA Business Studies (BABS) BS Media Sciences EMBA

# Course Catalogue 2019

BS Social Sciences BBA BE Mechatronics MS Computing LLB  
EMBA Ph.D MBA BS Media Sciences  
LLB MBA BE Mechatronics EMBA BS Social Sciences  
MS Media Sciences LLB BS Computing Ph.D BE Mechatronics  
BBA BS Computing BS Media Sciences  
BS Media Sciences Business Studies (BABS) MS Media Sciences  
MBA BBA MBA Banking and Finance EMBA Ph.D  
Business Studies (BABS) LLB BS Biosciences MS Computing

# The Vision

SZABIST aims to be a globally recognized institute for excellence in education, research, development, and distinction in service.

# The Mission

SZABIST is committed to produce highly qualified professionals to:

- Meet national and global contemporary needs;
- Conduct cutting edge research and development;
- Provide hi-tech scientific and technological expertise;
- Meet current and future socio-economic challenges;
- Meet global citizenship responsibility.

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# About SZABIST

Shaheed Mohtarma Benazir Bhutto, the first woman Prime Minister of a Muslim country and twice elected Prime Minister of Pakistan founded SZABIST in 1989 to realize the vision of her father, former elected prime minister of Pakistan, Shaheed Zulfikar Ali Bhutto. In his speech at the inauguration ceremony of the Karachi Nuclear Power Plant in 1972, he stated:

“We will give science and technology requirements the highest priority and our attention. To implement any program of scientific and technological development, the country needs to train scientific manpower. In this, the schools, colleges and universities have to play their role. I desire that vast number of people of Pakistan should acquire technological skills. I want first-class science in Pakistan because nothing less is acceptable. And I wish Pakistan to be increasingly self-reliant in all aspects of technology”.

It was in pursuit of this dream that SZABIST was established.

In its first academic year, 1995, SZABIST commenced studies by offering only two degrees i.e. MS in Software Engineering and Master of Business Administration with only 96 students. Since then, SZABIST has made tremendous progress and now offers programs in the disciplines of Management Sciences, Computer Science, Social Sciences, Media Sciences, Law, Mechatronics Engineering, Biosciences, Public Health and Education.

SZABIST has five full-fledged university campuses; Karachi, Islamabad, Larkana, Hyderabad and Dubai, which makes it the only degree granting institution in Pakistan with an international presence.

Pursuit of research is an integral part any educational institutions' life. In this regard, SZABIST pioneered Pakistan's first online research journal, Journal of Independent Studies and Research (JISR) in 2003. In 2009, SZABIST re-dedicated itself to its mission of research and development in science and technology with a number of new initiatives. These are focused on realizing the country's research potential, and developing long-term self-sufficiency in critical areas of energy, biomedicine, and technology.

Reflecting its dedication to excellence, SZABIST continues to grow and prosper as a top ranked institution of higher education. This is a singular achievement for an institution, which relies solely on its own resources, and it certainly augurs well for its future.

# Message by the Chancellor



I am pleased to welcome you all to Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), a multidisciplinary institution ranked amongst the top universities of Pakistan because of its graduates employability, proficient faculty, competent staff and quality tertiary education.

Over the last 24 years, the institute has gained recognition nationally and internationally due to the holistic and market-relevant programs supplementing the academic, social, professional, and creative needs of its students. Further, in line with our commitment to provide contemporary tertiary level education the courses offered at

SZABIST are regularly updated according to the market requirement and are fully compatible with the guidelines of the Higher Education Commission (HEC) of Pakistan.

The Course Catalogue 2019 is a quality tool designed for enhancing students understanding of the offered courses as it contains detailed and standardized description of courses in Management Sciences, Computer Science, Social Sciences, Media Sciences, Mechatronics, Biosciences, Public Health, Education and Law programs. The document will assist students in comprehending the respective degree completion requirements; it also illustrates a range of elective courses. In addition, the Course Catalogue helps Program Managers in guiding students to successfully complete their respective degree requirements.

I wish the students the very best for their academic life at SZABIST and urge them to follow the SZABIST motto, "Discover Yourself" to become the leaders of tomorrow.

**Dr. Azra Fazal Pechuho**  
Chancellor,  
SZABIST



# Message by the President



Welcome to SZABIST! I congratulate you on being selected at SZABIST, a highly rated Business and Technological institute with a tradition of producing high quality corporate leaders.

At SZABIST, the Board of Trustees, Management, Faculty and Staff are committed to impart professionally enriching, market-related, and socially beneficial skills through affordable high quality tertiary education. We believe your education is vital, not just for your future, but for the future of our community and economy.

In order to assist you for successful and timely completion of studies a comprehensive Course Catalogue 2019 with streamlined academic curricula has been produced. The document consists of standardized course descriptions of each course along with details of all programs offered in each discipline. This standardization would enhance, strengthen and consolidate the standard of education across all SZABIST campuses and bring it at par with national and international universities.

This Catalogue is one more indicator of SZABIST's growth into a mature institution, as it now offers thirty-eight diversified disciplines in Management Sciences, Computing, Social Sciences, Media Sciences, Mechatronics Engineering, Biosciences, Education and its International Programs including LLB (University of London, UK) and BA (Hons.) in Business Studies which has a continuing collaboration with universities in UK.

I thank the staff members of Institutional Research Department, in particular Ms. Mahwash Imran for collaborating with the Program Managers to prepare this Catalogue and the Marketing Department, especially Mr. Syed Bashir Ahmad, for his work in the design of the Catalogue.

I wish you a productive, intellectually stimulating, and socially responsible journey at SZABIST.

Best of luck!

**Ms. Shahnaz Wazir Ali**  
President,  
SZABIST



# Message by the Vice President (Academics)



Congratulations on becoming a part of SZABIST family! The institution relishes a high reputation thorough the courtesy of its professional environment and dedication for imparting quality education. The institution has crossed 21 plus years of its existence. Its exponential growth speaks itself of its popularity. It is fully recognized by all the national regulatory bodies, such as HEC, PEC, NCEAC, NBEAC, NACTE, CIEC (Sindh). In addition, SZABIST is a member of several international associations, such as International Association of Universities (IAU) Paris, Association of Commonwealth Universities (ACU) London, Association of Advance Collegiate School of Business (AACSB) Singapore, Asia University Federation Seoul, Asia-Pacific Quality Network (APQN) China, Association of Quality Assurance Agencies of the Islamic World (AQAAIW) Malaysia,

Tallories Network Massachusetts, etc.

The institution prepares students in diversified areas of learning, such as Management Sciences, Computer Science, Media Sciences, Bio-Sciences, Social Sciences, Mechatronic Engineering, Law and Education. Through the meticulous program and course learning outcomes students' develop critical and creative thinking, and acquire problem-solving skills. We understand, "University without Research" is tantamount to "Body without Soul." That is why we give high priority to research seminars and encourage our students to write research articles at every stage.

Counseling and providing guidance to youngsters holds great significance, therefore, SZABIST provides its students a point of reference at every step during their course of studies and beyond. Some of the most important guiding steps are: Program Managers, Prospectus, Students Handbook, Course Catalogue, Executive Development Centre (EDC), External Relation and Financial Assistance (ERFA) and the like.

The Course Catalogue 2019 is prepared and shared to increase students' awareness on SZABIST's offering. The catalogue is a continuous point of reference for students as it consists of detailed and standardized descriptions of core courses being offered at SZABIST along with the range of elective courses and degree completion requirements. Further, EDC looks after the job placements and builds linkages with alumni. That's why our alumni are our face value.

Our strength is our ERP, developed by our own software house. We fully make use of modern IT tools in teaching and managing our academics and ensure quality education through ongoing and systematic assessments throughout the semesters. Our QEC has been awarded 89.19% score by QAA/HEC.

Finally, we believe in building personalities, not merely producing degree-holders. This we ensure through conducting seminars and guest lectures frequently by eminent personalities, through our students' societies, which are responsible to arrange co-curricular and extra-curricular activities round the year.

Please go through the Course Catalogue 2019 to understand all the required offerings of your respective program. I assure you that you will be groomed and nurtured for meeting your future career challenges after completion of your academic degree program.

**Professor Dr. M. Altaf Mukati**  
Vice President (Academics)  
SZABIST

# Message by the Vice President (Development & Finance/Administration)



Welcome to SZABIST and congratulations on being selected at one of the top ranked higher education institutes of Pakistan.

The Course Catalogue 2019 is a compendium of the courses being offered at SZABIST. I am confident that it will serve as a useful resource to broaden your knowledge and develop deeper understanding of the courses taught by our renowned faculty.

At SZABIST, we provide you the skills, ethical values and facilities to make you highly valued professionals.

Focus on your goals and study hard to reach where you want to be.

Best wishes for a successful year!

***Ms. Nasreen Haque***

Vice President (Development & Finance/Administration)  
SZABIST

# Preface

The Course Catalogue provides a platform for the students of SZABIST to avail in advance information relevant to their respective program course requirements.

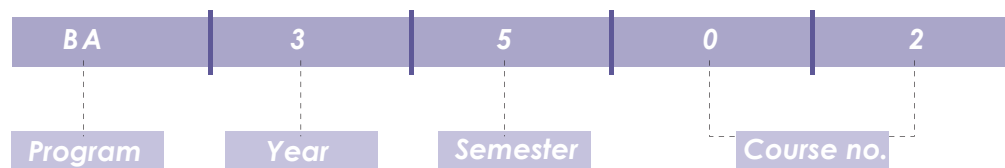
This Catalogue covers the core and/or compulsory courses for all the programs, offered in the following seven faculties:

- Management Sciences**
- Computer Sciences**
- Social Sciences**
- Media Sciences**
- Mechatronics Engineering**
- Biosciences**
- Education**
- External Programs**

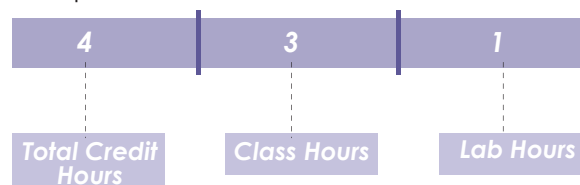
It provides information on the course credits, prerequisites (if any), course descriptions, and finally the equivalent courses. The students should consult the catalogue before registering for courses on ZabDesk.

Regardless of the academic program, this Catalogue will serve as a guidebook for students throughout their educational term at SZABIST. With the course descriptions, course titles and prerequisites mentioned, the student would easily be able to plan their semesters beforehand.

The courses in each program have been identified by their respective course codes. Therefore, the following course code illustration would assist the students in identifying the courses for a particular semester.



In addition, the composition of the Course Credit Hours is as follows:



# Acronyms

<b>BA</b>	<b><i>Business Administration</i></b>
<b>BABS</b>	<b><i>Bachelor of Arts in Business Administration</i></b>
<b>BBA</b>	<b><i>Bachelor of Business Administration</i></b>
<b>B&amp;F</b>	<b><i>Banking &amp; Finance</i></b>
<b>BMS</b>	<b><i>Bachelor of Media Science</i></b>
<b>BS A&amp;F</b>	<b><i>Bachelor of Science in Accounting &amp; Finance</i></b>
<b>BS</b> (Bioscience)	<b><i>Bachelor of Science in Biosciences</i></b>
<b>BSCS</b>	<b><i>Bachelor of Science in Computer Science</i></b>
<b>BS</b> (Entrepreneurship)	<b><i>Bachelor of Science in Entrepreneurship</i></b>
<b>BSSS</b>	<b><i>Bachelor of Science in Social Sciences</i></b>
<b>EMBA</b>	<b><i>Executive Master of Business Administration</i></b>
<b>HEC</b>	<b><i>Higher Education Commission of Pakistan</i></b>
<b>IR</b>	<b><i>Institutional Research</i></b>
<b>IT</b>	<b><i>Information Technology</i></b>
<b>MA EDU</b>	<b><i>Master of Arts in Education</i></b>
<b>MBA</b>	<b><i>Master of Business Administration</i></b>
<b>ME</b>	<b><i>Mechatronics Engineering</i></b>
<b>MPH</b>	<b><i>Master of Public Health</i></b>
<b>MPM</b>	<b><i>Master in Project Management</i></b>
<b>MS</b>	<b><i>Master of Science</i></b>
<b>MS</b> (Bioscience)	<b><i>Master of Science in Biosciences</i></b>
<b>MSCS</b>	<b><i>Master of Science in Computer Science</i></b>
<b>MSELM</b>	<b><i>Master of Science in Educational Leadership and Management</i></b>
<b>MS</b> (Media Studies)	<b><i>Master of Science in Media Studies</i></b>
<b>MSMS</b>	<b><i>Master of Science in Management Sciences</i></b>
<b>MSPM</b>	<b><i>Master of Science in Project Management</i></b>
<b>MSSS</b>	<b><i>Master of Science in Social Science</i></b>
<b>PhD</b>	<b><i>Doctor of Philosophy</i></b>
<b>SE</b>	<b><i>Software Engineering</i></b>
<b>SS</b>	<b><i>Social Science</i></b>

# Schematic Illustration

Given below is an explanation of the various elements of the course catalogue.

This is the title for the course.	<b>Course Name</b> Analysis of Financial Statements		This is the duration of a particular course, divided into lecture plus lab hours.
<b>Course Code</b>		BA5132	<b>Prerequisite(s)</b> BA5401
A code has been assigned to each of the respective course for identification.	<b>Course Description</b>		This is the course that a student is required to pass before taking this course.
<p>This course includes detailed analysis of Financial Statements of Manufacturing and Services Sector. Additional topics include cash flow statement, and statement of owner's equity; accounting principles; financial analysis and reporting process. Further, the course includes ratio analysis, trend analysis, and horizontal and vertical analysis, operating and financial leverage and their impact on a firm's performance, efficient market hypothesis, the capital asset pricing model (CAPM), inventory management process, FIFO/LIFO methods of costing calculate depreciation by applying different methods, and bond and stock valuation techniques.</p>		This contains the topics that would be covered in the course.	
<b>Equivalent Course(s)</b>		BA449, BA549	
These courses are considered similar, and earn equal credit hours to the given course and can be taken by the student, with approval from the respective Program Manager.			



# Department of Management Sciences

# 1.1 Bachelor

## 1.1.1 Bachelor of Business Administration (BBA)

Students enrolled in the Bachelor of Business Administration (BBA) program are required to complete 46 courses with a 03 credit hour Business Project and a 03 credit hour Community Service Project within six (6) years. The break-up of 46 courses (144 credit hours) is as follows:

- 40 Compulsory Courses (120 Credit Hours)
- 2 University Elective Courses<sup>1</sup> (6 Credit Hours)
- 4 Elective<sup>2</sup> Courses (12 Credit Hours)
- 1 Business Project (3 Credit Hours)
- 1 Community Service Project (3 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BA 1108	IT in Business	4
BA 1109	Personal Management and Communication	4
BA 1113	Islamic Studies/ Humanities	4
BA 1203	Management Principles	5
BA 1206	Oral Communication and Presentation Skills	5
BA 2307	Sociology	5
<b>Spring Semester</b>		
BA 1101	Introduction to Accounting	5
BA 1102	Microeconomics	6
BA 1105	English Writing Skills	6
BA 1204	Maths for Business	6
BA 1213	Pakistan Studies	7
BA 2312	Human Behavior	7
<b>Second Year</b>		
<b>Fall Semester</b>		
BA 1201	Financial Accounting	7
BA 1202	Macroeconomics	7
BA 1211	Logic and Critical Thinking	8
BA 2303	Marketing Principles	8
BA 2406	Business and Electronic Communication	8
BA 3504	Organizational Behavior	8
<b>Spring Semester</b>		
BA 2301	Introduction to Business Finance	9
BA 2311	Business Statistics	9
BA 2402	Retail Management	9
BA 2403	Business Ethics	9
BA 2408	Cost Accounting	10
BA 3507	Consumer Behavior	10

1- List of Optional Courses is given in Annexure A.  
2- List of Electives is given in Annexure B.



## 1.1.1 Bachelor of Business Administration (BBA)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
BA 3501	Financial Markets and Institutions	10
BA 3508	Media Management	11
BA 3605	Statistical Inference	11
BA 4706	Development Economics	11
BA 4801	Law and Taxation	12
BA xxxx	University Elective-I (as offered by Campus)	-
<b>Spring Semester</b>		
BA 3601	Financial Management	12
BA 3602	Marketing Management	12
BA 3603	Business Research Methods	13
BA 3607	Operations Management	13
BA 4804	Human Resource Management	13
BA xxxx	University Elective-II (as offered by Campus)	-
<b>Fourth Year</b>		
<b>Fall Semester</b>		
BA 3502	Entrepreneurship	14
BA 4705	Services Marketing	14
BA 4710	Business Project	14
BA 4814	Project Management	14
BA 4xxx	Elective-I	-
BA 4xxx	Elective-II	-
<b>Spring Semester</b>		
BA 3505	Quantitative Skills	15
BA 3609	Pakistan Economy	15
BA 4704	Management Information Systems	15
BA 4810	Community Service Project	-
BA 4xxx	Elective-III	-
BA 4xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- Research Project (BA 4807) may be substituted with BA 47XX Research Project-1 (3 Credit Hours) and BA 48XX Research Project-2 (3 Credit Hours) to be offered over two semesters as per the requirement of the campus.

## **1.1.1** Bachelor of Business Administration (BBA)

The description of 40 compulsory courses and the Research Project, as required for the BBA degree, is given below:

<b>Course Name</b>	IT in Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1108	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Microsoft Office is critical for day-to-day operations of any organization. This course covers basic, intermediate and advanced level of Office software that make a manager's task more productive and efficient. Today, employers across many industries and fields expect candidates to have Microsoft Office skills, as it is the most universally utilized software in business. Having these skills, even at a basic level, will help students' prospects and increase their chances to be considered for most roles.
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<b>Equivalent Course(s)</b>	BA 1103, AF 1102, EN 1102
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<b>Course Name</b>	Personal Management and Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1109	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work, and in personal and interpersonal relationship. Students learn the combination of factors such as personality, communication style, self-esteem, time management, conflict, negotiation and others that impact their personal effectiveness. They also learn methods, and techniques required to work effectively and confidently with others, using time management, negotiation and presentation skills with a positive mindset.
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<b>Equivalent Course(s)</b>	BA 1104, EN 1206
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<b>Course Name</b>	Islamic Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1113	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces the basic philosophy and universal teachings in private and social life. It also introduces the distinct Islamic values and institutions, and their role in society. The course informs about Islamic environmental values and ethics, and social systems. Furthermore, this course explains the fundamental principles of Islamic economic framework along-with contemporary Islamic financial and social institutions, and their role in the contemporary economy and financial systems. It clarifies the Islamic attitude towards science, reasoning, evidence and inductive knowledge for understanding physical realities for the effective use of material resources. Finally this course emphasizes social rights given to women, non-Muslims, orphans, parents and subordinates in the Islamic social framework.
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<b>Equivalent Course(s)</b>	AF 1205, EN 1207
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## Bachelor of Business Administration (BBA)

<b>Course Name</b>	Management Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1203	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future of management and society.

**Equivalent Course(s)** AF 1207, EN 1204, BA 5419

<b>Course Name</b>	Oral Communication and Presentation Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1206	<b>Prerequisite(s)</b>	None

**Course Description** In this course student learns the principles of a good presentation and has the opportunity to practice and experience these principles during this highly participative course. The course explores in detail, both verbal and non-verbal communication characteristics, and the importance of body-language expressions. Students are challenged through participative exercises with focus on active listening and observation techniques, that aim to make them competent in all facets of effective speech communication.

**Equivalent Course(s)** CSC 2101, ME 1101, AF 1203, SS 1116

<b>Course Name</b>	Sociology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2307	<b>Prerequisite(s)</b>	None

**Course Description** This course focuses on three central themes; social change, social inequality, and social harmony versus conflict. It combines selective theoretical texts with case studies to understand the mechanisms and institutions that can trigger, foster, sustain, or undermine each of the three processes. In addition, the course covers the work of major sociological thinkers and the influence of sociology on modernization, race, citizenship, culture, gender, society, and economic development.

**Equivalent Course(s)** BA 2306, SS 2307, AF 2304, EN 1203

<b>Course Name</b>	Introduction to Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1101	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the purpose and nature of accounting, forms of business enterprises, accounting information users, Generally Accepted Accounting Principles, accounting equation, accounting process, accounting cycle, ledgers and entries, accounting for receivables, inventory and depreciation.

**Equivalent Course(s)** AF 1104, EN 1103

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1102	<b>Prerequisite(s)</b>	None

**Course Description** Microeconomics studies how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, product markets and resource markets. It also deals with application of demand and supply, cost analysis and factors of production.

**Equivalent Course(s)** SS 1105, AF 2405, EN 1205, BA 5404

<b>Course Name</b>	English Writing Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1105	<b>Prerequisite(s)</b>	BA 1206

**Course Description** This course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses on grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.

**Equivalent Course(s)** CSC 1102, MD 1122, SS 2316, BIO 1111, AF 1103

<b>Course Name</b>	Maths for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1204	<b>Prerequisite(s)</b>	None

**Course Description** Course Description The aim of this course is to prepare students to solve economic and managerial problem through mathematical concepts. This course is covered in four parts; first part is based on systems of linear equations and its solutions; provide preliminary concept, construction of linear equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, Cramer's rule & inverse method to solve system of linear equations. The second part develops the concept of linear and nonlinear functions, and their application, and linear programming. The third part provides mathematics for finance, which covers simple, and compound interest rate computations and present and future annuity calculations. The last part of the course provides differentiation of basic functions, higher order differentiation, optimization of functions, definite and indefinite integration, and applications of integration.

**Equivalent Course(s)** BIO 1107, AF 1101, EN 1101

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1213	<b>Prerequisite(s)</b>	None

**Course Description** This course reviews the ideological and historic background for creation of Pakistan. It reviews the basic philosophy and circumstances that led to the creation of Pakistan. The course covers political and constitutional history of Pakistan, and discusses the current issues with respect to state, institutions and nation faced by Pakistan. Furthermore, the course looks at the role of Pakistan in the world over time and the future prospects.

**Equivalent Course(s)** EN 1107, AF 1105

<b>Course Name</b>	Human Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2312	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the basics of psychological features of human behavior with applications in real life situations. In addition, the aspects of personal growth and understanding are also covered.

**Equivalent Course(s)** SS 2306, AF 2303, EN1104

<b>Course Name</b>	Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1201	<b>Prerequisite(s)</b>	BA 1101

**Course Description** This course includes accounting for merchandise business, classified balance sheet, simple and multiple income statement, design of accounting system, accounts receivable, notes receivable, inventories, cost of goods sold, liabilities, corporation and measuring cash flow statements. Also, MS Excel is used and necessary accounting software is introduced.

**Equivalent Course(s)** AF 1201

<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1202	<b>Prerequisite(s)</b>	BA 1102

**Course Description** This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

**Equivalent Course(s)** SS 1205, AF 3505, EN 2303

## Bachelor of Business Administration (BBA)

<b>Course Name</b>	Logic and Critical Thinking	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1211	<b>Prerequisite(s)</b>	BA 1105

**Course Description** This course covers scope and laws of logic, deduction and induction, inferences, forms of discourse, emotive words, kinds of disputes and disagreements, rules and fallacies, classical (Aristotelian) logic, standard-form categorical syllogisms and testing, uniform translation, dilemma and enthymemes, and Mills' Methods of scientific investigation. Critical thinking skills and techniques are also introduced.

**Equivalent Course(s)** EN 2302, BA 1207

<b>Course Name</b>	Marketing Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2303	<b>Prerequisite(s)</b>	BA 1203

**Course Description** This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.

**Equivalent Course(s)** BA 5404, AF 1206, EN 2305

<b>Course Name</b>	Business and Electronic Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2406	<b>Prerequisite(s)</b>	BA 1105

**Course Description** This introductory course teaches students to communicate at both personal and professional levels. In addition, it develops competency in all forms of communication. Also, this course introduces communication theories and strategies for a variety of business situations. Using a developmental approach to business communication, the course examines methods for organizing ideas, analyzing data, addressing diverse concerns, presenting information, and developing a professional communication style.

**Equivalent Course(s)** BE 5104, BA 5418, AF 2301, EN 1202

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3504	<b>Prerequisite(s)</b>	BA 2312

**Course Description** This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.

**Equivalent Course(s)** AF 2305, EN 2306, SS 2414, BE 5206

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2301	<b>Prerequisite(s)</b>	BA 1201

<b>Course Description</b>	This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.
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<b>Equivalent Course(s)</b>	BA 5401, AF 4703, EN 2301
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<b>Course Name</b>	Business Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2311	<b>Prerequisite(s)</b>	BA1204

<b>Course Description</b>	This basic course aims to enhance the capacity of the students to solve the research problems by focusing on four areas; introduction to statistics, types of data, frequency distribution, graphs and charts, measures of central tendency, and measures of dispersion; concept of curve fitting techniques, regression analysis, correlation analysis, time series analysis; and index numbers, counting techniques and MS Excel tools for statistics using add-on analysis tool pack.
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<b>Equivalent Course(s)</b>	BA 2305, BIO 1208, AF 2406, EN 2304, SS 2318
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<b>Course Name</b>	Retail Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2402	<b>Prerequisite(s)</b>	BA 2303

<b>Course Description</b>	This course addresses retail management at two levels: the macro-level (the role of the retailing in the business industry), and the micro-level (which focuses on the functionality of a retail business). The course provides a preview of quality management, resources management, business communication, retail marketing and advertising, consumer behavior, inventory management and accounting, and human resource management.
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<b>Equivalent Course(s)</b>	Marketing Elective
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<b>Course Name</b>	Business Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2403	<b>Prerequisite(s)</b>	BA 1203

<b>Course Description</b>	This course introduces contemporary and controversial ethical issues faced by the business community. Topics include: moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Upon completion, students would be able to demonstrate an understanding of their moral responsibilities and obligations as members of the workforce and society.
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<b>Equivalent Course(s)</b>	AF 3503, EN 2402
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## 1.1.1 Bachelor of Business Administration (BBA)

<b>Course Name</b>	Cost Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2408	<b>Prerequisite(s)</b>	BA 1201

**Course Description** This course focuses on cost allocation, process costing systems and spoilage. Specific topics include relevancy of revenues and costs, cost allocation decisions (joint and byproducts), process costing systems, factory overhead applied, standard costing: setting of standards, analysis of variance and controlling, and costing material.

**Equivalent Course(s)** BA 5411, AF 2302

<b>Course Name</b>	Consumer Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3507	<b>Prerequisite(s)</b>	BA 2303

**Course Description** This course examines in detail, the complex behavioral processes which determine consumer actions and analyzes the decision patterns in a variety of situations with a special reference to individual and group influences. It is designed to cover contemporary concepts in consumer behavior, objectives, consumer and market segmentation, environmental influence, individual determinants, and consumer buying behavior.

**Equivalent Course(s)** BE 484, EN 2403

<b>Course Name</b>	Financial Markets and Institutions	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3501	<b>Prerequisite(s)</b>	BA 1202

**Course Description** This course would equip students with the knowledge of the financial system, regulatory frameworks and financial and economic environments in Pakistan and other countries. The course essentially delves into the following key topics: financial markets encompassing both money and capital markets of Pakistan, monetary policies which are aligned in accordance to the monetary systems, responsibilities of SBP as central bank and comparison with different Central Bank structures in the world, controlling money supply in the economy, operations and functions of commercial and corporate banks, role of other financial intermediaries and key financial instruments available in the market. In addition, stocks, bonds, foreign exchange, derivatives, commodity markets and hedging instruments would also be discussed. A comparative analysis of financial markets and institutions, their functions, roles and impact on economic system shall be critically examined. The course is also intended to identify the regulatory compliance initiatives to ethical and prudential issues.

**Equivalent Course(s)** None



## Bachelor of Business Administration (BBA)

<b>Course Name</b>	Media Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3508	<b>Prerequisite(s)</b>	BA 2303

### **Course Description**

This course introduces basic concepts of public relations and how it is different from promotional tools. It discusses various public relations tools, dimensions, and disciplines. It also addresses issues emerging out of modern and emerging communication media and provides a broader perspective of media in Pakistan describing its characteristics and effective ways to interact with them. The course concludes with a brief discussion on event management with an overview of importance of communications during crisis situations.

### **Equivalent Course(s)**

EN 2405

<b>Course Name</b>	Statistical Inference	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3605	<b>Prerequisite(s)</b>	BA 2311

### **Course Description**

This course covers probability; probability distributions; Binomial, Poisson, Hyper-geometric, Chi Square distribution, Normal distribution, Sampling Distribution; estimation; hypothesis testing; one-population test, two-populations test and analysis of variance; and computer applications in statistics.

### **Equivalent Course(s)**

SS 2418, AF 3506, BA 5405

<b>Course Name</b>	Development Economics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4706	<b>Prerequisite(s)</b>	BA 1202

### **Course Description**

This course defines development and identifies contemporary issues in development. It also discusses the theories of development, and relates them to the Pakistani scenario and the role of the international community in the development process. In addition, it also identifies and analyzes the problems of the poor in Pakistan, in particular, and of the developing countries, in general, it helps students to critically analyze contemporary domestic and international economic policies and determine whether such policies improve or worsen the condition of the poor.

### **Equivalent Course(s)**

SS 1163, SS 4147, SS 4284

## **1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Law and Taxation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4801	<b>Prerequisite(s)</b>	BA 1211

**Course Description** This course covers process of legislation in Pakistan, Contract Act, Law of Sale of Goods, Partnership Law and Company laws, Sales Tax, Income Tax Law and Intellectual Property Laws. This course identifies the legal rights of persons in case of nonperformance of contracts, it also identifies the taxation system as well as kinds of taxes in Pakistan. Furthermore, it identifies the intellectual property rights in Pakistan.

**Equivalent Course(s)** AF 3606, EN 2401

<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3601	<b>Prerequisite(s)</b>	BA 2301

**Course Description** Building upon the concepts already laid down in its pre-requisite, financial management helps students in exploring the depths of the relatively complex aspects of the financial world, with prime focus on the present value and opportunity cost of capital. This course covers topics such as nature, scope and function of financial decision areas, objectives of financial management, financial forecasting, working capital management, valuation of stocks, valuation of fixed income securities, project cash flow analysis, capital budgeting and decision making, determination of the required rate of return via asset pricing models, dividend policy, debt policy, introduction to financial risk management and derivatives and role of financial markets in Pakistan.

**Equivalent Course(s)** BA 5105, AF 4702, BE 5301

<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3602	<b>Prerequisite(s)</b>	BA 2303

**Course Description** This course introduces the concept of customer and market-driven management. Also, this course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.

**Equivalent Course(s)** BA 5106, AF 2403, BE 5205

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Business Research Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3603	<b>Prerequisite(s)</b>	BA 3605

### **Course Description**

This course provides the understanding of basic business research methods in the field of marketing, human resource management, and finance. The subject encompasses the theory and practice of research; and covers concepts, elements, and process of conducting business research. It builds the specific conceptual knowledge regarding identification and elicitation of research problem, development of research proposal, reviewing the literature, using suitable research methodology, data collection and analysis tools and writing research report. The focus of the course is on basic concept building and relating the research to real life business problems.

### **Equivalent Course(s)**

SS 3504, AF 3609

<b>Course Name</b>	Operations Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3607	<b>Prerequisite(s)</b>	BA 1203

### **Course Description**

This course introduces the concepts of production and operations management. Topics covered represent a blend of concepts from industrial engineering, cost accounting, general management, quantitative methods and statistics. The course topics include some operations and strategic issues such as applied forecasting, aggregate planning, scheduling, shop floor control, total quality management, inventory management, and facility layout and project management. In addition, topics include the complex understanding of services operations management with the help of real life case studies, processes and methodologies applied worldwide.

### **Equivalent Course(s)**

EN 2406, BA 4128, BE 5303

<b>Course Name</b>	Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4804	<b>Prerequisite(s)</b>	BA 3504

### **Course Description**

This course examines the role of the human resource professional, as a strategic partner, in managing contemporary organizations. The course introduces concepts, issues and practices in human resource management such as Human Resource planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, and rising benefit costs), and best practices of employers of choice.

### **Equivalent Course(s)**

BA 5205, AF 1204, EN 3602, BE 5302

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Entrepreneurship	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3502	<b>Prerequisite(s)</b>	BA 1203

### **Course Description**

This course focuses on ways in which entrepreneurs recognize opportunities, generate ideas, and organize resources to plan and run successful ventures that enable them to achieve their goals. Students are required to create an entrepreneurial venture as part of a practical learning activity. Through this hands-on experience, case studies, class discussions and text book readings students will have an opportunity to develop the values, traits, and skills most often associated with successful entrepreneurs.

### **Equivalent Course(s)**

BA 4859, BA 3517, AF 3504, EN 2404, BE 5401

<b>Course Name</b>	Services Marketing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4705	<b>Prerequisite(s)</b>	BA 3602

### **Course Description**

In this course students studies the difference between marketing mix of tangible offerings and that of services; describing applications of services marketing; developing services marketing plan and practice services marketing, and developing entrepreneurial mindset in a service industry. The course focuses on marketing services through 7Ps, whether service is the primary business or a supplementary to a product.

### **Equivalent Course(s)**

Marketing Elective

<b>Course Name</b>	Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4814	<b>Prerequisite(s)</b>	BA 3607

### **Course Description**

This course is split into three parts: Project Initiation, Project Implementation, and Project Termination. Topics include: definition of a project, importance of project management, project life cycle, types of projects, project management and related industries, project initiation and selection, project manager, project organization, project planning, conflicts and negotiation, project implementation, budgeting and cost estimation, scheduling, resource allocation, monitoring and information systems, project control, project termination, and project auditing. Furthermore, the course covers project feasibility study, format of feasibility study, contents of feasibility study, and making accurate estimates.

### **Equivalent Course(s)**

None

## **1.1.1** Bachelor of Business Administration (BBA)

<b>Course Name</b>	Quantitative Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3505	<b>Prerequisite(s)</b>	BA 1204

### **Course Description**

This course is an introduction to quantitative skills essentially required by business students. The course consists of several parts. First is related to arithmetic techniques like: numbers, exponents and roots, ratio and proportion, averages etc. and their usage in solving common problems. The second part consists of algebra, equations, and their applications in solving business problems. The third part comprises of coordinate geometry and combination of above parts. The fourth part covers graphical analysis and interpretation of the data. The fifth and last part consists of data sufficiency problems related to arithmetic, algebra and geometry.

### **Equivalent Course(s)**

None

<b>Course Name</b>	Pakistan Economy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3609	<b>Prerequisite(s)</b>	BA 4706

### **Course Description**

This course is designed to provide students critical information and knowledge about Pakistan economic environment. Starting with the historical background, it covers topics such as agriculture, industry, public finance and social sector development. The course also reviews government interventions, like fiscal policy, monetary policy, trade policy, and income policies. Further, the additional topics of this course includes: institutional reforms, deregulation, privatization, denationalization, globalization and other policies/factors that affect business environment in Pakistan. The course ends with discussion on challenges ahead for the Pakistan Economy in the regional and global perspectives.

### **Equivalent Course(s)**

SS 4249, AF 2306, EN 4701

<b>Course Name</b>	Management Information Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4704	<b>Prerequisite(s)</b>	BA 1108

### **Course Description**

This course covers different information technology applications in business for efficient management of business operations by providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

### **Equivalent Course(s)**

AF 2402

## 1.1 Bachelor

# 1.1.1 Bachelor of Arts in Business Studies (BABS)

Students enrolled in the BA (Hons) in Business Studies (BABS) program are required to complete 27 courses with 81 Credit Hours. Upon completion of the required courses at SZABIST, students can proceed for the Final Year to the Coventry University. UK to obtain their Bachelor (Honors) degree. If the student wish to continue at SZABIST Karachi, they can obtain BABS degree by completing additional 19 courses and a Research Project. The break-up of the courses offered is given below:

- 46 Compulsory Courses (138 Credit Hours)
- 1 Research Project (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BA 1101	Introduction to Accounting	18
BA 1102	Microeconomics	18
BA 1103	Introduction to Computers	18
BA 1104	Personal Management	18
BA 1206	Oral Communication and Presentation Skills	19
BA 1204	Math for Business	19
<b>Spring Semester</b>		
BA 1201	Financial Accounting	19
BA 1202	Macroeconomics	20
BA 1203	Management Principles	20
BA 1105	English Writing Skills	20
BA 2305	Statistics and Mathematics for Business	20
BA 2312	Human Behavior	21
<b>Summer Semester</b>		
BA 2301	Introduction to Business Finance	21
BA 2302	Graphic Design in Multimedia Presentations	21
<b>Second Year</b>		
<b>Fall Semester</b>		
BA 2303	Marketing Principles	21
BA 2304	Managerial Accounting	22
BA 2306	Introduction to Social Sciences	22
BA 2403	Business Ethics	22
BA 3504	Organizational Behavior	23
BA 1207	Introduction to Logic	23
<b>Spring Semester</b>		
BA 3505	Quantitative Skills	23
BA 3601	Financial Management	24
BA 3602	Marketing Management	24
BA 4704	Management Information Systems	24
BA 4721	Advertising	25
BA 4801	Law and Taxation	25

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
BA xxxx	Islamic Studies	25
BA 4804	Human Resource Management	26
BA 2406	Business and Electronic Communication	26
BA 3517	Entrepreneurship & Small Business Management	26
BA 3518	Law for Managers	27
BA 3605	Statistical Inference	27
<b>Spring Semester</b>		
BA 3617	Introductions to International Business	27
BA xxxx	Pakistan Studies	28
BA 3616	Customer Relationship Management	28
BA 3618	Leadership Development	28
BA xxxx	University Elective I	-
<b>Fourth Year</b>		
<b>Fall Semester</b>		
BA 3507	Consumer Behavior	29
BA 3501	Financial Markets and Institutions	29
BA 4824	Sales Management	29
BA 3603	Business Research Methods	30
BA 4703	Staffing/Compensation and Employee development	30
<b>Spring Semester</b>		
BA 4807	Research Project	30
BA xxxx	University Elective II	-
BA 4814	Project Management	31
BA 4128	Operations & Supply Chain Management	31
BA 4127	Managing Across Global environment	31
<b>University Electives</b>		
BA 3519	Current Affairs	-
BA 4827	Professional Development	-
BA 3506	Foreign Languages	-
BA 3619	Enterprise Management	-
BA 3522	Social Advocacy and Community Service	-
BA 3613	World Economy	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

All courses may not be offered every year. Alternate courses may be substituted as and when required. Alternate courses may be substituted as and when required. Full – time academic load is six courses (18 credit hours). All students are required to register for full load in the first semester.

<b>Course Name</b>	Introduction to Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1101	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the purpose and nature of accounting, forms of business enterprises, accounting information users, Generally Accepted Accounting Principles, accounting equation, accounting process, the accounting cycle, ledgers and entries, accounting for receivables, inventory and depreciation.

**Equivalent Course(s)** AF 1104, EN 1103

<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1102	<b>Prerequisite(s)</b>	None

**Course Description** Microeconomics studies how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, product markets and resource markets. It also deals with application of demand and supply, cost analysis and factors of production.

**Equivalent Course(s)** SS 1105, AF 2405, EN 1205

<b>Course Name</b>	Introduction to Computers	<b>Credit Hours</b>	3 (1,2)
<b>Course Code</b>	BA 1103	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces fundamental computer concepts, including basic functions and operations of the computer. Course topics include; identification of hardware, operating system, application software, programming languages, files and data basics, data communication, networking basics, computer graphics, computer security and controls, MS Word, MS Excel, MS Access, MS Power Point, MS Project, internet browsers, databases and e-banking.

**Equivalent Course(s)** BA 1108, BIO 1104, AF 1102, EN 1102, CSC 1104

<b>Course Name</b>	Personal Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1104	<b>Prerequisite(s)</b>	None

**Course Description** This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work, and in personal and interpersonal relationship. Students learn the combination of factors such as personality, communication style, self-esteem, time management, conflict, negotiation and others that impact their personal effectiveness. They also learn methods, and techniques required to work effectively and confidently with others, using time management, negotiation and presentation skills with a positive mindset.

**Equivalent Course(s)** BA 1109, EN 1206



## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Oral Communication and Presentation Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1206	<b>Prerequisite(s)</b>	None

### Course Description

In this course student' learns the principles of a good presentation and has the opportunity to practice and experience these principles during this highly participative course. The course explores in detail, both verbal and non-verbal communication characteristics, and the importance of body-language expressions. Students are challenged through participative exercises with focus on active listening and observation techniques, that aim to make them competent in all facets of effective speech communication.

### Equivalent Course(s)

CSC 2101, ME 1101, AF 1203, EN 1106, SS 1116

<b>Course Name</b>	Maths for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1204	<b>Prerequisite(s)</b>	None

### Course Description

The aim of this course is to prepare students to solve economic and managerial problem through mathematical concepts. This course is covered in four parts, first part is based on systems of linear equations and its solutions provide preliminary concept, construction of linear equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, Cramer's rule & inverse method to solve system of linear equations. The second part develops the concept of linear and nonlinear functions and their application, and linear programming. The third part provides mathematics for finance, which covers simple, and compound interest rate computations and present and future annuity calculations. The last part of the course provides differentiation of basic functions, higher order differentiation, optimization of functions, definite and indefinite integration, and applications of integration.

### Equivalent Course(s)

BIO 1107, AF 1102, EN 1101

<b>Course Name</b>	Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1201	<b>Prerequisite(s)</b>	BA 1101

### Course Description

This course includes accounting for merchandise business, classified balance sheet, simple and multiple income statement, design of accounting system, accounts receivable, notes receivable, inventories, cost of goods sold, liabilities, corporation and measuring cash flow statements. Also, MS Excel is used and necessary accounting software is introduced.

### Equivalent Course(s)

AF 1201

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1202	<b>Prerequisite(s)</b>	BA 1102

**Course Description** This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

**Equivalent Course(s)** SS 1205, AF 3505, EN 2303

<b>Course Name</b>	Management Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1203	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future of management and society.

**Equivalent Course(s)** BA 5419, AF 1106, EN 1204

<b>Course Name</b>	English Writing Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1105	<b>Prerequisite(s)</b>	None

**Course Description** This course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses on grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.

**Equivalent Course(s)** CSC 1102, MD 1122, SS 2316, BIO 1111, AF 1103

<b>Course Name</b>	Statistics and Mathematics for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2305	<b>Prerequisite(s)</b>	BA 1204

**Course Description** The course covers descriptive statistical tools and mathematical methods. Statistical tools consist of: frequency distribution, graphs, charts, mean, and variance, percentiles, correlation, and regression analysis. Mathematical methods consist of matrices, system of linear equations, differentiation and optimization, linear programming, and simplex method. The topics are taught in relation to their application in business and economics.

**Equivalent Course(s)** BA 2311, BIO 1208, AF 2406, EN 2304, SS 2318

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Human Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2312	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the basics of psychological features of human behavior with applications in real life situations. In addition, the aspects of personal growth and understanding are also covered.

**Equivalent Course(s)** BA 2306, SS 2306, AF 2303, EN 1104

<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2301	<b>Prerequisite(s)</b>	BA 1201

**Course Description** This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.

**Equivalent Course(s)** BA 5401, AF 4703, EN 2301

<b>Course Name</b>	Graphic Design in Multimedia Presentations	<b>Credit Hours</b>	3 (1,2)
<b>Course Code</b>	BA 2302	<b>Prerequisite(s)</b>	BA 1103

**Course Description** This course introduces the computer system developed for graphics. It covers topics such as hardware and software components for multimedia production, basic computer operations, ergonomics, file management, scanning techniques, archiving capabilities, and utilization of the multimedia department server and internet connection. Software such as Adobe Photoshop, and Freehand are introduced.

**Equivalent Course(s)** BA 4842

<b>Course Name</b>	Marketing Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2303	<b>Prerequisite(s)</b>	BA 1203

**Course Description** This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.

**Equivalent Course(s)** BA 5404, AF 1206, EN 2305

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Managerial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2304	<b>Prerequisite(s)</b>	BA 1201

**Course Description** This course focuses on cost allocation, process costing systems and spoilage. Specific topics include relevancy of revenues and costs, cost allocation decisions (joint and byproducts), process costing systems, Factory overhead applied, Standard Costing: Setting of Standards, Analysis of Variance and Controlling and Costing Material.

**Equivalent Course(s)** BA 2408, BA 5411, AF 2302

<b>Course Name</b>	Introduction to Social Sciences	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2306	<b>Prerequisite(s)</b>	None

**Course Description** This is an interdisciplinary course combining the perspectives of two or more of the social and behavioral sciences (anthropology, economics, geography, history, political science, psychology and sociology) on the central issues in social science studies. This course explores the relationship between the social and behavioral sciences being studied. It reviews the application of the scientific method, compares theory and concepts, and reviews the different perspectives of the discipline being studied. This course is broad in nature and scope and provides the basis for further study in other various social and behavioral sciences.

**Equivalent Course(s)** BA 2307, MD 1104, SS 2307, AF 2304, EN 1203

<b>Course Name</b>	Business Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2403	<b>Prerequisite(s)</b>	BA 1203

**Course Description** This course introduces contemporary and controversial ethical issues faced by the business community. Topics include: moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Upon completion, students would be able to demonstrate an understanding of their moral responsibilities and obligations as members of the workforce and society.

**Equivalent Course(s)** AF 3503, EN 2402

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3504	<b>Prerequisite(s)</b>	BA 2312

<b>Course Description</b>	This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.
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<b>Equivalent Course(s)</b>	BBA 5207, AF 2305, EN 2306, SS 2414
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<b>Course Name</b>	Introductin to Logic	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1207	<b>Prerequisite(s)</b>	BA 1105

<b>Course Description</b>	This course covers scope and laws of logic, deduction and induction, inferences, forms of discourse, emotive words, kinds of disputes and disagreements, rules and fallacies, classical (Aristotelian) logic, standard-form categorical syllogisms and testing, uniform translation, dilemma and enthymemes, and Mills' Methods of scientific investigation. Critical thinking skills and techniques are also introduced.
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<b>Equivalent Course(s)</b>	BA 1211, EN 2302
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<b>Course Name</b>	Quantitative Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3505	<b>Prerequisite(s)</b>	BA 2305

<b>Course Description</b>	This course is an introduction to quantitative skills essentially required to business students. The course consists of several parts. First is related to arithmetic techniques like: numbers, exponents and roots, ratio and proportion, averages etc. and their usage in solving common problems. The second part consists of algebra, equations, and their applications in solving business problems. The third part comprises of coordinate geometry and combination of above parts. The fourth part covers graphical analysis and interpretation of the data. The fifth and last part consists of data sufficiency problems related to arithmetic, algebra and geometry.
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<b>Equivalent Course(s)</b>	None
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## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3601	<b>Prerequisite(s)</b>	BA 2301

### Course Description

Building upon the concepts already laid down in its pre-requisite, financial management helps students in exploring the depths of the relatively complex aspects of the financial world, with prime focus on the present value and opportunity cost of capital. This course covers topics such as nature, scope, and function of financial decision areas, objectives of financial management, financial forecasting; working capital management, valuation of stocks, valuation of fixed income securities, project cash flow analysis, capital budgeting and decision making, determination of the required rate of return via asset pricing models, dividend policy, debt policy; introduction to financial risk management, and derivatives and role of financial markets in Pakistan.

### Equivalent Course(s)

BA 5105, AF 4702

<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3602	<b>Prerequisite(s)</b>	BA 2303

### Course Description

This course introduces the concept of customer and market-driven management. This course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.

### Equivalent Course(s)

BA 5106, AF 2403

<b>Course Name</b>	Management Information Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4704	<b>Prerequisite(s)</b>	BA 1103

### Course Description

This course covers different information technology applications in business for efficient management of business operations by providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

### Equivalent Course(s)

AF 2402

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4721	<b>Prerequisite(s)</b>	BA 2303

**Course Description** This course introduces students to the principles and practices of contemporary advertising, marketing and public relations. In this course students explore these roles in the marketplace, the elements of a successful advertisement, advertising production, and tasks accomplished by media professionals while promoting products and service businesses.

**Equivalent Course(s)** None

<b>Course Name</b>	Law and Taxation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4801	<b>Prerequisite(s)</b>	BA 1211

**Course Description** This course covers process of legislation in Pakistan, Contract Act, Law of Sale of Goods, Partnership Law and Company laws, Sales Tax, Income Tax Law and Intellectual Property Laws. This course identifies the legal rights of persons in case of nonperformance of contracts, it also identifies the taxation system as well as kinds of taxes in Pakistan. Furthermore, it identifies the intellectual property rights in Pakistan.

**Equivalent Course(s)** AF 3606, EN 2401

<b>Course Name</b>	Islamic Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA xxxx	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic philosophy and universal teachings of Islam in private and social life. It also introduces the distinct Islamic values and institutions and their role in society. The course informs about Islamic environmental values and ethics, and social systems. Furthermore, this course explains the fundamental principles of Islamic economic framework along with contemporary Islamic financial and social institutions and their role in the contemporary economy and financial system. It clarifies the Islamic attitude towards science, reasoning, evidence and inductive knowledge for understanding physical realities for the effective use of material resources. Finally, this course emphasizes social rights given to women, non-Muslims, orphans, parents and subordinates in the Islamic social framework.

**Equivalent Course(s)** None

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4804	<b>Prerequisite(s)</b>	BA 3504

### Course Description

This course examines the role of the human resource professional, as a strategic partner, in managing contemporary organizations. The course introduces concepts, issues and practices in human resource management such as human resource planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, rising benefit costs), and best practices of employers of choice.

### Equivalent Course(s)

BA 5205, AF 4804, EN 3602

<b>Course Name</b>	Business and Electronic Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2406	<b>Prerequisite(s)</b>	BA 1105

### Course Description

This introductory course teaches students to communicate at both personal and professional levels. In addition, it develops competency in all forms of communication. This course introduces communication theories and strategies for a variety of business situations. Using a developmental approach to business communication, the course examines methods for organizing ideas, analyzing data, addressing diverse concerns, presenting information, and developing a professional communication style.

### Equivalent Course(s)

BA 5418, AF 2301, EN 1202

<b>Course Name</b>	Entrepreneurship & Small Business Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3517	<b>Prerequisite(s)</b>	BA 2303

### Course Description

This course focuses on ways in which entrepreneurs recognize opportunities, generate ideas, and organize resources to plan and run successful ventures that enable them to achieve their goals. Students are required to create an entrepreneurial venture as part of a practical learning activity. Through this hands-on experience, case studies, class discussions and textbook readings students will have an opportunity to develop the values, traits, and skills most often associated with successful entrepreneurs.

### Equivalent Course(s)

BA 4859, BA 3502, AF 3504, EN 2404



## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Law for Managers	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3518	<b>Prerequisite(s)</b>	BA 4801

### Course Description

This course focuses on ways to teach students the basic principles of governing the corporate laws, management and the structure of corporate entities. In addition, the students will be able to comprehend the corporate laws applicable to the listed and public sector companies. This course identifies the rules and regulations laid down by Competition Commission of Pakistan; and demonstrate the rules and regulations governing the Non-Banking Finance Corporations.

### Equivalent Course(s)

None

<b>Course Name</b>	Statistical Inference	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3605	<b>Prerequisite(s)</b>	BA 2311

### Course Description

This course covers probability; probability distributions; Binomial, Poisson, Hyper-geometric, Chi Square distribution, Normal distribution, Sampling Distribution; estimation; hypothesis testing; one-population test, two-populations test and analysis of variance; and computer applications in statistics.

### Equivalent Course(s)

SS 2418, AF 3506

<b>Course Name</b>	Introduction to International Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3617	<b>Prerequisite(s)</b>	BA 3602, BA 4804 BA 2404, BA 3502

### Course Description

This course provides the manager perspective in the fields of international payments, international trade, and the analysis of investments. Emphasis is given to the materials and concepts that illuminate the strategies, structure, practices, and effects of multinational enterprises. The topics to be covered are: The Nature of International Business Management, Marketing to Customers with Diverse Cultural Backgrounds, Operations in Diverse Political and Legal Environments, Finance in the International Marketplace, Human Resources and Employees of Diverse Cultural Backgrounds, and Strategy and Structure of International or Global Enterprises.

### Equivalent Course(s)

BA 5308

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA xxxx	<b>Prerequisite(s)</b>	None

**Course Description** This course reviews the ideological and historic background for creation of Pakistan. It reviews the basic philosophy and circumstances that led to the creation of Pakistan. The course covers political and constitutional history of Pakistan, and discusses the current issues with respect to state, institutions and nation faced by Pakistan. Furthermore, the course looks at the role of Pakistan in the World over time, and the future prospects.

**Equivalent Course(s)** None

<b>Course Name</b>	Customer Relationship Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3616	<b>Prerequisite(s)</b>	BA 2303

**Course Description** Customer Relationship Management (CRM) is the business strategy, process, culture and technology that enables organizations to optimize revenue and increase value through a more complete understanding and fulfillment of customer needs. CRM aims at providing better customer service, retaining customers as long-term profitable customers, selling services/products more effectively, gaining new customers from present customers through referrals, and providing helping hand to salespeople.

**Equivalent Course(s)** BA 5124

<b>Course Name</b>	Leadership Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3618	<b>Prerequisite(s)</b>	BA 4804

**Course Description** This course is designed to build upon fundamental leadership theory and further explore historical and contemporary leadership theories, models and perspectives within a variety of contexts. Through dynamic interactions between the instructor, students and other experiences, each student should develop a more complete and holistic philosophical and theoretical leadership framework. This course focuses on professional leadership development. The course is designed to improve personal awareness in the areas of self-management, professionalism, work attitudes and motivation, personality, innovation and creativity, communication, diversity, and ethical decision making.

**Equivalent Course(s)** None

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Consumer Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3507	<b>Prerequisite(s)</b>	BA 2303

### Course Description

This course examines in detail, the complex behavioral processes which determine consumer actions and analyzes the decision patterns in a variety of situations with a special reference to individual and group influences. It is designed to cover contemporary concepts in consumer behavior, objectives, consumer and market segmentation, environmental influence, individual determinants, and consumer buying behavior.

### Equivalent Course(s)

BA 5123, BE 484, EN 2403

<b>Course Name</b>	Financial Markets and Institutions	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3501	<b>Prerequisite(s)</b>	BA 2401

### Course Description

A theoretical course that focuses on financial markets includes bond, equity and the effect of the economy upon the markets when funds are injected into the economic system through financial intermediaries. Topics include; interest rates the flow of funds, capital markets, debt market, money markets and their relationship with changing financial services and regulatory agencies. Other topics include roles of banks, finance companies, insurance companies and fund management companies. The study of Financial Market and Institutions (FMI) is one of the most important areas for finance and business students. The course has been designed to enable the students to understand the existing setup of financial markets, instruments and institutions.

### Equivalent Course(s)

BA 5135, AF 3501

<b>Course Name</b>	Sales Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4824	<b>Prerequisite(s)</b>	BA 3602

### Course Description

This course focuses on the management of an organization's personal selling functions which include the: 1. Formulation of a strategic sales program. 2. Implementation of the sales program and, 3. Evaluation and control of the sales force performance. This course comprises of an approach to understand the above stated sets of decisions and processes, through text and cases on sales management topics and also through sharing of the facilitator's own experiences and observations gained while serving various multinational and national sales and marketing organizations.

### Equivalent Course(s)

BA 3604

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Business Research Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3603	<b>Prerequisite(s)</b>	BA 3605

### Course Description

This course provides the understanding of basic business research methods in the field of marketing, human resource management, and finance. The subject encompasses the theory and practice of research; and covers concepts, elements, and process of conducting business research. It builds the specific conceptual knowledge regarding identification and elicitation of research problem, development of research proposal, reviewing the literature, using suitable research methodology, data collection and analysis tools and writing research report. The focus of the course is on basic concept building and relating the research to real life business problems.

### Equivalent Course(s)

SS 3504, AF 3609

<b>Course Name</b>	Staffing & Compensation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4703	<b>Prerequisite(s)</b>	BA 4804

### Course Description

This course focuses on strategies and tool to create organizational excellence through a continuous cycle of Recruitment & Selection. It explains pragmatic approaches for maintaining distinctive competence in knowledge workers by identifying high quality talent; creation of technological strategies to recruit high quality talent.

### Equivalent Course(s)

None

<b>Course Name</b>	Research Project	<b>Credit Hours</b>	6 (6,0)
<b>Course Code</b>	BA 4807	<b>Prerequisite(s)</b>	BA 3603

### Course Description

The research project course is the application of the theory and concepts learned across various courses in BABS program. It is a team-based project to demonstrate the understanding of interdisciplinary knowledge and soft skills. It is based on identifying and solving a problem from any one specific field of business e.g. management, marketing, finance, or human resource management. It consists of understanding the real life business and industry problem, formulating the research questions, identifying appropriate methodology to answer the research questions, collecting and analyzing data from the field, and reporting the findings by using the scientific methods of research.

### Equivalent Course(s)

AF 4807

## 1.1.2 Bachelor of Arts in Business Studies (BABS)

<b>Course Name</b>	Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4814	<b>Prerequisite(s)</b>	BA 3607

### Course Description

The course is split into three parts: Project Initiation, Project Implementation, and Project Termination. Topics include: definition of a project, importance of project management, project life cycle, types of projects, project management and related industries, project initiation and selection, project manager, project organization, project planning, conflicts and negotiation, project implementation, budgeting and cost estimation, scheduling, resource allocation, monitoring and information systems, project control, project termination, and project auditing. Furthermore, the course covers project feasibility study, format of feasibility study, contents of feasibility study, and making accurate estimates.

### Equivalent Course(s)

Finance Elective

<b>Course Name</b>	Operations & Supply Chain Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4128	<b>Prerequisite(s)</b>	BA 1203

### Course Description

This course covers study of the process directly related to the creation and distribution of goods and services. Increasingly, these operations are taking place outside the boundaries of a traditional enterprise. This course teaches students how to analyze processes, ensure quality, create value, and manage the flow of information, products and services across a network of customers, enterprises and supply chain partners.

### Equivalent Course(s)

BA 3607, EN 2406, BA 4128

<b>Course Name</b>	Managing Across Global Environment	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4127	<b>Prerequisite(s)</b>	BA 1203

### Course Description

The purpose of this course is to explore cultural dimensions of international management in view of increasing cultural differences between individuals and groups within and between organizations as a result of globalization. Culture is defined in its widest sense as the accumulation of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, concepts of the universe, and material objects and possessions: acquired by a group of people in the course of generations through individual and group behavior. Thus culture is communication and communication is culture.

### Equivalent Course(s)

None

## 1.1.2 Bachelor

# 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

Students enrolled in the BS (A&F) program are required to complete 46 courses with a 6 credit hour Research Project within six (6) years. The break-up of 46 courses and project (144 credit hours) is as follows:

- 46 Compulsory Courses (138 Credit Hours)
- 1 Research Project (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
AF 1101	Business Mathematics	34
AF 1102	Computer Concepts and Applications	34
AF 1104	Introduction to Financial Accounting	34
AF 1105	Pakistan Studies	35
AF 1203	Communication Skills	35
AF 1205	Islamic Studies/Humanities	35
<b>Spring Semester</b>		
AF 1103	English Comprehension	36
AF 1207	Business Management and Ethics	36
AF 1201	Advanced Financial Accounting	36
AF 2303	Introduction to Psychology	37
AF 2304	Introduction to Sociology	37
AF 2405	Principles of Micro Economics	37
<b>Second Year</b>		
<b>Fall Semester</b>		
AF 1202	Calculus for Business Studies	37
AF 1206	Principles of Marketing	38
AF 2302	Cost Accounting	38
AF 2305	Organizational Behavior	38
AF 3505	Principles of Macro Economics	38
AF 4703	Introduction to Business Finance	39
<b>Spring Semester</b>		
AF 2301	Business and Technical English Writing	39
AF 2401	Management Accounting	39
AF 3501	Accounting and Financial Information Systems	40
AF 2402	Management Information Systems	40
AF 2404	Money and Banking	40
AF 2406	Statistics and Probability	41

3 List of Electives is given in Appendix B.

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
AF 3607	Corporate Accounting	41
AF 3511	Auditing-I	41
AF 3506	Statistical Inference	42
AF 3507	Financial Institutes and Marketing	42
AF 3606	Taxation	42
AF 3608	Islamic Banking and Finance	43
<b>Spring Semester</b>		
AF 3611	Auditing-II	43
AF 2403	Marketing Management	43
AF 3605	Financial Reporting	44
AF 4701	Business and Labor Law	44
AF 4702	Financial Management	44
AF 3609	Business Research Methodologies	45
<b>Fourth Year</b>		
<b>Fall Semester</b>		
AF 1204	Introduction to Human Resource Management	45
AF xxxx	Accounting Elective-I	-
AF 4707	Company Law	45
AF 4801	Corporate Finance	45
AF xxxx	Finance Elective-I	-
AF 4805	Management of Financial Institutions	46
<b>Spring Semester</b>		
AF 2306	Pakistan Economic Policy	46
AF 3504	Entrepreneurship and Small Business Management	46
AF xxxx	Accounting Elective-II	-
AF xxxx	Finance elective-II	--
AF 4808	Final Project	47

All courses may not be offered every year. Alternate courses may be substituted as and when required.

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

The description of 46 compulsory courses and the Research Project, as required for the BS (A&F) degree, is given below:

<b>Course Name</b>	Business Mathematics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1101	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The aim of this course is to prepare students to solve economic and managerial problems through mathematical concepts. This course is covered in three parts; first part is based on systems of linear equations and its solutions to provide preliminary concepts, construction of linear equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, Cramer's rule & inverse method to solve system of linear equations. The second part develops the concept of linear and nonlinear functions, and their application, linear programming. The third part provides mathematics for finance, which covers simple, and compound interest rate computations and present and future annuity calculations.
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<b>Equivalent Course(s)</b>	BIO 1107, BA 1204, EN 1101
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<b>Course Name</b>	Computer Concepts and Application	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course deals with the introduction to information technology, understanding the computer system, computer hardware, operating system, application software, programming languages, files and data basics, data communication, networking basics, computer graphics, computer security and controls, MS Word, MS Excel, MS Access, MS Power Point, MS Project and Databases.
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<b>Equivalent Course(s)</b>	BA 1103, BA1108, CSC 1104, BIO 1104, EN 1102
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<b>Course Name</b>	Introduction to Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers the purpose and nature of accounting, forms of business enterprises, accounting information users, Generally Accepted Accounting Principles, accounting equation, accounting process, accounting cycle, ledgers and entries, accounting for receivables, inventory and depreciation.
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<b>Equivalent Course(s)</b>	BA 1101, EN 1103
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## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1105	<b>Prerequisite(s)</b>	None

**Course Description** This course provides an introduction to the history of Pakistan with reference to pre- and post-independence eras, and the contribution of different governments in nation's social, economic and legislative development over years.

**Equivalent Course(s)** BA 1213, EN 1107, ME 2306

<b>Course Name</b>	Communication Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1203	<b>Prerequisite(s)</b>	None

**Course Description** In this course student' learns the principles of a good presentation and has the opportunity to practice and experience these principles during this highly participative course. The course explores in detail, both verbal and non-verbal communication characteristics, and the importance of body-language expressions. Students are challenged through participative exercises with focus on active listening and observation techniques, that aim to make them competent in all facets of effective speech communication.

**Equivalent Course(s)** CSC 2101, ME 1101, BA 1206, EN 1106

<b>Course Name</b>	Islamic Studies/Humanities	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1205	<b>Prerequisite(s)</b>	None

**Course Description** Islamic Studies gives an introduction to basic principles of Islam, followed by topics, such as; *Ibadaat* (Worship), *Amr Bil Maroof wa Nahi anl Munkir* (i.e. commands and prohibition) , Islam's concept of knowledge, comparison with science, life history of the Prophet Muhammad (Peace and Blessings of Allah be upon Him), unity of Ummah ; *Kasb-e-Halal* (lawful earning) and obligations of a Muslim. In addition, fundamental human rights and minorities, Islamic society, maintaining identity in a non-Islamic state, Islamic politics, problems faced by Muslims and the status of women in Islam are covered.

**Equivalent Course(s)** BA 1113, EN 1207, ME 1106

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	English Comprehension	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1103	<b>Prerequisite(s)</b>	None

**Course Description** This course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses on grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.

**Equivalent Course(s)** CSC 1102, MD 1122, SS 1116, BIO 1111, BA 1105

<b>Course Name</b>	Business Management and Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1207	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future perspective of management and society. The course also introduces contemporary ethical issues faced by the business community.

**Equivalent Course(s)** BA 1203, EN 1204, BA 5419

<b>Course Name</b>	Advanced Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1201	<b>Prerequisite(s)</b>	AF 1104

**Course Description** This course builds up on the Introductory Accounting course and presents the underlying framework and concepts of Financial Accounting in the context of overall business environment. Financial accounting is the basic means of recording and reporting financial information in a business. Students will learn how accounting supports economic decision making and provides value to entities and society. Students will discover the uses of financial statements and related information, and will expand their knowledge about types of business organizations by learning about merchandising companies. Topics examined include those related to corporate financial position, operating results, and financial assets. Students will also study the basic accounting system and will be shown how the various accounting alternatives for recording financial transactions impact results.

**Equivalent Course(s)** BA 1201

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Introduction to Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2303	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the basics of psychological features of human behavior with applications in real life situations. In addition, the aspects of personal growth and understanding are covered. Topics include human information processing, learning and memory, motivation, development, language acquisition, social psychology, and personality.

**Equivalent Course(s)** BA 2312, SS 2306, EN 1104

<b>Course Name</b>	Introduction to Sociology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2304	<b>Prerequisite(s)</b>	None

**Course Description** This course focuses on three central themes; social change, social inequality, and social harmony versus conflict. It combines selective theoretical texts with case studies to understand the mechanisms and institutions that can trigger, foster, sustain, or undermine each of the three processes. In addition, the course covers the work of major sociological thinkers and the influence of sociology on modernization, race, citizenship, culture, gender, society, and economic development

**Equivalent Course(s)** BA 2307, SS 2307, EN 1203

<b>Course Name</b>	Principles of Micro Economics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2405	<b>Prerequisite(s)</b>	None

**Course Description** Microeconomics covers how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, product markets and resource markets. It also deals with application of demand and supply, cost analysis and factors of production.

**Equivalent Course(s)** SS 1105, BA 1102, EN 1205

<b>Course Name</b>	Calculus for Business Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1202	<b>Prerequisite(s)</b>	AF 1101

**Course Description** This course covers derivatives, results of differentiation, derivatives of logarithmic exponential and trigonometric functions, differentials, growth and decay models, definite and indefinite integrals, techniques of integration, integrals involving logarithmic, exponential and trigonometric functions, integration by tables, area under curve and between curves, functions of several variables, partial derivatives and their application to optimization.

**Equivalent Course(s)** None

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Principles of Marketing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1206	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.

**Equivalent Course(s)** BA 5404, BA 2303, EN 2305

<b>Course Name</b>	Cost Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2302	<b>Prerequisite(s)</b>	AF 1201

**Course Description** Cost Accounting covers all key cost accounting topics, including inventory valuation, job costing, process costing, and standard costing. The course also covers the role of the cost accountant in setting prices, not only to outside customers, but also to other subsidiaries. The course delves into many other areas of concern to the cost accountant, including target costing, constraint analysis, capital budgeting, the cost of quality, and even cost collection systems.

**Equivalent Course(s)** BA 2408, BA 5411

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2305	<b>Prerequisite(s)</b>	AF 2303

**Course Description** This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.

**Equivalent Course(s)** BA 3504, BA 5207, EN 2306

<b>Course Name</b>	Principles of Macro Economics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3505	<b>Prerequisite(s)</b>	AF 2405

**Course Description** This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

**Equivalent Course(s)** SS 1205, BA 1202, EN 2303

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4703	<b>Prerequisite(s)</b>	AF 1201

### Course Description

This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.

### Equivalent Course(s)

BA 5401, BA 2301, EN 2301

<b>Course Name</b>	Business and Technical English Writing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2301	<b>Prerequisite(s)</b>	AF 1203, AF1103

### Course Description

This course helps students to analyze and produce typical office documents, such as letters, memoranda, presentations, proposals, and reports. Through individual and collaborative projects students develop purpose-driven messages that reflect the needs of professional audiences and the physical, stylistic, and social constraints of various media, genres, and situations and learn revising fact sheets according to plain language principles, developing clear instructions, and conducting and reporting on usability tests.

### Equivalent Course(s)

None

<b>Course Name</b>	Management Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2401	<b>Prerequisite(s)</b>	AF 2302

### Course Description

In this course student study accounting concepts and reporting techniques applied in a management decision-making context. It covers analysis of accounting data with real-world case studies, presentation of analysis, conclusions, and recommendations. In addition it covers managerial accounting topics including: cost accounting and the behavior of costs, budgeting, differential analysis, responsibility accounting, balanced score card, performance measurement and monitoring. Also, reporting techniques involving the use of current spreadsheet and graphic presentation technology are covered.

### Equivalent Course(s)

BA 2304, BA 5411

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Accounting and Financial Information Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3501	<b>Prerequisite(s)</b>	AF 2401

<b>Course Description</b>	This course covers the knowledge and skills needed to function within cutting edge accounting information systems that integrate information technology and software in the transactions control procedures and financial reporting cycles. It will also cover, how to be proactive accountants to improve the analysis and design of the Accounting Information Systems (AIS) to add a real value to business organizations, protect business information and its net worth. course will encompass issues such as advising businesses about security risks which affect the business internal control systems over financial documentation, record keeping and reporting. In addition, the course would include using accounting software in designing an accounting information system for a small-to-medium size business.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Management Information Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2402	<b>Prerequisite(s)</b>	AF 1102

<b>Course Description</b>	This course covers different information technology applications in business for efficient management of business operations by providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.
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<b>Equivalent Course(s)</b>	BA 4704
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<b>Course Name</b>	Money and Banking	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2404	<b>Prerequisite(s)</b>	AF 3505

<b>Course Description</b>	This course deals with the history, evolution and function of money. The course essentially delves into the following key topics: monetary policies which are aligned in accordance to the monetary systems, responsibilities of SBP as central bank, controlling money supply in the economy, operations and functions of commercial banks, role of other financial intermediaries, key financial instruments available in the market. In addition, commodity markets, hedging instruments, different functions of treasury, corporate and consumer banking department are introduced.
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<b>Equivalent Course(s)</b>	BA 2401
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## **1.1.3** Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Statistics and Probability	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2406	<b>Prerequisite(s)</b>	AF 1101

<b>Course Description</b>	This basic course aims to enhance the capacity of the students to solve the research problems by focusing on four areas; introduction to statistics, types of data, frequency distribution, graphs and charts, measures of central tendency, and measures of dispersion; concept of curve fitting techniques, regression analysis, correlation analysis, time series analysis; and index numbers, counting techniques, MS Excel tools for statistics using add-on analysis tool pack.
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<b>Equivalent Course(s)</b>	BIO 1208, EN 2304, BA 2311
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<b>Course Name</b>	Corporate Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3607	<b>Prerequisite(s)</b>	AF 1104, AF 1201

<b>Course Description</b>	This course introduces students to the corporate accounting and the external financial reporting environment. The focus throughout the course is on the preparation of general purpose financial reports that comply with the Companies ordinance 1984 and international accounting standards issued by the International Accounting Standards Board (IASB). The course begins by covering the regulatory environment in which general purpose financial statements are prepared. It then covers the conceptual framework, principles of disclosure and requirements for the presentation of the financial statements, measurement principles applied in the preparation of financial statements, accounting for Leases, group of companies, amalgamation, banking & leasing companies. We then consider business combinations and liquidations as an introduction to the main topic of the course of accounting. A primary objective of the course is for students to gain an understanding of how to prepare consolidated financial statements. The next topic is accounting for banking companies. The course concludes with an overview of insolvency and liquidation.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Auditing-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3511	<b>Prerequisite(s)</b>	AF 1104, AF 1201

<b>Course Description</b>	This course introduces students to fundamental auditing concepts, principles and procedures. It addresses issues concerning regulations, appointment of auditors, audit risk, materiality, and characteristics of evidence, internal control, analytical procedures, computerized audit tools, fraud, audit report and auditing theory.
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<b>Equivalent Course(s)</b>	None
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## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Statistical Inference	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3506	<b>Prerequisite(s)</b>	AF 2406

<b>Course Description</b>	The course covers probability; probability distributions; Binomial, Poisson, Hyper-geometric, Chi Square distribution, Normal distribution, sampling distribution; estimation; hypothesis testing; one-population test, two-populations test and analysis of variance; and computer applications in statistics.
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<b>Equivalent Course(s)</b>	SS 2418, BA 3605
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<b>Course Name</b>	Financial Institutes and Markets	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3507	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	A theoretical course that focuses on financial markets includes bond, equity and the effect of the economy upon the markets when funds are injected into the economic system through financial intermediaries. Topics include: interest rates, the flow of funds, capital markets, debt market, money markets and their relationship with changing financial services and regulatory agencies. Other topics include roles of banks, finance companies, insurance companies and fund management companies. The study of Financial Market and Institutions (FMI) is one of the most important areas for finance and business students. The course has been designed to enable the students to understand the existing setup of financial markets, instruments and institutions.
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<b>Equivalent Course(s)</b>	BA 3501
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<b>Course Name</b>	Taxation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3606	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers operations and scope of the Pakistan Tax System as applicable to individuals, unincorporated bodies and persons. Topics include Tax System, rights and obligations of taxpayers, implication of non-compliance, computation of tax for persons, unincorporated bodies and companies, capital gains, taxation issues, and sales tax.
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<b>Equivalent Course(s)</b>	None
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## **1.3** Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Islamic Banking and Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3608	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course explores the growth of Islamic banking into an international multi-billion dollar venture covering both the Islamic and non-Islamic worlds, the relationship between finance and Islamic law, basic principles of Islamic economics, the framework of Islamic finance, the nature of Islamic banking and finance, the concept of money in Islam, the prohibition of interest, the ethical dimension of Islamic banking, the financing mechanisms used in Islamic banking and the supervision of Islamic banks both by the central banks and by the Shariah supervisory boards, and how Islamic banking differs from the conventional interest-based banking system
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Auditing-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3611	<b>Prerequisite(s)</b>	AF1201, AF 3511

<b>Course Description</b>	This course builds on the fundamental auditing concepts, principles and procedures introduced in AF 3511 Auditing-I course. It addresses issues concerning regulations, appointment of auditors, audit risk, materiality, and characteristics of evidence, internal control, analytical procedures, computerized audit tools, fraud, audit report and auditing theory.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2403	<b>Prerequisite(s)</b>	AF 1206

<b>Course Description</b>	This course introduces the concept of customer and market-driven management. This course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.
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<b>Equivalent Course(s)</b>	BA 5106, BA 3602
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## 1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Financial Reporting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3605	<b>Prerequisite(s)</b>	AF 3607

**Course Description** This course covers accounting standards such as, IAS 1: Presentation of Financial Statements, IAS 18 : Revenue, IAS 2 : Inventories, IAS 7: Statement of Cash Flows, IAS 8: Accounting policies, Changes in accounting Estimates and Errors, IAS 16: Property , Plant and Equipment, IAS 17 : Leases, IAS 10 : Events after the reporting period, IAS 23 : Borrowing Costs, IAS 12 : Income Taxes, IAS 33 : Earnings per share, IAS 11: Accounting For Construction Contracts, IAS 37 : Provisions , Contingent liabilities and Contingent Assets, IFRS 1 : First Time Adoption of Financial Reporting Standards, IFRS 2 : Share Based Payments.

**Equivalent Course(s)** None

<b>Course Name</b>	Business and Labor Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4701	<b>Prerequisite(s)</b>	None

**Course Description** This course covers process of legislation in Pakistan, Contract Act, Law of Sale of Goods, Partnership Law and Company laws and Intellectual Property Laws. Also, the course would cover Factories Act and Child Labor Act along with brief overview of different laws related to labor force.

**Equivalent Course(s)** EN 2401, BA 4801

<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4702	<b>Prerequisite(s)</b>	AF 4703

**Course Description** The syllabus for Financial Management, is designed to equip candidates with the skills that would be expected from a finance manager responsible for the finance function of a business. It prepares candidates for more advanced and specialist study in Corporate Finance. Therefore, the course starts by introducing the role and purpose of the financial management function within a business. Before looking at the three key financial management decisions of investing, financing, and dividend policy, the syllabus explores the economic environment in which such decisions are made. The next area introduced is financing decisions. This section of the syllabus starts by examining the various sources of business finance and how much finance can be raised from within the business. It also looks at the cost of capital and other factors that influence the choice of the type of capital a business will raise. The principles underlying the valuation of business and financial assets, including the impact of cost of capital on the value of business, is also covered. The syllabus finishes with an introduction to, and examination of, investing decisions. This is done in two stages - investment in (and the management of) working capital and the appraisal of long-term investments.

**Equivalent Course(s)** BA 5105, BA 3601

## 1.13 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Business Research Methodologies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3609	<b>Prerequisite(s)</b>	AF 3506

### Course Description

This course provides the understanding of basic business research methods in the field of marketing, human resource management, and finance. The subject encompasses the theory and practice of research; and covers concepts, elements, and process of conducting business research. It builds the specific conceptual knowledge regarding identification and elicitation of research problem, development of research proposal, reviewing the literature, using suitable research methodology, data collection and analysis tools and writing research report. The focus of the course is on basic concept building and relating the research to real life business problems.

### Equivalent Course(s)

SS 3504, BA 3603

<b>Course Name</b>	Introduction to Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 1204	<b>Prerequisite(s)</b>	AF 2305

### Course Description

This course examines the role of the human resource professional, as a strategic partner, in managing contemporary organizations. The course introduces concepts, issues and practices in human resource management such as Human Resource planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, and rising benefit costs), and best practices of employers of choice.

### Equivalent Course(s)

BA 5205, BA 4804, EN 3602

<b>Course Name</b>	Company Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4707	<b>Prerequisite(s)</b>	None

### Course Description

This course covers Company Law 1984 with detailed discussion over major sections affecting the companies and their operations in Pakistan. Also, brief coverage of regulations governing Insurance, exchange and other type of companies is included in the course.

### Equivalent Course(s)

None

<b>Course Name</b>	Corporate Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4801	<b>Prerequisite(s)</b>	AF 4702

### Course Description

This course covers corporate finance and capital markets, emphasizing the financial aspects of managerial decisions. It touches on all areas of finance, including the valuation of real and financial assets, risk management and financial derivatives, the trade-off between risk and expected return, and corporate financing and dividend policy. Also, the course draws heavily on empirical research to help guide managerial decisions.

### Equivalent Course(s)

None

## 1.1.3 Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Management of Financial Institutions	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4805	<b>Prerequisite(s)</b>	None

### Course Description

**Equivalent Course(s)** None

<b>Course Name</b>	Pakistan Economic Policy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 2306	<b>Prerequisite(s)</b>	AF 3505

**Course Description** This course is designed to provide students with critical information and knowledge about Pakistan economic environment. Starting with the historical background, covering topics such as agriculture, industry, public finance and social sector development. The course also reviews government interventions, like fiscal policy, monetary policy, trade policy, and income policies. Also included in this course are topics like institutional reforms, deregulation, privatization, denationalization, globalization and other policies/factors that affect business environment in Pakistan. The course ends with discussion on challenges ahead for the Pakistan Economy in the regional and global perspectives.

**Equivalent Course(s)** None

<b>Course Name</b>	Entrepreneurship and Small Business Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 3504	<b>Prerequisite(s)</b>	AF 1106, AF 4703

**Course Description** This course focuses on ways in which entrepreneurs recognize opportunities, generate ideas, and organize resources to plan and run successful ventures that enable them to achieve their goals. Students are required to create an entrepreneurial venture as part of a practical learning activity. Through this hands-on experience, case studies, class discussions and text book readings students will have an opportunity to develop the values, traits, and skills most often associated with successful entrepreneurs.

**Equivalent Course(s)** BA 3502, BA 3517, EN 2404

## **1.3** Bachelor of Science in Accounting & Finance (BSA&F)

<b>Course Name</b>	Final Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	AF 4808	<b>Prerequisite(s)</b>	AF 3609

**Course Description** The Final project is the application of the theory and concepts learned across various courses in BS A&F program. It is a team-based project to demonstrate the understanding of interdisciplinary knowledge and soft skills. It is based on identifying and solving a problem from the accounting and finance. It consists of understanding the real life business and industry problem, formulating the research questions, identifying appropriate methodology to answer the research questions, collecting and analyzing data from the field, and reporting the findings, by using the scientific methods of research.

**Equivalent Course(s)** BA 4807

# 1.1 Bachelor

## 1.1.4 Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

Students enrolled in the BS (Entrepreneurship) program are required to complete 45 courses with a 9 credit hour Capstone Project within six (6) years. The break-up of 45 courses and project (144 credit hours) is as follows:

- 41 Compulsory Courses (123 Credit Hours)
- 4 Elective<sup>1</sup> Courses (12 Credit Hours)
- 1 Capstone Project (9 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
EN 1103	Introduction to Accounting	50
EN 1107	Pakistan Studies	50
EN 1102	Computer Application in Business	50
EN 1104	Introduction to Human Behavior	50
EN 1101	Business Mathematics and Calculus	51
EN 1106	Oral and Written Communication	51
<b>Spring Semester</b>		
EN 1203	Introduction to Sociology	51
EN 1201	Accounting for Business Operations	52
EN 1205	Microeconomics	52
EN 1206	Personal Management	52
EN 1204	Management Principles	52
EN 1207	Islamic Studies/Humanities	53
<b>Second Year</b>		
<b>Fall Semester</b>		
EN 2303	Macroeconomics	53
EN 2302	Logic and Critical Thinking	53
EN 2301	Introduction to Business Finance	53
EN 2305	Marketing Principles	54
EN 2304	Managerial Statistics	54
EN 2306	Organizational Behavior	54
<b>Spring Semester</b>		
EN 1202	Business and Electronic Communication	54
EN 2404	Introduction to Entrepreneurship	55
EN 2401	Business and Labour Laws	55
EN 2403	Consumer Behavior	55
EN 2406	Operation Management	55
EN 2402	Business Ethics	56

00- List of Electives is given in Appendix B.

## **1.1.4** Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Code</b>	<b>Course Title</b>	<b>Page #</b>
<b>Third Year</b>		
<b>Fall Semester</b>		
EN 3502	Business Plan Development	56
EN 3501	Business Analysis and Forecasting	56
EN 3503	Entrepreneurial Marketing	56
EN 3504	Finance and Taxation for Entrepreneurs	57
EN 3506	Sustainability and Technology	57
EN 3505	Marketing Research	57
<b>Spring Semester</b>		
EN 3609	Capstone Project-I	58
EN 3603	Launching a Venture	-
EN 3602	Human Resource Management	58
EN 3605	Product Innovation and Design	58
EN 3601	Analysis of Pakistani Industries	59
EN 3604	Logistics and Supply Change Management	59
<b>Fourth Year</b>		
<b>Fall Semester</b>		
EN 4709	Capstone Project-II	59
EN 4701	Issues in Pakistan's Economy	59
EN 4702	Financing a Venture	60
EN 4703	Emerging Media	60
EN 4xxx	Elective-I	-
EN 4xxx	Elective-II	-
<b>Spring Semester</b>		
EN 4809	Capstone Project-III	60
EN 4801	Business Policy and Design	60
EN 4802	Innovative Business Models	61
EN 4803	SME Management	61
EN 4xxx	Elective-III	-
EN 4xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

## 1.1.4 Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

The description of 41 compulsory courses and the Research Project, as required for the BS-Entrepreneurship degree, is given below:

<b>Course Name</b>	Introduction to Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1103	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the purpose and nature of accounting, forms of business enterprises, accounting information users, generally accepted accounting principles, accounting equation, accounting process, accounting cycle, ledgers and entries, accounting for receivables, inventory and depreciation.

**Equivalent Course(s)** BA 1101, AF 1104

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1107	<b>Prerequisite(s)</b>	None

**Course Description** This course provides an introduction to the history of Pakistan with reference to pre- and post-independence eras, and the contribution of different governments in nation's social, economic and legislative development over years.

**Equivalent Course(s)** BA 1213, AF 1105, ME 2306

<b>Course Name</b>	Computer Application in Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1102	<b>Prerequisite(s)</b>	None

**Course Description** This course deals with the introduction to information technology, computer system, computer hardware, operating system, application software, programming languages, files and data basics, data communication, networking basics, computer graphics, computer security and controls, MS Word, MS Excel, MS Access, MS Power Point, MS Project and Databases used in a business environment.

**Equivalent Course(s)** BA 1103, CSC 1104, BIO 1104, AF 1102, BA 1108

<b>Course Name</b>	Introduction to Human Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1104	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the basics of psychological features of human behavior with applications in real life situations and business environment. In addition, the aspects of personal growth and understanding are also covered.

**Equivalent Course(s)** BA 2308, SS 2306, BA 2312, AF 2303



## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Business Mathematics & Calculus	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1101	<b>Prerequisite(s)</b>	None

### Course Description

The aim of this course is to prepare students to solve economic and managerial problem through mathematical concepts. This course is covered in four parts, first part is based on systems of linear equations and its solutions; provide preliminary concept, construction of linear equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, Cramer's rule & inverse method to solve system of linear equations. The second part develops the concept of linear and nonlinear functions, and their application, and linear programming. The third part provides mathematics for finance, which covers simple, and compound interest rate computations and present and future annuity calculations. The last part of the course provides differentiation of basic functions, higher order differentiation, optimization of functions, definite and indefinite integration, and applications of integration.

### Equivalent Course(s)

BIO 1107, BA 1204, AF 1101

<b>Course Name</b>	Oral and Written Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1106	<b>Prerequisite(s)</b>	None

### Course Description

This course is aimed at improving English language communication and presentation skills, specifically aimed for business students. With a multidimensional approach, the course enables the students to practice the use of English in everyday usage and professional situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to make effective presentations, with an awareness of the audience and utilizing appropriate verbal and non-verbal communication with the ability to respond to comments and negotiate their own point of view persuasively. They will also learn to express their ideas in their writings displaying the ability to describe, argue and analyze well. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in effective communication in formal and informal contexts.

### Equivalent Course(s)

None

<b>Course Name</b>	Introduction to Sociology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1203	<b>Prerequisite(s)</b>	None

### Course Description

This course focuses on three central themes; social change, social inequality, and social harmony versus conflict. It combines selective theoretical texts with case studies to understand the mechanisms and institutions that can trigger, foster, sustain, or undermine each of the three processes. The course covers the work of major sociological thinkers and the influence of sociology on modernization, race, citizenship, culture, gender, society, and economic development.

### Equivalent Course(s)

SS 2307, BA 2307, AF 2304

## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Accounting for Business Operation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1201	<b>Prerequisite(s)</b>	EN 1103

**Course Description** This course focuses on cost allocation, process costing systems and spoilage. Specific topics include relevancy of revenues and costs, cost allocation decisions (joint and byproducts), process costing systems, factory overhead applied, standard costing: setting of standards, analysis of variance and controlling, and costing material.

**Equivalent Course(s)** BA 5411, BA 2408, AF 2302

<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1205	<b>Prerequisite(s)</b>	None

**Course Description** Microeconomics studies how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, product markets and resource markets. It also deals with application of demand and supply, cost analysis and factors of production.

**Equivalent Course(s)** SS 1105, AF 2405, BA 1102

<b>Course Name</b>	Personal Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1206	<b>Prerequisite(s)</b>	None

**Course Description** This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work, and in personal and interpersonal relationship. Students learn the combination of factors such as personality, communication style, self-esteem, time management, conflict, negotiation and others that impact their personal effectiveness. They also learn methods, and techniques required to work effectively and confidently with others, using time management, negotiation and presentation skills with a positive mindset.

**Equivalent Course(s)** BA 1104, BA 1109

<b>Course Name</b>	Management Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1204	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future of management and society.

**Equivalent Course(s)** BA 5419, BA 1203, AF 1106

## **1.1.4** Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Islamic Studies / Humanities	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1207	<b>Prerequisite(s)</b>	None

### **Course Description**

<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2303	<b>Prerequisite(s)</b>	EN 1205

**Course Description** This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

<b>Equivalent Course(s)</b>	SS 1205, BA 1202, AF 3505
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<b>Course Name</b>	Logic and Critical Thinking	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2302	<b>Prerequisite(s)</b>	EN 1106

**Course Description** This course covers scope and laws of logic, deduction and induction, inferences, forms of discourse, emotive words, kinds of disputes and disagreements, rules and fallacies, classical (Aristotelian) logic, standard-form categorical syllogisms and testing, uniform translation, dilemma and enthymemes, and Mills' Methods of scientific investigation. Critical thinking skills and techniques are also introduced.

<b>Equivalent Course(s)</b>	BA 1211
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<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2301	<b>Prerequisite(s)</b>	EN 1201

**Course Description** This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.

<b>Equivalent Course(s)</b>	BA 5401, BA 2301, AF 4703
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## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Marketing Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2305	<b>Prerequisite(s)</b>	EN 1204

**Course Description** This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.

**Equivalent Course(s)** BA 5404, BA 2303, AF 1206

<b>Course Name</b>	Managerial Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2304	<b>Prerequisite(s)</b>	EN 1101

**Course Description** This basic course aims to enhance the capacity of the students to solve the research problems by focusing on four areas; introduction to statistics, types of data, frequency distribution, graphs and charts, measures of central tendency, and measures of dispersion; concept of curve fitting techniques, regression analysis, correlation analysis, time series analysis; and index numbers, counting techniques and MS Excel tools for statistics using add-on analysis tool pack.

**Equivalent Course(s)** BIO 1208, BA 2311, AF 2406

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2306	<b>Prerequisite(s)</b>	EN 1104

**Course Description** This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.

**Equivalent Course(s)** BA 5207, BA 3504, AF 2305

<b>Course Name</b>	Business and Electronic Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 1202	<b>Prerequisite(s)</b>	EN 1106

**Course Description** This introductory course teaches students to communicate at both personal and professional levels. In addition, it develops competency in all forms of communication. Also, this course introduces communication theories and strategies for a variety of business situations. Using a developmental approach to business communication, the course examines methods for organizing ideas, analyzing data, addressing diverse concerns, presenting information, and developing a professional communication style.

**Equivalent Course(s)** BA 5418, BA 2406

## **1.1.4** Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Introduction to Entrepreneurship	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2404	<b>Prerequisite(s)</b>	EN 1204

<b>Course Description</b>	This course focuses on ways in which entrepreneurs recognize opportunities, generate ideas, and organize resources to plan and run successful ventures that enable them to achieve their goals. Students are required to create an entrepreneurial venture as part of a practical learning activity. Through this hands-on experience, case studies, class discussions and text book readings students will have an opportunity to develop the values, traits, and skills most often associated with successful entrepreneurs.
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<b>Equivalent Course(s)</b>	BA 4859, BA 3517, BA 3502, AF 3504
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<b>Course Name</b>	Business and labor Laws	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2401	<b>Prerequisite(s)</b>	EN 2302

<b>Course Description</b>	This course covers process of legislation in Pakistan, Contract Act, Law of Sale of Goods, Partnership Law and Company laws and Intellectual Property Laws. Course would also cover Factories Act and Child Labor Act along with brief overview of different laws related to labor force.
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<b>Equivalent Course(s)</b>	AF 4701, BA 4801
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<b>Course Name</b>	Consumer Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2403	<b>Prerequisite(s)</b>	EN 2305

<b>Course Description</b>	This course examines in detail, the complex behavioral processes which determine consumer actions and analyzes the decision patterns in a variety of situations with a special reference to individual and group influences. It is designed to cover contemporary concepts in consumer behavior, objectives, consumer and market segmentation, environmental influence, individual determinants, and consumer buying behavior.
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<b>Equivalent Course(s)</b>	BA 3507
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<b>Course Name</b>	Operations Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2406	<b>Prerequisite(s)</b>	EN 1204

<b>Course Description</b>	This course introduces the concepts of production and operations management. Topics covered represent a blend of concepts from industrial engineering, cost accounting, general management, quantitative methods and statistics. The course topics include some operations and strategic issues such as applied forecasting, aggregate planning, scheduling, shop floor control, total quality management, inventory management, and facility layout and project management. In addition, topics include the complex understanding of services operations management with the help of real life case studies, processes and methodologies applied worldwide.
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<b>Equivalent Course(s)</b>	BA 3607
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## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Business Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 2402	<b>Prerequisite(s)</b>	EN 1204

### Course Description

### Equivalent Course(s)

BA 2403

<b>Course Name</b>	Business Plan Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3502	<b>Prerequisite(s)</b>	EN 2404

### Course Description

This course covers the process of identifying and quantifying market opportunities, planning, and starting a new enterprise in the Pakistani market. Students will adopt the lean model methodology and learn how to use a business model canvas to brainstorm, iterate, and develop an idea that is both viable and doable with actual figures and scenarios from the market

### Equivalent Course(s)

None

<b>Course Name</b>	Business Analysis and Forecasting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3501	<b>Prerequisite(s)</b>	EN 2304

### Course Description

This course entails understanding business as a financial system where management makes decisions in three key areas Investment, Financing and Operations. The course will help students analyze profit & loss, balance sheet, and cash flow statements. Using profitability and risk ratios to compare companies across different sizes and industries (Intercompany, Intracompany and Industry Averages). Balance Sheet, Income Statements and Cash flow statement analytics will also be carried out in the course.

### Equivalent Course(s)

None

<b>Course Name</b>	Entrepreneurial Marketing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3503	<b>Prerequisite(s)</b>	EN 2305

### Course Description

This course covers different methods of conventional and non-conventional marketing carried out by startups and businesses by using market intelligence, guerrilla marketing, subversive marketing, disruptive marketing, radical marketing, viral marketing, convergence marketing and expeditionary marketing. Each reflects an alternative approach to marketing for a startup.

### Equivalent Course(s)

None

## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Finance and Taxation for Entrepreneurs	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3504	<b>Prerequisite(s)</b>	EN 2301

<b>Course Description</b>	<p>This course examines the elements of entrepreneurial finance and taxation, partly focusing on start-up ventures and the early stages of company development. The course addresses key questions which challenge all entrepreneurs: how much money can and should be raised; when should it be raised and from whom; what is a reasonable valuation of the company; and how should funding, employment contracts and exit decisions be structured. It aims to prepare students for these decisions, both as entrepreneurs and venture capitalists. The other part of this course examines the elements of entrepreneurial taxation, focusing on how different taxes and understanding of changes in tax laws can change entrepreneurial activities. Key elements that would be considered from taxation point view are: income tax, sales tax, value added tax, service tax, property tax, etc and tax laws and regulation's structure. It aims to prepare students for these decisions, both as entrepreneurs and venture capitalists.</p>
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Sustainability and Technology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3506	<b>Prerequisite(s)</b>	EN 2404

<b>Course Description</b>	<p>This course is designed to articulate need for business growth and importance of sustainability practices in parallel. The course will introduce concepts of sustainability, significance and its role in economic, social and environmental settings. Also, the course incorporates social responsibility in value chain of business. In addition, explains role of technology and innovation in sustainable practices.</p>
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Marketing Research	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3505	<b>Prerequisite(s)</b>	EN 2305

<b>Course Description</b>	<p>This course provides the understanding of basic research techniques. It will introduce the elements and process of conducting business research. It will build the concepts regarding problem identification, development of research problem, eliciting the theoretical framework, developing suitable research methodology, data collection and analysis tools, and report writing.</p>
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<b>Equivalent Course(s)</b>	BA 4707
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## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Capstone Project-1	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3609	<b>Prerequisite(s)</b>	EN 3505

**Course Description** In the capstone project students are supposed to work on a business idea and its feasibility through individual basis or working as apprentice with any entrepreneur thereby doing research and honing the skills before its application in the market.

**Equivalent Course(s)** None

<b>Course Name</b>	Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3602	<b>Prerequisite(s)</b>	EN 2306

**Course Description** This course examines the role of the human resource professional, as a strategic partner, in managing startups and established businesses. The course introduces concepts, issues and practices in human resource management such as Human Resource planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, and rising benefit costs), and best practices of employers of choice.

**Equivalent Course(s)** BA 5205, BA 4804, AF 1204

<b>Course Name</b>	Product Innovation and Design	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3605	<b>Prerequisite(s)</b>	EN 2404

**Course Description** This course is designed to provide students with vital information on the development and launching of a new product or service. The course reviews different stages a product/service has to go through before reaching its final customer.

**Equivalent Course(s)** BA 4859



## Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Analysis of Pakistani Industries	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3601	<b>Prerequisite(s)</b>	EN 2303

**Course Description** This course is designed to make student understand the characteristics, nature of competition, growth potential, current trends, history, concurrent issues and its importance in context of Pakistan's economic scenario. Also, the course identifies the impact of these prevailing trends on businesses operating in different industries.

**Equivalent Course(s)** None

<b>Course Name</b>	Logistics and Supply Chain Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 3604	<b>Prerequisite(s)</b>	EN 2406

**Course Description** This course will provide understanding of overall logistics and supply chain process for startups. Also, it will cover various activities like transportation, production, distribution, warehousing, inventory management, purchasing of raw material and handling of semi produced products, and customer services. In addition, it will equip students with various tools, models and theories to operate in a business environment.

**Equivalent Course(s)** None

<b>Course Name</b>	Capstone Project-11	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4709	<b>Prerequisite(s)</b>	EN 3609

**Course Description** In this project student's will transform their ideas practically in the market. This stage is not confined to numbers, business plan or any financial statements rather it is utilizing both primary research and secondary research to develop their ideas and taking practical steps to start their company. Also, a mentor entrepreneur in the relevant field will be assigned to facilitate the students with the research and create a prototype product to test in the market for results.

**Equivalent Course(s)** None

<b>Course Name</b>	Issues in Pakistan's Economy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4701	<b>Prerequisite(s)</b>	EN 3601

**Course Description** This course is designed to provide students with critical information and knowledge about Pakistan economic environment. Starting with the historical background, it covers topics such as agriculture, industry, public finance and social sector development. The course also reviews government interventions, like fiscal policy, monetary policy, trade policy, and income policies. Further, the additional topics of this course includes: institutional reforms, deregulation, privatization, denationalization, globalization and other policies/factors that affect business environment in Pakistan. The course ends with discussion on challenges ahead for the Pakistan Economy in the regional and global perspectives.

**Equivalent Course(s)** SS 4249, BA 3609

## 1.1.4 Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Financing a Venture	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4702	<b>Prerequisite(s)</b>	EN 3504

**Course Description** This course is for aspiring or active entrepreneurs who want to understand how to secure funding for their company. This course will demystify key financing concepts to give entrepreneurs and aspiring entrepreneurs a guide to secure funding.

**Equivalent Course(s)** None

<b>Course Name</b>	Emerging Media	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4703	<b>Prerequisite(s)</b>	EN 2405

**Course Description** In this course students will learn how new and emerging media technologies are being integrated into advertising and public relations campaigns, and how they are being used to deliver traditional messages in novel times and spaces. In an increasingly competitive and diversifying media space, communicators are finding new ways to reach their intended audiences. This course will foster an understanding of the roles and limitations of new media for delivering messages and engaging with key audiences, public and markets while allowing students to critically analyze how to best utilize new media to connect with consumers.

**Equivalent Course(s)** BA 4125

<b>Course Name</b>	Capstone Project-III	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4809	<b>Prerequisite(s)</b>	EN 4709

**Course Description** The course will help students to implement the learnings of previous 2 capstone projects and check its success in the chosen market. The course represents the startup feasibility around six core elements, opportunity, innovation, calculated risk-taking, resource leveraging, proactive behavior, and customer intensity. A continuum is involved, to gauge the firm's external environment drive the need for a future entrepreneur to be well prepared against turbulence, discontinuities, rapid changes in technology and economy.

**Equivalent Course(s)** None

<b>Course Name</b>	Business Policy and Design	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4801	<b>Prerequisite(s)</b>	EN 3502

**Course Description** The course focuses on creating an understanding on development of company policy and strategy. It will explore the issues faced by startups and business in matters relating sustainability, corporate governance, leadership and policy making.

**Equivalent Course(s)** None

## 1.1.4 Bachelor of Science in Entrepreneurship (BS Entrepreneurship)

<b>Course Name</b>	Innovation Business Models	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4802	<b>Prerequisite(s)</b>	EN 3603

**Course Description** The course introduces students to various modern and unique business models and their critical components. The course will cover traditional and web based platform business models to give insights to the students on their synergy with the business environment.

**Equivalent Course(s)** None

<b>Course Name</b>	SME Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EN 4803	<b>Prerequisite(s)</b>	EN 2404

**Course Description** This course focuses on the importance and purpose of SMEs highlighting how to carry out efficient and effective small and medium business activities, in local and international markets. Students will learn the different obstacles faced by SMEs related to policy making, development of feasibility studies and interaction with both public and private sector institutions.

**Equivalent Course(s)** None

## 1.2.1 Master of Business Administration (MBA)

### MBA (72 credit hours)

For students with 4-year undergraduate degree/16-years of education, the duration of the MBA program is 2 years. Twenty-two courses (66 credits) and Business Research Project (6 credits) or Thesis (6 credit hours) are needed to graduate. Students are also required to complete a six-week internship. The maximum duration to complete this degree is 4 years.

- 18 Core Courses (54 Credit Hours)
- 4 Elective Courses<sup>1</sup> (12 Credit Hours)
- 1 Business Research Project/Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BA 5301	Financial Accounting	64
BA 5419	Business Management & Ethics*	64
BA 5418	Managerial Communication*	64
BA 5502	Quantitative Tools for Managers *	64
BA 5302	Micro Economics*	65
BA 5106	Marketing Management*	65
<b>Spring Semester</b>		
BA 5402	Macro Economics*	65
BA 5205	Human Resource Management*	66
BA 5411	Cost and Management Accounting*	66
BA 5401	Introduction to Business Finance*	66
BA 5405	Statistical Inference*	67
BA 5501	Applied Research Methods	67
<b>Second Year</b>		
<b>Fall Semester</b>		
BA 5308	International Business	67
BA 5601	Strategic Human Resource Management	68
BA 5105	Financial Management*	68
BA 5203	Strategic Marketing	68
BA 5506	Business Research Project-I (3 Credits) <b>OR</b>	69
BA 5507	Thesis-I (3 Credits)	69
BA 5xxx	Elective-I	-
<b>Spring Semester</b>		
BA 5104	Strategic Management	69
BA 5208	Strategic Finance	70
BA 5606	Business Research Project-II (3 Credits) <b>OR</b>	70
BA 5607	Thesis-II(3 Credits)	70
BA 5xxx	Elective-II	-
BA 5xxx	Elective-III	-
BA 5xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Annexure B.

00- Spread over two semesters (BRP I/Thesis I, BRP II/Thesis II).

The students with 4-year BBA/BABS/BS (Accounting & Finance)/BS (Entrepreneurship) or equivalent degree are exempted 36 credit hours of course work. Minimum duration of degree for such students will be 1.5-year with following program structure:

- 6 Core Courses (18 Credit Hours)
- 4 Elective Courses<sup>00</sup> (12 Credit Hours)
- 1 Business Research Project/Academic Research Project//Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BA 5501	Applied Research Methods	67
BA 5104	Strategic Management	69
BA 5601	Strategic HRM	68
BA 5208	Strategic Finance	70
<b>Spring Semester</b>		
BA 5104	Strategic Management	69
BA 5506	Business Research Project-I (3 Credits) <b>OR</b>	69
BA 5507	Thesis-I (3 Credits)	69
BA 5xxx	Elective-I	-
BA 5xxx	Elective-II	-
<b>Second Year</b>		
<b>Fall Semester</b>		
BA 5308	International Business	67
BA 5606	Business Research Project-II (3 Credits) <b>OR</b>	70
BA 5607	Thesis-II(3 Credits)	70
BA 5xxx	Elective-III	-
BA 5xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B.

00- Spread over two semesters (BRP I/Thesis I, BRP II/Thesis II).

## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5301	<b>Prerequisite(s)</b>	None

**Course Description** This course includes accounting for merchandise business, classified balance sheet, simple and multiple income statement, design of accounting system, accounts receivable, notes receivable, inventories, cost of goods sold, liabilities, corporation and measuring cash flow statements. Also, MS Excel is used and necessary accounting software is introduced.

**Equivalent Course(s)** None

<b>Course Name</b>	Business Management & Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5419	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future perspective of management and society. The course also introduces contemporary ethical issues faced by the business community.

**Equivalent Course(s)** BA 1203, AF 1106, EN 1204

<b>Course Name</b>	Managerial Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5418	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to develop the application of written oral and interpersonal communication theory in the business management environment. Areas of emphasis include the role of communication in contemporary organizations, considerations of message production and reception, internal versus external audiences, communicating change, intercultural communication, and ethics.

**Equivalent Course(s)** BA 2406, AF 2301, EN 1202

<b>Course Name</b>	Quantitative Tools for Managers	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5502	<b>Prerequisite(s)</b>	None

**Course Description** The course covers descriptive statistical tools and mathematical methods. Statistical tools consist of: frequency distribution, graphs, charts, mean and variance, percentiles, correlation and regression analysis. Mathematical methods consist of: matrices, system of linear equations, differentiation and optimization, linear programming and simplex method.

**Equivalent Course(s)** None

## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5302	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.

**Equivalent Course(s)** SS 1105, BA 1102, EN 1205, AF 2405

<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5106	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the concepts of marketing, marketing environment, planning and research. The course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.

**Equivalent Course(s)** None

<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5402	<b>Prerequisite(s)</b>	BA 5302

**Course Description** This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

**Equivalent Course(s)** SS 1205, BA 1202, EN 2303, AF 3505

## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5205	<b>Prerequisite(s)</b>	BA 5419

**Course Description** This course examines the role of the human resource professional, as a strategic partner, in managing contemporary organizations. The course introduces concepts, issues and practices in Human Resource Management (HRM) such as Human Resource planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, and rising benefit costs), and best practices of employers of choice.

**Equivalent Course(s)** BA 4804, AF 1204, EN 3602

<b>Course Name</b>	Cost and Management Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5411	<b>Prerequisite(s)</b>	BA 5301

**Course Description** This course introduces cost concepts, classifications, behaviors, and assignment, usage of quantitative and qualitative tools and methods of preparing spreadsheet models to analyze data, account for specific industries and organizational structures, understand advantages, disadvantages, and appropriate usage of job-order costing, process costing, activity-based costing, variable costing, and standard costing, and computing and interpreting variances from budgets and standards.

**Equivalent Course(s)** BA 2408, AF 2302, EN 1201

<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5401	<b>Prerequisite(s)</b>	BA 5301

**Course Description** This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.

**Equivalent Course(s)** BA 2301, AF 4703, EN 2301



## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Statistical Inference	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5405	<b>Prerequisite(s)</b>	BA5502

### Course Description

This course covers probability; probability distributions; Binomial, Poisson, Hyper-geometric, Chi Square distribution, Normal distribution, sampling distribution; estimation; hypothesis testing; one-population test, two-populations test and analysis of variance; and computer applications in statistics.

### Equivalent Course(s)

BA 3605, AF 3506

<b>Course Name</b>	Applied Research Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5501	<b>Prerequisite(s)</b>	None

### Course Description

This course equips students with the essential tools of research which forms the basis of sound decision-making. Through an applied approach using term report supplemented by classroom discussions and presentations, students gain knowledge of converting a business issue into a research problem; and applying the most appropriate methodology to solve this problem. The course provides an overview of applied research methodology and statistics. The general aims are to provide a) an advanced understanding of research methods and data analysis, b) enhanced research literacy, and c) a greater understanding of the way in which research methodology and statistics are interwoven with theory and practice.

### Equivalent Course(s)

None

<b>Course Name</b>	International Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5308	<b>Prerequisite(s)</b>	None

### Course Description

This course develops an understanding of the worldwide developments and foundations for international business and the cultural context for managing in an overseas environment. It provides an understanding of the macroeconomic and political changes that have taken place in the era of globalization and beyond globalization. It also helps to investigate the political economy of international business, trade and investment, In addition describes and explains trade and the investment environment in which international business transactions occurs.

### Equivalent Course(s)

None

## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Strategic Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5601	<b>Prerequisite(s)</b>	
		<b>For MBA 72</b>	BA 5205
		<b>For MBA 36</b>	None

<b>Course Description</b>	This course equips students to take strategic human resource decisions. The course is designed to involve students in practical activities ranging from assessment of the global economic environment and organizational culture to the analysis of competencies and the implementation of human resource decisions. Students carry out a detailed strategic analysis of a human resource management issue in organizations and, in doing so learn how to contribute in improving the performance, productivity, and morale.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5105	<b>Prerequisite(s)</b>	BA 5401

<b>Course Description</b>	Building upon the concepts already laid down in its pre-requisite, financial management helps students in exploring the depths of the relatively complex aspects of the financial world, with prime focus on the present value and opportunity cost of capital. This course covers topics such as nature, scope and function of financial decision areas, objectives of financial management, financial forecasting, working capital management, valuation of stocks, valuation of fixed income securities, project cash flow analysis, capital budgeting and decision making, determination of the required rate of return via asset pricing models, dividend policy, debt policy, introduction to financial risk management and derivatives and role of financial markets in Pakistan.
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<b>Equivalent Course(s)</b>	BA 3601, AF 4702
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<b>Course Name</b>	Strategic Marketing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5203	<b>Prerequisite(s)</b>	
		<b>For MBA 72</b>	BA 5106
		<b>For MBA 36</b>	None

<b>Course Description</b>	This course addresses topics such as business and marketing strategies, business strategy and competitive advantage, marketing situation analysis, market segmentation, marketing target and positioning strategy, product portfolio strategy, price strategy, promotion strategy, marketing strategy implementation and control. The focus is on the analysis and decision making process from strategic point of view. Additionally, understanding of how marketing interacts with other levels of strategy and integrate with all the other departments within the organization.
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<b>Equivalent Course(s)</b>	None
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## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Business Research Project 1	<b>Credit Hours</b>	<b>(3,0)</b>
<b>Course Code</b>	BA 5506	<b>Prerequisite(s)</b>	BA 5501

### Course Description

In Business Research Project students are required to work in teams on a specific industry challenge faced by a company. The project work usually involves carrying out research and/or performing sound strategic analysis for identifying solutions to the problem. The objectives of this project work are to: enhance the practical side of the learning process, internalize managerial concepts, and develop creative and applicable solutions. It mainly covers parts of Chapter 1: Introduction, Chapter 2: Literature Review and Chapter 3: Methodology (Proposed).

### Equivalent Course(s)

BA 5507

<b>Course Name</b>	Thesis 1	<b>Credit Hours</b>	<b>(3,0)</b>
<b>Course Code</b>	BA 5507	<b>Prerequisite(s)</b>	BA 5501

### Course Description

Thesis is the application of the theory and concepts learned across various courses in MBA program. It is an individual project to demonstrate the understanding of interdisciplinary knowledge and soft skills. It is based on identifying and solving a problem from any one specific field of business e.g. Management, Marketing, Finance, or Human Resource Management. It consists of understanding the real life business and industry problem, formulating the research questions, identifying appropriate methodology to answer the research questions, collecting and analyzing data from the field, and reporting the findings, by using the scientific methods of research. It mainly covers parts of Chapter 1: Introduction, Chapter 2: Literature Review and Chapter 3: Methodology (Proposed).

### Equivalent Course(s)

BA 5506

<b>Course Name</b>	Strategic Management	<b>Credit Hours</b>	<b>3 (3,0)</b>
<b>Course Code</b>	BA 5104	<b>Prerequisite(s)</b>	<b>For MBA 72</b> BA 5205, BA 5105, BA 5106 <b>For MBA 36</b> None

### Course Description

This course covers various aspects of strategic management, information inputs, concepts of mission and objectives, strategy formulation, action plan choice, strategy selection and evaluation, function strategy evaluation, strategy implementation and strategic control.

### Equivalent Course(s)

None

## 1.2.1 Master of Business Administration (MBA)

<b>Course Name</b>	Strategic Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 5208	<b>Prerequisite(s)</b>	
		<b>For MBA 72</b>	BA 5105
		<b>For MBA 36</b>	None

<b>Course Description</b>	This is an advanced course in finance that focuses upon the linkages that exist between corporate strategy and objectives, financial policy and financing strategies, corporate governance, and the creation and allocation of wealth. It also discusses the appropriate tools that can be applied to structuring and managing the business and financial affairs of a firm under varying conditions.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Business Research Project 2	<b>Credit Hours</b>	(3,0)
<b>Course Code</b>	BA 5606	<b>Prerequisite(s)</b>	BA 5506

<b>Course Description</b>	Students cover the areas of activities and methodology, like overall strategy analysis of the company, data collection & risk management tools and analysis, and finally conclude whether or not it is a viable business venture (or a viable business/strategic path for the client company to explain why the company should or should not pursue the business venture or the path under investigation). It mainly covers parts of Chapter 3: Methodology (concluding), Chapter 4: Results and Chapter 5: Discussion and Conclusion.
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<b>Equivalent Course(s)</b>	BA 5607
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<b>Course Name</b>	Thesis 2	<b>Credit Hours</b>	(3,0)
<b>Course Code</b>	BA 5607	<b>Prerequisite(s)</b>	BA 5507

<b>Course Description</b>	This final part II of Thesis describes alternative models of study, and then applies the concepts in those models to understand the gap analysis, enlightening on the procedure of data collection and analysis, and finally concluding and giving future research directions. It covers parts of Chapter 3: Methodology (concluding), Chapter 4: Results (Business Project 2), Chapter 5: Discussion and Conclusion (Business Project 2).
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<b>Equivalent Course(s)</b>	BA 5606
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## 1.2 Masters and PhD

### 1.2.3 Master in Project Management (MPM)

Master in Project Management is designed to enable individuals to manage complex projects of today through modern project management approaches. MPM is a one-year evening program comprising 30 credit hours spread over two semesters.

Students enrolled in the Master in Project Management (MPM) program are required to complete 30 credit hours within four (4) years. The breakup of the courses is as follows:

- 7 Compulsory Courses (24 Credit Hours)
- 2 Elective Courses<sup>00</sup> (6 Credit Hours)
- 1 Project (3 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
PM 5102	Fundamentals of Project Management	72
PM 5104	Cost and Financial Management for Project Management	72
PM 5105	Project Scope	72
PM 5107	IT Tools by Project Management	73
PM 5201	Project Scheduling, Planning and Time Management	73
<b>Spring Semester</b>		
PM 5301	Project Quality Management	73
PM 5351	Project Risk Management	74
PM 5209	Project	74
PM 5xxx	Elective-I	-
PM 5xxx	Elective-II	-

\* May alternatively be exchanged with "IT Tools for Project Management?" or "Enterprise Project Management."

All courses may not be offered every year. Alternative courses may be substituted as and when required.

## 1.2.3 Master in Project Management (MPM)

<b>Course Name</b>	Fundamentals of Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This introductory course provides basic knowledge regarding; organization, planning, and controlling of projects, and practical knowledge on managing project scope, schedule, and resources. It includes various topics like project life cycle, work break-down structure and Gantt charts, network diagrams, scheduling techniques, and resource allocation decisions. Also, theoretical concepts are supplemented through practical team projects and tutorials using project management software. The purpose of this course is to familiarize students with all terms and processes of project management and to let them have an enriched flavor of working in teams.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Cost and Financial Management for Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course is intended to provide the general approaches to cost management, such as the methods used to estimate costs, preparing budgets and controlling/monitoring a project's finances. It will help to understand the interrelationship of various cost control concepts and possible responses a project management team might make if a project is falling behind schedule or overrunning its budget in real time. Further, the course would introduce the concept of project finance, which includes financing of projects based upon the projected cash flows of the project. It helps in understanding the strategic and technical components of project finance. Strategic elements of project financing include an understanding of project screening, value-for-money analysis, and risk mitigation and allocation. Technical elements of project financing include an understanding of the data and relevant assumptions, sensitivity analyses, tariffs, projecting cash flow, NPV & IRR returns, and cost of capital all critical in building and interpreting the actual financial model.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Project Scope	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5105	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course will provide participants with the skills and knowledge required to gather requirements, accurately define project scope, create a Work Breakdown Structure (WBS) that details all work components, and learn the elements involved in verifying and controlling scope. Scope Management techniques allow project managers and supervisors to allocate just the right amount of work necessary to complete a project successfully.
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<b>Equivalent Course(s)</b>	None
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## 1.2.3 Master in Project Management (MPM)

<b>Course Name</b>	IT Tools for Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5107	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The role and vitality of present and future project managers significantly depends on how they are able to handle and use the contemporary technological tools available around them for effective project planning and execution. As such the use of IT enabled platforms becomes imperative and gaining hands on experience on both Stand Alone and Server Based Project Management applications is a must. This course addresses this important aspect of Project Management (PM) by imparting HANDS-ON trainings of the participants on the latest available IT platforms through interactive discussions and realistic scenario building.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Project Scheduling, Planning and Time Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5201	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course utilizes PMI's industry standard for the schedule management process and the Microsoft Project Scheduling Application which can be applied immediately to real-life projects. The course begins with the process of planning and developing of the right size schedule and making sure that it aligns with the current Work Breakdown Structure (WBS). By utilizing the Precedence Diagramming Method (PDM) the learners are able to develop the activity list, apply activity sequencing methodology, perform activity duration estimating with risk infusion, and even perform schedule optimization using Critical Path Methodology (CPM). The course also provides different techniques to evaluate impact of time delays of different activities through Project Evaluation and Review Technique (PERT).
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Project Quality Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5301	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course aims to give a broad understanding of various concepts and techniques used in project quality management such as quality concept in project management, quality planning, tools of quality management, quality assurance, quality monitoring and control, quality partnership, and customer satisfaction indices. The course also equips the students regarding different quality standards like, ISO 9000:2008, and six-sigma. Also, the course covers quality implementation and review techniques in project management with practical approaches to project quality planning, project quality assurance, continuous quality improvement and project performance measurement through various quality metrics.
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<b>Equivalent Course(s)</b>	None
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## 1.2.3 Master in Project Management (MPM)

<b>Course Name</b>	Project Risk Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5351	<b>Prerequisite(s)</b>	None

**Course Description** This course utilizes PMIs standards for Project Risk Management. The course is designed in a way that it enhances expertise and competency of Project Professionals in assessing and identifying project risks, mitigating threats and capitalizing on opportunities, while still possessing a core knowledge and practical application in all areas of project management.

**Equivalent Course(s)** None

<b>Course Name</b>	Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	PM 5209	<b>Prerequisite(s)</b>	None

**Course Description** This course is based upon industry-linked project that emphasizes to utilize concepts, theories, tools, and techniques learned in various courses of project management. The course is based on teams that undertake a real-life project from the industry, government or non-governmental organizations. Major emphasis is placed on utilization of project management skill and tools learned in the classroom, communication skills, technical writing, and regular interaction with industry representatives along with the course facilitator. The overall goal of the course is to experience modern project management practices and develop interpersonal skills to handle real projects under real constraints by realizing the contextual information.

**Equivalent Course(s)** None



## 1.2 Master

# 1.2.4 Executive Master of Business Administration (EMBA)

Students enrolled in the Executive Master of Business Administration (EMBA) program are required to complete 20 Course, 01 Business Project and 01 Research Project within four (4) years. The break-up of 20 courses & projects (66 credit hours) is as follows:

- 17 Compulsory Courses (51 Credit Hours)
- 3 Elective<sup>1</sup> Courses (9 Credit Hours)
- 1 Business Project (3 Credit Hours)
- 1 Research Project (3 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BE 5101	Accounting for Business	76
BE 5102	Business Management	76
BE 5103	Contemporary Marketing	76
BE 5104	Managerial Communication	77
BE 5105	Quantitative Analysis for Decision Making	77
<b>Spring Semester</b>		
BE 5201	Applied Research Methods	77
BE 5202	Business Finance	78
BE 5203	Managerial Accounting and Control	78
BE 5204	Managerial Economics	78
BE 5205	Marketing Management	78
BE 5206	Organizational Behavior	79
<b>Second Year</b>		
<b>Fall Semester</b>		
BE 5301	Financial Management	79
BE 5302	Human Resource Management	79
BE 5303	Operations and Supply Chain Management	80
BE 5304	Business Project	80
BE 5xxx	Elective-I (Marketing, HR, Finance and Supply Chain)	-
<b>Spring Semester</b>		
BE 5401	Entrepreneurship and Family Businesses	80
BE 5402	Ethics and Corporate Governance	81
BE 5403	Strategic Management	81
BE 5409	Research Project	81
BE 5xxx	Elective-II (Marketing, HR, Finance and Supply Chain)	0
BE 5xxx	Elective-III (Marketing, HR, Finance and Supply Chain)	0

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B.

## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Accounting for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5101	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers the basic accounting principles and concepts of financial accounting. The topics include accounting for merchandise business, classified balance sheet, simple and multiple steps income statement, design of accounting system, accounts receivable, notes receivable, inventories, cost of goods sold, liabilities, and stockholders equity.
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<b>Equivalent Course(s)</b>	BA 5301
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<b>Course Name</b>	Business Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future perspective of management and society. Also, the course introduces contemporary ethical issues faced by the business community.
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<b>Equivalent Course(s)</b>	BA 5419
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<b>Course Name</b>	Contemporary Marketing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5103	<b>Prerequisite(s)</b>	

<b>Course Description</b>	This course is designed for professionals to share the current and future development in the field of marketing and to bring students at a level where they will be able to apply experiential learning, problem solving, analytical, and decision-making skills to real situations. This course promotes the capacity to take initiatives and develop independence of thought in a supportive framework-qualities universally identified as being essential to industrial and commercial needs.
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<b>Equivalent Course(s)</b>	BA 5404
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## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Managerial Communication	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5104	<b>Prerequisite(s)</b>	None

### Course Description

This course is designed to develop the application of written, oral, and interpersonal communication theory in the business management environment. Areas of emphasis include the role of communication in contemporary organizations, considerations of message production and reception, internal versus external audiences, communicating change, intercultural communication, and ethics.

### Equivalent Course(s)

BA 5418

<b>Course Name</b>	Quantitative Analysis for Decision Making	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5105	<b>Prerequisite(s)</b>	None

### Course Description

The fundamental aim of this course is to develop the students' ability to use quantitative techniques for decision making. This course contains the tools of statistical analysis, both descriptive and inferential, to make decisions about parameters of a population. The technique of testing hypothesis would help to make decision concerning selection between alternatives. The regression analysis and the analysis of variance included in the outline helps in precise prediction, as well as, formulation of strategies objectively. Moreover, linear programming technique helps in the optimum allocation of resources.

### Equivalent Course(s)

BA 5502

<b>Course Name</b>	Applied Research Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5201	<b>Prerequisite(s)</b>	None

### Course Description

This course equips students with the essential tools of research which forms the basis of sound decision-making. Through an applied approach using term report supplemented by classroom discussions and presentations, students gain knowledge of converting a business issue into a research problem; and applying the most appropriate methodology to solve this problem. The course provides an overview of applied research methodology and statistics. The general aims are to provide: a) an advanced understanding of research methods and data analysis, b) enhanced research literacy, and c) a greater understanding of the way in which research methodology and statistics are interwoven with theory and the practice.

### Equivalent Course(s)

BA 5501

## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5202	<b>Prerequisite(s)</b>	BE 417

**Course Description** This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.

**Equivalent Course(s)** BA 5401

<b>Course Name</b>	Managerial Accounting and Control	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5203	<b>Prerequisite(s)</b>	BE 417, BE 414

**Course Description** This course includes the study of management accounting for internal reporting and decision making. The course introduces a business management approach for the development and use of accounting information. Major topics include cost behavior, cost analysis, profit planning, and control measures.

**Equivalent Course(s)** BA 5411

<b>Course Name</b>	Managerial Economics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5204	<b>Prerequisite(s)</b>	None

**Course Description** Students focus on the application of economic models and rationale choice to business decision making. Topics include an overview of managerial economics; demand and supply; costs of production and the organization of the firm; market structure and pricing and output decisions; game theory and pricing strategies; and the economics of information and the role of government in the marketplace..

**Equivalent Course(s)** None

<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5205	<b>Prerequisite(s)</b>	BE 5103

**Course Description** This course introduces the concept of customer and market-driven management. This course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.

**Equivalent Course(s)** BA 5106

## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5206	<b>Prerequisite(s)</b>	BE 5102

### Course Description

This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.

### Equivalent Course(s)

BA 5207

<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5301	<b>Prerequisite(s)</b>	BE 5202

### Course Description

Building upon the concepts already laid down in its prerequisite, financial management helps students in exploring the depths of the relatively complex aspects of the financial world, with prime focus on the present value and opportunity cost of capital. This course covers topics such as nature, scope and function of financial decision areas, objectives of financial management, financial forecasting, working capital management, valuation of stocks, valuation of fixed income securities, project cash flow analysis, capital budgeting and decision making, determination of the required rate of return via asset pricing models, dividend policy, debt policy, introduction to financial risk management and derivatives and role of financial markets in Pakistan.

### Equivalent Course(s)

BA 5105

<b>Course Name</b>	Human Resource Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5302	<b>Prerequisite(s)</b>	BE 5206

### Course Description

This course examines the role of the human resource professional as a strategic partner in managing contemporary organizations. The course introduces concepts, issues and practices in Human Resource Management (HRM) such as Human Resource (HR) planning, job design and analysis, recruitment and selection, training and development, performance appraisal, compensation and benefit management, career planning and development, employee relations, appraising the implications of legal and global environments and analyzing the current issues (such as diversity training, sexual harassment policies, and rising benefit costs), and best practices of employers of choice.

### Equivalent Course(s)

BA 5205

## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Operations and Supply Chain Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5303	<b>Prerequisite(s)</b>	BE 5102

<b>Course Description</b>	This course serves as the macro perspective for operations. Students' learning is rounded in this course where they see how Strategy, Operations, Marketing, Sales, Finance, IT and Accounting work together to add to Operational Efficiency, Customer Intimacy, and Product Innovation for companies. Understanding key supply chain foundations is crucial to any company's success and profitability. In this class students learn supply chain and its significant impact on all aspects of business while gaining an understanding of the synchronism and synergies of all its components.
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<b>Equivalent Course(s)</b>	BA 5214
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<b>Course Name</b>	Business Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5309	<b>Prerequisite(s)</b>	BE 5201

<b>Course Description</b>	This course is designed to ensure that the students demonstrate their understanding of developing a business strategy for the existing or new business organization by utilizing the theories, concepts, and knowledge learnt during the whole program. It also ensures students' ability to critically evaluate the process of business innovation with particular reference to the groups work and experience and to generate business ideas, to screen these ideas, and to develop a realistic plan for development and implementation of a selected idea.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Entrepreneurship and Family Businesses	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5401	<b>Prerequisite(s)</b>	BE 5103, BE 5205

<b>Course Description</b>	This course is designed to teach the conceptual foundations of entrepreneurship, strategic areas of business, entrepreneurial perspective, process, ventures, practices, characteristics, entrepreneurship and new free enterprise, product and service concepts, marketing and new venture development, entrepreneurial team and business formation, and applying various tools and analytical techniques to the new venture creation process in domestic and international settings.
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<b>Equivalent Course(s)</b>	BA 5406
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## 1.2.4 Executive Master of Business Administration (EMBA)

<b>Course Name</b>	Ethics and Corporate Governance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5402	<b>Prerequisite(s)</b>	BE 5103

### Course Description

This course is designed so students can gain knowledge about the area of Corporate Governance & Business Ethics from different perspectives and its application. To understand and apply the concepts learned from various models to different corporate environment and to understand the mechanisms of controls, accountability and compliance. To provide effective management and decision-making skills.

### Equivalent Course(s)

None

<b>Course Name</b>	Strategic Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5403	<b>Prerequisite(s)</b>	BE 5202, BE 55302 BE 5102

### Course Description

This course covers strategic management, information inputs, concepts of mission and objectives, strategy formulation, action plan choice, strategies selection and evaluation, function strategy evaluation, strategy implementation, and strategic control.

### Equivalent Course(s)

BA 5104

<b>Course Name</b>	Research Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BE 5409	<b>Prerequisite(s)</b>	BE 418

### Course Description

For this course project the research has to be based on scientific study in a specialized field of business, such as Marketing, Finance, Human Resource Management, Management Information System etc. The course consists of understanding the real-life business problems and formulating the research techniques to solve them by using the scientific tools. It also helps to comprehend the research tools along with their application in specific areas.

### Equivalent Course(s)

None

## 1.2 Masters and PhD

### 1.2.5 Master of Science in Project Management (MSPM)

The Master of Science in Project Management (MSPM) is a 1.5 - 2 years program having two streams i.e. Course Work Based Stream and Research Based Stream. Students enrolled in the Master of Science in Project Management (MSPM) program are required to complete 30 credit hours within four (4) years.

The breakup of the courses as per specific Stream students is provided below:

#### Course Work based Stream

- 4 Core Courses (12 Credit Hours)
- 6 Elective Courses<sup>00</sup> (18 Credit Hours)

#### Research based Stream

- 4 Core Courses (12 Credit Hours)
- 4 Elective Courses<sup>00</sup> (12 Credit Hours)
- 2 Independent Research Study/1 Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MP 5107	Fundamentals of Project Management	83
MP 5105	Advance Project Management	83
MP 5202	Quantitative Tools for Research	83
MP 5xxx	Elective - I	-
<b>Spring Semester</b>		
MP 5103	Research Methodology	84
MP 5xxx	Elective-II	-
MP 5xxx	Elective-III	-
MP 5xxx	Elective-IV	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MP 5xxx	Thesis-I*/Independent Research Study – I*/Elective-V	-
MP 5xxx	Independent Research Study - II/Elective-VI	-
<b>Spring Semester</b>		
MP 5xxx	Thesis-II	-

\* Thesis to be registered in two parts while Independent Research Study-I and Independent Research Study-II can be opted in one semester by Research Based Stream.

All courses may not be offered every year. Alternative courses may be substituted as and when required. Thesis may be substituted by the electives.

00- List of Electives is given in Appendix B.  
00- List of Electives is given in Appendix B.



## 1.2.5 Master of Science in Management Sciences (MSPM)

<b>Course Name</b>	Fundamentals of Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MP 5107	<b>Prerequisite(s)</b>	None

**Course Description** This is an introductory course that will provide the broad knowledge regarding basic concepts and techniques used in Project Management. It will provide practical knowledge on managing project scope, schedule and resources. It includes various topics like: Project life cycle, work breakdown structure and Gantt charts, network diagrams, scheduling techniques and resource allocation decisions.

**Equivalent Course(s)** None

<b>Course Name</b>	Advanced Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MP 5105	<b>Prerequisite(s)</b>	None

**Course Description** This course would cover broad knowledge regarding concepts in Project Management and techniques used in project management ranging from Change Management in Projects, Project Risk, Risk Analysis, Procurement, Project Human Resource, Communication, Stockholder Management, and Integration Management. The course includes a number of case studies to integrate the broad areas and emphasize application in project management.

**Equivalent Course(s)** None

<b>Course Name</b>	Quantitative Tools for Research	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MP 5202	<b>Prerequisite(s)</b>	None

**Course Description** Quantitative Tools for Research course is designed to introduce students to some of the statistical and mathematical techniques that are widely used in empirical work in management and other related disciplines. It covers the basics of estimation and inference in the context of the single-equation linear regression model and simultaneous equation models

**Equivalent Course(s)** MS 5204

## 1.2.5 Master of Science in Management Sciences (MSPM)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MP 5103	<b>Prerequisite(s)</b>	None

**Course Description** This course familiarizes participants with a range of approaches used in the management and project management research, with an emphasis on approaches commonly used in practical settings. The advantages and limitations of different research approaches are examined, as well as their applicability in different organizational contexts. Experience is provided in the; design of research studies; analysis and interpretation of data; and report writing and presentation. Participants acquire skills which will be useful in doing academic research independently in their chosen area of interest.

**Equivalent Course(s)** MS 5137

<b>Course Name</b>	Independent Research Study – I/ Independent Research Study – II/ Thesis – I /Thesis – II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MP 5103	<b>Prerequisite(s)</b>	MP5103, MP5202

**Equivalent Course(s)** None

## 1.2 Masters and PhD

### 1.2.6 Master of Science in Management Sciences (MSMS)

The Master of Science in Management Sciences (MSMS) is a 1.5 - 2 years program having two streams i.e. Course Work Based Stream and Research Based Stream. Students enrolled in the either stream of MSMS program are required to complete a total of 30 credit hours within four (4) years.

#### Course Based Stream:

The following is the break-up of the 30 credit hour courses:

- 6 Compulsory Courses (18 Credit Hours)
- 4 Elective<sup>00</sup> Courses (12 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MS 5137	Research Methods and Techniques	87
MS 112	Applied Strategic Management	87
MS 5238	Strategic Human Resource Development	87
MS 5104	Strategic Marketing Decision	88
<b>Spring Semester</b>		
MS 5204	Quantitative Tools for Research	88
MS 5318	Strategic Finance	88
MS 5xxx	Elective I	-
MS 5xxx	Elective II	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MS 5xxx	Electives III	-
MS 5xxx	Electives IV	-

00- List of Electives is given in Appendix B.

## 1.2.6 Master of Science in Management Sciences (MSMS)

### Research Based Stream:

The following is the break-up of the 30 credit hour courses:

- 6 Compulsory Courses (18 Credit Hours)
- 2 Elective<sup>00</sup> Courses (6 Credit Hours)
- 2 Independent Research Studies (IRS)/1 Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MS 5137	Research Methods and Techniques	87
MS 5112	Applied Strategic Management	87
MS 5238	Strategic Human Resource Development	87
MS 5104	Strategic Marketing Decisions	88
<b>Spring Semester</b>		
MS 5204	Quantitative Tools for Research	88
MS 5318	Strategic Finance	88
MS 5xxx	Elective I	-
MS 5xxx	Elective II	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MS5119 and MS5219	IRS I and IRS II / Thesis (Part I)	-
MS 5xxx	Thesis (Part II) If any	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

For both streams Electives can be taken from any of the following specializations:

- Finance
- Marketing
- Human Resource Management

Students cannot register in Independent Research Study (IRS) OR Thesis without completing six compulsory courses.

## 1.2.6 Master of Science in Management Sciences (MSMS)

<b>Course Name</b>	Research Methods and Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5137	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to introduce the methods and techniques of quantitative research. It covers the philosophical underpinning, research designing, proposal development, method selection, sampling techniques, primary data collection tools, measurement and scaling, reliability and validity of the measurement tools, and reporting the research findings. A special emphasis will be given to the applications of business and economics in real life situations. The course is developed, designed, and delivered by process approach to inculcate the competences and skills to write and present the research articles.

**Equivalent Course(s)** EDU 5303, MS 5239, MP 5103

<b>Course Name</b>	Applied Strategic Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5112	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to equip with necessary knowledge, skills and attitude required for crafting and executing strategies that are best suited to the changing market conditions and a firm's own resources as well. Students should be able to develop a solid action plan that will result in sustainable competitive advantage to the firm while showing profitability.

**Equivalent Course(s)** BA 5104

<b>Course Name</b>	Strategic Human Resource Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5238	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed for delivering the knowledge, skills and practices regarding strategic human resource development in local and global organizations. The course encompasses the topics; role of SHRD, changing environment, development of HRD strategy, approaches to HRD, learning process, cycles and theories; integrating learning with work. It also covers SHRD interventions design, evaluations, and impact to the individual, teams and organizations. The course also furnishes new perspectives on knowledge creation and career management.

**Equivalent Course(s)** BA 5601

## 1.2.6 Master of Science in Management Sciences (MSMS)

<b>Course Name</b>	Strategic Marketing Decision	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course has been designed to enable students to analyze, formulate and implement marketing strategies. An in-depth analysis of consumer and market provides basic foundation for market segmentation and targeting. Marketing programs and strategies are developed in the light of these analyses and effective implementation and control ensure its success.
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<b>Equivalent Course(s)</b>	BA 5601
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<b>Course Name</b>	Quantitative Tools for Research	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5204	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Quantitative Tools for Research is a compulsory course at the MS level. It introduces students to the concepts of inferential statistics and quantitative research techniques in scientific investigation. The major areas of learning in this course include identification and application of quantitative tools in the scientific enquiry, quantitative analytical framework, data presentations, and interpretations of quantitative results of the research.
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<b>Equivalent Course(s)</b>	BA 4792, SS 5207, MS 6212, MP 5202
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<b>Course Name</b>	Strategic Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 5318	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course includes all such areas of finance which will lead to plan the financial sources of any company. The cost of all such funding should be evaluated appropriately in order to attain the desired level of earnings. Similarly projects' growth opportunities and expenditures.
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<b>Equivalent Course(s)</b>	BA 5208
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## 1.2 Masters and PhD

### 1.2.7 Doctor of Philosophy in Management Sciences (PhD MS)

Students enrolled in Doctor of Philosophy in Management Sciences (PhD MS) program are required to complete 48 credit hours from 3 to eight (8) years. Following is the breakup of the 48 Credit Hour courses.

- 2 Compulsory Courses (6 Credit Hours)
  - 3 Elective Course (9 Credit Hours)
  - 1 Independent Research Study (3 Credit Hours)
  - 1 Dissertation (30 Credit Hours)
    - ⇒ Students cannot register in IRS before completing all compulsory courses, passing GAT-Subject and maintaining minimum CGPA requirement.
    - ⇒ Dissertation of 30 Credit Hours is Compulsory.
    - ⇒ Registration in Dissertation is allowed after passing Comprehensive Examination.
    - ⇒ All the requirements of HEC pertaining to PhD must be fulfilled these are;
- Passing GAT Subject with minimum 60%.
  - Maintaining minimum CGPA requirement for each course and for entire program.
  - Passing Comprehensive examination to establish the PhD candidacy within two years from the date of admission (maximum 2 attempts allowed).
  - Publishing one Research Paper from the thesis in HEC recognized journal before the completion of 30 Credit Hours Dissertation.
  - Elective Courses will be selected from the specialized area of Marketing, Finance and Human Resource Management.
  - Maximum Course Load for each Semester is 9 credit hours.
  - Time duration for PhD is Minimum 3 years and Maximum 8 years.
  - All General guidelines mentioned in DOCTORAL DEGREE PROGRAMS are applicable to PhD-Management Science.

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MS 6106	Advanced Research Methods and Techniques	91
MS 6216	Advanced Quantitative Tools for Research	91
MS 6xxx	Elective-I	-
<b>Spring Semester</b>		
MS 6xxx	Elective-II	-
MS 6xxx	Elective-III	-
MS 6119	Independent Research Study	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MS 6xxx	Dissertation (Proposal)	-
<b>Spring Semester</b>		
MS 6xxx	Dissertation	-

15- List of Electives is given in Appendix B.

**Third Year**

**Fall Semester**

MS 6xxx	Dissertation	-
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**Spring Semester**

MS 6xxx	Dissertation	-
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All courses may not be offered every year. Alternate courses may be substituted as and when required



## 1.2.7 Doctor of Philosophy in Management Sciences (PhD MS)

<b>Course Name</b>	Advanced Research Methods and Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 6106	<b>Prerequisite(s)</b>	MS 5137

<b>Course Description</b>	The course of ARMT covers advanced research methods and techniques that include role of philosophy in research, research paradigms, role of theory in research, advanced research strategies and approaches, gap identification in literature, research tools development process and techniques, and inference through qualitative, quantitative, and mixed data analysis. The emphasis of the course is on quality criteria in research through rigorous analysis and in depth understanding of the phenomenon.
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<b>Equivalent Course(s)</b>	MS 6116
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<b>Course Name</b>	Advanced Quantitative Tools for Research	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MS 6216	<b>Prerequisite(s)</b>	MS 5204

<b>Course Description</b>	This course is designed for PhD students and requires an understanding of quantitative tools for research. It covers advanced topics in quantitative research like: multivariate model building, multiple regression analysis, multiple discriminant analysis, MANOVA, ANCOVA, canonical correlations, factor analysis, cluster analysis, conjoint analysis, structured equation modelling. The emphasis of course is using advanced techniques for research with concept building and software application.
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<b>Equivalent Course(s)</b>	MS 6212
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# Department of Computer Science

# 2.0 Bachelor of Science

## 2.1 Bachelor of Science in Computer Science (BSCS)

The Bachelor of Science in Computer Science (BSCS) program is offered through a well-trained foreign qualified faculty. It consists of 40 courses (five courses per semester) with a total of 130 credit hours. BS (CS) Program is accredited by NCEAC. The maximum time to complete the degree is 7 years. The breakup of 40 courses is /as follow:

- 29 Compulsory Course (97 Credit Hours)
- 2 University Electives<sup>00</sup> (6 Credit Hours)
- 7 CS Electives (21 Credit Hours)
- 2 Final Year Project (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
CSC 1108	Introduction to Computer Science	97
CSCL 1108	Lab : Introduction to Computer Science	97
CSC 1103	Fundamentals of Programming	97
CSCL 1103	Lab : Fundamentals of Programming	97
CSC 1102	English Composition and Comprehension	97
CSC 1101	Calculus and Analytical Geometry	98
CSC 1107	Applied Physics	98
CSCL 1107	Lab : Applied Physics	98
		<b>Total Credit Hrs. 16</b>
<b>Spring Semester</b>		
CSC 2103	Digital Logic Design	98
CSCL 2103	Lab : Digital Logic Design	98
CSC 1208	Object Oriented Programming Techniques	99
CSCL 1208	Lab : Object Oriented Programming Techniques	99
CSC 2101	Communication and Presentation Skills	99
CSC 2105	Statistics and Probability	99
CSC xxxx	University Elective – 1	-
		<b>Total Credit Hrs. 17</b>
<b>Second Year</b>		
<b>Fall Semester</b>		
CSC 2201	Computer Organization and Assembly Language	100
CSCL 2201	Lab : Computer Organization and Assembly Language	100
CSC 2102	Data Structures and Algorithms	100
CSCL 2102	Lab : Data Structures and Algorithms	100
CSC 1201	Discrete Mathematical Structures	100
CSC 4102	Professional Practices	101
CSC xxxx	CS Supporting – 1	-
		<b>Total Credit Hrs. 17</b>

00- List of University Electives is given in Appendix B.  
00- List of CS Electives is given in Appendix B.

## 2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Code	Course Title	Page #
<b>Spring Semester</b>		
CSC 3202	Design & Analysis of Algorithms	101
1CSC 2204	Finite Automata Theory and Formal Languages	101
CSC 2203	Database Systems	102
CSC 2203	Lab : Database Systems	102
CSC 2206	Linear Algebra	102
CSC xxxx	University Elective – 2	-
<b>Total Credit Hrs. 16</b>		
<b>Third Year</b>		
<b>Fall Semester</b>		
CSC 3201	Compiler Construction	102
CSC 2205	Operating Systems	103
CSC 2205	Lab : Operating Systems	103
CSC 3109	Software Engineering	103
CSC xxxx	CS Supporting – 2	-
CSC xxxx	CS Supporting – 3	-
<b>Total Credit Hrs. 16</b>		
<b>Spring Semester</b>		
CSC 4101	Artificial Intelligence	103
CSC 4101	Lab : Artificial Intelligence	103
CSC 3205	Computer Networks and Data Communications	104
CSC 3205	Lab: Computer Networks and Data Communications	104
CSC 1205	Technical and Business Writing	104
CSC 4xxx	CS Elective 1	-
CSC 4xxx	CS Elective 2	-
<b>Total Credit Hrs. 17</b>		
<b>Fourth Year</b>		
<b>Fall Semester</b>		
CSC 4105	Final Year Project- I	104
CSC 4106	Parallel & Distributed Computing	105
CSC 4xxx	CS Elective 3	-
CSC 4xxx	CS Elective 4	-
CSC xxxx	University Elective – 3	-
<b>Total Credit Hrs. 15</b>		
<b>Spring Semester</b>		
CSC 4205	Final Year Project - II	105
CSC 4201	Information Security	105
CSC 4202	Pakistan and Islamic Studies / Humanities	106
CSC 4xxx	CS Elective 5	-
CSC xxxx	University Elective – 4	-
<b>Total Credit Hrs. 15</b>		
<b>Total Credit Hrs. 130</b>		

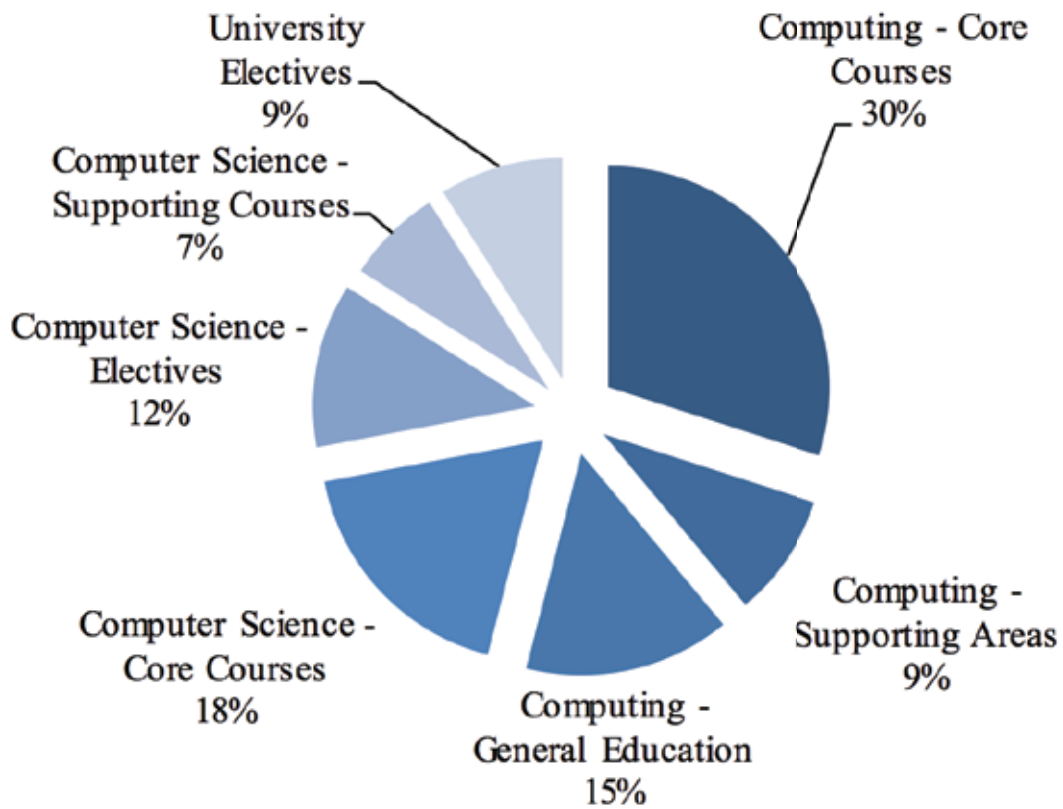
All courses may not be offered every year. Alternate courses may be substituted as and when needed.

\*A CSC xxxx Mathematics deficiency course will be offered to those students who have limited mathematical background (if deemed necessary by relevant PM/HOD)

## 2.1 Bachelor of Science in Computer Science (BSCS)

### DISTRIBUTION OF CREDIT HOURS

Course Group		Cr. Hrs.	%
Computing	Core Courses	39	30%
	Supporting Areas	12	9%
	General Education	19	15%
Computer Science	Core Courses	24	18%
	Electives	15	12%
	Supporting Courses	9	7%
University Electives		12	9%
<b>Total</b>		<b>130</b>	<b>100%</b>



## 2.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Introduction to Computer Science	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	CSC 1108	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces fundamental computer concepts, including basic functions and operations of the computer. Course will cover topics that include identification of hardware components, computer software and architecture, operating system and network technologies, basic computer operations, internet and the world wide web, databases and information systems.

### Equivalent Course(s)

BA 1108, BA 1103, BIO 1104, AF 1102, EN 1102

<b>Course Name</b>	Fundamentals of Programming	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 1103	<b>Prerequisite(s)</b>	None

### Course Description

This course is about learning the basics of programming languages. It provides Principles of Structured and Modular Programming and Overview of Structured Programming, and subsequently targets the development of coding abilities in a student. Later, it develops skills to identify errors, troubleshoot and finally, to analyze a C programming code. To do so, the following technical topics are covered: Constructs, Data Types; Basics of Input and Output, Selection and Decision (If, If-Else, Nested If-Else, Switch Statement and Condition Operator), Repetition (While and For Loop, Do-While Loops), Break Statement, Continue Statement, Control Structures, Functions, Arrays, Pointers, Records, Files (Input-Output), Testing & Debugging.

### Equivalent Course(s)

None

<b>Course Name</b>	English Composition and Comprehension	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 1102	<b>Prerequisite(s)</b>	None

### Course Description

This course will provide students with the basic skills needed to organize, develop and deliver effective communication. It will also empower the students to determine the appropriate purpose, audience, and mode of communication based on the context. The course focuses on paragraph and essay writing, comprehension and reading as well as cause and effect, descriptive, comparative writing skills. The students will also be able to design their own CVs and cover letters which would help them in their future job search.

### Equivalent Course(s)

ME 1205, MD 1222, SS 2316, BIO 1211

## 2.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Calculus and Analytical Geometry	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 1101	<b>Prerequisite(s)</b>	None

### Course Description

This course begins with a review of algebra and trigonometry; then the idea of limits and continuity is introduced. With the knowledge of limits and continuity the student develops the concept of the derivative and its applications. At the end, the student studies the anti-derivative of elementary functions and the applications of the definite integral in geometry, science, and engineering. Applicable toward graduation where program structure permits. Topics include (but are not limited to) the following: limits and continuity; definition of derivative: rate of change, slope; derivatives of polynomial and rational functions; the chain rule; implicit differentials; approximation by differentials; higher order derivatives; Rolle's Theorem: mean value theorem; applications of the derivative; anti-derivative; the definite integral; the fundamental theorem of calculus; area, volume, other applications of the integral; the calculus of the trigonometric functions; logarithmic and exponential functions and techniques of integration.

### Equivalent Course(s)

BA 2404, ME 1104

<b>Course Name</b>	Applied Physics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	CSC 1107	<b>Prerequisite(s)</b>	None

### Course Description

The topics covered in this course include particle kinematics and dynamics; conservation of energy and linear momentum; rotational kinematics; rigid body dynamics; conservation of angular momentum; simple harmonic motion; the static and dynamics of fluids. This course also includes basic electronics concepts that help students to understand all essential electronics used for computing.

### Equivalent Course(s)

None

<b>Course Name</b>	Digital Logic Design	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 2103	<b>Prerequisite(s)</b>	CSC 1107

### Course Description

This course teaches theoretical concepts, well supported through practical work, systematic synthesis of the applied techniques for the design of practical digital systems. Topics include; introduction to various numbering systems, various design techniques, minimization techniques for designing efficient combinational and sequential logic circuits, basic digital circuit building blocks, such as, decoders, multiplexers, shift registers, flip flops, etc. Modern methods of designing digital circuits; designing of autonomous and input-controlled counters & shift-registers and concept of finite state machine are also introduced.

### Equivalent Course(s)

None

## 2.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Object Oriented Programming	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	CSC 1208	<b>Prerequisite(s)</b>	CSC 1103

<b>Course Description</b>	The Object oriented paradigm presents a conceptual and practical introduction to imperative and object oriented programming, exemplified by Java. Along with providing grounding in the use of Java, the course will cover general principles of programming in imperative and object oriented frameworks. In addition, the course would enable students to develop programs that support experimentation, simulation and exploration in other parts of the Information curriculum (e.g. the capacity to implement, test and observe a particular algorithm).
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Communication and Presentation Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 2101	<b>Prerequisite(s)</b>	CSC 1102

<b>Course Description</b>	The course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them, critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.
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<b>Equivalent Course(s)</b>	ME 1101, MD 1122, SS 1116, BIO 1111, AF 1203, EN 1106
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<b>Course Name</b>	Statistics and Probability	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 2105	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The course "Statistics and Probability" emphasizes the probabilistic foundations required to understand probability models and statistical methods. Topics covered includes the introduction to statistical methods (understanding data and its importance, data classification, tabulation, and graphical representation), Central Tendencies, dispersion. Probability axioms, basic combinatorial, discrete and continuous random variables, probability distributions, mathematical expectation, common families of probability distributions and introduction to correlation and regression. Brief discussion on Statistical Inferences and real life case studies will be included to further enhance students' understanding on the subject matter.
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<b>Equivalent Course(s)</b>	BA 3605, BA 5405
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## 2.1.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Computer Organization and Assembly Language	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 2201	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course teaches: Microprocessor Bus Structure: Addressing, Data and Control, Memory Organization and Structure (Segmented and Linear Models), Introduction to Registers and Flags, Data Movement, Arithmetic and Logic, Programmer Control, Subroutines, Stack and its operation, Peripheral Control Interrupts, Interfacing with high level languages, Real-time application, Objectives and Perspectives of Assembly Language, Addressing Modes, Introduction to the Assembler and Debugger, Manipulate and translate machine and assembly code, describe actions inside the processing chip, Discuss operations performed by an instruction set, Write a fully documented program, and Using an assembler of choice.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Data Structures and Algorithms	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 2102	<b>Prerequisite(s)</b>	CSC 1208

<b>Course Description</b>	This course covers the concept of specification, design, implementation, and use of the basic data types; important programming techniques, data abstraction techniques, object oriented programming and sorting; data types: sets, bags, sequential lists, order lists, stacks, queues, and trees; types of searching such as linear and binary search, and different techniques of sorting; linear data structures and implementation each with C++/Java and non-linear data structures with implementation and the complexity of an algorithm of search and sorting.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Discrete Mathematical Structures	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 1201	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces the applications of discrete mathematics in the field of computer science. It also covers sets, logic, proving techniques, combinatorics, functions, relations, graph theory and algebraic structures. These basic concepts of sets, logic functions and graph theory are applied to Boolean Algebra and logic networks, while the advanced concepts of functions and algebraic structures are applied to finite state machines and coding theory.
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<b>Equivalent Course(s)</b>	None
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## 2.1.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Professional Practices	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 4102	<b>Prerequisite(s)</b>	None

### Course Description

This course provides an introduction to and an overview of the professional practices of software engineers. Also it provides necessary knowledge and set of skills/ tools to aid understanding at a strategic level and the day to day tasks of technology professionals. This will be done by encouraging professionalism and professional practice methods cases to understand the huge horizons. In addition, students will identify ethical conflicts, identify their responsibilities and options, and think through the implications of possible solutions to ethical conflicts.

### Equivalent Course(s)

None

<b>Course Name</b>	Design and Analysis of Algorithms	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 3202	<b>Prerequisite(s)</b>	CSC 2102

### Course Description

This course will cover the basic approaches and mindsets for analyzing and designing algorithms and data structures. Topics will range from time space complexity to sorting, searching, and selection algorithms. Algorithm design techniques: divide-and-conquer, dynamic programming, greedy algorithms and others will be covered along with fundamental graph problems: minimum-cost spanning tree, connected components, topological sort, and shortest paths.

### Equivalent Course(s)

None

<b>Course Name</b>	Finite Automata Theory and Formal Languages	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 2204	<b>Prerequisite(s)</b>	None

### Course Description

In this course we are primarily concerned with what computers can do. It turns out that there are problems that cannot be solved by computer, or, at least, by machines corresponding to the mathematical models of computers we shall present. Finite Automata is the theoretical study of capabilities and limitations of Computers. This course introduces finite automata, formal languages and computability, including regular and context-free languages, context-free grammar, Pushdown Automata, and Turing Machine.

### Equivalent Course(s)

None

## 2.1.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Database Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 2203	<b>Prerequisite(s)</b>	CSC 2102

**Course Description** This course covers: Basic database concepts; Entity Relationship modelling, Relational data model and algebra, Structured Query language; RDBMS; Database design, functional dependencies and normal forms; Transaction processing and optimization concepts; concurrency control and recovery techniques; and Database security and authorization. It also covers Small Group Project implementing a database; Physical database design; Storage and file structure indexed files, b-trees; files with dense index, files with variable length records, database efficiency and tuning.

**Equivalent Course(s)** None

<b>Course Name</b>	Linear Algebra	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 2206	<b>Prerequisite(s)</b>	None

**Course Description** The objective of the course is to provide a rigorous approach towards the solutions of linear models which involves more than one variable. The techniques discussed in this course can be implemented on a wide range of applications from physical world. The matrix algebra will be helpful in performing and understanding of matrix computations on a machine. The eigenvalues, eigenvectors, inner product spaces, orthogonally are useful concepts for the analysis of dynamical systems.

**Equivalent Course(s)** ME 1202

<b>Course Name</b>	Compiler Construction	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 3201	<b>Prerequisite(s)</b>	CSC 2204

**Course Description** This course provides a thorough understanding of the basic structure of compilers for programming languages. A major part of the course consists of the implementation of a compiler for a simplified Pascal-like language. The course will acquaint students with software tools and techniques for developing compilers.

**Equivalent Course(s)** None

## 2.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Operating Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 2205	<b>Prerequisite(s)</b>	CSC 2102

### Course Description

This course involves study of concepts and components of general purpose operating systems. These include the study of processes and process synchronization, multithreaded applications, deadlocks, memory management, and file systems. Further, UNIX and Windows NT are general purpose operating systems used as examples when studying these concepts. Laboratory assignments of process/thread synchronization, process communication, and file systems are given.

### Equivalent Course(s)

None

<b>Course Name</b>	Software Engineering	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 3109	<b>Prerequisite(s)</b>	None

### Course Description

The topics covered in this course includes: Introduction to Software Process Models; Programming in the Large vs. Individual Programming; Evaluation of Software Process Models; Requirements Analysis and Design Modeling Tools; Testing Tools; Programming Environments that Automate Parts of Program Construction Processes; Tool Integration Concepts and Mechanisms; Functional Requirements; Properties of Requirements; Software Requirements Elicitation; Describing System Data; Non-Functional Requirements; Requirements Specifications; System Design Principles; Design Paradigms; Structural and Behavioral Models of Software Designs; Design Patterns; Relationships between Requirements and Designs; Software Architecture; Refactoring Designs using Design Patterns; The Use of Components in Design; Coding Practices; Coding Standards; Integration Strategies; Verification and Validation; Inspections; Reviews; Audits; Testing Types; Testing Fundamentals; Defect Tracking; and Limitations of Testing.

### Equivalent Course(s)

None

<b>Course Name</b>	Artificial Intelligence	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 4101	<b>Prerequisite(s)</b>	CSC 1201

### Course Description

This course covers Artificial Intelligence: Introduction, and Intelligent Agents; Problem-solving: Solving Problems by Searching, Informed Search and Exploration, Constraint Satisfaction Problems, and Adversarial Search; Knowledge and reasoning: Logical Agents, First-Order Logic, Inference in First-Order Logic, Knowledge Representation. Planning and Acting in the Real World; Uncertain knowledge and reasoning: Uncertainty, Probabilistic Reasoning, Probabilistic Reasoning over Time, Making Simple Decisions, and Making Complex Decisions; Learning; Learning from Observations, Knowledge in Learning, Statistical Learning Methods, and Reinforcement Learning; Communicating, Perceiving and Acting: Communication, Probabilistic Language Processing, Perception and Robotics; Introduction to LISP/PROLOG, and Expert Systems (ES) and Applications.

### Equivalent Course(s)

None

## 2.1.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Computer Networks and Data Communications	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	CSC 3205	<b>Prerequisite(s)</b>	None

**Course Description** This course provide students with an overview of the concepts and fundamentals of data communication and computer networks. Topics includes: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols.

**Equivalent Course(s)** None

<b>Course Name</b>	Technical and Business Writing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 1205	<b>Prerequisite(s)</b>	None

**Course Description** Technical and Business Writing/Business and Electronic Communications aims to teach the principles and methodology of written and oral communication in the workplace. As business communicators you will be required to draft messages using a variety of communication channels and integrated electronic media. This course will prepare students to communicate knowledge and information to different audiences ranging from experts, to coworkers, to customers and to laypersons and to make the best use of electronic media.

**Equivalent Course(s)** BIO 2411

<b>Course Name</b>	Final Year Project-I	<b>Credit Hours</b>	3 (0,3)
<b>Course Code</b>	CSC 4105	<b>Prerequisite(s)</b>	None

**Course Description** This is the project that final year students carry out as part of their degree requirement. Part-I generally carries to build concept and prototype model. The objective of this course is to implement and demonstrate the software engineering processes and principles which include; project analysis, design, implementation and evaluation of a large-scale problem involving computer and computational systems. The project is supervised by a faculty member, under whose guidance each project team will research the solution. The mid evaluation is performed by a team of experts at the conclusion of part-1.

**Equivalent Course(s)** None

## 2.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Parallel & Distributed Computing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 4106	<b>Prerequisite(s)</b>	CSC 2205

<b>Course Description</b>	This course covers Asynchronous/synchronous computation/communication, concurrency control, fault tolerance, GPU architecture and programming, heterogeneity, interconnection topologies, load balancing, memory consistency model, memory hierarchies, Message Passing Interface (MPI), MIMD/SIMD, multithreaded programming, parallel algorithms & architectures, parallel I/O, performance analysis and tuning, power, programming models (data parallel, task parallel, process-centric, shared/distributed memory), scalability and performance studies, scheduling, storage systems, synchronization, and tools (Cuda, Swift, Globus, Condor, Amazon AWS, OpenStack, Cilk, gdb, threads, MPICH, OpenMP, Hadoop, FUSE).
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Final Year Project-II	<b>Credit Hours</b>	3 (0,3)
<b>Course Code</b>	CSC 4205	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This is the continuation of FYP-I taken in the previous semester. In this phase, students build the actual project after duly completing the prototype in part-I. The complete project is evaluated by a team of experts at the conclusion of part-II.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Information Security	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 4201	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers information security foundations, security design principles; security mechanisms, symmetric and asymmetric cryptography, encryption, hash functions, digital signatures, key management, authentication and access control; software security, vulnerabilities and protections, malware, database security; network security, firewalls, intrusion detection; security policies, policy formation and enforcement, risk assessment, cybercrime, law and ethics in information security, privacy and anonymity of data
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<b>Equivalent Course(s)</b>	None
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## 2.1.1 Bachelor of Science in Computer Science (BSCS)

<b>Course Name</b>	Pakistan & Islamic Studies/Humanities	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 4202	<b>Prerequisite(s)</b>	None

### Course Description

This course covers the fundamentals of Islam (Aqaid, Ibadat, Islamic Dawah etc.); ethical values of Islam; seerah of the Holy Prophet (PBUH); Islamic civilization and its effects on humanity, study of other prominent world religions and ethical systems in comparison with Islamic viewpoint; Multicultural societies, historical background of Pakistan: Muslim society in Indo-Pakistan, the movement led by the societies, the downfall of Islamic society, the establishment of British Raj- causes and consequences. It also covers political evolution of Muslims in the twentieth century: Sir Syed Ahmed Khan; Muslim League; Nehru; Allama Iqbal: independence movement; Lahore Resolution; Pakistan culture and society, constitutional and administrative issues, Pakistan and its geo-political dimension, Pakistan and international affairs, and Pakistan and the challenges ahead.

### Equivalent Course(s)

BA 1106, MD 2402, SS 1109, BIO 2303, EN 1105

## 2.2 Master of Science and PhD

### 2.1.1 Master of Science in Computer Science (MSCS)

SZABIST offers Master of Science in Computer Sciences (MSCS) degree in three domains: Core Computer Science and two specialization tracks, i.e., Software Engineering (SE) and Networks and Security (N&S). Students have to complete 4 focused courses in any specific domain. The program is of 2-year duration and is offered in the evening. It requires 33 credit hours to complete the degree with 9 courses (27 credit hours) and Thesis/Research Work (6 credit hours) in not more than four (4) years.

The following is the break-up of the minimum credit hours requirements to be fulfilled by the students enrolled in this program:

- 5 Compulsory/Core Courses (15 Credit Hours)
- 4 Electives<sup>1</sup> (12 Credit Hours)
- 1 Thesis (6 Credit Hours) or 2 Course (3 Credit Hours each)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>First Semester</b>		
CSC 5105	Research Methodology	0
CSC 5101	Advanced Algorithms Analysis	0
CSC 5102	Theory of Computation	0
<b>Second Semester</b>		
CSC 5201	Advanced Operating Systems	0
CSC 5202	Advanced Computer Architecture	0
CSC 5xxx	Elective-I (Independent Research Study – Topic related to CS/SE/N&S Stream-I or II)	0
<b>Second Year</b>		
<b>Third Semester</b>		
CSC 5xxx	Thesis or Course work (from CS/SE/N&S Stream-II)	-
CSC 5xxx	Elective-II ( from CS/SE/N&S – Stream-I)	0
CSC 5xxx	Elective-III ( from CS/SE/N&S – Stream-I)	0
<b>Fourth Semester</b>		
CSC 5xxx	Thesis or Course Work (from CS/SE/N&S– Stream-II)	-
CSC 5xxx	Elective-IV ( from CS/SE/N&S – Stream-I)	0

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B



## 2.2 Master of Science in Computer Sciences (MSCS)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 5105	<b>Prerequisite(s)</b>	None

### Course Description

This course covers international ethical, professional and legal issues in computing research including concept of research, definitions, quantitative and qualitative approaches, proposal for research, forming hypotheses, originality, critical analysis methods; also reading for research; data collection, information gathering; literature surveys and questionnaires data analysis, presentation of information, writing academic papers, content and referencing. The students have to perform meta analyses of 25-30 research papers selected in current research topics in International Journals. Topic and papers are selected with approval from the instructor. Conference papers are not allowed for review. Students have to read all such papers and prepare the analysis related to model, methods, findings and come up with what has been done related to selected area of research and research gaps if any are explicitly identified with future work.

### Equivalent Course(s)

None

<b>Course Name</b>	Advanced Algorithms Analysis	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 5101	<b>Prerequisite(s)</b>	None

### Course Description

Advanced Algorithm Analysis includes the introduction of formal techniques and the underlying mathematical theories like NP-completeness, search techniques, randomized algorithms and heuristic and approximation algorithms. Topics include: asymptotic analysis of upper and average complexity bounds using big-O, little-o, and theta notation. Fundamental algorithmic strategies (brute-force, greedy, divide-and-conquer, backtracking, branch-and-bound, pattern matching, and numerical approximations) are covered. It also covers standard graph and tree algorithms, standard complexity classes, time-space tradeoffs in algorithms, using recurrence relations to analyze recursive algorithms, non-computable functions, the halting problem, and the implications of non-computability. Algorithmic animation is used to reinforce theoretical results. Upon completion of the course, students should be able to explain the mathematical concepts used in describing the complexity of an algorithm, and select and apply algorithms appropriate to a particular situation.

### Equivalent Course(s)

None

## 2.2.1 Master of Science in Computer Sciences (MSCS)

<b>Course Name</b>	Theory of Computation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 5102	<b>Prerequisite(s)</b>	None

### Course Description

This course includes set theory, sequences, tuples, functions, relations and graphs; Turing machine; language, designing variants of Turing machines, enumerators, dovetailing, Church-Turing Thesis, Hilbert's Tenth problem, decidable languages, acceptance problem for DFAs, the halting problem, reducibility, recursion theorem, logical theories, complexity theory; time complexity, non-deterministic time, Class P, Class NP, NP-completeness, space complexity, relationship between Space and Time complexity, P-SPACE-completeness, Class L, Class NL and NL-completeness.

### Equivalent Course(s)

None

<b>Course Name</b>	Advanced Operating Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 5201	<b>Prerequisite(s)</b>	None

### Course Description

This course covers characterization of modern operating systems; file systems, memory management techniques, process scheduling and resource management; system models; architectural models; inter process communication; issues of security in distributed systems (partial coverage); distributed file system; concurrency control in distributed systems; problems of coordination and agreement in distributed systems; replication – advantages and requirements; fault-tolerant services and mobile and ubiquitous computing.

### Equivalent Course(s)

None

<b>Course Name</b>	Advanced Computer Architecture	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 5202	<b>Prerequisite(s)</b>	None

### Course Description

This course covers architectural and organizational attributes of computer architecture like Flynn's classifications; SISD, SIMD, MISD and MIMD systems and their working principles, shared versus distributed memory architectures, Bernstein conditions, performance measurements of computers, open architecture versus close architectures, CISC, RISC, conventional versus super-scalar (K-Issue) processors and WINTEL architecture are studied. Furthermore, cache memory, techniques to reduce cache misses, multi-level caches, cache-look-ahead processor, micro-programmed controller versus hardwired controller, CPU performance metrics, pipelining, multiprogramming and time-sharing operating systems, design of a generic processor and its architecture, designing of executable versus hardwired instructions, microcode versus macro code, concept of control word (microinstructions), parallel computing, taxonomy of parallel architectures, parallel applications, synchronization mechanisms, data level parallelism (Vector Processing, Multimedia Applications, Graphics Processing Units) are also covered in the course.

### Equivalent Course(s)

None

## 2.2 Master of Science and PhD

### 2.1.1 Doctor of Philosophy in Computing (PhD Computing)

Doctor of Philosophy in Computing (PhD Computing) program requires completion of a total of 48 credit hours with 5 courses, an Independent Research Study (IRS) and a dissertation. The following is the break-up of the credit hours requirements to be fulfilled by the students enrolled in this program in not more than eight (8) years.

- 5 Elective Courses<sup>1</sup> (15 Credit Hours)
- 1 Independent Research Study (03 Credit Hours)
- 1 Dissertation (30 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
CSC 6101	Research Methodology*	0
CSC 6xxx	Elective-I	0
CSC 6xxx	Elective-II	0
<b>Spring Semester</b>		
CSC 6xxx	Independent Research Study	-
CSC 6xxx	Elective-III	0
CSC 6xxx	Elective-IV	0
<b>Second Year</b>		
<b>Fall Semester</b>		
CSC 6xxx	Dissertation	-
<b>Spring Semester</b>		
CSC 6xxx	Dissertation	-
<b>Third Year</b>		
<b>Fall Semester</b>		
CSC 6xxx	Dissertation	-
<b>Spring Semester</b>		
CSC 6xxx	Dissertation	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B.  
00- The course of Research Methodology is compulsory if not done earlier in Masters.

## Doctor of Philosophy in Computing (PhD Computing)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	CSC 6101	<b>Prerequisite(s)</b>	None

**Course Description** This course covers international ethical, professional and legal issues in computing research including concept of research, definitions, quantitative and qualitative approaches, proposal for research, forming hypotheses, originality, critical analysis methods; also reading for research; data collection, information gathering; literature surveys and questionnaires data analysis, presentation of information, writing academic papers, content and referencing. The students have to perform meta analyses of 25-30 research papers selected in current research topics in International Journals. Topic and papers are selected with approval from the instructor. Conference papers are not allowed for review. Students have to read all such papers and prepare the analysis related to model, methods, findings and come up with what has been done related to selected area of research and research gaps if any are explicitly identified with future work.

**Equivalent Course(s)** None





Department of  
**Social  
Sciences**

## 3.1 Bachelor of Science

### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

Students enrolled in Bachelor of Science in Social Sciences (BSSS) program are required to complete a total of 144 credit hours within seven (7) years. The course break-up is as follows:

- 32 Compulsory Courses (96 Credit Hours)
- 12 Major Courses<sup>00</sup> (36 Credit Hours)
- 2 Electives<sup>00</sup> (6 Credit Hours)
- 1 Research Project (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
SS 1117	Computer and Web Skills	116
SS 1116	English for General Purposes (EGP)	116
SS 1109	Islamiat / Ethics and Pakistan Studies	116
SS 1105	Microeconomics	117
SS 1115	Community Services	117
SS 1201	Introduction to Social Sciences	117
<b>Spring Semester</b>		
SS 2306	Psychology	117
SS 1205	Macroeconomics	118
SS 2307	Sociology	118
SS 1155	Introduction to Political Science	118
SS 2412	International Relations	118
SS 4705	Sindh Studies	119
<b>Second Year</b>		
<b>Fall Semester</b>		
SS 2314	Study of Anthropology	119
SS 2316	English for Academic Purposes (EAP)	119
SS 2313	Introduction to Social Psychology	120
SS 2318	Mathematics and Statistics	120
SS 2413	Philosophy	120
SS 1xxx	Elective-I	-
<b>Spring Semester</b>		
SS 2406	Gender Studies	122
SS 2418	Statistical Inferences	122
SS 2414	Introduction to Organizational Psychology	122
SS 3503	Development Studies	122
SS 1209	Social Policy	122
SS 1xxx	Elective-II	-

00- List of Major Courses is given in Appendix C.  
00- List of Electives is given in Appendix B.

## 3.1.1 Bachelor of Science in Social Sciences (BSSS)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
SS 2312	Culture, Art and Society	122
SS 3509	Language-I	122
SS 3606	Political Economy	122
SS 4xxx	Major-I	-
SS 4xxx	Major-II	-
SS 4xxx	Major-III	-
<b>Spring Semester</b>		
SS 3504	Research Methods	123
SS 3605	International Law and Human Rights	123
SS 3609	Language-II	123
SS 4xxx	Major-IV	-
SS 4xxx	Major-V	-
SS 4xxx	Major-VI	-
<b>Fourth Year</b>		
<b>Fall Semester</b>		
SS 2411	Environmental Studies	124
SS 4707	Introduction to Health Psychology	124
SS 4709	Research Project-I	124
SS 4xxx	Major-VII	-
SS 4xxx	Major-VIII	-
SS 4xxx	Major-IX	-
<b>Spring Semester</b>		
SS 4804	Public Policy	124
SS 4809	Research Project-II	125
SS 2405	Enlightenment	125
SS 4xxx	Major-X	-
SS 4xxx	Major-XI	-
SS 4xxx	Major-XII	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.



### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Computer and Web Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1117	<b>Prerequisite(s)</b>	None

**Course Description** This course provides understanding on computer systems and their applications. The course focuses on discussing the desktop environment, word processing, spreadsheets, graphics packages, the internet, computer programming, Microsoft Access, Microsoft Visio, html, and webpage developments.

**Equivalent Course(s)** BA 1103, BA 1108, CSC 1104, BIO 1104, AF 1102, BST 1102

<b>Course Name</b>	English for General Purposes (EGP)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1116	<b>Prerequisite(s)</b>	None

**Course Description** This course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them, critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

**Equivalent Course(s)** ME 1101, MD 1122, CSC 2101, BIO 1111, AF 1203, EN 1106

<b>Course Name</b>	Islamiat/Ethics and Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1109	<b>Prerequisite(s)</b>	None

**Course Description** This course discusses the fundamental Islamic concepts and a concise history of Pakistan. Topics include pillars of Islam, the Shariah, discourses on Fiqh, the progression of Muslim society (from the advent of Islam up to the independence of the Indian sub-continent), and post-independence events in Pakistan.

**Equivalent Course(s)** BA 1106, CSC 1105, MD 2402, BIO 2303, AF 1205

## 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1105	<b>Prerequisite(s)</b>	None

**Course Description** Microeconomics studies how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, the product markets and the resource markets. It also deals with application of demand and supply, cost analysis and factors of production.

**Equivalent Course(s)** BA 1102, BA 5302, AF 2405, BST 1105

<b>Course Name</b>	Community Services	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1115	<b>Prerequisite(s)</b>	None

**Course Description** This course is comprised of two components. First, it introduces students to community-based environment, development and application of social policies, the scope of volunteer work in general and non-governmental organizations (NGOs) in particular, cultural and social aspects of community work, and formulating social processes and procedures. In addition, the second component of this course consist of Application of concepts and perspectives learnt in first component. Furthermore, students would be required to engage in a community-based project through an NGO.

**Equivalent Course(s)** None

<b>Course Name</b>	Introduction to Social Sciences	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1201	<b>Prerequisite(s)</b>	None

**Course Description** This course covers the fundamental concepts of social science, definition of social science, its scope and applicability and the various branches of social sciences.

**Equivalent Course(s)** None

<b>Course Name</b>	Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2306	<b>Prerequisite(s)</b>	None

**Course Description** This course covers themes such as introduction to psychology, methods of psychology, biological basis of behavior, sensation, perception, attention, memory, emotions, learning, thinking and individual differences.

**Equivalent Course(s)** BA 2312, BIO 2306, MD 2424, BA 2306, AF 2303

### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1205	<b>Prerequisite(s)</b>	SS 1105

**Course Description** This course introduces students to key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth and development.

**Equivalent Course(s)** BA 5402, BA 1202, BST 1204, AF 3505

<b>Course Name</b>	Sociology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2307	<b>Prerequisite(s)</b>	None

**Course Description** This course covers an overview of sociology. Topics include introduction to sociology, basic concepts of sociology, social groups, culture, Socialization and personality, social control and collective behavior.

**Equivalent Course(s)** BA 2307, BA 2306, MD 1104, AF 2304

<b>Course Name</b>	Introduction to Political Science	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1155	<b>Prerequisite(s)</b>	None

**Course Description** This course provides students introduction to major concept of political systems including system of governance, nature of political and social fabrics. Also, constitutions and rule of business for the success of political system will be taught to students. In addition, different political ideologies and political systems will be part of this course.

**Equivalent Course(s)** None

<b>Course Name</b>	International Relations	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2412	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces students to key issues, questions, and theories about international relations in historical context. Course covers world politics since the First World War, and the lessons learnt by the academic, political, and military elites in the context of international relations since that time. The themes include power politics, liberal internationalism, statecraft, diplomacy, international political economy, international law, international organizations, foreign policy making and policy analysis, security and defense, hegemony and empire, globalization and civil society, and the future of the state.

**Equivalent Course(s)** None

## 3.11 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Sindh Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 4705	<b>Prerequisite(s)</b>	None

### Course Description

In this course students explore the civilizations of the Indus Valley from a geographic, historical, anthropological, and archaeological perspective. They study modern Sindh from the viewpoint of several disciplines, as for example, culture, literature, ethnomusicology etc. The course gives students the foundation to understand Sindh in interdisciplinary paradigms and prepares them for further aspects of area studies in Sindh. One underlying aim of Sindh Studies is to encourage students to think critically about societal development and interethnic harmony in Sindh.

### Equivalent Course(s)

None

<b>Course Name</b>	Study of Anthropology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2314	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces the discipline of Anthropology and its four major fields. It shall be discussed what is the Anthropological understanding of human associations and groups (families, marriages, ethnic and racial groups), and of systems humans have evolved to order their social lives (political, and economic systems).

### Equivalent Course(s)

None

<b>Course Name</b>	English for Academic Purposes (EAP)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2316	<b>Prerequisite(s)</b>	SS 1116

### Course Description

This course is designed to improve academic English language and study skills of students. The course follows a multidimensional approach based on the four language skills with a specific focus on reading and writing skills that are required in research-based study at university level. The course includes listening and note taking skills, library and internet use for locating and evaluating research articles. In addition, the course seeks to enable the students to speed read, skim, scan and infer from written text. The course specifically focuses on enabling the students to experiment with complex grammatical forms, sentence structures and logical paragraph development, to present coherent, cohesive and effective arguments clearly in research-based writing according to the requirements of their specific discipline.

### Equivalent Course(s)

MD 1222, ME 1205, CSC 1102, BIO 1211

## 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Introduction to Social Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2313	<b>Prerequisite(s)</b>	SS 2306

<b>Course Description</b>	This course provides an understanding on how human behavior, feelings and thoughts are affected by social factors of environment and vice versa. Topics include group behavior, social perception, nonverbal behaviors, self-concept, cognitive dissonance, attitudes, conformity, aggression and prejudices.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Mathematics and Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2318	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces basic statistical concepts and techniques. Topics include; sampling and experimentation, descriptive statistics, probability, binomial and normal distributions, estimation, single sample and two sample hypothesis tests for means and proportions. Mathematical methods consists of; matrices, system of linear equations, differentiation and optimization, linear programming, and simplex method. Additional topics cover descriptive methods in regression and correlation, or contingency table analysis.
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<b>Equivalent Course(s)</b>	BA 5305, BA 2305, BIO 1208, BA 2311, BST 1206, AF 2406
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<b>Course Name</b>	Philosophy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2413	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course is both an introduction to philosophy and to careful thought, analysis, and argumentation. The course focuses on a general introduction to philosophy, Greek philosophy, medieval era, development of Muslims, Al-Farabi, Al Ghazali, Ibn-e-Rushd, and mystical tradition in Muslim thought, Renaissance, the Enlightenment (Rousseau, Voltaire), German Idealism, modern social philosophers, and contemporary social philosophers.
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<b>Equivalent Course(s)</b>	None
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### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Gender Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2406	<b>Prerequisite(s)</b>	None

**Course Description** This course covers basic concepts, approaches and debates in gender studies. The course introduces gender terms and concepts, the concept of gender division of labour, gender mainstreaming, the effects of development process on women and men and various approaches to gender and development, gender equality and the Millennium Development Goals, definition and explanation of feminism and feminist theory, history of the feminist movements around the world, conceptual development of Muslim feminism and its social, political, economic and legal impact on Muslim countries.

**Equivalent Course(s)** None

<b>Course Name</b>	Statistical Inferences	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2418	<b>Prerequisite(s)</b>	SS 2318

**Course Description** This course covers; sets and probability, concept of random variable, possibilities, theory, estimation theory, testing hypothesis, one sample tests, two sample tests, regression and correlation, analysis of variance, Chi-square distribution, F-distribution, and computer applications.

**Equivalent Course(s)** BA 3605, BA 5405, AF 3506, BST 2306

<b>Course Name</b>	Introduction to Organizational Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2414	<b>Prerequisite(s)</b>	SS 2306

**Course Description** It is the study of organization, workplace and its employees and how work can be done to enhance the performance and satisfaction of its people. The course discusses hiring and management, job attitudes, leadership, workplace ethics, team composition, job designs, organizational development and human resources.

**Equivalent Course(s)** BA 3504, BA 5207, AF 2305, EN 2306

<b>Course Name</b>	Development Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3503	<b>Prerequisite(s)</b>	None

**Course Description** This course explores the complex and multidimensional nature of development. It covers a broad overview of the development studies, poverty, gender, culture, globalization, empowerment, population, environment and livelihood.

**Equivalent Course(s)** None

### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Social Policy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 1209	<b>Prerequisite(s)</b>	SS 2307

**Course Description** This course discusses concepts and paradigms of social policy, social policy issues, such as, education, housing, health, corporate social responsibility (CSR), and social service delivery.

**Equivalent Course(s)** None

<b>Course Name</b>	Culture, Art and Society	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2312	<b>Prerequisite(s)</b>	None

**Course Description** In addition to the stylistic and structural components of art, this course includes the historical, social, religious, political, technological, and philosophical issues related to the production and development of art, along with basic understanding of culture and society, globalization of art and culture, media and development of popular culture, alternative cultures subcultures, and public relations.

**Equivalent Course(s)** None

<b>Course Name</b>	Language-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3509	<b>Prerequisite(s)</b>	None

**Course Description** This course focuses on the practical and the day-to-day use of the target language in relation to everyday life in the target culture, the communicative approach working mainly through video documents offers role-plays, group discussions, listening comprehension exercises as well as written comprehension, and essay-writing.

**Equivalent Course(s)** None

<b>Course Name</b>	Political Economy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3606	<b>Prerequisite(s)</b>	None

**Course Description** This course adapts an interdisciplinary approach ranging from political science, economics, history, and sociology in order to offer a broad introduction to current issues in political economy. Topics include mercantilism and liberalism, structuralism, the post-structuralism, Marxian definition of capitalism, difference between capitalist class processes (the basis for capitalism) from non-capitalist (slave, feudal, ancient, communal) class processes, international trade, money and debt, global security, knowledge and power, economic integration, development and multinational corporations, food, hunger, and environment.

**Equivalent Course(s)** None

## 3.11 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Research Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3504	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	This course introduces students to the quantitative/qualitative research methods, social research, steps involved in conducting research, sampling, and data collection tools, data collection and processing, data management, data analysis and techniques, and (Statistical Product and Service Solutions) SPSS.		
<b>Equivalent Course(s)</b>	BA 3603, BA 5206, AF 3609, BST 2301		

<b>Course Name</b>	International Law and Human Rights	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3605	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	This course covers origins, content, applications, and ongoing development of human rights principles and doctrines in both international and national politics. Furthermore, this course discusses the historical development of human rights principles and doctrines, including the religious and philosophical ideas that have contributed to their development, the reasons for shifting from moral movements for human rights and national human rights doctrines to the codification of international human rights law. Also, it explains the work of governments, multilateral, and international and local non-governmental organizations in the enforcement of human rights laws, major debates in the field of human rights, including debates over the limits of sovereignty, universality versus relativism, individual versus group rights, and first, second, and third generation rights.		
<b>Equivalent Course(s)</b>	None		

<b>Course Name</b>	Language-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 3609	<b>Prerequisite(s)</b>	SS 3509
<b>Course Description</b>	Language-II is the continuation of Language-I to equip students with advanced skills and knowledge to comprehend, speak, read and write competently in real-life situations. Topics include principal of language grammar, elementary communication, language for reading knowledge, and conversation and composition.		
<b>Equivalent Course(s)</b>	None		



### 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Environmental Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2411	<b>Prerequisite(s)</b>	None

**Course Description** This introductory course provides an overview of environmental issues, policy and politics, impact of human activities on natural environment and basic economic and political factors generating environmental crisis. The course covers introduction to environmental issues, foundations of environmental policy and politics, international environmental law and policy, natural resources policy practicum and environmental diplomacy practicum, water resource management, land planning and impact of urban land use planning and transportation on environment, strategies for land conservation, and understanding environmental campaigns, strategies and tactics.

**Equivalent Course(s)** None

<b>Course Name</b>	Introduction to Health Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 4707	<b>Prerequisite(s)</b>	SS 2306

**Course Description** This course helps in identifying behaviors and experiences that promote health, give rise to illness, and influence the effectiveness of health care. Topics include occupational health and public health.

**Equivalent Course(s)** None

<b>Course Name</b>	Research Project-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 4709	<b>Prerequisite(s)</b>	SS 3504, SS 2318, SS 2418

**Course Description** This course covers research methods application to research report, and research proposal writing, applying a systematic approach to solve problems, analyze, evaluate, and apply relevant information from a variety of sources, and writing accurately, concisely, and logically in American Psychological Association (APA) or Harvard styles.

**Equivalent Course(s)** None

<b>Course Name</b>	Public Policy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 4804	<b>Prerequisite(s)</b>	SS 1209

**Course Description** This course explores both the theoretical and practical aspects of performing policy analysis. The themes of the course include current policy issues from the perspectives of local, state, and federal governments, non-governmental and advocacy organizations, needs and demands for public action, organization and nature of political support, and processes and problems of decision making in major policy areas.

**Equivalent Course(s)** None

## 3.1.1 Bachelor of Science in Social Sciences (BSSS)

<b>Course Name</b>	Research Project-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 4809	<b>Prerequisite(s)</b>	SS 4709

<b>Course Description</b>	This course covers research methods application to research report, and research proposal writing, applying a systematic approach to solve problems, analyze, evaluate, and apply relevant information from a variety of sources, and writing accurately, concisely, and logically in American Psychological Association (APA) or Harvard styles.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Enlightenment	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 2405	<b>Prerequisite(s)</b>	SS 2413

<b>Course Description</b>	This course discusses classic Enlightenment texts and writers such as Smith, Diderot, Millar, Schiller, Hume, Kant, and Rousseau. This course explores the ways that contemporary thinkers like Derrida, Foucault, Habermas, Adorno, Lyotard and Luhman have absorbed, engaged and either rejected the Enlightenment completely or attempted to resurrect its more positive and hopeful aspects.
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<b>Equivalent Course(s)</b>	None
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## 3.2 Master of Science and PhD

### 3.2.1 3.2.1 Master of Science (International Relations, Economics, Psychology and Sociology)

The Master of Science (International Relations, Economics, Psychology and Sociology) is a 1.5 - 2 years program having two streams i.e. Course Work Based Stream and Research Based Stream. Students enrolled in the either stream of MS (International Relations, Economics, Psychology and Sociology) program are required to complete a total of 30 credit hours within four (4) years.

#### Course Based Stream:

The following is the break-up of the 30 credit hour courses:

- 2 Compulsory Courses (6 Credit Hours)
- 8 Elective Courses (24 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
SS 5121	Advance Research Methods and Techniques (ARMT)- I (Qualitative)	128
SS 5122	Advance Research Methods and Techniques (ARMT)- II (Quantitative)	128
SS 5xxx	Elective I	-
SS 5xxx	Elective II	-
<b>Spring Semester</b>		
SS 5xxx	Elective III	-
SS 5xxx	Elective IV	-
SS 5xxx	Elective V	-
SS 5xxx	Elective VI	-
<b>Second Year</b>		
<b>Fall Semester</b>		
SS 5xxx	Elective VII	-
SS 5xxx	Elective VIII	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## Research Based Stream:

The following is the break-up of the 30 credit hour courses:

- 2 Compulsory Courses (6 Credit Hours)
- 6 Elective<sup>00</sup> Courses (18 Credit Hours)
- 2 Independent Research Studies (IRS)/ 1 Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
SS 5121	Advance Research Methods and Techniques (ARMT)- I (Qualitative)	128
SS 5122	Advance Research Methods and Techniques (ARMT)- II (Quantitative)	128
SS 5xxx	Elective I	-
SS 5xxx	Elective II	-
<b>Spring Semester</b>		
SS 5xxx	Elective III	-
SS 5xxx	Elective IV	-
SS 5xxx	Elective V	-
SS 5xxx	Elective VI	-
<b>Second Year</b>		
<b>Fall Semester</b>		
SS 5xxx	Independent Research Studies (I & II)/Thesis-I	-
<b>Spring Semester</b>		
SS 5xxx	Thesis-II	-

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All courses may not be offered every year. Alternate courses may be substituted as and when needed.

For both streams Electives can be taken from any of the following specializations:

- International Relations
- Economics
- Psychology
- Sociology

00- List of Electives is given in Appendix. B

## 3.2.1 Bachelor of Science in Social Sciences (MSSS)

<b>Course Name</b>	Advance Research Methods and Techniques-I (Qualitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 5121	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	This course develops critical and practical understandings for evaluating and conducting research from five qualitative research traditions (narrative research, grounded theory, phenomenology, ethnography and case studies). It develops an ethically and procedurally sound qualitative research proposal for qualitative research designs; collect, analyze and interpret qualitative, textual, and other non-traditional forms of data obtained through various tools and sources.		
<b>Equivalent Course(s)</b>	SS 6104, ELM 5102, ELM 6101		

<b>Course Name</b>	Advance Research Methods and Techniques-II (Quantitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	SS 5122	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	In this course, concepts, techniques and applications of quantitative methods for decision making are introduced. Topics include: forecasting, regression analysis, analysis of variance, statistical decision theory, utility theory, linear programming, and waiting lines. The course incorporates computer software packages.		
<b>Equivalent Course(s)</b>	SS 6105, ELM 5102, ELM 6102		

## 3.2 Master of Science and PhD

### 3.2.2 Doctor of Philosophy in Social Sciences (PhD SS)

Students enrolled in the Doctor of Philosophy (PhD) in Social Sciences and Economics Program with a MS /M.Phil (with minimum 5 years of formal university education) are required to complete a total of 48 credit hours within eight (8) years. The following is the break-up of the 48 credit hour courses:

- 2 Compulsory Courses (6 Credit Hours)
- 3 Electives<sup>1</sup> (9 Credit Hours)
- 1 Independent Research Studies (3 Credit Hours)
- 1 Dissertation (30 Credit Hours)

Further, students cannot register in IRS before completing compulsory courses. In addition, candidate may be given prerequisite/deficiency courses or theses which will be decided by the Interview Board at the time of admission. Moreover, all the requirements of HEC pertaining to PhD must be fulfilled.

Course Code	Course Title	Page #
<b>PhD</b>		
<b>First Year</b>		
<b>Fall Semester</b>		
SS 6104	Advance Research Methods and Techniques- I (Qualitative)	130
SS 6105	Advance Research Methods and Techniques- II (Quantitative)	130
SS 5xxx	Elective I	-
<b>Spring Semester</b>		
SS 5xxx	Elective-II	-
SS 5xxx	Elective-III	-
SS 6xxx	Independent Research Study	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MS 6x09	Dissertation	-
<b>Spring Semester</b>		
MS 6x09	Dissertation	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

00- List of Electives is provided in Appendix B.

## 3.2.2 Doctor of Philosophy in Social Sciences (PhD SS)

<b>Course Name</b>	Advance Research Methods and Techniques-I (Qualitative)	<b>Credit Hours</b>	<b>3 (3,0)</b>
<b>Course Code</b>	SS 6104	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	This course develops critical and practical understandings for evaluating and conducting research from five qualitative research traditions (narrative research, grounded theory, phenomenology, ethnography and case studies). Develops an ethically and procedurally sound qualitative research proposal for qualitative research designs; collect, analyze and interpret qualitative, textual, and other non-traditional forms of data obtained through various tools and sources.		
<b>Equivalent Course(s)</b>	SS 5229, ELM 5102, ELM 6101		

<b>Course Name</b>	Advance Research Methods and Techniques-II (Quantitative)	<b>Credit Hours</b>	<b>3 (3,0)</b>
<b>Course Code</b>	SS 6105	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	In this course, concepts, techniques and applications of quantitative methods for decision making are introduced. Topics include; forecasting, regression analysis, analysis of variance, statistical decision theory, utility theory, linear programming, and waiting lines. The course incorporates computer software packages.		
<b>Equivalent Course(s)</b>	SS 5122, ELM 5103, ELM 6102		



# Department of Media Sciences



# 4.1 Bachelor of Science

## 4.1.1 Bachelor of Media Science (BMS)

Students enrolled in the Bachelor of Media Science (BMS) program are required to complete 43 courses and a thesis within seven (7) years. The break-up of the 43 courses, including thesis is as follows:

- 33 Compulsory Courses (99 Credit Hours)
- 7 Major Requirements<sup>00</sup> (21 Credit Hours)
- 3 Open Electives<sup>00</sup> (9 Credit Hours)
- Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>Year</b>		
<b>Fall Semester</b>		
MD 1122	English for General Purposes (EGP)	134
MD 1107	Drawing and Perspective	134
MD 1115	Introduction to Media Industries	134
MD 1116	Civilization Studies-I	135
MD 2402	Islamiat and Pakistan Studies / Humanities	135
MD 1106	Photography	135
<b>Spring Semester</b>		
MD 1222	English for Academic Purposes (EAP)	136
MD 1104	Culture, Media, and Society	136
MD 3601	Art of Music	136
MD 1211	Basic Design	137
MD 2321	History and Aesthetics of Film	137
MD 1217	Introduction to Sound	137
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00- List of Major Courses is given in Appendix A.  
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## 4.1.1 Bachelor of Media Science (BMS)

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MD 4808	Thesis II	144
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All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	English for General Purposes (EGP)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1122	<b>Prerequisite(s)</b>	None

### Course Description

The course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them, critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

### Equivalent Course(s)

CSC 1102, BA 1105, SS 1116, BIO 1103, ME 1101, AF 1203, EN 1106, BST 1103

<b>Course Name</b>	Drawing and Perspective	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1107	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces students to visual reading and thinking skills through the practice of elementary drawing techniques. The topics include linear and aerial perspective, composition, shape, space, volume, and proportion, depth and distance, horizons and vanishing-points, the use and manipulation of shadow and light, stippling and cross-hatching; primary, secondary, and complementary colors, rendering mood, expression, and motion.

### Equivalent Course(s)

None

<b>Course Name</b>	Introduction to Media Industries	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1115	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces students to the history, development, and impact of mass media nationally and internationally, with a focus on the different media outlets and industry/business models. It covers history of print and broadcast journalism, print, broadcast, and digital formats, fringe, mainstream, regional, national and international media structures, formats and business models. Also, functions and evolution of journalism, film, TV, print media, advertising, and digital technologies, and introduction to media convergence environment.

### Equivalent Course(s)

MD 1117

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Civilization Studies-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1116	<b>Prerequisite(s)</b>	None

### Course Description

This course investigates major historical civilizations in Ancient Egypt, China, and India; classical Greece and Rome; and medieval and renaissance Europe. It also covers oral cultures and oral transmission, the invention of writing, the production and preservation of cultural and social artifacts and texts, the emergence, development, dissemination, and cross-cultural influences of aesthetic practices. Topics include comparative analysis of Asian, Greco-Roman, Chinese and Medieval traditions from Pyramids to Pre-Socratics and from Ancient Chinese thought to Early Cathedrals and from Bronze revolution in Central Asia to Iron revolution in India to the discovery of Laws of Reflecton by Alhazen. The course places a fundamental emphasis on the history of ideas, cultural expressions, and social institutions. The course will stop at the discussions of the emergence of Gothic Cathedrals in France.

### Equivalent Course(s)

None

<b>Course Name</b>	Islamiat and Pakistan Studies/Humanities	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2402	<b>Prerequisite(s)</b>	None

### Course Description

The course focuses on the history, theory, and practice of Islam and other religions, and their social, political, and cultural importance and impact in Pakistan and beyond. It covers History of religion, religious practice and thought, major interpretive traditions, religion and society, religion and politics, mysticism and orthodoxy, Comparative religion, religion and gender, Islam and other Abrahamic religions, Islam and modernity.

### Equivalent Course(s)

SS 1109, CSC 1105, BA 1106, BIO 1212, EN 1105

<b>Course Name</b>	Photography	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD1106	<b>Prerequisite(s)</b>	MD 1107

### Course Description

This course introduces students to the history, science, and art of photography. It covers cameras, their construction and use, use of digital versus film as a medium, set-up, focus, framing, composition, indoor versus outdoor photography (studio versus landscape), lenses, apertures, lighting, film and shutter speed, exposure, and depth of field, panning, zooming, and light-painting, black-and-white versus color, basic Photoshop editing and manipulating, narrative photography, developing and printing, and portfolio presentation.

### Equivalent Course(s)

None

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	English for Academic Purposes (EAP)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1222	<b>Prerequisite(s)</b>	MD 1122

### Course Description

This course is designed to improve academic English language and study skills of students. The course follows a multidimensional approach based on the four language skills with a specific focus on reading and writing skills that are required in research-based study at university level. The course includes listening and note taking skills, library and internet use for locating and evaluating research articles. In addition, the course seeks to enable the students to of speed read, skim, scan and infer from written text. The course specifically focuses on enabling the students to experiment with complex grammatical forms, sentence structures and logical paragraph development, to present coherent, cohesive and effective arguments clearly in research-based writing according to the requirements of their specific discipline.

### Equivalent Course(s)

ME 1205, SS 2316, BIO 1211, BA 1206, CSC 2101, AF 1203, EN 1106

<b>Course Name</b>	Culture, Media and Society	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1104	<b>Prerequisite(s)</b>	MD 1115, MD 1122

### Course Description

This course covers the basic theoretical concepts and debates focused on the relations among media, cultural texts, and the communities within which these are produced and disseminated. The topics include Theories of media and popular culture – Marxism, structuralism, post-structuralism, modernity, and post-modernism. Subcultures and youth cultures. The role of media in culture and society, the politics of identity (race, gender, ethnicity, religion, sexuality, class, and nationality), the emergence and effect of cyber culture, globalization and multiculturalism.

### Equivalent Course(s)

SS 2312

<b>Course Name</b>	Art of Music	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3601	<b>Prerequisite(s)</b>	None

### Course Description

This course focuses upon the evolution and development of sound and music. It covers global and local genres and styles (western art music, jazz, Indian classical, qawwali, hip-hop, rock, punk, etc.), the history and evolution of instruments and instrumentation, electronic and digital music technologies, performance modes, forms, and venues, music's influence in the media and on popular culture, and music's relationship with the visual and performing arts.

### Equivalent Course(s)

None

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Basic Design	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1211	<b>Prerequisite(s)</b>	MD 1107

**Course Description** This course introduces students to fundamental elements and principles of design. It covers grids, hierarchies, scale, point, line, texture, color, value, proportion, space, and plane, figure-ground, color theory; form and composition, issues of balance, emphasis, position, unity, pattern, harmony, contrast, rhythm, repetition, and movement, and the anatomy of fonts and types.

**Equivalent Course(s)** None

<b>Course Name</b>	History and Aesthetics of Film	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2321	<b>Prerequisite(s)</b>	MD 2323

**Course Description** This course covers the history and aesthetics of world cinema from its origins to the present, emphasizing major directors, historically and critically important movements and films, the emergence and development of film genres, and the aesthetic effects of technological innovations. The topics include Origins (Edison, Melies and Griffith), German Expressionism (Wieneand Lang), Soviet montage (Eisenstein), American and Indian Silent Films (Chaplin, Keaton, and Wadia Movietone), Impressionism and Surrealism (Bunuel and Renoir), national cinemas (Italy, Japan, France, Eastern Europe, and India), American Melodrama (Sirk and Minnelli), film genres, the studio system, auteur directors, technological developments and apparatus theory, and experimental film.

**Equivalent Course(s)** None

<b>Course Name</b>	Introduction to Sound	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1217	<b>Prerequisite(s)</b>	MD 3601

**Course Description** This course introduces students to; the properties and uses of sound in media texts, evolving technologies, and techniques employed to create sound recordings. It covers basic sound recording and editing (looping, sampling, sequencing, mixing, and mastering), introduction to Presonus Studio 1, volume envelopes, voice-over editing, dynamics processing, sound design, and film scoring.

**Equivalent Course(s)** None

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Design Practices-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2427	<b>Prerequisite(s)</b>	MD 1211

**Course Description** This course covers the theory and practice of design to inculcate logical methods of reasoning through design problems, and to polish aesthetic sensibilities. The course introduces students to all the important software such as InDesign, Illustrator, Photoshop, CorelDraw, Freehand, etc. Topics may include package design, basic typography (Urdu and English), signs, symbols, logos and identities, illustration, photography, 2-D versus 3-D design, visual problem-solving, symmetry and asymmetry, rhythm and balance, hierarchies, layers, transparencies, and visual thinking.

**Equivalent Course(s)** MD 1208

<b>Course Name</b>	Topics in Asian Literature	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1118	<b>Prerequisite(s)</b>	MD 1222

**Course Description** This course introduces students to a range of literatures produced in Asia fiction, poetry, and drama. It covers a range of themes and styles employed by Asian writers, examines how these writers appropriated and renewed older narrative forms and conventions, and consider how and why this body of work both responds to/and reconstructs Asian constructs of nation, society, community, and identity.

**Equivalent Course(s)** SS 2404

<b>Course Name</b>	Production Practices-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2323	<b>Prerequisite(s)</b>	MD 1107

**Course Description** This course introduces students to the basic craft of film and video production. Students will practice how to conceive, shoot, edit, and show a silent, low-budget, and simple narrative film. The topics include the technology of motion pictures, HD cameras, flip-books, stop-motion animation, frames, storyboarding, basic camera set-ups, basic lighting, framing, focus and lenses, panning, basic editing, creating rough-cuts, the role of the DP, production processes, and film screenings.

**Equivalent Course(s)** MD 2311

<b>Course Name</b>	Civilization Studies-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1216	<b>Prerequisite(s)</b>	MD 1116

**Course Description** This course will start from the emergence of Gothic Cathedral and will offer an introduction to the aesthetic and contextual study of different movements from renaissance to the present. The course will investigate how one art movement triggered the other and how to discover connections among the art movements of different times. The course also discusses societies, cultures, and art of major Islamic civilizations through history.

**Equivalent Course(s)** MD1216

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Idea Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2313	<b>Prerequisite(s)</b>	MD 1107

### Course Description

This course introduces students to strategies that will help them generate narrative ideas applicable to advertising, journalism, and film and video production. It covers theories and structures of narrative, elements of storytelling, the psychology of narrative, effective brainstorming, visual versus print narratives, finding images, idioms, analogies, and metaphors, parables and allegories, causality, probability, and necessity, simple and complex plots, inventing and developing characters, establishing place, conceiving, and shaping stories visually.

### Equivalent Course(s)

None

<b>Course Name</b>	Principles of Journalism	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3505	<b>Prerequisite(s)</b>	MD 1122

### Course Description

This course introduces students to basic news, feature, and editorial writing, and reporting. It covers lead writing, story-structure, interviewing, note-taking, background research, issue analysis, feature development, editorials, editing, journalistic ethics, print versus digital, and evidence and inference.

### Equivalent Course(s)

None

<b>Course Name</b>	Play Analysis	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1119	<b>Prerequisite(s)</b>	MD 1122

### Course Description

The focus of this course is upon a variety of techniques and strategies through which theatrical texts are analyzed and understood. It discusses plot and scene structures, character construction, the use and effect of language, syntax, rhythm, tone, sound, gesture, movement, design, and spatial composition, the origins and development of performance conventions, the relationship between audiences and performances, the interplay between performed events, and cultural and social formations.

### Equivalent Course(s)

None

<b>Course Name</b>	History of Commercial Art	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2318	<b>Prerequisite(s)</b>	MD 1107, MD 1211

### Course Description

This course introduces students to the history of commercial art from lithography to logos, book design to branding, stencils to motion graphics, and covering the origins and history of advertising and design. The topics include defining commercial art, origins and history of commercial art and design, inventing alphabets, illuminated manuscripts, the psychology of branding, graphic design versus advertising design, impact of new technologies from the printing press to computers, and the past, present, and the future of commercial design.

### Equivalent Course(s)

None



## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Audiovisual Editing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2425	<b>Prerequisite(s)</b>	MD 2323, MD 1217

**Course Description** This course discusses the aesthetics and techniques of sound and video editing. The topics include perspective, transitions, and pace, cutting, splicing, fading, dissolving, and wiping, controlling and manipulating content and audience response, continuity editing, frame rates and temporal compression, visual effects, axis of action, jump-cuts, eye-lines and match-cuts, incorporating sound, ambient and Foley sound effects, and musical scoring.

**Equivalent Course(s)** None

<b>Course Name</b>	Radio Programming and Production	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3525	<b>Prerequisite(s)</b>	MD 1217, MD 3601

**Course Description** This course aims to train students to apply in a practical setting the skills they've learned in their sound and music classes using **SZABIST**'s on-campus radio station. It discusses digital audio recording, digital workstations, and introduction to Studio 1, editing techniques, and radio story production and programming.

**Equivalent Course(s)** MD 3511

<b>Course Name</b>	Design Practices-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3527	<b>Prerequisite(s)</b>	MD 2427

**Course Description** This course extends and develops theories and practices introduced in Graphic Design-I. It discusses contemporary trends and styles, advanced layout strategies, merging text and art, sustainable design, propaganda design, the psychological impact of design, advanced typography (Urdu and English), publication design, brochures, packaging, posters, cover art, advanced Photoshop techniques, and advanced Illustrator techniques.

**Equivalent Course(s)** MD 2409

<b>Course Name</b>	Media Research	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2325	<b>Prerequisite(s)</b>	MD 1104, MD 1222

**Course Description** This course teaches the quantitative and qualitative methods for media research. It covers designing research question, reviewing the literature, writing proposal, researching industry, researching text, researching audiences, research tools – questionnaire, focus group interviews, ethnography, phenomenology, hermeneutics, etc.

**Equivalent Course(s)** MD 4845, BA 3508, MD 2416

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Theater Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2423	<b>Prerequisite(s)</b>	MD 1119

### Course Description

This course discusses the techniques of theater and documentary production using a form developed in the US through the auspices of the Federal Theatre Project, and to create an original Living Newspaper performance. It covers history and practice of documentary theater and performance, the Living Newspaper and the Federal Theater Project, selecting and researching newsworthy topics, conducting archival research, conducting field interviews, improvisation and script development, staging and design, and rehearsals and performance.

### Equivalent Course(s)

None

<b>Course Name</b>	Media Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2424	<b>Prerequisite(s)</b>	MD 1104, MD 1222

### Course Description

This course introduces students to the basic principles of human behavior, with a focus on how different media shape and affect who we are and how we think. It covers formation of personality types, the structures of learning, the development and manifestation of phobias and neuroses, the functions of memory, perception, emotion, and the effect of media images on self-perception.

### Equivalent Course(s)

SS 2306

<b>Course Name</b>	Production Practices-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3523	<b>Prerequisite(s)</b>	MD 1217, MD 2313 MD 2323

### Course Description

This course develops and extends the theories and techniques introduced in Production Practices-I. Production Practices II introduces students to use elements of sound and dialogue with visuals in narrative films. It covers advanced single-camera techniques, using camera angles, jibs, cranes, tracks, and dollies; manipulating color and light, lenses and looks, digital speed, color temperatures, filters, and gels, visual storytelling, 3-act structures, production design, advanced sound editing, advanced digital editing, and linear and non-linear pre and post production strategies.

### Equivalent Course(s)

MD 4725

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Media Laws and Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 2405	<b>Prerequisite(s)</b>	MD 1115, MD 1222

<b>Course Description</b>	This course introduces students to the way media policies are influenced and shaped by legal and ethical considerations. It covers basic ethical theories, defining media laws, free speech and human rights, press freedoms and democratic politics, slander, defamation and libel, morality, propriety and obscenity laws, private and public knowledge, objectivity and sensationalism, conflicts of interest and transparency, the use, abuse, and protection of sources, accuracy, liability and licensing, regulating advertising, copyright laws and fair-use, self-censorship and content regulation, federal, provincial, and local laws, Pakistan Electronic Media Regulatory Authority (PEMRA), new media technologies and the law, and contempt of court.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Creative Writing	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 1213	<b>Prerequisite(s)</b>	MD 1122, MD 1118

<b>Course Description</b>	This course introduces students to various forms and techniques of creative writing in both English and Urdu. The topics include understanding and analyzing creative texts, writing prose fiction and non-fiction, understanding and writing poetry, and creative expression in different genres and language styles.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Animation and Motion Graphics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3518	<b>Prerequisite(s)</b>	MD 2425, MD 2427

<b>Course Description</b>	This course discusses the principles of motion graphic design, and to teach them how to create complex, multi-layered animations. It also covers after effects (AE) basics; interface and palettes, vector art versus bitmap art, anchor points, typography in AE, track mattes, layers, framing, basic animation, and rotoscoping, motion masks, composing and nesting, using green screens, color keying and compositing, expressions in AE; scripting, time remapping, and temporal processing.
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<b>Equivalent Course(s)</b>	None
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## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	State and Nation Building in Pakistan	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 4701	<b>Prerequisite(s)</b>	MD 1216, MD 1222

### Course Description

The focus of this course is on both the idea and fact of Pakistan starting with the 1857 War of Independence, extending through Partition, the founding of the nation and its subsequent dismemberment, and ending with contemporary issues and challenges facing our future. The topics include theories of nationalism, Iqbal and Pakistan, partition and political relations with India, military versus civilian rule 1971 war and the break-up of Pakistan, 1973 Constitution, secularism and Islam, national symbols and national identity, the role of the media, foreign policy, and national identity.

### Equivalent Course(s)

SS 3605

<b>Course Name</b>	Theories of Visual Culture	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 3506	<b>Prerequisite(s)</b>	MD 1104, MD 1222

### Course Description

This course introduces students to a range of theoretical approaches to defining, analyzing, and categorizing visual texts including, but not limited to, films, photographs, advertisements, television shows, sculpture, graffiti, architecture, paintings, performance, fashion, graphic and interior design. It covers theory versus praxis, defining the visual, the sociological processes of culture, the politics of visual culture, conspicuous consumption, Marxist, feminist, structuralism, and semiological approaches to visual culture, substance versus style, and McLuhan, media, and messages.

### Equivalent Course(s)

SS 4804

<b>Course Name</b>	Thesis-I	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 4807	<b>Prerequisite(s)</b>	Dept. Permission (38 Courses)

### Course Description

It is a two-semester project that allows advertising, journalism, and film students the opportunity to demonstrate to the Media Sciences faculty their proficiency in their chosen area of specialization. It covers proposal development and pre-production (Communication design and market research, component gathering, scriptwriting, campaign planning, storyboarding, production design, and story research).

### Equivalent Course(s)

None

## 4.1.1 Bachelor of Media Science (BMS)

<b>Course Name</b>	Producing Short Narratives	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 4714	<b>Prerequisite(s)</b>	MD 3523

**Course Description** This course focuses on how to conceive, write, storyboard, film, edit, produce, and present a short project employing the skills they have learned in their production and design courses in the previous five semesters. It discusses conceiving and scripting, creating characters, design and art direction, light and shot referencing, creating storyboards and mood boards, music and sound selection and design, short narratives across cultures, music videos, and PSAs.

**Equivalent Course(s)** MD 3603

<b>Course Name</b>	Thesis-II	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 4808	<b>Prerequisite(s)</b>	MD 4807

**Course Description** The course is a culmination of thesis I. Students start their projects (films, documentaries, journalistic assignments, written work, advertising or design projects) and makes final presentations to demonstrate their proficiency in their chosen area of specialization.

**Equivalent Course(s)** None

## 4.2 Masters

### 4.2.1 Master of Advertising (MoA)

Students enrolled in Master of Advertising program are required to complete 8 courses and a 6-credit hour Research Project within five (5) years. The breakup of the courses is as follows:

- 5 Core Courses (15 Credit Hours)
- 3 Elective Courses (9 Credit Hours)
- 1 Research Project (6 Credit Hours)

### Master of Advertising (36 credit hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MD 5168	Research Methods in Advertising	146
MD 5164	History of Communication and Advertising	146
MD 5166	Ideation Techniques in Advertising	146
MD 5167	Principles of Advertising	147
<b>Spring Semester</b>		
MD 5268	Creative Advertising Campaigns	147
MD 5xxx	Elective I	-
MD 5xxx	Elective II	-
MD 5xxx	Research Project I	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MD 5349	Research Project II	147
MD 5xxx	Elective III	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 4.1.1 Master of Advertising (MoA)

<b>Course Name</b>	Research Methods in Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5168	<b>Prerequisite(s)</b>	None

### Course Description

This course teaches students how to conduct research that helps them understand how consumer behavior and advertisements work, and that maximizes the effective reach of advertising campaigns. It covers advanced quantitative vs. qualitative research strategies, collecting and interpreting data sets, customized vs. syndicated research, effective pre and post testing studies, flows of attention, emotion, and meaning, brand linkage and branding moments, ad tracking, longitudinal vs. latitudinal studies, selective perception, picture, and copy sorts.

### Equivalent Course(s)

MD 5162 SS 3504 BA 5609

<b>Course Name</b>	History of Communication and Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5164	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces students to a sociological analysis of advertising and its' role in society. It covers the historical beginnings of contemporary advertising and its relationship to popular culture. Part of Visual and Oral Communication theories, advertising content, mechanisms of persuasion and effects on human behavior is studied through representation of gender, class, race and ethnicity present in various groups; inclusive of how advertising and social constructs affects children and society.

### Equivalent Course(s)

MD 5164

<b>Course Name</b>	Ideation Techniques in Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5166	<b>Prerequisite(s)</b>	None

### Course Description

This course introduces students to a sociological analysis of advertising and its' role in society. It covers the historical beginnings of contemporary advertising and its relationship to popular culture. Part of Visual and Oral Communication, advertising content, mechanisms of persuasion and effects on human behavior is studied through representation of gender, class, race and ethnicity present in various groups; inclusive of how advertising affects children and social constructs.

### Equivalent Course(s)

MD 5166

## 4.1.1 Master of Advertising (MoA)

<b>Course Name</b>	Principles of Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5167	<b>Prerequisite(s)</b>	None

### Course Description

The purpose of this course is to give an overview of the advertising industry, its functions and practices, and an appreciation of its place within the broader communications context.

In the course the students will analyze and discuss examples of advertising, discovering best practice in the advertising industry, and exploring the processes involved in creating campaigns.

They will examine advertising practice and processes: advertising agencies, advertising professional roles, advertising clients, target audiences, media, and strategic and creative thinking. A historical analysis sheds light on the important role social forces have played in the evolution of advertising.

### Equivalent Course(s)

None

<b>Course Name</b>	Creative Advertising Campaigns	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5268	<b>Prerequisite(s)</b>	None

### Course Description

This course investigates issues associated with creativity in advertising such as development of creative strategy, generation of successful advertising messages and evaluation of creative output to produce campaigns. By the end of this course you will have worked collaboratively in a team to design and create a live advertising campaign.

The course includes a work integrated learning experience in which your knowledge and skills will be applied and assessed in a real or simulated workplace context and where feedback from industry and/or community is integral to your experience.

Examine creative approaches to advertising within global markets.

### Equivalent Course(s)

None

<b>Course Name</b>	Research Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5349	<b>Prerequisite(s)</b>	Dept. Permission

### Course Description

Research Project provides students with an opportunity to conduct a sustained research and analysis focused on a subject of their choice.

### Equivalent Course(s)

None



## 4.2 Masters

### 4.2.2 Master of Science in Media Studies (MS Media Studies)

Students enrolled in MS in Media Studies program are required to complete 30 credits within five (5) years. The breakup of the courses is as follows:

- 6 Compulsory Courses (18 Credit Hours)
- 2 Electives<sup>00</sup> (6 Credit Hours)
- 2 Independent Research Studies (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MD 5104	Research Methodology	149
MD 5102	Media and Contemporary Culture	149
MD 5113	Management Concepts in Media Industries	149
<b>Spring Semester</b>		
MD 5207	Media Evolution and Innovation	150
MD 5201	Communication for Social Change	150
MD 5213	Social and Cultural Impact of GEC Programming (for GEC Stream)	150
MD 5215	Production Design (for production Stream)	151
MD 5214	Journalism Law and Ethics (for Journalism Stream)	151
<b>Second Year</b>		
<b>Fall Semester</b>		
MD 5xxx	Elective-I	-
MD 5xxx	Elective-II	-
MD 5xxx	Independent Research Study-I /Thesis I	-
<b>Spring Semester</b>		
MD 5xxx	Independent Research Study-II/Thesis II	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

00- List of Electives is provided in Appendix B

## 4.1.1 Master of Science in Media Studies (MS Media Studies)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces students to both qualitative and quantitative methods of research and analysis. The topics include: designing research (choosing, narrowing, and shaping topics); articulating research questions and hypotheses; conducting literature reviews; quantitative methods (sampling, designing questionnaires, conducting interviews, selecting focus groups, analyzing data); qualitative methods (primary vs. secondary sources, adjudicating contradictory information, assessing bias); textual analysis; historical analysis; productions analysis; audience analysis, and writing research reports.
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<b>Equivalent Courses</b>	SS 5229 SS 6313 MS 5131
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<b>Course Name</b>	Media and Contemporary Culture	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course discusses theoretical foundations of contemporary cultural criticism, especially as this relates to aesthetic, social and political practices across media. The topics include: Theories of media and popular culture-Marxism, structuralism, post-structuralism, modernity, and post-modernism. Also, subcultures and youth cultures, the role of media in culture and society, the politics of identity (race, gender, ethnicity, religion, sexuality, class, and nationality), the emergence and effect of cyber culture, globalization and multiculturalism.
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<b>Equivalent Course</b>	None
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<b>Course Name</b>	Management Concepts in Media Industries	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5113	<b>Prerequisite(s)</b>	?

### Course Description

<b>Equivalent Course(s)</b>	None
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## 4.1.1 Master of Science in Media Studies (MS Media Studies)

<b>Course Name</b>	Media Evolution and Innovation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5207	<b>Prerequisite(s)</b>	None

**Course Description** This course aims at discussing the emergence, growth, and development of media practices and technologies, and to chart future possibilities. The topics include Birth of media technologies; traditional media content; economic, social and cultural influences; traditional content and technologies; emergence, evolution, and institutionalization of telecommunications technologies; synergy and integration; and ethical implications of developing technologies and future directions.

**Equivalent Courses** MD 5164

<b>Course Name</b>	Communication for Social Change	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5201	<b>Prerequisite(s)</b>	None

**Course Description** This course teaches students how to develop, apply, and coordinate communication strategies that help facilitate interdisciplinary collaboration and social change. The topics include: Models of communication, information ecosystems, change theories, the impact of media concentration and interactions in the Triple Helix model i.e. Public, Private and Academia, conflict management and resolution, media activism, gender and its role in social change, and content diversity and its socio-economic and political impact.

**Equivalent Courses** None

<b>Course Name</b>	Social and Cultural impact of GEC Programming	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MD 5213	<b>Prerequisite(s)</b>	?

**Course Description**

**Equivalent Course(s)** None

## 4.1.1 Master of Science in Media Studies (MS Media Studies)

<b>Course Name</b>	Production Design	<b>Credit Hours</b>	3
<b>Course Code</b>	MD 5215	<b>Prerequisite(s)</b>	

### Course Description

<b>Equivalent Course(s)</b>	None
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	Journalism Law and Ethics	<b>Credit Hours</b>	3 (3,0)
	MD 5214	<b>Prerequisite(s)</b>	?

### Course Description

<b>Equivalent Course(s)</b>	None
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The background of the page is a teal-colored word cloud. It contains numerous degree program names in various sizes and orientations, including BA, BE, MEchatronics, EMBA, BS, Biosciences, BBA, Ph.D, LLB, MBA, BS Social Sciences, MS Computing, MS Media Sciences, BS Media Sciences, Business Studies (BABS), MS Management Sciences, BS Computing, MS Media Sciences, EMBA, Ph.D, BS Media Sciences, Business Studies (BABS), MS Media Sciences, BBAMBA, Banking and Finance, MS Computing, BS Biosciences, BS Social Sciences, BE Mechatronics, MBA Banking and Finance, Business Studies (BABS), BS Media Sciences, EMBA, BBA, BE Mechatronics, EMBA, BS Biosciences, BS Social Sciences, MS Computing, BS Media Sciences, MS Management Sciences, BS Media Sciences, Business Studies (BABS), MS Media Sciences, EMBA, Ph.D, BBAMBA, Banking and Finance, MS Computing, Business Studies (BABS), BS Biosciences, MBA Banking and Finance, Social Sciences, BBA, BE Mechatronics, MS Computing, BS Media Sciences, MBA, BS Media Sciences, BE Mechatronics, MS Computing, BS Media Sciences, Business Studies (BABS), MS Media Sciences, BBA, MBA, Banking and Finance, EMBA, Ph.D, Business Studies (BABS), LLB, BS Biosciences, MS Computing, BS Media Sciences, Business Studies (BABS), LLB, BS Biosciences, MS Computing, Business Studies (BABS), LLB, BS Biosciences, MS Computing.

# 5.1 Bachelor of Engineering

## 5.1.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

Students enrolled in the Bachelor of Engineering in Mechatronics (BEME) program, are required to complete 46 courses with a total of 140 credit hours and an Internship, within seven (7) years, to be eligible for BE (Mechatronics) degree. The following is the break-up of the 46 courses:

- 42 Compulsory Courses (123 Credit Hours)
- 4 Electives (11 Credit Hours)
- Final Year Project (6 Credit Hours) (to be completed in 7th & 8th semesters)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
ME 1101	Communication and Presentation Skills	0
ME 1111	Electric Circuits	0
ME 1104	Engineering Mathematics-I: Calculus and Analytical Geometry	0
ME 1106	Islamic Studies	0
ME 1109	Engineering Drawing - I	0
ME 1203	Engineering Physics	0
<b>Spring Semester</b>		
ME 1201	Electronic Devices and Circuits	0
ME 1202	Engineering Mathematics-II: Linear Algebra and Ordinary Differential Equations (ODES)	0
ME 1204	Engineering Statics	0
ME 1207	Engineering Workshop	0
ME 1209	Computer Programming	0
ME 2306	Pakistan Studies	0
ME 2xxx	Social Sciences Elective	0
<b>Second Year</b>		
<b>Fall Semester</b>		
ME 2302	Digital Logic Design	0
ME 2303	Engineering Dynamics	0
ME 2304	Engineering Mathematics-III: 3-D Geometry and Vector Calculus	0
ME 2311	Network Analysis	0
ME 2312	Data Structures and Object-Oriented Programming	0
ME 2405	Thermodynamics	0
<b>Spring Semester</b>		
ME 2401	Electronics Circuit Design	169
ME 2403	Engineering Mathematics-IV: Transformation Techniques	169
ME 2406	Strength of Materials	169
ME 2407	Actuating Systems	170
ME 2408	Signals and Systems	170
ME 3607	Solid Modeling	170

00- List of Electives is given in Appendix B.

## Bachelor of Engineering in Mechatronics Engineering (BEME)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
ME 3501	Engineering Mathematics-V: Numerical Methods	
ME 3502	Fluid Mechanics	
ME 3509	Microprocessor and Microcontroller Based Systems	
ME 3506	Materials and Manufacturing Processes	
ME 3507	Theory of Machines	
ME 3508	Instrumentation and Measurements	
<b>Spring Semester</b>		
ME 3602	Control Systems	
ME 3603	Engineering Mathematics-VI: Probability and Statistics	
ME 3604	Machine Design	
ME 3605	Power Electronics	
ME 4705	Mechatronics System Design	
ME 1205	Technical Writing Skills	
<b>Fourth Year</b>		
<b>Fall Semester</b>		
ME 4xxx	Engineering Elective-I	
ME 4702	Engineering Economics and Project Management	
ME 4707	Mechanical Vibrations	
ME 4708	Final Year Project I*	
ME 4703	Heat Transfer	
ME 4802	Robotics	
*To be continued and final grades will be awarded at the end of 8th Semester.		
<b>Spring Semester</b>		
ME 4706	Professional Practices	
ME 4xxx	Engineering Elective-II	
ME 4xxx	Management Sciences Elective	
ME 4808	Final Year Project II*	
ME 4807	Manufacturing Automation	
*To be continued from 7th semester and final grades will be awarded at the conclusion of 8th Semester.		

All courses may not be offered every year. Alternate courses may be substituted as and when required.



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Communication and Presentation Skills	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1101	<b>Prerequisite(s)</b>	None

### Course Description

This course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

### Equivalent Course(s)

CSC 2101, MD 1122, SS 1116, BIO 1111 AF 1203, EN 1106

<b>Course Name</b>	Electric Circuits	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1111	<b>Prerequisite(s)</b>	None

### Course Description

This course aims to explain the working principles of resistors, capacitors and inductors in terms of voltage and current. Ohm's law, Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) are explained in detail. Each discussion on theory is supplemented with appropriate lab experiment. This course prepares students for more advanced courses in electronic engineering to be followed in subsequent semesters.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-I: Calculus and Analytical Geometry	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1104	<b>Prerequisite(s)</b>	None

### Course Description

The course begins with a review of vector algebra and trigonometry; then limits and continuity are introduced. With the knowledge of limits and continuity the students develop the concept of the derivative and its applications. At the end, the students study the anti-derivative of elementary functions and applications of the definite integral in geometry, science, and engineering.

### Equivalent Course(s)

CSC 1101, BA 2404

## 5.11 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Islamic Studies	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1106	<b>Prerequisite(s)</b>	None

### Course Description

Islamic Studies gives an introduction to basic principles of Islam, followed by topics, such as; Ibadaat (Worship), Amr Bil Maroof wa Nahi anl Munkir (i.e. commands and prohibition), Islam's concept of knowledge, comparison with science, life history of the Prophet Muhammad (Peace and Blessings of Allah be upon Him), unity of Ummah ; Kasb-e-Halal (lawful earning) and obligations of a Muslim. In addition, fundamental human rights and minorities, Islamic society, maintaining identity in a non-Islamic state, Islamic politics, problems faced by Muslims and the status of women in Islam, are also being covered.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Drawing-I	<b>Credit Hours</b>	2 (0,2)
<b>Course Code</b>	ME 1109	<b>Prerequisite(s)</b>	None

### Course Description

Drawings are means of communication for engineers. During this course this is accomplished through sketching, use of instruments and knowledge of orthographic projection. Initially students are introduced to engineering drawing basics, such as types of lines, lettering, dimensioning, use of pencil and drawing instruments, and planning of drawing sheet. Then students are given practice of making engineering drawings of different objects. Furthermore, students are also made to practice orthographic projections drawing in first and third angles. This helps them in understanding the engineering drawings and then making and modifying them efficiently.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Physics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1203	<b>Prerequisite(s)</b>	None

### Course Description

The main objective of this course is to develop an understanding of physical processes which govern the nature. Emphasis is given to certain key branches in physics like mechanics, fluids, heat, electromagnetism, and material/energy properties in a given environment. This constructs a firm base for the courses in future semesters.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Electronic Devices and Circuits	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 1201	<b>Prerequisite(s)</b>	ME 1102, ME 111

### Course Description

This course is an introduction to electronic circuits. It explains the basic concepts of semi-conductor diode, its current-voltage relationship and various applications of junction diode, and Bipolar Junction Transistor and Field-Effect Transistor are evolved as two PN-junction devices. In addition, relations of various currents and voltages in these transistors are explained in detail, and effect of temperature on these semiconductor devices is highlighted. A variety of applications of various types of transistors, amplifiers and power supplies are discussed in this course.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-II: Linear Algebra and Ordinary Differential Equations (ODES)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1202	<b>Prerequisite(s)</b>	ME 1104

### Course Description

The first half of the course covers topics such as; linear algebra, systems of linear algebraic equations, vector spaces, linear dependence, bases, dimension, matrix algebra, determinants, eigenvalues, and eigenvectors. The second half covers; ordinary differential equations, including solutions to separable and linear first order equations, and higher order linear equations with constant coefficients.

### Equivalent Course(s)

CSC 2104

<b>Course Name</b>	Engineering Statics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1204	<b>Prerequisite(s)</b>	None

### Course Description

This course provides a basic understanding of the part of mechanics which is concerned with the equilibrium of bodies under the action of forces. It lays the foundation and framework for subsequent courses, namely Engineering Dynamics and Mechanics of Materials. The topics include: basic concepts of mechanics and vectors, free-body diagrams and equilibrium of particles, free-body diagrams and equilibrium of rigid bodies, force systems, analysis of trusses, beams and frames, distributed forces, friction and application of frictional forces.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Workshop	<b>Credit Hours</b>	2 (0,2)
<b>Course Code</b>	ME 1207	<b>Prerequisite(s)</b>	None

**Course Description** Engineering Workshop course introduces students to various engineering processes in electrical and mechanical workshops. The electrical workshop would further include the hardware and software interfacing and the electro-mechanical project. Whereas, the mechanical workshop would elaborate on the wood working shop, metal work, welding shop, fitting shop and machine shop.

**Equivalent Course(s)** None

<b>Course Name</b>	Computer Programming	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1209	<b>Prerequisite(s)</b>	None

**Course Description** Computer Programming teaches the basics of C Programming Language. The topics include: C (variable, data type, arithmetic operations), expressions and operators, decisions (conditional statement, flowcharting, if/else structure, logical operators), loops, over flow conditions, properties of while loop, do while loop, switch statements, functions, arrays and their initializations, copying and linear structures.

**Equivalent Course(s)** None

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2306	<b>Prerequisite(s)</b>	None

**Course Description** This course is oriented towards developing better understanding of Pakistan with a critical perspective. History, economics, constitutional development, cultural and social integration, as well as the study of the foreign policy forms a major part of the course.

**Equivalent Course(s)** None

<b>Course Name</b>	Digital Logic Design	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 2302	<b>Prerequisite(s)</b>	ME1102, ME1111

**Course Description** This course teaches theoretical concepts, well-supported through practical work, the systematic synthesis of the applied techniques for the design of practical digital systems. Topics include; introduction to various numbering systems, various design techniques, minimization techniques for designing efficient combinational and sequential logic circuits, basic digital circuit building blocks, such as, decoders, multiplexers, shift registers, flip flops, etc. Modern methods of designing digital circuits. Designing of autonomous and input-controlled counters & shift-registers., and concept of finite state machine.

**Equivalent Course(s)** None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Dynamics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2303	<b>Prerequisite(s)</b>	ME 1204

### Course Description

During this course, students are explained the concepts of kinematics of particle motion in various coordinate systems as well as relative and constrained motion. This helps in understanding the forces being applied on a system in motion. Students are further exposed to particles kinetics which include; the force mass acceleration, work–energy and impulse momentum. These help students in strengthening concepts related to bodies in motion.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-III: 3-D Geometry and Vector Calculus	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2304	<b>Prerequisite(s)</b>	ME 1104

### Course Description

This course is designed to introduce the concepts of vector-valued functions, functions of several variables, partial derivatives, multiple integrals, and vector analysis. Also, applications to geometry and physics, as well as other real-life problems are particularly emphasized in the course, e.g., surface areas or volumes of 3D objects, gradient or divergence of vector fields, etc.

### Equivalent Course(s)

None

<b>Course Name</b>	Network Analysis	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2311	<b>Prerequisite(s)</b>	ME 1111

### Course Description

This course focuses on the analysis and circuit's response of first and second order circuits by formulation of the differential equation of the circuit and its solutions for DC and AC Forcing functions. The concept of phasors and Laplace transformation are introduced as a tool to solve the circuit equations in Laplace and phasor domains. The course also covers the frequency response of a circuit through sinusoidal analysis.

### Equivalent Course(s)

None

<b>Course Name</b>	Data Structures and Object-Oriented Programming	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 2312	<b>Prerequisite(s)</b>	ME 2301

### Course Description

This course introduces students to the concepts of object-oriented programming like classes, objects, abstraction, polymorphism, encapsulation, inheritance, etc. The course also reinforces students understanding of basic programming principles and fundamentals of procedural programming.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Drawing-II	<b>Credit Hours</b>	1 (0,1)
<b>Course Code</b>	ME 2309	<b>Prerequisite(s)</b>	ME 1109

### Course Description

Initially students are introduced with the basic AutoCAD commands and computer-aided-drafting concepts to draw, design, and draft. Emphasis is placed on efficient and accurate drawing techniques incorporating the features, commands, and techniques for creating, editing, and printing 2D production drawings. During the latter part of the course students will create several mechanical CAD drawings following the ANSI (American Standards Institute) and ISO (International Standards Organization) standards.

### Equivalent Course(s)

None

<b>Course Name</b>	Electronics Circuit Design	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2401	<b>Prerequisite(s)</b>	ME 1201

### Course Description

This course contributes to both the engineering aspects and design components. The course has been designed with consideration to single and multi-device sub-circuits, frequency response characteristics, and feedback, stability, efficiency, and IC techniques. It is a prerequisite to senior-level electronic design courses.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-IV: Transformation Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2403	<b>Prerequisite(s)</b>	ME 1202

### Course Description

The course covers the advanced topics in mathematics, applicable to engineering problems. Topics include; complex variable analysis, and Fourier analysis including complex Fourier series, complex Fourier integral, Fourier transforms and discrete Fourier transform.

### Equivalent Course(s)

None

<b>Course Name</b>	Thermodynamics	<b>Credit Hours</b>	? (2,1)
<b>Course Code</b>	ME 2405	<b>Prerequisite(s)</b>	ME-2303

### Course Description

This course gives introduction to basic laws of thermodynamics and control volume analyses; properties and behavior of pure substances; application to thermodynamic systems operating in steady state and transient processes, heat transfer mechanisms, typical power producing cycles and refrigerators. Towards the end of the course, students are introduced to Refrigeration, heat pump systems, combustion and fuel cells.

### Equivalent Course(s)

None

## 5.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Strength of Materials	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2406	<b>Prerequisite(s)</b>	ME 1204

**Course Description** This course is a foundation to many advanced techniques that allow engineers to design structures, predict failures and understand the physical properties of materials. This course provides basic tools for stress, strain and strength analysis. Furthermore, methods for determining the stresses, strains and deflections produced by applied loads are taught. In summary, engineering design concepts are integrated into the Strength of Materials course.

**Equivalent Course(s)** None

<b>Course Name</b>	Actuating Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2407	<b>Prerequisite(s)</b>	ME 2311

**Course Description** The objective of this course is to get the students familiarize with the basic principles of actuating systems including: solenoids, dc motors and ac motors (synchronous and asynchronous). Furthermore, other actuating systems using hydraulics and pneumatics principles will also be explained. The course includes several lab experiments to explain the theoretical aspect.

**Equivalent Course(s)** None

<b>Course Name</b>	Signals and Systems	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2408	<b>Prerequisite(s)</b>	None

**Course Description** This course would develop a good understanding about Signals and Systems as they occur in various domains. Various Signal Transformations and associated mathematical representations would be elaborated. It would help develop expertise to model, analyze and process signals as it occurs in different domains.

**Equivalent Course(s)** None

<b>Course Name</b>	Solid Modelling	<b>Credit Hours</b>	1 (0,1)
<b>Course Code</b>	ME 3607	<b>Prerequisite(s)</b>	ME 2309

**Course Description** This course is taught with a combination of theory and practice. Alongside with the theory, the course requires a student to undertake assignments using major commercial softwares. Throughout the course intensive hand-on training on leading commercial CAD packages is provided to enable students to develop the knowledge of the complete concept from 3D Solid Modelling.

**Equivalent Course(s)** None

## 5.11 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Mathematics-V: Numerical Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3501	<b>Prerequisite(s)</b>	ME 1202

### Course Description

This course introduces students to a variety of numerical methods and application of these methods to solve a broad range of engineering problems. The course covers fundamental principles regarding types of computational errors, and propagation of errors. The numerical methods include finding zeros of functions, solving systems of linear equations, interpolation and approximation of functions, numerical integration and differentiation, and solving initial value problems of ordinary differential equations.

### Equivalent Course(s)

None

<b>Course Name</b>	Fluid Mechanics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3502	<b>Prerequisite(s)</b>	ME 2405

### Course Description

This course introduces students to the concepts, principles, laws, observations, and models of fluids at rest and in motion. The basic idea of what fluids are, the study of static fluids, the use of control volumes for fluids in motion, and the uses of length, mass, time and temperature dimensions to greatly simplify the description of fluids are illustrated. During the latter part of the course attention is paid to application of hydraulics and pneumatics in Mechatronics systems.

### Equivalent Course(s)

None

<b>Course Name</b>	Microprocessor and Microcontroller Based Systems	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 3509	<b>Prerequisite(s)</b>	ME 2302

### Course Description

Microcontroller-Based Systems emphasizes on the practical applications of microcontrollers for a variety of products in various fields. It teaches to perform analysis requirement of a given task, making decisions in selecting an appropriate controller, designing, implementing and fully testing the hardware and software part of the product. Furthermore, the course covers programming the microcontroller using assembly code instructions, programming the microcontroller using C/C++ in integrated development environment. The course is heavily based on practical work.

### Equivalent Course(s)

None



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Materials and Manufacturing Processes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3506	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces student to the structures and properties of metals, ceramics, polymers, and composites, with an understanding of the processing and design limitations of contemporary materials, as well as to new classes of materials being developed to meet the ever-expanding range of material requirements. In the later part of the course, students are introduced to different manufacturing processes used in the industry.

**Equivalent Course(s)** None

<b>Course Name</b>	Theory of Machines	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 3507	<b>Prerequisite(s)</b>	ME 2303

**Course Description** The objective of this course is to introduce the preliminary concepts of mechanisms and to present methods of analysis for the motion and force transmission in mechanisms. This course enables students to understand various independent technical approaches that exist in the field of mechanisms, kinematics and machine dynamics.

**Equivalent Course(s)** None

<b>Course Name</b>	Instrumentation and Measurements	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3508	<b>Prerequisite(s)</b>	ME 2407

**Course Description** This course covers the operating principles of various types of sensors and introduces the concepts & designs of instruments for the measurement of electrical and non-electrical quantities. Upon completion of this course, along with its lab sessions, students will also be able to select, interface and calibrate various types of sensors or instruments.

**Equivalent Course(s)** None

## 5.1.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Control Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3602	<b>Prerequisite(s)</b>	None

### Course Description

In this course students, initially are taught how to model linear time-invariant electrical, mechanical, and electro-mechanical systems. Then, students are taught to analyze the behavior of the above-mentioned systems in time and frequency domains and recognize the performance characteristics of a control system such as stability, damping, phase and gain margins. Subsequently, the students learn to analyze the performance of proportional, derivative and integral feedback controllers and design simple control systems that satisfy given criteria. Finally, students are introduced to modern state-space-based control system analysis and design techniques. The students also use industry standard software tools such as Matlab to analyze, design, and evaluate control systems.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-VI: Probability and Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3603	<b>Prerequisite(s)</b>	ME 1104

### Course Description

Engineering Mathematics-VI covers data and types, sampling techniques, group and ungroup data, measure of dispersion, mathematical and statistical functions, multiple linear regressions, laws of probability, probability distribution-binomial, probability distribution-normal, probability distribution-poisson, steps involved in hypothesis analysis, quality control, control chart, acceptance sampling, errors and rectification, goodness of fit, Chi-square test and curve fitting.

### Equivalent Course(s)

CSC 2105

<b>Course Name</b>	Machine Design	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3604	<b>Prerequisite(s)</b>	ME 2303

### Course Description

This course aims to synergize forces, moments, torques, stress and strength information to develop ability to analyze, design and/or select machine elements - with attention to safety, reliability, and societal and fiscal aspects. Finally, the course prepares the students to design static and dynamic machine elements such as shafts, springs, screws, bearings and gears.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Power Electronics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3605	<b>Prerequisite(s)</b>	ME 2401

**Course Description** The objective of the course is to expose students to electric power conversion i.e. from AC to DC and DC to AC. Special semiconductor devices like Thyristors, Silicon controlled rectifiers etc. are fully explained. The course also covers choppers, regulators and phase-controlled circuits. The course is supplemented with experiments to give students hands-on-practice for developing a thorough understanding of the subject.

**Equivalent Course(s)** None

<b>Course Name</b>	Mechatronics System Design	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4705	<b>Prerequisite(s)</b>	ME 2407, ME 3508

**Course Description** This course provides the essentials of digital control as applied to high-speed mechanical systems. The approach is both theoretical and practical in providing the optimal software and/or hardware control solution. Project work will include mechatronics integration of mechanical, electrical, microprocessor, micro-controller and software components including programming within engineering systems.

**Equivalent Course(s)** None

<b>Course Name</b>	Technical Writing Skills	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1205	<b>Prerequisite(s)</b>	None

**Course Description** This course focuses on the use of English in professional contexts. The course aims to develop interpersonal communication skills in a dynamic, digitalized and globally connected business world. This interactive course will create an awareness in the students about the basics of communication in formal contexts, allows them to analyze the mechanics of technical business writing with the use of specific registers, and experiment with different types of letters, memos, reports, proposals, presentations, and manuals to communicate complex information with clarity, conciseness, and force to meet the basic business communication needs of working professionals.

**Equivalent Course(s)** CSC 1102, MD 1222, SS 2316, BIO 1211



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Economics and Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 4702	<b>Prerequisite(s)</b>	None

### Course Description

Engineering Economics and Project Management covers; basic economic concepts, such as types of costs, cash flow diagrams, market mechanism, equivalence, project feasibility analysis, equity versus debt financing, depreciation accounting, consumer demand and elasticity, and cost benefit analysis. Further, general project management skills and techniques are also covered.

### Equivalent Course(s)

None

<b>Course Name</b>	Mechanical Vibrations	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 4707	<b>Prerequisite(s)</b>	ME 2303

### Course Description

In this course students are introduced to the concepts of free vibration of a system, harmonic motion, viscous damping, stiffness, and system modeling and vibration measurements. Students will become familiar with the response of various systems such as single degree, multi and infinite degrees of freedom to various inputs (harmonic excitation, impulse excitation and base excitation). Furthermore, design of systems for vibration suppression and machine condition monitoring using vibration and acoustics emission is introduced. In summary, emphasis is placed on developing a thorough understanding of how the changes in system parameters affect the system response.

### Equivalent Course(s)

None

<b>Course Name</b>	Final Year Project I & II	<b>Credit Hours</b>	6 (0,6)=(0,3)+(0,3)
<b>Course Code</b>	ME 4708 and ME 4808	<b>Prerequisite(s)</b>	None

### Course Description

Final Year Project is a group project requiring designing of a Mechatronics product or application. Each group consists of two to four students the project is stretched over two semesters (i.e. the seventh and the eighth). A midterm evaluation is carried out in the summer semester in the presence of the department's faculty. Towards the end of the eighth semester, each group is required to submit a report according to the university's report format and present the final project.

### Equivalent Course(s)

None

<b>Course Name</b>	Heat Transfer	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4703	<b>Prerequisite(s)</b>	ME 3502

### Course Description

This course is meant to study the three fundamental modes of heat transfer: conduction, convection, and radiation. A physical interpretation of the many quantities and processes in heat transfer using numerical methods to solve practical problems. Fundamentals of heat transfer are applied to the analysis and design of heat exchangers and other applications.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Robotics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4802	<b>Prerequisite(s)</b>	ME 2303

**Course Description** During this course a detailed study of robotics is undertaken with emphasis on homogeneous transformations, kinematics, force and velocity transformation, end effectors and the interpretation of sensory information. The course is designed to explore the current and future use of automation technology in industry and everyday use. The students will receive a comprehensive overview of robotic systems and the subsystems that comprise them.

**Equivalent Course(s)** None

<b>Course Name</b>	Professional Practices	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 4706	<b>Prerequisite(s)</b>	None

**Course Description** This course provides students with an introduction to the issues in engineering ethics. It places those issues within a philosophical framework, and it seeks to exhibit their social importance and intellectual challenge. The goal is to stimulate reasoning and to provide students with the conceptual tools necessary for responsible decision making.

**Equivalent Course(s)** None

<b>Course Name</b>	Fundamentals of Thermal Sciences	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 47xx	<b>Prerequisite(s)</b>	ME 3502

**Course Description** This course gives introduction of basic concepts of thermodynamics, like system, surrounding, work, heat, modes of heat transfer and different process to the students. It will also introduce steady flow and non-steady flow processes and basic steam and gas turbine cycles.

**Equivalent Course(s)** None

<b>Course Name</b>	Manufacturing Automation	<b>Credit Hours</b>	4 (2,1)
<b>Course Code</b>	ME 4807	<b>Prerequisite(s)</b>	ME 4705

**Course Description** This course introduces the student to practical methods of automatic control of machines, processes and systems. This course primarily covers manufacturing automation with reference to CNC and PLC. The course also includes familiarization with PLCs, covering programming of some popular PLCs used in the industry. Towards the end of the course, an introduction to industrial robots and their application is covered.

**Equivalent Course(s)** None

## 5.2 Master

# 5.1.1 Master of Science in Mechatronics Engineering (MSME)

SZABIST offers Master of Science in Mechatronics Engineering (MSME) degree with two specializations; namely: Robotics & Industrial automation and Smart Electromechanical Systems. The program is of 2-year duration and is offered in the evening. It requires 30 credit hours to complete the degree with 8 courses (24 credit hours) and Thesis/Research Work (6 credit hours) in not more than four (4) years.

The following is the break-up of the minimum credit hours requirements to be fulfilled by the students enrolled in this program:

- 5 Core Courses (15 Credit Hours)
- 3 Electives (9 Credit Hours)
- Thesis/Research Project or (2 Electives in lieu of Thesis/Research Project) (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
ME-5102	Advanced Robotics	0
ME-5101	Advanced Embedded Systems	0
ME-5105	Research Methodology	0
<b>Spring Semester</b>		
ME-5202	Image Processing for Intelligent Systems	0
ME-5201	Data Acquisition and Control	0
ME-5xxx	Elective-I	0
<b>Second Year</b>		
<b>Fall Semester</b>		
ME-5xxx	Elective-II	0
ME-5xxx	Elective-III	0
<b>Spring Semester</b>		
ME-5xxx	Electives IV / Thesis	0
ME-5xxx	Electives V / Thesis	0

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B.

## 21 Master of Science in Mechatronics Engineering (MSME)

<b>Course Name</b>	Advanced Robotics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5102	<b>Prerequisite(s)</b>	None

**Course Description** The course will mainly cover geometry and mathematical representation of rigid body motion; forward and inverse kinematics of articulated mechanical arms; trajectory generation, splines, interpolation; manipulator dynamics; position sensing, actuation and fundamentals of manipulator control.

**Equivalent Course(s)** None

<b>Course Name</b>	Advanced Embedded Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5101	<b>Prerequisite(s)</b>	None

**Course Description** The course is intended to give detailed explanation of processor architecture and design, memory access, programming of embedded systems and integration of embedded systems in real time environment. An overview of programmable logic devices and system on chip will also be given along with IC fabrication and design challenges.

**Equivalent Course(s)** None

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5105	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the Research Process to students. It covers review of technical publications and journals, research problem formulation, research methodologies and article drafting. The students are required to undertake a research project that would result in an IEEE style formatted article.

**Equivalent Course(s)** None

<b>Course Name</b>	Image Processing for Intelligent Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5202	<b>Prerequisite(s)</b>	None

**Course Description** This course presents the theory and practice of digital image processing with Matlab. Numerous examples and practical hands-on exercises are included in the course. One major topic of image processing is covered in every lecture and it typically consists of a discussion of the basic theoretical concepts and some examples illustrating practical imaging problems.

**Equivalent Course(s)** None

## Master of Science in Mechatronics Engineering (MSME)

<b>Course Name</b>	Data Acquisition and Control	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 5201	<b>Prerequisite(s)</b>	None

**Course Description** The course is intended to give detailed explanation of passive and active electrical transducers, signal conditioning circuits along with digital interfacing techniques. An overview of digital control systems and digital controller design will also be given.

**Equivalent Course(s)** None





# Department of Mechatronics Engineering

# 5.1 Bachelor of Engineering

## 5.1.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

Students enrolled in the Bachelor of Engineering in Mechatronics (BEME) program, are required to complete 46 courses with a total of 140 credit hours and an Internship, within seven (7) years, to be eligible for BE (Mechatronics) degree. The following is the break-up of the 46 courses:

- 42 Compulsory Courses (123 Credit Hours)
- 4 Electives (11 Credit Hours)
- Final Year Project (6 Credit Hours) (to be completed in 7th & 8th semesters)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
ME 1101	Communication and Presentation Skills	0
ME 1111	Electric Circuits	0
ME 1104	Engineering Mathematics-I: Calculus and Analytical Geometry	0
ME 1106	Islamic Studies	0
ME 1109	Engineering Drawing - I	0
ME 1203	Engineering Physics	0
<b>Spring Semester</b>		
ME 1201	Electronic Devices and Circuits	0
ME 1202	Engineering Mathematics-II: Linear Algebra and Ordinary Differential Equations (ODES)	0
ME 1204	Engineering Statics	0
ME 1207	Engineering Workshop	0
ME 1209	Computer Programming	0
ME 2306	Pakistan Studies	0
ME 2xxx	Social Sciences Elective	0
<b>Second Year</b>		
<b>Fall Semester</b>		
ME 2302	Digital Logic Design	0
ME 2303	Engineering Dynamics	0
ME 2304	Engineering Mathematics-III: 3-D Geometry and Vector Calculus	0
ME 2311	Network Analysis	0
ME 2312	Data Structures and Object-Oriented Programming	0
ME 2405	Thermodynamics	0
<b>Spring Semester</b>		
ME 2401	Electronics Circuit Design	169
ME 2403	Engineering Mathematics-IV: Transformation Techniques	169
ME 2406	Strength of Materials	169
ME 2407	Actuating Systems	170
ME 2408	Signals and Systems	170
ME 3607	Solid Modeling	170

00- List of Electives is given in Appendix B.

## Bachelor of Engineering in Mechatronics Engineering (BEME)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
ME 3501	Engineering Mathematics-V: Numerical Methods	
ME 3502	Fluid Mechanics	
ME 3509	Microprocessor and Microcontroller Based Systems	
ME 3506	Materials and Manufacturing Processes	
ME 3507	Theory of Machines	
ME 3508	Instrumentation and Measurements	
<b>Spring Semester</b>		
ME 3602	Control Systems	
ME 3603	Engineering Mathematics-VI: Probability and Statistics	
ME 3604	Machine Design	
ME 3605	Power Electronics	
ME 4705	Mechatronics System Design	
ME 1205	Technical Writing Skills	
<b>Fourth Year</b>		
<b>Fall Semester</b>		
ME 4xxx	Engineering Elective-I	
ME 4702	Engineering Economics and Project Management	
ME 4707	Mechanical Vibrations	
ME 4708	Final Year Project I*	
ME 4703	Heat Transfer	
ME 4802	Robotics	
*To be continued and final grades will be awarded at the end of 8th Semester.		
<b>Spring Semester</b>		
ME 4706	Professional Practices	
ME 4xxx	Engineering Elective-II	
ME 4xxx	Management Sciences Elective	
ME 4808	Final Year Project II*	
ME 4807	Manufacturing Automation	
*To be continued from 7th semester and final grades will be awarded at the conclusion of 8th Semester.		

All courses may not be offered every year. Alternate courses may be substituted as and when required.

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Communication and Presentation Skills	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1101	<b>Prerequisite(s)</b>	None

### Course Description

This course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

### Equivalent Course(s)

CSC 2101, MD 1122, SS 1116, BIO 1111 AF 1203, EN 1106

<b>Course Name</b>	Electric Circuits	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1111	<b>Prerequisite(s)</b>	None

### Course Description

This course aims to explain the working principles of resistors, capacitors and inductors in terms of voltage and current. Ohm's law, Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) are explained in detail. Each discussion on theory is supplemented with appropriate lab experiment. This course prepares students for more advanced courses in electronic engineering to be followed in subsequent semesters.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-I: Calculus and Analytical Geometry	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1104	<b>Prerequisite(s)</b>	None

### Course Description

The course begins with a review of vector algebra and trigonometry; then limits and continuity are introduced. With the knowledge of limits and continuity the students develop the concept of the derivative and its applications. At the end, the students study the anti-derivative of elementary functions and applications of the definite integral in geometry, science, and engineering.

### Equivalent Course(s)

CSC 1101, BA 2404

## 5.11 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Islamic Studies	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1106	<b>Prerequisite(s)</b>	None

### Course Description

Islamic Studies gives an introduction to basic principles of Islam, followed by topics, such as; Ibadaat (Worship), Amr Bil Maroof wa Nahi anl Munkir (i.e. commands and prohibition), Islam's concept of knowledge, comparison with science, life history of the Prophet Muhammad (Peace and Blessings of Allah be upon Him), unity of Ummah ; Kasb-e-Halal (lawful earning) and obligations of a Muslim. In addition, fundamental human rights and minorities, Islamic society, maintaining identity in a non-Islamic state, Islamic politics, problems faced by Muslims and the status of women in Islam, are also being covered.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Drawing-I	<b>Credit Hours</b>	2 (0,2)
<b>Course Code</b>	ME 1109	<b>Prerequisite(s)</b>	None

### Course Description

Drawings are means of communication for engineers. During this course this is accomplished through sketching, use of instruments and knowledge of orthographic projection. Initially students are introduced to engineering drawing basics, such as types of lines, lettering, dimensioning, use of pencil and drawing instruments, and planning of drawing sheet. Then students are given practice of making engineering drawings of different objects. Furthermore, students are also made to practice orthographic projections drawing in first and third angles. This helps them in understanding the engineering drawings and then making and modifying them efficiently.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Physics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1203	<b>Prerequisite(s)</b>	None

### Course Description

The main objective of this course is to develop an understanding of physical processes which govern the nature. Emphasis is given to certain key branches in physics like mechanics, fluids, heat, electromagnetism, and material/energy properties in a given environment. This constructs a firm base for the courses in future semesters.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Electronic Devices and Circuits	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 1201	<b>Prerequisite(s)</b>	ME 1102, ME 111

### Course Description

This course is an introduction to electronic circuits. It explains the basic concepts of semi-conductor diode, its current-voltage relationship and various applications of junction diode, and Bipolar Junction Transistor and Field-Effect Transistor are evolved as two PN-junction devices. In addition, relations of various currents and voltages in these transistors are explained in detail, and effect of temperature on these semiconductor devices is highlighted. A variety of applications of various types of transistors, amplifiers and power supplies are discussed in this course.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-II: Linear Algebra and Ordinary Differential Equations (ODES)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1202	<b>Prerequisite(s)</b>	ME 1104

### Course Description

The first half of the course covers topics such as; linear algebra, systems of linear algebraic equations, vector spaces, linear dependence, bases, dimension, matrix algebra, determinants, eigenvalues, and eigenvectors. The second half covers; ordinary differential equations, including solutions to separable and linear first order equations, and higher order linear equations with constant coefficients.

### Equivalent Course(s)

CSC 2104

<b>Course Name</b>	Engineering Statics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 1204	<b>Prerequisite(s)</b>	None

### Course Description

This course provides a basic understanding of the part of mechanics which is concerned with the equilibrium of bodies under the action of forces. It lays the foundation and framework for subsequent courses, namely Engineering Dynamics and Mechanics of Materials. The topics include: basic concepts of mechanics and vectors, free-body diagrams and equilibrium of particles, free-body diagrams and equilibrium of rigid bodies, force systems, analysis of trusses, beams and frames, distributed forces, friction and application of frictional forces.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Workshop	<b>Credit Hours</b>	2 (0,2)
<b>Course Code</b>	ME 1207	<b>Prerequisite(s)</b>	None

**Course Description** Engineering Workshop course introduces students to various engineering processes in electrical and mechanical workshops. The electrical workshop would further include the hardware and software interfacing and the electro-mechanical project. Whereas, the mechanical workshop would elaborate on the wood working shop, metal work, welding shop, fitting shop and machine shop.

**Equivalent Course(s)** None

<b>Course Name</b>	Computer Programming	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 1209	<b>Prerequisite(s)</b>	None

**Course Description** Computer Programming teaches the basics of C Programming Language. The topics include: C (variable, data type, arithmetic operations), expressions and operators, decisions (conditional statement, flowcharting, if/else structure, logical operators), loops, over flow conditions, properties of while loop, do while loop, switch statements, functions, arrays and their initializations, copying and linear structures.

**Equivalent Course(s)** None

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2306	<b>Prerequisite(s)</b>	None

**Course Description** This course is oriented towards developing better understanding of Pakistan with a critical perspective. History, economics, constitutional development, cultural and social integration, as well as the study of the foreign policy forms a major part of the course.

**Equivalent Course(s)** None

<b>Course Name</b>	Digital Logic Design	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 2302	<b>Prerequisite(s)</b>	ME1102, ME1111

**Course Description** This course teaches theoretical concepts, well-supported through practical work, the systematic synthesis of the applied techniques for the design of practical digital systems. Topics include; introduction to various numbering systems, various design techniques, minimization techniques for designing efficient combinational and sequential logic circuits, basic digital circuit building blocks, such as, decoders, multiplexers, shift registers, flip flops, etc. Modern methods of designing digital circuits. Designing of autonomous and input-controlled counters & shift-registers., and concept of finite state machine.

**Equivalent Course(s)** None



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Dynamics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2303	<b>Prerequisite(s)</b>	ME 1204

**Course Description** During this course, students are explained the concepts of kinematics of particle motion in various coordinate systems as well as relative and constrained motion. This helps in understanding the forces being applied on a system in motion. Students are further exposed to particles kinetics which include; the force mass acceleration, work–energy and impulse momentum. These help students in strengthening concepts related to bodies in motion.

**Equivalent Course(s)** None

<b>Course Name</b>	Engineering Mathematics-III: 3-D Geometry and Vector Calculus	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2304	<b>Prerequisite(s)</b>	ME 1104

**Course Description** This course is designed to introduce the concepts of vector-valued functions, functions of several variables, partial derivatives, multiple integrals, and vector analysis. Also, applications to geometry and physics, as well as other real-life problems are particularly emphasized in the course, e.g., surface areas or volumes of 3D objects, gradient or divergence of vector fields, etc.

**Equivalent Course(s)** None

<b>Course Name</b>	Network Analysis	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2311	<b>Prerequisite(s)</b>	ME 1111

**Course Description** This course focuses on the analysis and circuit's response of first and second order circuits by formulation of the differential equation of the circuit and its solutions for DC and AC Forcing functions. The concept of phasors and Laplace transformation are introduced as a tool to solve the circuit equations in Laplace and phasor domains. The course also covers the frequency response of a circuit through sinusoidal analysis.

**Equivalent Course(s)** None

<b>Course Name</b>	Data Structures and Object-Oriented Programming	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 2312	<b>Prerequisite(s)</b>	ME 2301

**Course Description** This course introduces students to the concepts of object-oriented programming like classes, objects, abstraction, polymorphism, encapsulation, inheritance, etc. The course also reinforces students understanding of basic programming principles and fundamentals of procedural programming.

**Equivalent Course(s)** None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Drawing-II	<b>Credit Hours</b>	1 (0,1)
<b>Course Code</b>	ME 2309	<b>Prerequisite(s)</b>	ME 1109

### Course Description

Initially students are introduced with the basic AutoCAD commands and computer-aided-drafting concepts to draw, design, and draft. Emphasis is placed on efficient and accurate drawing techniques incorporating the features, commands, and techniques for creating, editing, and printing 2D production drawings. During the latter part of the course students will create several mechanical CAD drawings following the ANSI (American Standards Institute) and ISO (International Standards Organization) standards.

### Equivalent Course(s)

None

<b>Course Name</b>	Electronics Circuit Design	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2401	<b>Prerequisite(s)</b>	ME 1201

### Course Description

This course contributes to both the engineering aspects and design components. The course has been designed with consideration to single and multi-device sub-circuits, frequency response characteristics, and feedback, stability, efficiency, and IC techniques. It is a prerequisite to senior-level electronic design courses.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-IV: Transformation Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 2403	<b>Prerequisite(s)</b>	ME 1202

### Course Description

The course covers the advanced topics in mathematics, applicable to engineering problems. Topics include; complex variable analysis, and Fourier analysis including complex Fourier series, complex Fourier integral, Fourier transforms and discrete Fourier transform.

### Equivalent Course(s)

None

<b>Course Name</b>	Thermodynamics	<b>Credit Hours</b>	? (2,1)
<b>Course Code</b>	ME 2405	<b>Prerequisite(s)</b>	ME-2303

### Course Description

This course gives introduction to basic laws of thermodynamics and control volume analyses; properties and behavior of pure substances; application to thermodynamic systems operating in steady state and transient processes, heat transfer mechanisms, typical power producing cycles and refrigerators. Towards the end of the course, students are introduced to Refrigeration, heat pump systems, combustion and fuel cells.

### Equivalent Course(s)

None

## 5.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Strength of Materials	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2406	<b>Prerequisite(s)</b>	ME 1204

**Course Description** This course is a foundation to many advanced techniques that allow engineers to design structures, predict failures and understand the physical properties of materials. This course provides basic tools for stress, strain and strength analysis. Furthermore, methods for determining the stresses, strains and deflections produced by applied loads are taught. In summary, engineering design concepts are integrated into the Strength of Materials course.

**Equivalent Course(s)** None

<b>Course Name</b>	Actuating Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 2407	<b>Prerequisite(s)</b>	ME 2311

**Course Description** The objective of this course is to get the students familiarize with the basic principles of actuating systems including: solenoids, dc motors and ac motors (synchronous and asynchronous). Furthermore, other actuating systems using hydraulics and pneumatics principles will also be explained. The course includes several lab experiments to explain the theoretical aspect.

**Equivalent Course(s)** None

<b>Course Name</b>	Signals and Systems	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 2408	<b>Prerequisite(s)</b>	None

**Course Description** This course would develop a good understanding about Signals and Systems as they occur in various domains. Various Signal Transformations and associated mathematical representations would be elaborated. It would help develop expertise to model, analyze and process signals as it occurs in different domains.

**Equivalent Course(s)** None

<b>Course Name</b>	Solid Modelling	<b>Credit Hours</b>	1 (0,1)
<b>Course Code</b>	ME 3607	<b>Prerequisite(s)</b>	ME 2309

**Course Description** This course is taught with a combination of theory and practice. Alongside with the theory, the course requires a student to undertake assignments using major commercial softwares. Throughout the course intensive hand-on training on leading commercial CAD packages is provided to enable students to develop the knowledge of the complete concept from 3D Solid Modelling.

**Equivalent Course(s)** None

## 5.11 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Mathematics-V: Numerical Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3501	<b>Prerequisite(s)</b>	ME 1202

### Course Description

This course introduces students to a variety of numerical methods and application of these methods to solve a broad range of engineering problems. The course covers fundamental principles regarding types of computational errors, and propagation of errors. The numerical methods include finding zeros of functions, solving systems of linear equations, interpolation and approximation of functions, numerical integration and differentiation, and solving initial value problems of ordinary differential equations.

### Equivalent Course(s)

None

<b>Course Name</b>	Fluid Mechanics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3502	<b>Prerequisite(s)</b>	ME 2405

### Course Description

This course introduces students to the concepts, principles, laws, observations, and models of fluids at rest and in motion. The basic idea of what fluids are, the study of static fluids, the use of control volumes for fluids in motion, and the uses of length, mass, time and temperature dimensions to greatly simplify the description of fluids are illustrated. During the latter part of the course attention is paid to application of hydraulics and pneumatics in Mechatronics systems.

### Equivalent Course(s)

None

<b>Course Name</b>	Microprocessor and Microcontroller Based Systems	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 3509	<b>Prerequisite(s)</b>	ME 2302

### Course Description

Microcontroller-Based Systems emphasizes on the practical applications of microcontrollers for a variety of products in various fields. It teaches to perform analysis requirement of a given task, making decisions in selecting an appropriate controller, designing, implementing and fully testing the hardware and software part of the product. Furthermore, the course covers programming the microcontroller using assembly code instructions, programming the microcontroller using C/C++ in integrated development environment. The course is heavily based on practical work.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Materials and Manufacturing Processes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3506	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces student to the structures and properties of metals, ceramics, polymers, and composites, with an understanding of the processing and design limitations of contemporary materials, as well as to new classes of materials being developed to meet the ever-expanding range of material requirements. In the later part of the course, students are introduced to different manufacturing processes used in the industry.

**Equivalent Course(s)** None

<b>Course Name</b>	Theory of Machines	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	ME 3507	<b>Prerequisite(s)</b>	ME 2303

**Course Description** The objective of this course is to introduce the preliminary concepts of mechanisms and to present methods of analysis for the motion and force transmission in mechanisms. This course enables students to understand various independent technical approaches that exist in the field of mechanisms, kinematics and machine dynamics.

**Equivalent Course(s)** None

<b>Course Name</b>	Instrumentation and Measurements	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3508	<b>Prerequisite(s)</b>	ME 2407

**Course Description** This course covers the operating principles of various types of sensors and introduces the concepts & designs of instruments for the measurement of electrical and non-electrical quantities. Upon completion of this course, along with its lab sessions, students will also be able to select, interface and calibrate various types of sensors or instruments.

**Equivalent Course(s)** None

## 5.1.1 Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Control Systems	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3602	<b>Prerequisite(s)</b>	None

### Course Description

In this course students, initially are taught how to model linear time-invariant electrical, mechanical, and electro-mechanical systems. Then, students are taught to analyze the behavior of the above-mentioned systems in time and frequency domains and recognize the performance characteristics of a control system such as stability, damping, phase and gain margins. Subsequently, the students learn to analyze the performance of proportional, derivative and integral feedback controllers and design simple control systems that satisfy given criteria. Finally, students are introduced to modern state-space-based control system analysis and design techniques. The students also use industry standard software tools such as Matlab to analyze, design, and evaluate control systems.

### Equivalent Course(s)

None

<b>Course Name</b>	Engineering Mathematics-VI: Probability and Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3603	<b>Prerequisite(s)</b>	ME 1104

### Course Description

Engineering Mathematics-VI covers data and types, sampling techniques, group and ungroup data, measure of dispersion, mathematical and statistical functions, multiple linear regressions, laws of probability, probability distribution-binomial, probability distribution-normal, probability distribution-poisson, steps involved in hypothesis analysis, quality control, control chart, acceptance sampling, errors and rectification, goodness of fit, Chi-square test and curve fitting.

### Equivalent Course(s)

CSC 2105

<b>Course Name</b>	Machine Design	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 3604	<b>Prerequisite(s)</b>	ME 2303

### Course Description

This course aims to synergize forces, moments, torques, stress and strength information to develop ability to analyze, design and/or select machine elements - with attention to safety, reliability, and societal and fiscal aspects. Finally, the course prepares the students to design static and dynamic machine elements such as shafts, springs, screws, bearings and gears.

### Equivalent Course(s)

None

## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Power Electronics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 3605	<b>Prerequisite(s)</b>	ME 2401

**Course Description** The objective of the course is to expose students to electric power conversion i.e. from AC to DC and DC to AC. Special semiconductor devices like Thyristors, Silicon controlled rectifiers etc. are fully explained. The course also covers choppers, regulators and phase-controlled circuits. The course is supplemented with experiments to give students hands-on-practice for developing a thorough understanding of the subject.

**Equivalent Course(s)** None

<b>Course Name</b>	Mechatronics System Design	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4705	<b>Prerequisite(s)</b>	ME 2407, ME 3508

**Course Description** This course provides the essentials of digital control as applied to high-speed mechanical systems. The approach is both theoretical and practical in providing the optimal software and/or hardware control solution. Project work will include mechatronics integration of mechanical, electrical, microprocessor, micro-controller and software components including programming within engineering systems.

**Equivalent Course(s)** None

<b>Course Name</b>	Technical Writing Skills	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 1205	<b>Prerequisite(s)</b>	None

**Course Description** This course focuses on the use of English in professional contexts. The course aims to develop interpersonal communication skills in a dynamic, digitalized and globally connected business world. This interactive course will create an awareness in the students about the basics of communication in formal contexts, allows them to analyze the mechanics of technical business writing with the use of specific registers, and experiment with different types of letters, memos, reports, proposals, presentations, and manuals to communicate complex information with clarity, conciseness, and force to meet the basic business communication needs of working professionals.

**Equivalent Course(s)** CSC 1102, MD 1222, SS 2316, BIO 1211



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Engineering Economics and Project Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 4702	<b>Prerequisite(s)</b>	None

### Course Description

Engineering Economics and Project Management covers; basic economic concepts, such as types of costs, cash flow diagrams, market mechanism, equivalence, project feasibility analysis, equity versus debt financing, depreciation accounting, consumer demand and elasticity, and cost benefit analysis. Further, general project management skills and techniques are also covered.

### Equivalent Course(s)

None

<b>Course Name</b>	Mechanical Vibrations	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 4707	<b>Prerequisite(s)</b>	ME 2303

### Course Description

In this course students are introduced to the concepts of free vibration of a system, harmonic motion, viscous damping, stiffness, and system modeling and vibration measurements. Students will become familiar with the response of various systems such as single degree, multi and infinite degrees of freedom to various inputs (harmonic excitation, impulse excitation and base excitation). Furthermore, design of systems for vibration suppression and machine condition monitoring using vibration and acoustics emission is introduced. In summary, emphasis is placed on developing a thorough understanding of how the changes in system parameters affect the system response.

### Equivalent Course(s)

None

<b>Course Name</b>	Final Year Project I & II	<b>Credit Hours</b>	6 (0,6)=(0,3)+(0,3)
<b>Course Code</b>	ME 4708 and ME 4808	<b>Prerequisite(s)</b>	None

### Course Description

Final Year Project is a group project requiring designing of a Mechatronics product or application. Each group consists of two to four students the project is stretched over two semesters (i.e. the seventh and the eighth). A midterm evaluation is carried out in the summer semester in the presence of the department's faculty. Towards the end of the eighth semester, each group is required to submit a report according to the university's report format and present the final project.

### Equivalent Course(s)

None

<b>Course Name</b>	Heat Transfer	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4703	<b>Prerequisite(s)</b>	ME 3502

### Course Description

This course is meant to study the three fundamental modes of heat transfer: conduction, convection, and radiation. A physical interpretation of the many quantities and processes in heat transfer using numerical methods to solve practical problems. Fundamentals of heat transfer are applied to the analysis and design of heat exchangers and other applications.

### Equivalent Course(s)

None



## Bachelor of Engineering in Mechatronics Engineering (BEME)

<b>Course Name</b>	Robotics	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 4802	<b>Prerequisite(s)</b>	ME 2303

**Course Description** During this course a detailed study of robotics is undertaken with emphasis on homogeneous transformations, kinematics, force and velocity transformation, end effectors and the interpretation of sensory information. The course is designed to explore the current and future use of automation technology in industry and everyday use. The students will receive a comprehensive overview of robotic systems and the subsystems that comprise them.

**Equivalent Course(s)** None

<b>Course Name</b>	Professional Practices	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 4706	<b>Prerequisite(s)</b>	None

**Course Description** This course provides students with an introduction to the issues in engineering ethics. It places those issues within a philosophical framework, and it seeks to exhibit their social importance and intellectual challenge. The goal is to stimulate reasoning and to provide students with the conceptual tools necessary for responsible decision making.

**Equivalent Course(s)** None

<b>Course Name</b>	Fundamentals of Thermal Sciences	<b>Credit Hours</b>	4 (3,1)
<b>Course Code</b>	ME 47xx	<b>Prerequisite(s)</b>	ME 3502

**Course Description** This course gives introduction of basic concepts of thermodynamics, like system, surrounding, work, heat, modes of heat transfer and different process to the students. It will also introduce steady flow and non-steady flow processes and basic steam and gas turbine cycles.

**Equivalent Course(s)** None

<b>Course Name</b>	Manufacturing Automation	<b>Credit Hours</b>	4 (2,1)
<b>Course Code</b>	ME 4807	<b>Prerequisite(s)</b>	ME 4705

**Course Description** This course introduces the student to practical methods of automatic control of machines, processes and systems. This course primarily covers manufacturing automation with reference to CNC and PLC. The course also includes familiarization with PLCs, covering programming of some popular PLCs used in the industry. Towards the end of the course, an introduction to industrial robots and their application is covered.

**Equivalent Course(s)** None

## 5.2 Master

# 5.1.1 Master of Science in Mechatronics Engineering (MSME)

SZABIST offers Master of Science in Mechatronics Engineering (MSME) degree with two specializations; namely: Robotics & Industrial automation and Smart Electromechanical Systems. The program is of 2-year duration and is offered in the evening. It requires 30 credit hours to complete the degree with 8 courses (24 credit hours) and Thesis/Research Work (6 credit hours) in not more than four (4) years.

The following is the break-up of the minimum credit hours requirements to be fulfilled by the students enrolled in this program:

- 5 Core Courses (15 Credit Hours)
- 3 Electives (9 Credit Hours)
- Thesis/Research Project or (2 Electives in lieu of Thesis/Research Project) (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
ME-5102	Advanced Robotics	0
ME-5101	Advanced Embedded Systems	0
ME-5105	Research Methodology	0
<b>Spring Semester</b>		
ME-5202	Image Processing for Intelligent Systems	0
ME-5201	Data Acquisition and Control	0
ME-5xxx	Elective-I	0
<b>Second Year</b>		
<b>Fall Semester</b>		
ME-5xxx	Elective-II	0
ME-5xxx	Elective-III	0
<b>Spring Semester</b>		
ME-5xxx	Electives IV / Thesis	0
ME-5xxx	Electives V / Thesis	0

All courses may not be offered every year. Alternate courses may be substituted as and when required.

00- List of Electives is given in Appendix B.

## 21 Master of Science in Mechatronics Engineering (MSME)

<b>Course Name</b>	Advanced Robotics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5102	<b>Prerequisite(s)</b>	None

**Course Description** The course will mainly cover geometry and mathematical representation of rigid body motion; forward and inverse kinematics of articulated mechanical arms; trajectory generation, splines, interpolation; manipulator dynamics; position sensing, actuation and fundamentals of manipulator control.

**Equivalent Course(s)** None

<b>Course Name</b>	Advanced Embedded Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5101	<b>Prerequisite(s)</b>	None

**Course Description** The course is intended to give detailed explanation of processor architecture and design, memory access, programming of embedded systems and integration of embedded systems in real time environment. An overview of programmable logic devices and system on chip will also be given along with IC fabrication and design challenges.

**Equivalent Course(s)** None

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5105	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces the Research Process to students. It covers review of technical publications and journals, research problem formulation, research methodologies and article drafting. The students are required to undertake a research project that would result in an IEEE style formatted article.

**Equivalent Course(s)** None

<b>Course Name</b>	Image Processing for Intelligent Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ME 5202	<b>Prerequisite(s)</b>	None

**Course Description** This course presents the theory and practice of digital image processing with Matlab. Numerous examples and practical hands-on exercises are included in the course. One major topic of image processing is covered in every lecture and it typically consists of a discussion of the basic theoretical concepts and some examples illustrating practical imaging problems.

**Equivalent Course(s)** None

## Master of Science in Mechatronics Engineering (MSME)

<b>Course Name</b>	Data Acquisition and Control	<b>Credit Hours</b>	2 (2,0)
<b>Course Code</b>	ME 5201	<b>Prerequisite(s)</b>	None

**Course Description** The course is intended to give detailed explanation of passive and active electrical transducers, signal conditioning circuits along with digital interfacing techniques. An overview of digital control systems and digital controller design will also be given.

**Equivalent Course(s)** None





# Department of Biosciences

## 6.1 Bachelor of Science

### 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Students enrolled in Bachelor of Science in Biosciences (BS Bio) program are required to complete 43 courses and a research report with a minimum of 135 credit hours, within seven (7) years to become eligible for obtaining the BS degree in Biosciences. The break-up of 43 courses is as follows:

- 39 Compulsory Courses (117 credit hours)
- 4 Electives<sup>00</sup> (12 credit hours)
- 1 Research Report (6 credit hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BIO 1101	Cell Biology	176
BIO 1111	English for General Purposes	176
BIO 1107	Fundamental Mathematics	177
BIO 2404	Lab Management	177
BIO 1109	Chemistry	178
<b>Spring Semester</b>		
BIO 1113	Microbiology-I	178
BIO 2301	Biochemistry-I	179
BIO 1211	English for Academic Purposes	179
BIO 1214	Sociology	179
BIO 1208	Statistics	180
BIO 1212	Islamic Studies/Ethics and Pakistan Studies	180
<b>Second Year</b>		
<b>Fall Semester</b>		
BIO 1206	Physiology-I	181
BIO 2411	English for Professional Purposes	181
BIO 2401	Biochemistry-II	181
BIO 1104	Introduction to Computing	181
BIO 1213	Microbiology-II	182
<b>Spring Semester</b>		
BIO 2305	Physiology-II	182
BIO 3504	Immunology	183
BIO 4803	Molecular Biology	183
BIO 2409	Humanities	183
BIO 3503	Genetics	184

00- List of Electives is given in Appendix B.

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
BIO 2406	Genetic Engineering	184
BIO 3507	Biotechnology-I	184
BIO 2405	Hematology	185
BIO 4801	Bioethics	185
BIO 3505	Pharmacology-I	185
BIO 2306	Psychology	186
<b>Spring Semester</b>		
BIO 2407	Basic Endocrinology	186
BIO 3607	Biotechnology-II	186
BIO 3601	Agricultural Science	187
BIO 2304	Nutrition and Dietetics	187
BIO 3605	Pharmacology-II	187
BIO 4703	Research Methodology	188
<b>Fourth Year</b>		
<b>Fall Semester</b>		
BIO 4701	Business Management	188
BIO 4705	Research Report-I	188
BIO 2309	Animal and Plant Tissue Culture	189
BIO 2402	Bioinformatics	189
BIO 4xxx	Elective-I	-
BIO 4xxx	Elective-II	-
<b>Spring Semester</b>		
BIO 2403	Environmental Sciences	189
BIO 4802	Biophysics	190
BIO 3509	Epidemiology	190
BIO 4805	Research Report-II	188
BIO 4xxx	Elective-III	-
BIO 4xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.



## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Cell Biology	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 1101	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include: cell theory, structure, chemical constituents of cell and cell organelles and their functions, separation of cell organelles, cell membrane, its molecular organization and functional role. The concept of the unit membrane, the fluid mosaic model, membrane receptors and transport mechanisms, endoplasmic reticulum, lysosome, micro-bodies, mitochondrial ultra-structure and function, chloroplast ultra-structure and the mechanism of photosynthesis. Cell movements, structure and function of cytoskeleton, centriole, cilia and flagella, the mitotic apparatus. The nucleus, structure and function of chromosomes, and the cell cycle. Fundamentals of Eukaryotic Gene Expression, and reproduction in Eukaryotic cell.

**Equivalent Course(s)** None

<b>Course Name</b>	English for General Purposes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1111	<b>Prerequisite(s)</b>	None

**Course Description** The course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them, critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

**Equivalent Course(s)** CSC 1102, BA 1105, SS 1116, MD-1122, BIO 1103, ME 1101, AF 1203, EN 1106, BST 1103

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Fundamental Mathematics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1107	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	<p>The course topics include:</p> <p><i>Preliminaries:</i> Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.</p> <p><i>Matrices:</i> Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule.</p> <p><i>Quadratic Equations:</i> Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.</p> <p><i>Sequences and Series:</i> Arithmetic progression, geometric progression, harmonic progression.</p> <p><i>Binomial Theorem:</i> Introduction to mathematical induction, binomial theorem with rational and irrational indices.</p> <p><i>Trigonometry:</i> Fundamentals of trigonometry and trigonometric identities.</p>
<b>Equivalent Course(s)</b>	BA 1204, AF 1102, EN 1101

<b>Course Name</b>	Lab Management	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2404	<b>Prerequisite(s)</b>	BIO 1209

<b>Course Description</b>	<p>The course topics include; Introduction to lab management, quality management systems, health safety in laboratories, work safety legislations, animal biosafety consideration, fire safety and risk assessment, hazards of biological waste and disposal, basic principles of biosafety, levels of biosafety, biocontainment of genetically modified organisms, packing and shipment of biological materials.</p>
<b>Equivalent Course(s)</b>	None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Chemistry	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1109	<b>Prerequisite(s)</b>	None

### Course Description

This course topics include: Chemical Bonding: types of chemical bonding, localized bond approach, theories of chemical bonding. Acids and Bases. Brief concepts of chemical equilibrium. p-Block Elements, Basic concepts of organic chemistry: structure- aromaticity, inductive effect, dipole moment, resonance and its rules, hyperconjugation, classification and nomenclature of organic compounds including IUPAC system, types of organic reactions (an overview). Chemistry of Hydrocarbons: saturated, unsaturated and aromatic hydrocarbons with emphasis on synthesis and free radical, electrophilic addition and electrophilic substitution reactions. Chemistry of Functional Groups: Green Chemistry, ionic liquids, super critical extraction technology, Chemical Thermodynamics, Chemical Equilibrium, Solution Chemistry, Physical properties of liquids, surface tension, viscosity, refractive index. Chemical Kinetics, The rates of reactions, zero, first, second and third order reactions with same and different initial concentrations, half-lives of reactions. Classical Analytical Methods in Chemical Industries.

### Equivalent Course(s)

None

<b>Course Name</b>	Microbiology-I	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 1113	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include; Fundamentals of Microbiology, Microorganisms and their respective place in the living world, differentiation between prokaryotic and eukaryotic cells, historical development of Microbiology and its scope. Microscopy, morphology, bacterial taxonomy and nomenclature, other topics include growth, nutrition (physical and nutritional requirement and nutritional types, sources of energy, C, N, H, O, S, P, H<sub>2</sub>O, trace elements, growth factors) and reproduction, general methods of studying microorganisms, including cultivation, isolation, purification and characterization, control of microorganisms by physical and chemical methods. Chemotherapeutic agents and antibiotics, modes of action of antibiotics on microorganisms, basic properties of fungi, protozoa and algae, and a brief introduction to structure and propagation of viruses and bacteriophages.

### Equivalent Course(s)

None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Biochemistry-I	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2301	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include; Water, pH, buffers, diffusion, osmosis, surface tension, carbohydrates, amino acids, proteins, structure and function, molecular structure of proteins, relationship between the structure and function of proteins, relationship of primary structure and function of protein, enzymes, the Michaelis-Menten equation, enzyme inhibitors, reversible enzyme inhibition, irreversible enzyme inhibition. Lipids, vitamins and nucleic acids.

### Equivalent Course(s)

None

<b>Course Name</b>	English for Academic Purposes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1211	<b>Prerequisite(s)</b>	BIO 1111

### Course Description

This course is designed to improve academic English language and study skills of students. The course follows a multidimensional approach based on the four language skills with a specific focus on reading and writing skills that are required in research-based study at university level. The course includes listening and note taking skills, library and internet use for locating and evaluating research articles. In addition, the course seeks to enable the students to of speed read, skim, scan and infer from written text. The course specifically focuses on enabling the students to experiment with complex grammatical forms, sentence structures and logical paragraph development, to present coherent, cohesive and effective arguments clearly in research-based writing according to the requirements of their specific discipline.

### Equivalent Course(s)

BA 1206, CSC 2101, BIO 1202, ME 1205, MD 1222, SS 2316, AF 1203, EN 1106

<b>Course Name</b>	Sociology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1214	<b>Prerequisite(s)</b>	None

### Course Description

This course focuses on three central themes: social change, social inequality, and social harmony versus conflict. It combines selective theoretical texts with case studies to understand the mechanisms and institutions that can trigger, foster, sustain, or undermine each of the three processes. The course covers the work of major sociological thinkers and the influence of sociology on modernization, race, citizenship, culture, gender, society, and economic development.

### Equivalent Course(s)

BA 2307, BA 2306, MD 1104, AF 2304, SS 2307

## 6.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Statistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1208	<b>Prerequisite(s)</b>	BIO 1107

### Course Description

The course topics include; Definition of statistics, characteristics, importance and limitations, population and samples, frequency distribution and probabilities, formation of frequency table from raw data, histograms, applications of probabilities to simple events, measures of central tendencies and dispersion, arithmetic mean, median, mode, range, variance and standard deviation, standard error of the mean, mean deviation, semi interquartile range, standard distribution (binomial, poisson and normal distributions, properties and application, normality), test of significance (t-test, X2-test, F-test, L.S.D. test, multiple range test), design of experiment, brief account of correlation and regression, and computer based statistical software applications.

### Equivalent Course(s)

CSC 2105, BA 3605, BA 5405, BA 5305, BA 2305, BIO 1208, AF 2406, EN 2304, BST 1206

<b>Course Name</b>	Islamic Studies/Ethics and Pakistan Studies	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 1212	<b>Prerequisite(s)</b>	None

### Course Description

**Islamiat:** Islamic history, Introduction to Quranic studies, study of selected text of Holy Quran, Seerat of Holy Prophet (S.A.W), Introduction to Sunnah, Selected study of Hadith, Islamic culture & civilization, Islam & Science, Economic, Political, and Social System of Islam.

**Ethics:** This course introduces contemporary and controversial ethical issues facing the scientific community. Topics include moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Upon completion, students should be able to demonstrate an understanding of their moral responsibilities and obligations as members of the workforce and society.

**Pakistan Studies:** Historical Perspective: Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah, Factors leading to Muslim separatism. Government and Politics in Pakistan: Political and constitutional phases of 1947-58, 1958-71, 1971-77, 1977-88, 1988-99, 1999 onward. Contemporary Pakistan: Economic institutions and issues, Society and social structure, Ethnicity, Foreign policy of Pakistan and challenges, Futuristic outlook of Pakistan.

### Equivalent Course(s)

BA 1106, CSC 1105, MD 2402, SS 1109, CSC 1105, EN 1105

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Physiology-I	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 1206	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to provide students with an understanding of the function and regulation of the human body and physiological integration of the organ system. The course topics include; basic principle of physiology level of chemical and physiological organization of human, cell physiology, physiology blood and blood cells cardiovascular and circulatory system. Physiology of respiratory system, mechanism of oxygen transport into the cells and physiology of renal system.

**Equivalent Course(s)** None

<b>Course Name</b>	English for Professional Purposes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 2411	<b>Prerequisite(s)</b>	BIO 1111, BIO 1211

**Course Description** This technical and business writing course focuses on the use of English in professional contexts. The course aims to develop interpersonal communication skills in a dynamic, digitalized and globally connected business world. This interactive course will create an awareness in the students about the basics of communication in formal contexts, allows them to analyze the mechanics of technical business writing with the use of specific registers, and experiment with different types of letters, memos, reports, proposals, presentations, and manuals to communicate complex information with clarity, conciseness, and force to meet the basic business communication needs of working professionals.

**Equivalent Course(s)** CSC 1205

<b>Course Name</b>	Biochemistry-II	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2401	<b>Prerequisite(s)</b>	BIO BIO 2301, BIO 1206

**Course Description** The course topics include, metabolism, metabolic pathways, major pathways in cells, thermodynamics and metabolism. The concept of oxidation electron transport chain and oxidative phosphorylation. Carbohydrate metabolism, lipids metabolism, amino acid metabolism, nucleotide metabolism, introduction to molecular biology, and introduction to endocrinology.

**Equivalent Course(s)** None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Introduction to Computing	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 1104	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include; basic computing hardware (input, output, processing and storage devices) and software classification with important historical events; software applications using office automation tools (Word Processor, Spread Sheet, Presentation Software); effective use of internet/intranet; introduction to software/web programming and development, computer networks, information technology within the broader domain of computing, and social issues of computing.

**Equivalent Course(s)** CSC 1104, BA 1108, BA 1103, AF 1102, EN 1102, BST 1102

<b>Course Name</b>	Microbiology-II	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 1213	<b>Prerequisite(s)</b>	BIO 1113

**Course Description** The course topics include; bacterial DNA replication, transcription, translation, mutation and variation, introduction to the genetical intermixing of bacteria including transformation, transduction and conjugation. Microbiology of water and wastewaters is studied as a source of infection and methods of water purification, along with Methods of sewage treatment and disposal. The course introduction to food and dairy microbiology, include methods of food preservation, food intoxication and food-infection. Microbiology of soil with particular reference to nitrogen cycle and microbiology of air. Pathogenesis of microorganism and molecular mechanism of pathogenesis and bacterial, fungal and viral diseases are also covered.

**Equivalent Course(s)** None

<b>Course Name</b>	Physiology-II	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2305	<b>Prerequisite(s)</b>	BIO 1206

**Course Description** This course will cover physiology, gastrointestinal system, central nervous system, autonomic nervous system, peripheral nervous system and special senses which include sense of vision, sense of hearing, sense of pain, sense of taste and sense of smell.

**Equivalent Course(s)** None

## 6.11 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Immunology	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3504	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include; introduction: chronological development and scope of immunology. Immunity and immune responses: Definitions and types (specific and non specific). Humoral and cellular immunity. Complement system. Cells and tissues of immune system. The antigens: structure (simple and complex molecules, proteins and polysaccharides) and immunogenicity. Immunoglobulins: structure and function; classes, subclasses, types and subtypes; immunoglobulin genetics. Immune response to an antigen. Introduction to antigen-antibody reactions: methods for detecting antigens and antibodies (agglutination, precipitation, complement fixation, EIA, etc.). HLA & MHC and its role in immune response, disease and its significance in tissue transplantation. Immunoregulation and tolerance, cancer immunology, hypersensitivity reactions, autoimmune diseases and immunodeficiencies, and Immunization (methods of immunization, vaccines and adjuvants).

### Equivalent Course(s)

None

<b>Course Name</b>	Molecular Biology	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 4803	<b>Prerequisite(s)</b>	BIO 1209, BIO 1101

### Course Description

The course topics include; overview of Molecular Biology, logic of Molecular Biology, types and functions of various DNA and RNA polymerases, types and functions of Endonucleases and Exonucleases, Plasmid, Vectors types and functions, transfer of specific genetic material in host and its expression, Molecular techniques for Gene Amplification, techniques for DNA sequencing, techniques for identification of Genetic disorders and infectious diseases e.g. HBV, HCV, HAV, HIV, Tuberculosis, Typhoid, etc.

### Equivalent Course(s)

None

<b>Course Name</b>	Humanities	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 2409	<b>Prerequisite(s)</b>	None

### Course Description

This course includes an introduction to the humanities through a review of some of the major developments in human culture. The goal is to analyze how societies express themselves through literature, art, music, philosophy, and technology. Focus is on developing the conceptual tools to understand cultural phenomena critically.

### Equivalent Course(s)

None



## 6.11 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Genetics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3503	<b>Prerequisite(s)</b>	BIO 4803

**Course Description** The course topics include; Mendelian genetics, principle of segregation, symbols and terminology, monohybrid crosses, dominance, recessiveness, codominance, semidominance, principle of independent assortment, dihybrid ratios, trihybrid ratios, gene interaction, epistasis, and multiple alleles. ABO blood type alleles in humans, Rh factor alleles in humans, probability in Mendelian inheritance, chi-square, structure of chromosomes and genes, DNA as storage of genetic information, Friedrich Miescher Experiment, Avery, Macleod and McCarty experiment, Hershey and Chase experiment, Watson and Crick DNA model, sex determination, identification of sex chromosomes, environmental factors and sex determination, linkage and crossing over.

**Equivalent Course(s)** None

<b>Course Name</b>	Genetic Engineering	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2406	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include; an outline of DNA cloning experiment, cloning vectors including plasmids, bacteriophages, cosmids YAC vectors, shuttle and expression vectors, Tumor Inducing (TI) plasmids, and DNA libraries, screening methods for gene libraries. Southern and Northern blotting Human genome project along with stem cells and therapeutic cloning and social considerations are included in the course.

**Equivalent Course(s)** None

<b>Course Name</b>	Biotechnology-I	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3507	<b>Prerequisite(s)</b>	BIO 4803, BIO 2309

**Course Description** The course topics include: history, importance, screening and selection of microorganisms of industrial importance, development and maintenance of pure cultures, microbial growth dynamics, effect of environments on microbial activity, culture preservation and maintenance, strain improvement, screening, enrichment, protoplast fusion, gene cloning, inoculum, development, size and physiological state, mixed cultures and substrate system, tissue culture, nano-biotechnology, principles of methods and their application in industry and agricultural, biomedical, and environmental biotechnology.

**Equivalent Course(s)** None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Hematology	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2405	<b>Prerequisite(s)</b>	BIO 2305, BIO 1206

**Course Description** The course topics include; ABO and Rhesus blood group system, types of blood cells and their functions, formation and maturation of blood cells, general principles and iron metabolism, hematological disorders, hereditary spherocytosis, anaemia, types of anaemia, neutropenia, Hodgkin's disease, idiopathic and thrombotic purpura, thalassemia and its types, hematology laboratory procedures, clotting mechanisms and disorders, and detection of coagulation disorders.

**Equivalent Course(s)** None

<b>Course Name</b>	Bioethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 4801	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include; why study Bioethics, Introduction (Definition, branches, Oaths & laws relating to Medical Profession), Ethical Issues in Organ transplantation & artificial insemination and Assisted Reproductive Technology (ART), Ordinance/Laws pertinent Gender sensitivity/women issues, such as: Haddood Ordinance, Swara + Vanni, Karo-Kari, Taboos against divorced women/widow, Female feticide, Physical violence against women, Fatal/lethal burns to married/unmarried women, Assessment process and intervention strategies by medical professionals, Medical negligence and medical malpractice, Patients' rights, Consent to Medical Examination and Treatment, Global ethical issues, Other ethical issues, such as: Child abuse and molestation, The practice of alternate medicine, Quackery, Pakistan ethical issues verses global ethical issues, Religious perspective (commonality), Ethical dilemmas at workplace, Flesh trade, Child labor, Myths and ethics.

**Equivalent Course(s)** None

<b>Course Name</b>	Pharmacology-I	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3505	<b>Prerequisite(s)</b>	BIO 1206, BIO 2305

**Course Description** The course topics include; introduction, history of pharmacology and its classification, drugs and their sources, routes of drugs administration, advantages and disadvantages of enteral routes, advantages and disadvantages of parenteral routes, advantages and disadvantages of topical routes, pharmacokinetics, drug solubility and passage of drugs across the body membranes, plasma concentration of drugs and various factors affecting it (absorption and factors influencing the rate of absorption, GIT and other routes) of drugs, distribution and factors influencing the rate of distribution of drugs, biotransformation and factors influencing the rate of biotransformation of drugs, excretion, channels of excretion and factors influencing the rate of excretion of drugs, definition of bioavailability and bioequivalence, therapeutic index, plasma half life ( $t_{1/2}$ ), dose-response curve, area under curve, volume of distribution, pharmacodynamics, drug receptors and theories, mechanisms of drug action, specificity of drug action and factors modifying the action and dosage of drugs.

**Equivalent Course(s)** None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 2306	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include why study psychology, nature and application of psychology with special reference to Pakistan, schools of psychology, methods of psychology, biological basis of behavior and sensation, perception and attention. It helps distinguish between the major perspectives on human thought and behavior and appreciate the variety of ways psychological data are gathered and evaluated. The course also entails gaining insight into human behavior and into one's own personality or personal relationships, exploring the ways that psychological theories are used to describe, understand, predict, and control or modify behavior, motives, emotions, learning, memory and thinking, impact of behavior on organization, how do the tools of psychology improve work output, social medicine, and social evils.

### Equivalent Course(s)

SS 2306, BA 2312, MD 2424, BA 2306, SS 2306, AF 2303, EN 1104

<b>Course Name</b>	Basic Endocrinology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 2407	<b>Prerequisite(s)</b>	BIO 1206, BIO 2305

### Course Description

The course topics include; hormones and chemical signals, receptors, basic principle of endocrine physiology, synthesis, secretion and mode of action of various hormones, hormonal control of metabolism, hypothalamic and pituitary hormones, thyroid glands and its hormones; adrenal glands and its hormones, calcium hemostasis, hormonal assays, and hormonal control of reproduction in males and females.

### Equivalent Course(s)

None

<b>Course Name</b>	Biotechnology-II	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3607	<b>Prerequisite(s)</b>	BIO 2302

### Course Description

The course topics include; advances in vaccine development, recombinant products expression and transgenic, bioreactor design, introduction to factors affecting bioreactor design, description of a typical aseptic bioreactor, bioreactor configurations and scale-up of bioreactor system, design of sterilization systems, oxygen mass transfer and heat transfer in bioreactor systems, fermentation technology, product recovery, waste treatment and safety, biosensors (applications of biosensors, transducer technology, principles of biosensors), recombinant protein production, general aspects of heterologous protein expression, bacterial expression systems- Escherichia coli and Bacillus subtilis, Saccharomyces cerevisiae a system for expression of heterologous proteins, expression in non-saccharomyces yeast species and filamentous fungi, enzymes and industry, extremozymes, enzyme evolution, and microbial productions of pharmaceuticals, diagnostic proteins, vaccines, microbial toxins and insecticides.

### Equivalent Course(s)

None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Agricultural Science	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 3601	<b>Prerequisite(s)</b>	BIO 2406, BIO 2302

### Course Description

The course topics include; Agricultural systems (definitions, history, domestication), the concepts of plant molecular markers, historical background of tissue culture, requirements for in-vitro cultures, role of Phyto-hormones in somatic embryogenesis, Somaclonal variations as breeding tool, Somatic Hybridization, commercial application and issues related to tissue culture, plant transformation, gene gun method of transformation, Agrobacterium-mediated transformation, PEG mediated transformation, field evaluation and commercialization, transgenic crops for herbicide, biotic and abiotic stress resistance, introduction to bio fertilizers, biosafety concerns and bioethics on GM crops, and ethical issues in sustainable agriculture and agricultural research.

### Equivalent Course(s)

None

<b>Course Name</b>	Nutrition and Dietetics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 2304	<b>Prerequisite(s)</b>	BIO 2301, BIO 1206

### Course Description

The course topics include; what is and why study nutrition and dietetics, role of nutrition and dietetics in health and how it helps in health, energy and protein, carbohydrates and fats, water soluble vitamin, fat soluble vitamins, minerals RDA/dietary guidelines, nutrition in pregnancy and lactation, nutrition in the growing years, nutrition in adult and elderly, nutrition problem in Pakistan, nutritional assessment, principle of diet therapy in patients, diet in body weight control, diabetes mellitus, hypertension, cardiovascular disease, cancer, osteoporosis, renal disease and food service management in hospitals, and screening of deficiencies.

### Equivalent Course(s)

None

<b>Course Name</b>	Pharmacology-II	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 3605	<b>Prerequisite(s)</b>	BIO 3505

### Course Description

The course topics include; drugs acting on central nervous systems—depressants, hypnotic and sedatives and analgesics (narcotic analgesics and opioid antagonists, analgesic, antipyretic and anti-inflammatory drugs, chemotherapy, anti-microbials, sulphonamides, anti-virals, anti-protozoals treatment of malaria and treatment of amebiasis), anti-fungals, anthelmintics, penicillins, cephalosporins, aminoglycosides, tetracyclines, chloramphenicol, macrolides, quinolones and miscellaneous anti-biotics.

### Equivalent Course(s)

None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 4703	<b>Prerequisite(s)</b>	BIO 4801, BIO 2404

**Course Description** The course topics include; problem identification, problem statement, objectives, literature review and referencing, conceptual framework/hypotheses, planning, methods and procedures, presenting professional papers, introduction to data collection and analysis, statistical measures, hypothesis testing, linear regression and analysis of variance in application oriented manner, data collection methods using various instruments, analysis of experimental and quasi-experimental methods, and presentation of research findings.

**Equivalent Course(s)** CSC 5105, MPH 5205

<b>Course Name</b>	Business Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 4701	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include; basic business decisions, defining, assessing and choosing options, laying the foundations, market research, understanding and reaching customers, cost and profit analysis, finances and assets, competitors and constraints, writing a business plan, running your business; selling techniques and business promotions, e-marketing and online selling, customer satisfaction, price and budgeting; cash flow and book-keeping, and negotiating and legal aspects of small businesses.

**Equivalent Course(s)** None

<b>Course Name</b>	Research Report-I Research Report-II	<b>Credit Hours</b>	6 (0,3)+(0,3)
<b>Course Code</b>	BIO 4705 BIO 4805	<b>Prerequisite(s)</b>	BIO 2401, BIO 1207 BIO 2305, BIO 4803

**Course Description** A Biosciences related research project is to be conducted, in which candidates are required to do a short lab experiment, and present their findings in terms of research report and power point presentations.

**Equivalent Course(s)** None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Animal and Plant Tissue Culture	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2309	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include; Introduction and history of plant tissue culture; design of typical tissue culture laboratory, basic media and their components. Culture initiation; explants; type of explants, preparation of explant and their sterilization. Callus culture, cell culture, and single cell culture. Synseeds or synthetic seeds production. Somaclonal variation; problems and benefits. Protoplast culture and Somatic hybridization. Somatic Embryo Production (Somatic Embryogenesis); Principles, technology of automation and the application. Production of natural products by plant cell, tissue and organ culture. Introduction to animal tissue culture, history and application of cell and tissue culture, different types of cell culture, Isolation of cells for culture, factors effecting the growth of cultured cell, contact inhibition, subculturing, establishment of cell line, cryopreservation, characterization and validation

### Equivalent Course(s)

None

<b>Course Name</b>	Bioinformatics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2402	<b>Prerequisite(s)</b>	BIO 1104

### Course Description

The course topics include; bioinformatics approach to study molecular to organism level of biological hierarchical structure, application of computational tools to the analysis of genome and their gene products, protein structure, classification, mechanism of protein folding and folding pathways and role of chaperones in protein folding, experimental techniques for characterizing membrane, introduction to sequence databases, comparing sequences against sequence databases, predicting protein coding and non coding regions. Additional topics include; prediction of protein structure from sequencing data, phylogenetic analysis, genome sequencing projects, bioinformatics, and genome analysis.

### Equivalent Course(s)

CSC 4707

<b>Course Name</b>	Environmental Science	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 2403	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include; Environmental Sciences study of inter-relationship, matter, energy and environment, risk assessment, ecosystems and communities, biogeochemical cycle, population characteristics and issues, energy, biodiversity, land use planning, agricultural methods and pest management, water management, air quality issues, solid waste management and disposal, environmental regulations, hazardous substances and wastes.

### Equivalent Course(s)

None

## 6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

<b>Course Name</b>	Biophysics	<b>Credit Hours</b>	3 (3.0)
<b>Course Code</b>	BIO 4802	<b>Prerequisite(s)</b>	BIO 1206

**Course Description** The course topics include; introduction to basic concepts of biophysics, physicist and biologist approaches to biophysics, water, biostructures, assemblies of biomolecules, physical sketch of cell, light and life, photosynthesis, UV effects on biosystems, mechanics and dynamics, physics of reactions, molecular machines, assembly, and biostructures.

**Equivalent Course(s)** None

<b>Course Name</b>	Epidemiology	<b>Credit Hours</b>	3 (3.0)
<b>Course Code</b>	BIO 3509	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include; dynamics of disease transmission, measures of disease impact, disease surveillance, validity and reliability of diagnostic tests, natural history of disease, cohort studies and case controls with other design, risk and association, bias with confounding and interaction, genetic and environmental factors in disease causation, epidemiology to evaluate health services with screening programs and public policy, ethical and professional issues in Epidemiology.

**Equivalent Course(s)** None

# 6.1 Bachelor of Science

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

Students enrolled in Bachelor of Science in Biotechnology (BS BTC) program are required to complete 46 courses and a research report with a minimum of 139 credit hours, within seven (7) years to become eligible for obtaining the BS degree in Biotechnology. The break-up of 46 courses is as follows:

- 41 Compulsory Courses (121 credit hours)
- 4 Electives<sup>00</sup> (12 credit hours)
- 1 Research Report (6 credit hours)

### Scheme for BS Biotechnology

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BTC 1105	Cell Biology	193
BTC 1106	English for General Purposes	193
BTC 1103	Mathematics – I (Pre-Calculus)	193
BTC 1101	Biosafety and Bioethics	194
BTC 1104	Organic Chemistry	194
BTC 1102	Islamic Studies / Ethics	195
<b>Spring Semester</b>		
BTC 1204	Microbiology	196
BTC 1201	Biochemistry-I	197
BTC 1202	English for Academic Purposes	197
BTC 1206	Inorganic Chemistry	197
BTC 1205	Probability and Biostatistics	198
BTC 1203	Biomathematics	198
<b>Second Year</b>		
<b>Fall Semester</b>		
BTC 2303	English for Professional Purposes	198
BTC 2305	Microbial Biotechnology	199
BTC 2304	Introduction to Computer Science	199
BTC 2301	Biochemistry-II	199
BTC 2302	Ecology, Biodiversity and Evolution-I	200
BTC 2306	Physical Chemistry	200
<b>Spring Semester</b>		
BTC 2402	Ecology, Biodiversity and Evolution -II	201
BTC 2404	Immunology	201
BTC 2405	Molecular Biology	201
BTC 2407	Pakistan Studies	202
BTC 2401	Classical Genetics	202
BTC 2406	Genomics & Proteomics	203

00- List of Electives is given in Appendix B.



## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

Course Code	Course Title	Page #
<b>Third Year</b>		
<b>Fall Semester</b>		
BTC 3508	Sociology	203
BTC 3504	Introduction to Biotechnology	203
BTC 3503	Enzymology	204
BTC 3507	Genetic Resources Conservation	204
BTC 3506	Psychology	204
<b>Spring Semester</b>		
BTC 3603	Industrial Biotechnology	205
BTC 3601	Agriculture Biotechnology	205
BTC 3607	Analytical Chemistry & Instrumentation	205
BTC 3606	Research Methodology	206
BTC 3604	Medical Biotechnology	206
<b>Fourth Year</b>		
<b>Fall Semester</b>		
BTC 4705	Research Report-I	206
BTC 4704	Methods in Molecular Biology	206
BTC 4702	Bioinformatics	207
BTC 3505	Principles of Biochemical Engineering	207
BTC 4xxx	Elective-I	-
BTC 4xxx	Elective-II	-
<b>Spring Semester</b>		
BTC 4801	Biological physics	207
BTC 4805	Research Report-II	208
BTC 4802	Environmental Biotechnology	208
BTC 4803	Food Biotechnology	208
BTC 4xxx	Elective-III	-
BTC 4xxx	Elective-IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Cell Biology	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BTC 1105	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to cell theory including historical perspective; overview of membrane structure and chemical constituents of the cell; function, isolation and molecular organization of cellular organelles specifically the endoplasmic reticulum, lysosome, micro-bodies, mitochondrial ultra-structure and function, chloroplast ultra-structure and the mechanism of photosynthesis; composition and structure of membranes; membrane receptors and transport mechanisms; cell movement - structure and function of cytoskeleton, centriole, cilia and flagella; nucleus; structure and function of chromosomes; cell cycle, mitosis and meiosis.

### Equivalent Course(s)

BIO 1101

<b>Course Name</b>	English for General Purposes	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BTC 1106	<b>Prerequisite(s)</b>	None

### Course Description

The course is aimed at improving English language communication and presentation skills of students. With a multidimensional approach, the course enables the students to practice the use of English in everyday situations, building upon all four skills: listening, speaking, reading and writing. It prepares them to participate in seminars and discussions and make effective presentations, with an awareness of the audience and effective use of verbal and non-verbal communication. The course addresses the basic English language issues faced by the learners, while also aiming to foster in them, critical skills to develop a concise and clear argument, respond to others' comments and negotiate their own point of view persuasively. The course uses an interactive, participatory methodology, to engage learners' interest and boost their confidence to use English in everyday communication in formal and informal contexts.

### Equivalent Course(s)

None

<b>Course Name</b>	Mathematics-I (Pre-Calculus)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BTC 1103	<b>Prerequisite(s)</b>	None

### Course Description

Preliminaries: Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions. Matrices: Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule. Quadratic Equations: Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations. Sequences and Series: Arithmetic progression, geometric progression, harmonic progression. Binomial Theorem: Introduction to mathematical induction, binomial theorem with rational and irrational indices. Trigonometry: Fundamentals of trigonometry, trigonometric identities.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Biosafety & Bioethics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BTC 1101	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to Biosafety - definition, concept, uses and abuses of genetic information, and biohazards; good laboratory practices; risks related to genetically modified organisms (GMO); international rules and regulations for biosafety and GMOs; introduction to bioethics; ethical issues related to GMOs; euthanasia, reproductive and cloning technologies, transplants and eugenics; patenting, commercialization and benefit sharing; role of national bioethics committees; biosafety guidelines from a national perspective; introduction to lab management, quality management systems, health safety in laboratories, work safety legislations, animal biosafety consideration, fire safety and risk assessment, hazards of biological waste and disposal, basic principles of biosafety, levels of biosafety, biocontainment of genetically modified organisms, packing and shipment of biological materials.

**Equivalent Course(s)** None

<b>Course Name</b>	Organic Chemistry	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BTC 1104	<b>Prerequisite(s)</b>	None

**Course Description** Basic Concepts of Organic Chemistry: Bonding and hybridization, localized and delocalized bonding, structure-aromaticity, inductive effect, dipole moment, resonance and its rules, hyper conjugation, classification and nomenclature of organic compounds including IUPAC system, types of organic reactions (an overview). Chemistry of Hydrocarbons: Saturated and unsaturated hydrocarbons with emphasis on free radical, electrophilic addition and electrophilic substitution reactions. Chemistry of Functional Groups: preparation and properties of alcohols, phenols, ethers, and amines with focus on reaction mechanism and applications, preparations and reaction mechanism of aldehydes and ketones and their applications, carboxylic acids and their derivatives, acidity of carboxylic acids and effect of substituents on their acidity, preparation and reactions of carboxylic acids and their derivatives including esters, amides, acid halides and acid anhydrides.

**Equivalent Course(s)** None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Islamic Studies	<b>Credit Hours</b>	2(2,0)
<b>Course Code</b>	BTC 1102	<b>Prerequisite(s)</b>	None

### Course Description

- Introduction to Quran Studies
- 1) Basic Concepts of Quran
  - 2) History of Quran
  - 3) Uloom-ul -Quran
- Study of Selected Text of Holly Quran
- 1) Verses of Surah Al-Baqra Related to Faith (Verse No-284-286)
  - 2) Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)
  - 3) Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
  - 4) Verses of Surah al-Furqan Related to Social Ethics (Verse No.63- 77)
  - 5) Verses of Surah Al-Inam Related to Ihkam (Verse No-152-154)
- Study of Selected Text of Holly Quran
- 1) Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58.)
  - 2) Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
  - 3) Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No- 1,14)
- Seerat of Holy Prophet (S.A.W) I
- 1) Life of Muhammad Bin Abdullah (Before Prophet Hood)
  - 2) Life of Holy Prophet (S.A.W) in Makkah
  - 3) Important Lessons Derived from the life of Holy Prophet in Makkah
- Seerat of Holy Prophet (S.A.W) II
- 1) Life of Holy Prophet (S.A.W) in Madina
  - 2) Important Events of Life Holy Prophet in Madina
  - 3) Important Lessons Derived from the life of Holy Prophet in Madina
- Introduction to Sunnah
- 1) Basic Concepts of Hadith
  - 2) History of Hadith
  - 3) Kinds of Hadith
  - 4) Uloom –ul-Hadith
  - 5) Sunnah & Hadith
  - 6) Legal Position of Sunnah
- Selected Study from Text of Hadith
- Introduction to Islamic Law & Jurisprudence
- 1) Basic Concepts of Islamic Law & Jurisprudence
  - 2) History & Importance of Islamic Law & Jurisprudence
  - 3) Sources of Islamic Law & Jurisprudence
  - 4) Nature of Differences in Islamic Law
  - 5) Islam and Sectarianism
- Islamic Culture & Civilization
- 1) Basic Concepts of Islamic Culture & Civilization
  - 2) Historical Development of Islamic Culture & Civilization
  - 3) Characteristics of Islamic Culture & Civilization
  - 4) Islamic Culture & Civilization and Contemporary Issues

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

### Islam & Science

- 1) Basic Concepts of Islam & Science
- 2) Contributions of Muslims in the Development of Science
- 3) Quranic & Science

### Islamic Economic System

- 1) Basic Concepts of Islamic Economic System
- 2) Means of Distribution of wealth in Islamic Economics
- 3) Islamic Concept of Riba
- 4) Islamic Ways of Trade & Commerce

### Political System of Islam

- 1) Basic Concepts of Islamic Political System
- 2) Islamic Concept of Sovereignty
- 3) Basic Institutions of Govt. in Islam

### Islamic History

- 1) Period of Khlaft-E-Rashida
- 2) Period of Ummayyads
- 3) Period of Abbasids

### Social System of Islam

- 1) Basic Concepts Of Social System Of Islam
- 2) Elements Of Family
- 3) Ethical Values Of Islam

**Equivalent Course(s)** None

<b>Course Name</b>	Microbiology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 1204	<b>Prerequisite(s)</b>	None

### Course Description

Overview and history of microbiology including microbial diversity (Archaea, bacteria, fungi, algae, protozoa), nutrition, growth, metabolism; cultivation; viruses; control of microorganisms: sterilization and disinfection, antimicrobial agents, antibiotics, antibiotic resistance and susceptibility, antifungal and antiviral agents; cell death; symbiosis, carbon, nitrogen, sulfur and phosphorus cycles; microbiology of soil, freshwater and seawater.

**Equivalent Course(s)** None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Biochemistry-I	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 1201	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to biochemistry; water, pH, buffers, and biochemical composition of cells; carbohydrates - structure and classification; proteins - overview with emphasis on their composition and structure, classification and function; lipids - structure, classification and biological significance; enzymes - properties, nomenclature, classification, and factors affecting enzyme activity including inhibitors and potentiators, basic kinetics, derivation of  $K_m$  and  $V_{max}$ ; coenzymes and vitamins; nucleic acids - structure and function.

### Equivalent Course(s)

None

<b>Course Name</b>	English for Academic Purposes	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 1202	<b>Prerequisite(s)</b>	None

### Course Description

The course is designed to improve academic English language and study skills of students. The course follows a multidimensional approach based on the four language skills with a specific focus on reading and writing skills that are required in research-based study at university level. The course includes listening and note taking skills, library and internet use for locating and evaluating research articles. In addition, the course seeks to enable the students to speed read, skim, scan and infer from written text. The course specifically focuses on enabling the students to experiment with complex grammatical forms, sentence structures and logical paragraph development, to present coherent, cohesive and effective arguments clearly in research-based writing according to the requirements of their specific discipline.

### Equivalent Course(s)

None

<b>Course Name</b>	Inorganic Chemistry	<b>Credit Hours</b>	3(2,0)
<b>Course Code</b>	BTC 1206	<b>Prerequisite(s)</b>	None

### Course Description

Chemical Bonding: Types of chemical bonding, ionic and covalent bonding, localized bond approach, theories of chemical bonding, valence bond theory (VBT), hybridization and resonance, prediction of molecular shapes using Valence Shell Electron Pair Repulsion (VSEPR) model, molecular orbital theory (MOT) applied to diatomic molecules, delocalized approach to bonding, bonding in electron deficient compounds, hydrogen bonding. Acids and Bases: Brief concepts of chemical equilibrium, acids and bases including soft and hard acids and bases (SHAB), relative strength of acids and bases, significance of pH,  $pK_a$ ,  $pK_b$  and buffer solutions, theory of indicators, solubility, solubility product, common ion effect and their industrial applications. p-Block Elements: Physical and chemical properties of p-block elements with emphasis on some representative compounds, inter-halogens, pseudo-halogens and polyhalides.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Probability & Biostatistics	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 1205	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include definition of statistics, characteristics, importance and limitations, population and samples, frequency distribution and probabilities, formation of frequency table from raw data, histograms, applications of probabilities to simple events, measures of central tendencies and dispersion, arithmetic mean, median, mode, range, variance and standard deviation, standard error of the mean, mean deviation, semi interquartile range, standard distribution (binomial, poison and normal distributions, properties and application, normality), test of significance (t-test, X<sup>2</sup>-test, F-test, L.S.D. test, multiple range test), design of experiment, brief account of correlation and regression, and computer based statistical software applications.

### Equivalent Course(s)

None

<b>Course Name</b>	Biomathematics	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 1203	<b>Prerequisite(s)</b>	None

### Course Description

This course aims to provide students with the essential concepts of biomathematics and how these can be employed for analyzing real data. Preliminaries: Real-number line, functions and their graphs, solution of equations involving absolute values, inequalities, binomial theorem and its use. Limits and Continuity: Limit of a function, left-hand and right-hand limits, continuity, continuous functions. Derivatives and their Applications: Differentiable functions, differentiation of polynomial, rational and transcendental functions, derivatives. Integration and Definite Integrals: Techniques of evaluating indefinite integrals, integration by substitution, integration by parts, change of variables in indefinite integrals. Application and importance of calculus for biotechnology; the exponential growth curve and growth equation.

### Equivalent Course(s)

None

<b>Course Name</b>	English for Professional Purposes	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 2303	<b>Prerequisite(s)</b>	BTC 1202

### Course Description

This technical and business writing course focuses on the use of English in professional contexts. The course aims to develop interpersonal communication skills in a dynamic, digitalized and globally connected business world. This interactive course will create an awareness in the students about the basics of communication in formal contexts, allows them to analyze the mechanics of technical business writing with the use of specific registers, and experiment with different types of letters, memos, reports, proposals, presentations, and manuals to communicate complex information with clarity, conciseness, and force to meet the basic business communication needs of working professionals.

### Equivalent Course(s)

CSC 1205, BIO 2411

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Microbial Biotechnology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2305	<b>Prerequisite(s)</b>	None

### Course Description

Issues and scope of microbial biotechnology; genetically modified microorganisms; microbes as tools for microbiological research; biotechnological potential of microbes; significance of microorganisms in food production, fermentation, pharmaceutical and other industries; vaccine development and production; microbiological mining, biofuels and use of microbes in petroleum industry; plant-microbe interactions; bio-fertilizers, biopesticides, composting; antimicrobials; significance of microbial biotechnology in the economic development of Pakistan.

### Equivalent Course(s)

None

<b>Course Name</b>	Introduction to Computer Science	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2304	<b>Prerequisite(s)</b>	None

### Course Description

The course topics include basic computing hardware (input, output, processing and storage devices) and software classification with important historical events; software applications using office automation tools (Word Processor, Spread Sheet, Presentation Software); effective use of internet/intranet; introduction to software/web programming and development, computer networks, information technology within the broader domain of computing, and social issues of computing.

### Equivalent Course(s)

None

<b>Course Name</b>	Biochemistry-II	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2301	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to metabolism and basic aspects of bioenergetics and biochemical thermodynamics (endergonic and exergonic reactions); phosphoryl group transfer and ATP production; metabolism, oxidation-reduction; carbohydrate metabolism and regulation (glycolysis, glycogenolysis; gluconeogenesis; pentose phosphate pathway); citric acid cycle (reactions, energetics and control), electron transport chain, oxidative phosphorylation, shuttle mechanisms (glycerol-phosphate shunt), lipid metabolism (energy yield from fatty acid oxidation, ketone bodies, acyl glycerol, compound lipids, cholesterol); photosynthesis; Calvin Cycle; metabolism of nitrogenous compounds (amino acid synthesis, catabolism, purine and pyrimidine synthesis); nucleic acid metabolism and control; urea cycle; integration of metabolism.

### Equivalent Course(s)

None



## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Ecology, Biodiversity & Evolution –I	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2302	<b>Prerequisite(s)</b>	None

### Course Description

Introduction; ecosystem and ecological pyramids; role of environment on phenotype of organisms; food chain, webs and trophic levels; factors influencing environment; impact of urbanization and industry on environment; population: air, water, land, thermal, radiation and noise; community ecology; atmosphere – composition and cycles; pollution; climate change (greenhouse effect and global warming); ozone layer – composition and state across the globe; waste and sewerage processing and disposal; microbes, plants and animal species; comparative study of life forms; features and characteristics of bacteria, archaea and eukaryotes; phylogenetic relationships between the three kingdoms; evolution of different members belonging to each of the three domains of life (with specific examples); models of speciation; causes and consequences of extinction.

### Equivalent Course(s)

None

<b>Course Name</b>	Physical Chemistry	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2306	<b>Prerequisite(s)</b>	None

### Course Description

Chemical Thermodynamics: Equation of states, ideal and real gases, the real gas equation and the van der Waals equation for real gases, critical phenomena and critical constants, four laws of thermodynamics and their applications, thermochemistry, calorimetry, heat capacities and their dependence on temperature, pressure and volume, reversible and nonreversible processes, spontaneous and non-spontaneous processes, relations of entropy and Gibbs free energy with equilibrium constant, Gibbs Helmholtz equation, fugacity and activity. Chemical Equilibrium: General equilibrium expressions, reaction quotients, examples of equilibrium reactions in solid, liquid and gas phases, extent of reactions and equilibrium constants, Gibbs energies of formation and calculations of equilibrium constants, effect of temperature and pressure on the equilibrium constants/compositions, van't Hoff equation, Le-Chatelier's principle. Solution Chemistry: Physical properties of liquids, surface tension, viscosity, refractive index, dipole moment etc. and their applications, brief account of interactions among the molecules in liquids, ideal and nonideal solutions, Raoult's law and its applications, lowering of vapor pressure, elevation of boiling point, depression of freezing point, osmotic pressure, vapor pressure of non-ideal solutions and Henry's law, abnormal colligative properties, degrees of association and dissociation of solutes, osmotic pressure and its measurement, fractional distillation and concept of azeotropic mixtures. Chemical Kinetics: The rates of reactions, zero, first, second and third order reactions with same and different initial concentrations, half-lives of reactions, experimental techniques for rate determination and methods for determination of order of reaction (integration, half-life, initial rate, and graphical methods), Arrhenius equation.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Ecology, Biodiversity & Evolution –II	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2402	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to animal kingdom: features of protists, protozoa, annelids, arthropods, myriapods, echinoderms, chordates, amphibians, reptiles and birds. Plant biodiversity – history, importance, usefulness and evolution; importance of plants, their conservation and domestication; improvement of crops; impact of environment on loss of genetic diversity and speciation; in situ and ex situ conservation; evolution of microbes, plants and animals; origin of life; methods of studying evolution; construction of phylogenetic trees on basis of morphology and molecular markers; environmental ethics.

### Equivalent Course(s)

None

<b>Course Name</b>	Immunology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2404	<b>Prerequisite(s)</b>	None

### Course Description

Overview of the immune system as the body's main defence mechanism; elements of innate and acquired immunity; cells and organs of the immune system; properties of antibodies and antigens together with their structure, function and interactions; genetics of antibody structure and diversity; expression of immunoglobulin genes; VDJ recombination; antigen processing and presentation; major histocompatibility complex; monoclonal and polyclonal antibodies; T-cell receptors, maturation, activation, and differentiation; B-cell generation, activation, and differentiation; complement system, hypersensitivity, cytokines, resistance and immune response to infectious diseases, cell-mediated effector response, leukocyte migration and inflammation, vaccines, diseases of the immune system - autoimmunity, transplantation immunology.

### Equivalent Course(s)

None

<b>Course Name</b>	Molecular Biology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2405	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to molecular biology and history; structure and function of DNA; chromatin and structure of chromosomes; protein structure and function; DNA replication in prokaryotes and eukaryotes; transcription in prokaryotes and eukaryotes; post transcriptional processing (e.g., RNA splicing, alternative splicing, editing); genetic code; translation, post-translational processing in prokaryotes and eukaryotes; protein folding, targeting and turnover; DNA 27 damage and repair, recombination and transposable elements. Signaling and control of gene regulation in prokaryotes and eukaryotes.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Pakistan Studies	<b>Credit Hours</b>	2(2,1)
<b>Course Code</b>	BTC 2407	<b>Prerequisite(s)</b>	None

### Course Description

1. Historical Perspective
  - a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah.
  - b. Factors leading to Muslim separatism
  - c. People and Land
    - i. Indus Civilization
    - ii. Muslim advent
    - iii. Location and geo-physical features.
2. Government and Politics in Pakistan Political and constitutional phases:
  - a. 1947-58
  - b. 1958-71
  - c. 1971-77
  - d. 1977-88
  - e. 1988-99
  - f. 1999 onward
3. Contemporary Pakistan
  - a. Economic institutions and issues
  - b. Society and social structure
  - c. Ethnicity
  - d. Foreign policy of Pakistan and challenges
  - e. Futuristic outlook of Pakistan

### Equivalent Course(s)

None

<b>Course Name</b>	Classical Genetics	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 2401	<b>Prerequisite(s)</b>	None

### Course Description

The course includes Classical Mendelian genetics; monohybrid crosses, dominance, recessiveness, co-dominance, and semi-dominance; principle of independent assortment; dihybrid and trihybrid ratios; gene interactions; epistasis and multiple alleles; ABO blood type alleles and Rh factor alleles in humans; probability in Mendelian inheritance; structure of chromosomes; organization of genes and genomes; nucleic acid function; DNA as warehouse of genetic information; experimental evidence that DNA is genetic material; sex determination; linkage and crossing over.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Genomics & Proteomics	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 2406	<b>Prerequisite(s)</b>	None

### Course Description

Organization and structure of genomes; genetic mapping (RFLP, microsatellite, SNP); high-resolution physical mapping (STS, EST); flow cytometry; somatic cell and radiation hybrids; artificial chromosomes in bacteria and yeast; hierarchical and whole genome shotgun sequencing; DNA sequencing strategies – manual and automated sequencing, pyro-sequencing, Solexa, Helicos, Roche 454, realtime and nano-pore sequencing; sequence assembly, obstacles and solutions; estimating gene number – overprediction and under-prediction, homology searches, exon prediction programs, integrated gene-finding software packages; structural variation in the genome and its applications; microarray and RNA interference; proteomics; cellular communication/signalling pathways; protein-protein interactions and validation - yeast two hybrid system, affinity purification-mass spectrometry (AP-MS), tandem affinity purification (TAP) tagging, fluorescence resonance energy transfer (FRET) and coimmunoprecipitation.

### Equivalent Course(s)

None

<b>Course Name</b>	Sociology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3508	<b>Prerequisite(s)</b>	None

### Course Description

The course focuses on three central themes: social change, social inequality, and social harmony versus conflict. It combines selective theoretical texts with case studies to understand the mechanisms and institutions that can trigger, foster, sustain, or undermine each of the three processes. The course covers the work of major sociological thinkers and the influence of sociology on modernization, race, citizenship, culture, gender, society, and economic development.

### Equivalent Course(s)

None

<b>Course Name</b>	Introduction to Biotechnology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 3504	<b>Prerequisite(s)</b>	None

### Course Description

Biotechnology- definition and history; foundations of biotechnology and interdisciplinary pursuit; branches and/or applications of biotechnology in medicine, agriculture (food, livestock, fisheries, algae, fungi, etc.); protection of biotechnological products; safety in biotechnology; public perception of biotechnology; biotechnology and ethics; biotechnology and the developing world

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Enzymology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3503	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to enzymes, nomenclature, classification, ribozyme, general characteristics of theories of enzyme catalysis, enzyme and substrate specificity, isozymes, coenzymes, cofactors, regulation of enzyme activity, chemical kinetics and enzyme kinetics, Michaelis-Menten equation, effect of various factors on rate of reactions, inhibition of enzymatic reactions and kinetics, multienzyme system and bisubstrate reactions, catalytic mechanisms, regulatory enzymes, immobilised enzyme and enzyme assays.

**Equivalent Course(s)** None

<b>Course Name</b>	Genetic Resources and Conservation	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3507	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to genetic resources and their significance; plant genetic resources - utilization, opportunities and constraints; strategic role of plant genetic resources in achieving global food security and sustainable agriculture; overview of wild and domesticated genetic resources of Pakistan; genetic diversity in endangered species; genotype-environment interactions; gene pools and genetic boundaries; genetic drift, inbreeding, migration and gene flow; introduction to extinction and its causes; threatened animal and plant species; conservation of genetic resources through mapping of existing biological diversity; assessing conservation status; management strategies; laws and treaties of conservation; quarantine regulations; future prospects of genetic conservation.

**Equivalent Course(s)** None

<b>Course Name</b>	Psychology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3506	<b>Prerequisite(s)</b>	None

**Course Description** The course topics include why study psychology, nature and application of psychology with special reference to Pakistan, schools of psychology, methods of psychology, biological basis of behavior and sensation, perception and attention. It helps distinguish between the major perspectives on human thought and behavior and appreciate the variety of ways psychological data are gathered and evaluated. The course also entails gaining insight into human behavior and into one's own personality or personal relationships, exploring the ways that psychological theories are used to describe, understand, predict, and control or modify behavior, motives, emotions, learning, memory and thinking, impact of behavior on organization, how do the tools of psychology improve work output, social medicine, and social evils.

**Equivalent Course(s)** None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Industrial Biotechnology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3603	<b>Prerequisite(s)</b>	None

### Course Description

Industrial biotechnology – introduction and scope; microorganisms commonly used in industry; media and nutritional requirements of industrial organisms; screening for productive strains and strain improvement; culture collections; fermentation and fermenters; extraction of fermented products; production of beer, wines, spirits and vinegar; use of single cell proteins as food products; biocatalysts; microbial insecticides; production of metabolites: organic acids and amino acids; vaccines and antibiotic production

### Equivalent Course(s)

None

<b>Course Name</b>	Agriculture Biotechnology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3601	<b>Prerequisite(s)</b>	None

### Course Description

Agriculture biotechnology and its applications in crop improvements; cell and plant tissue culture methodology; improvement of plants via plant cell culture; plant molecular biomarkers; direct and indirect methods of plant and animal transformation: gene gun method of transformation, Agrobacterium mediated transformation, chloroplast transformation and polyethylene glycol (PEG) mediated transformation; transgenic crops with herbicide, biotic and abiotic stress resistance; problems related to transgenic plants; genetically modified organisms (GMOs); field evaluation and commercialization of GMOs; possible effects of releasing GMOs into the environment; bio-fertilizers, bio-pesticides and their types; non-symbiotic nitrogen fixers; present and future prospects of bio fertilizers

### Equivalent Course(s)

None

<b>Course Name</b>	Analytical Chemistry and Instrumentation	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 3607	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to various analytical techniques; principles and applications of various types of chromatography including paper, thin layer, gel filtration, ion-exchange, affinity, high performance liquid chromatography (HPLC), gas chromatography, GC-MS and LC-MS; spectroscopy types including nuclear magnetic resonance (NMR), visible, ultraviolet, luminescence, flame, atomic absorption, fluorescence, emission and inductively coupled plasma emission spectroscopy (ICPMS); principles and applications of flow cytometry; introduction to X-ray diffraction; general analytical instrumentations and methods of fractionation and characterization of proteins and nucleic acids including dialysis, ultra-filtration, lyophilisation, ultracentrifuge and amino acid analyzer.

### Equivalent Course(s)

None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3606	<b>Prerequisite(s)</b>	None

**Course Description** Introduction; unethical academic practices (plagiarism); need of research and research types; extraction and review of literature; identifying a research problem and formulating a hypothesis; designing a study; data collection, interpretation and analysis; writing a research report, project, thesis and/or research article or review; preparing posters; making scientific presentations; intellectual property.

**Equivalent Course(s)** None

<b>Course Name</b>	Medical Biotechnology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 3604	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to health biotechnology; social acceptance of medical biotechnology; molecular basis of disease; molecular and genetic markers; detection of mutations and infectious agents; active and passive immunization; vaccines (live, killed, recombinant DNA vaccines, subunit vaccines, DNA vaccines, edible vaccines); organ transplantation; applications of transgenic animals (animal models of diseases, farming and enhancement of farm animals); drug delivery systems; blood transfusion and grafting techniques; pharmacogenetics; gene therapy; biopharmaceuticals from plants; stem cell technology

**Equivalent Course(s)** None

<b>Course Name</b>	Research Report I	<b>Credit Hours</b>	3(0,3)
<b>Course Code</b>	BTC 4705	<b>Prerequisite(s)</b>	None

**Course Description** A Biotechnology related research project is to be conducted, in which candidates are required to do a short lab experiment, and present their findings in terms of research report and power point presentations.

**Equivalent Course(s)** None

<b>Course Name</b>	Methods in Molecular Biology	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 4704	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to recombinant DNA technology; restriction and modifying enzymes; cloning and expression vectors and their types; expression of recombinant proteins and their purification by affinity chromatography; polymerase chain reaction (PCR) - types; (inverse, touch-down, nested, hemi-nested, pit stop, multiplex, reverse transcriptase, RACE, real-time) and its applications; detection of mutations and/or SNPs; DNA fingerprinting; analysis of nucleic acids by gel electrophoresis – horizontal, vertical, pulse field, denaturing gradient gel electrophoresis; analysis of proteins by native and SDS-PAGE; 2-D gels; generation of antibodies and their uses; enzyme-linked immunosorbant assay; Southern, Western, Northern blotting.

**Equivalent Course(s)** None

## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Bioinformatics	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 4702	<b>Prerequisite(s)</b>	None

### Course Description

Introduction; bio-computing; biological databases - types and retrieval of nucleic acid (or genomic) or protein sequence information; sequence alignment - pairwise, multiple; phylogenetics; in silico identification of protein motifs and domains; structural bioinformatics of proteins and RNAs including protein modeling and prediction of their interactions with other proteins and small molecules; identification of genes and promoter regions within genomes; networks; strategies for whole genome sequencing and assembly.

Recommended Databases and Tools: 1. NCBI, PDB, EcoCyc, DDBJ, SWISS-PROT, TIGR, KEGG etc. 2. Bioedit, Repeatmasker, PHRED, PHRAP, BLAST, Prosite/BLOCKS/PFAM, CLUSTALW, Emotif, RasMol, Oligo, Primer3, Molscrip, Treeview, Alscript, Genetic Analysis Software, Phylip, MEGA4.0 etc.

### Equivalent Course(s)

None

<b>Course Name</b>	Principles of Biochemical Engineering	<b>Credit Hours</b>	3(2,1)
<b>Course Code</b>	BTC 3505	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to microorganisms and biological molecules; principles of enzyme catalysis; methods of enzyme and cell immobilization; enzyme kinetics; internal mass transfer effect on immobilized growth; stoichiometry models of microbial growth; structured model, of microbial growth; bioreactors - continuous stirred tank bioreactors, plug-flow and packed bed bioreactors, imperfect mixing, fed batch bioreactors, gas liquid mass transfer in bioreactors, power requirement for bioreactor, sterilization and heat transfer in bioreactors; introduction to bio product recovery; biological product manufacturing; economic analysis of bioprocesses; case study: penicillin.

### Equivalent Course(s)

None

<b>Course Name</b>	Biological Physics	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 4801	<b>Prerequisite(s)</b>	None

### Course Description

Essentials of thermodynamics; concept of entropy, enthalpy and Gibb's free energy; order and disorder in biological systems; molecules, diffusion, random walks and friction; methods of studying macromolecules; interactions of molecules in 3-D space – determining binding and dissociation constants; molecular motors; sedimentation; Reynold's number; chemical forces and self- assembly; physics of ion channels.

### Equivalent Course(s)

None



## 6.1.2 Bachelor of Science in Biotechnology (BS-BTC)

<b>Course Name</b>	Research Report II	<b>Credit Hours</b>	3(0,3)
<b>Course Code</b>	BTC 4805	<b>Prerequisite(s)</b>	None

**Course Description** A Biosciences related research project is to be conducted, in which candidates are required to do a short lab experiment, and present their findings in terms of research report and power point presentations

**Equivalent Course(s)** None

<b>Course Name</b>	Environmental Biotechnology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 4802	<b>Prerequisite(s)</b>	None

**Course Description** Introduction to environmental biotechnology; fundamentals of biological interventions; genetic manipulation strategies in environmental biotechnology; pollution indicators and pollution control strategies; bioreactors; domestic waste water treatment; industrial effluent treatment; sludge treatment; contaminated 30 land and bioremediation; phytoremediation; landfills and composts; concept of integrated environmental biotechnology; biodegradation and biotransformation of hazardous chemicals; products of environmental biotechnology.

**Equivalent Course(s)** None

<b>Course Name</b>	Food Biotechnology	<b>Credit Hours</b>	3(3,0)
<b>Course Code</b>	BTC 4803	<b>Prerequisite(s)</b>	None

**Course Description** Food composition, probiotics, fermented foods, food enzymes, colors and additives; overview of metabolic engineering of bacteria for food ingredients; 32 techniques used for production of food ingredients by microbes; genetic modification of plant starches for food applications; biotechnological approaches to improve nutritional quality and shelf life of fruits and vegetables; microbial food spoilage and food borne diseases; detection and control of food borne bacterial pathogens; food safety and quality control; international aspects of quality and safety assessment of food derived by modern biotechnology.

**Equivalent Course(s)** None

## 6.2 Masters

### 6.2.2 Master of Science in Biosciences (MS-Biosciences)

Students enrolled in Master of Science in Biosciences (MS-BIO) program are required to complete 8 courses with a minimum of 30 credit hours, within five (5) years to become eligible for obtaining the MS degree in Biosciences. The break-up of 30 courses is as follows:

- 4 Compulsory Courses (12 Credit Hours)
- 4 Electives<sup>00</sup> (12 Credit Hours)
- 1 Thesis / 2 additional electives or 2 IRS instead of thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BIO 5101	Advanced Research Methodology	210
BIO 5102	Biostatistics	210
BIO xxx	Elective-I	-
BIO xxx	Elective-II	-
<b>Spring Semester</b>		
BIO 5201	Molecular Genetics	211
BIO 5202	Techniques in Biomolecules Analyses	211
BIO 5xxx	Elective-III	-
BIO 5xxx	Elective-IV	-
<b>Second Year</b>		
<b>Fall Semester</b>		
BBIO 5xxx	Thesis / Elective-V OR IRS-I	-
<b>Spring Semester</b>		
BIO 5xxx	Thesis / Elective-VI OR IRS-II	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

00- List of Electives is given in Appendix B.

## 6.2.2 Master of Science in Biosciences (MS-Biosciences)

<b>Course Name</b>	Advanced Research Methodology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BIO 5101	<b>Prerequisite(s)</b>	None

### Course Description

This course is aimed to provide a comprehensive description related to research and its methods. Topics include definition and value of research, scientific methods of research and its special features, classification of research, how to select a topic for research? theory and research, concepts, variables and types of variables, hypothesis testing and characteristics, review of literature, conducting a systematic literature review, theoretical framework, problem definition and research proposal, the research process, ethical issues in research, measurement of concepts, criteria for good measurement, research design, tools for data collection, sample and sampling, probability and non-probability sampling, data analysis tools, data presentation, experimental research, use of secondary data, research report writing, and referencing.

### Equivalent Course(s)

MPH 5205, MS 5239

<b>Course Name</b>	Biostatistics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 5102	<b>Prerequisite(s)</b>	None

### Course Description

The objective of this course is to equip students with current tools and techniques to analyze and interpret data. Topics include the collection, classification, and presentation of descriptive data; the rationale of estimation and hypothesis testing; analysis of variance; analysis of contingency tables; correlation and regression analysis; multiple regression, logistic regression, and the statistical control of confounding; sample size and power considerations; and survival analysis. Special attention is directed to the ability to recognize and interpret statistical procedures in articles from the current literature. This course gives students the skills to perform, present, and interpret basic statistical analyses using the SPSS statistical package.

### Equivalent Course(s)

MS 5204, MPH 5105, BA 5305

## 6.2.2 Master of Science in Biosciences (MS-Biosciences)

<b>Course Name</b>	Molecular Genetics	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 5201	<b>Prerequisite(s)</b>	None

### Course Description

In this course, students will be introduced to the new and current developments in the field of molecular biology and genetics. Topics include: genome structure and function, chromosomes and chromatin structure, genome organization, genetic and physical mapping, gene regulation, gene and RNA splicing, gene cloning, control of gene regulation, molecular and genetic diagnosis of diseases, genetics of host resistance, gene therapy, human genome project, developmental genetics, cancer genetics, immunogenetics, neurogenetics, and population genetics.

### Equivalent Course(s)

None

<b>Course Name</b>	Techniques in Biomolecules Analyses	<b>Credit Hours</b>	3 (2,1)
<b>Course Code</b>	BIO 5202	<b>Prerequisite(s)</b>	None

### Course Description

In this course, students are introduced to various tools and techniques that are currently applied for the analyses of biomolecules. Techniques like nuclear magnetic resonance, mass spectrometry, ultraviolet and infrared spectroscopy, genome sequencing and proteome analysis, chromatographic separation of molecules are included in this course. In addition, various visits to high profile research labs will be organized to give proper demonstration and experience to the students.

### Equivalent Course(s)

None

## 6.2.1 Master of Public Health (MSPH)

## (MSPH)-36 credits hours

MSPH at SZABIST is a two-year program distributed into two streams i.e., MSPH (36 credit hours) and MSPH (60 credit hours). For MSPH (36 credit hours), the curriculum includes 10 courses of 3 credit hours each and a research project (thesis) of 6 credit hours or 2 IRS. The maximum time limit to complete the MSPH degree is four years.

Students enrolled in Master of Public Health (MSPH-36) are required to complete 36 credits, within 4 years. The break-up of credit hours is as follows:

- 7 core courses (21 credit hours)
- 3 electives (9 credit hours)
- 1 Thesis (6 Credit Hours) OR 2 IRS (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MSP 5104	Social and Behavioral Aspects of Public Health	214
MSP 5101	Basic Epidemiology and Biostatistics	214
MSP 5102	Environmental and Occupational Health	215
MSP 5103	Health Promotion, Advocacy and Social Mobilization	215
<b>Spring Semester</b>		
MSP 5201	Applied Epidemiology and Biostatistics	216
MSP 5202	Health System	216
MSP 5203	Research Methods: Quantitative and Qualitative	217
MSP 5xxx	Elective-I	-
<b>Second Year</b>		
<b>Fall Semester</b>		
MSP 5xxx	Thesis-I or IRS-I	-
MSP 5xxx	Elective-II	-
<b>Spring Semester</b>		
MSP 5xxx	Thesis-II or IRS-II	-
MSP 5xxx	Elective-III	-

Practicum OR One Publication in Peer Reviewed Journal (HEC Indexed Journal)

All courses may not be offered every year. Alternate courses may be substituted as & when needed.

## 6.2 Masters

### 6.2.1 Master of Public Health (MSPH)

#### (MSPH)-60 credits hours

For MSPH (60 credit hours), the curriculum includes 18 courses of 3 credit hours each and a research project (thesis) of 6 credit hours or 2 IRS. The maximum time limit to complete the MSPH degree is four years.

The break-up of credit hours is as follows:

- 15 core courses (45 credit hours)
- 3 elective courses in the specialized track (9 credit hours)
- 1 Thesis (6 Credit Hours) OR 2 IRS (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
MSP 5104	Social and Behavioral Aspects of Public Health	214
MSP 5111	Sociology of Health and Disease	218
MSP 5106	Population Dynamics	218
MSP 5107	Professional Ethics	219
MSP 5105	Mental Health	219
<b>Spring Semester</b>		
MSP 5206	Microbiology	219
MSP 5204	Entomology	220
MSP 5203	Research Methods: Quantitative and Qualitative	220
MSP 5205	Health Care Risk Management	220
MSP 5207	Parasitology	220
<b>Second Year</b>		
<b>Fall Semester</b>		
MSP 5101	Basic Epidemiology and Biostatistics	214
MSP 5102	Environmental and Occupational Health	215
MSP 5103	Health Promotion, Advocacy and Social Mobilization	215
MSP 5202	Health System	216
MSP 5xxx	Thesis-I or IRS-I	-
<b>Spring Semester</b>		
MSP 5201	Applied Epidemiology and Biostatistics	216
MSP 5xxx	Thesis-II or IRS-II	-
MSP 5xxx	Elective-I	-
MSP 5xxx	Elective -II	-
MSP 5xxx	Elective -III	-

Practicum OR One Publication in Peer Reviewed Journal (HEC Indexed Journal)

All courses may not be offered every year. Alternate courses may be substituted as & when needed.

## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Social and Behavioral Aspects of Public Health	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Definition of public health in a historical perspective, Recent developments in public health and future directions of public health, Problem-solving methodology applied to public health, Developing a conceptual framework for understanding the key determinants, Identifying and developing strategies (policies and interventions), Setting priorities and recommending intervention or policies, Implementing interventions or policies and evaluation plan, Developing a communication strategy, Research in public health and importance of evidence-based decision making, Overview of public health programs in Pakistan
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<b>Equivalent Course(s)</b>	MPH 5104
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<b>Course Name</b>	Basic Epidemiology and Biostatistics	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5101	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Definition of Epidemiology, Importance of Epidemiology, Types of study designs: their importance, uses and limitations. Outcome measures for each study design e.g. Relative risk, Odds ratio etc. Causality and association, Inferential Epidemiology, Validity and Reliability, Measuring the Disease burden: Rates, Ratios, Incidence, Prevalence, Role of Chance, Confounding and Bias in interpretations. Screening in disease control Introduction to Biostatistics, Types of statistical applications, Scales of measurements, Descriptive Statistics, Measures of central tendencies, Measures of variability, Measures of shapes, Probability, Probability Distributions: Normal, Poisson, Binomial Sampling techniques, sampling errors/ Confidence Intervals, Concepts of analytical statistics: Hypothesis testing: Alpha and Beta errors Tests of Significance: Normal test, t test, Chi square test etc. Correlation, Regression, Sampling and various sampling techniques, Data presentation: Figures, graphs, tables
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<b>Equivalent Course(s)</b>	None
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## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Environmental and Occupational Health	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MSP 5102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Introduction to Environmental Health Issues, Environmental Health Issues of Pakistan, Human Impacts on Environment, Environmental Impacts on Human Health, Sanitation Status and Options in Pakistan, Water Pollution, Drinking Water Quality Situation in Pakistan, Pesticides and Fertilizers, Arsenic, Fluoride and Nitrate contamination in Drinking Waters, Water Born Diseases in Pakistan, Water Supply Agencies, their Capacity and Performance, Present Drinking Water Treatment Practices, Waste Water Availability and its Treatment, Air Pollution, Noise Pollution,, Solid and Hazardous Waste Management Environmental Impact Assessment (EIA), Climate Change and Its Effect on Health, Environment Policy and Law, Workplace and Health, Scope of Occupational Health and Safety, Occupational Health Issues in Low-income Countries, Industrial Hygiene, Anticipation, Recognition, Evaluation, Control, Clinical Occupational and Environmental Medicine, Legal and Regulatory Issues, Labor Law.
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<b>Equivalent Course(s)</b>	MPH 5101
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<b>Course Name</b>	Health Promotion, Advocacy and Social Mobilization	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MSP 5103	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	<p><b>1. Introduction to Health Promotion and Education</b> Health promotion, Risk transition, Ottawa Charter, Adelaide, Sundsva, Jakarta and Mexico, Bangkok conferences, Life course perspective, World Health Report 2002.</p> <p><b>2. Health perspectives and reflections</b> Health as a continuum, Approaches to Health Education, Orientations for health education.</p> <p><b>3. Evidence-based Health Promotion and Planning</b> Principles of Health Promotion, Hierarchy of evidence, Outcome model of Health Promotion, A new evidence paradigm, Health A new evidence paradigm</p> <p><b>4. Health Promotion theoretical perspectives</b> Ecological Models, Community theories, Diffusion of innovations, Community organization theory, Organizational change theory, Interpersonal, Social learning theory, Social cognitive theory, Trans theoretical model/Stages of change model, Health belief model, Consumer information processing Model.</p> <p><b>5. Models of Health Promotion</b> Aims of Health Promotion, Towards a more integrated model, Tanahills Model.</p> <p><b>6. Models of Health Promotion Planning</b> Precede-Proceed, Social Marketing, Logic Model.</p>
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## 6.2.1 Master of Public Health (MSPH)

### 7. Health Communication

Types and levels, Principles of effective communication, Message, Audience, HEALTHCOMS 5 step methodology, CDC's Health Communication Wheel, "A" frame of advocacy, 7 C's of effective communication, "P" process, Health Communication campaign, Planning a comprehensive health communication campaign.

### 8. Steps of the comprehensive health communication campaign

Steps of the comprehensive health communication campaign.

### 9. Social Marketing

### 10. Evaluating Health Promotion Programs

Stages of research and evaluations for Health Promotion programs, Best practices in health promotion, Skills for evaluation, Steps off evaluation process.

**Equivalent Course(s)** MPH 5103

<b>Course Name</b>	Applied Epidemiology and Biostatistics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MSP 5201	<b>Prerequisite(s)</b>	MSP 5101

#### Course Description

Disease frequency: Incidence and Prevalence, Proportional Morbidity and mortality, Details of measures of association and inference in cohort and case control studies, Further applications of Chance, confounding and bias in studies. Interaction and effect modification. Issues in screening. Survival time analysis. Standardization techniques in epidemiological studies. Parametric test: ANOVA, Non Parametric tests: Chi square test for several proportions, n x k tables and tables with ordered data, Fisher's exact test, non-parametric tests for a single or more than one samples e.g. Wilcoxon's Rank sum tests, Mann-Whitney U-tests. Partial correlation coefficients, coefficient of determination. Multiple regression and Logistic regression

**Equivalent Course(s)** None

<b>Course Name</b>	Health System	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	MSP 5202	<b>Prerequisite(s)</b>	None

#### Course Description

Definitions of health input, output and outcomes, Health System: Conceptual Frameworks, Health System: Terms and Concepts, Systems Approach, Micro Health System: Kielmann Model, Health Indicators and their use, Situation Analysis Approach, Instrument for Health Systems Analysis, Macro Health System: WHO model, Health Management Information System, Field Visits for data collection (applied system analysis), Health system functions, Health system outcomes, Primary Health Care, Linking the Micro and Macro Health models.

**Equivalent Course(s)** MPH 5202

## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Research Methods: Quantitative and Qualitative	<b>Credit Hours</b>	<b>3 (3, 0)</b>
<b>Course Code</b>	MSP 5203	<b>Prerequisite(s)</b>	None

### Course Description

Principles of critical reading of a scientific paper, Definition of research, Importance of research in public health, Selection of topic for research, Literature Search using internet and library, Preparing the background for the proposal writing. Parts of proposal writing. Study design, sampling techniques, inclusion and exclusion criteria. Methodology, Choosing the statistical techniques. Reference writing, Abstract writing, Title writing for the proposals

### Equivalent Course(s)

BMPH 5205, BIO 5101

<b>Course Name</b>	Thesis I	<b>Credit Hours</b>	<b>3 (0, 3)</b>
<b>Course Code</b>	MSP 5xxx	<b>Prerequisite(s)</b>	None

### Course Description

The course includes introduction to public health systems research is a vital element that the Master of Public Health (MSPH) program at SZABIST boosts. This will conceptualize the research experience and revamp it into a scientific report. This will complete the requirement for the fourth session of MSPH program. By completing their thesis MSPH students will demonstrate their understanding of core competencies through successful application of core knowledge and principles, critical thinking and analytic reasoning skills.

### Equivalent Course(s)

MPH 5309

<b>Course Name</b>	Thesis II	<b>Credit Hours</b>	<b>3 (0, 3)</b>
<b>Course Code</b>	MSP 5xxx	<b>Prerequisite(s)</b>	None

### Course Description

The course includes introduction to public health systems research is a vital element that the Master of Public Health (MSPH) program at SZABIST boosts. This will conceptualize the research experience and revamp it into a scientific report. This will complete the requirement for the fourth session of MSPH program. By completing their thesis MSPH students will demonstrate their understanding of core competencies through successful application of core knowledge and principles, critical thinking and analytic reasoning skills.

### Equivalent Course(s)

MPH 5409

## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Sociology of Health & Diseases	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5111	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Evolution of Health & Healing, Body, Mind, Illness and Environment, Theories, research and debates of medical sociology. Social, environmental and occupational factors in health and illness; The meaning of health and illness from the patient's perspective; The historical transformation of the health professions and the health work force; The social and cultural factors surrounding the creation and labeling of diseases; Disparities in health, access to healthcare, and the quality of healthcare received; Organizational and ethical issues in medicine including rising costs and medical technology; and health care reform.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Population Dynamics	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5106	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Introduction to language and methods in demography. The demographic transition and historical and modern population trends. Reading: PRB Handbook; Dyson 2001. General relationship linking Mortality and Development. Reading: McKeown; Preston 1975; Johansson & Mosk 1987. The Local Political Economy of Health; and HIV/AIDS Reading: Watkins 2004; Madhavan & Schatz 2007; Swidler and Watkins 2012 [long]. Gender Dimensions of Health and Mortality. Reading: Das Gupta 1987. Fertility Transitions in Poor Countries. Reading: Bongaarts et al. 1990; Pritchett 1994. The Politics of Population Control Reading: Sinding 2000. Migration and Development Reading: Massey 1988; Dyson 2011; Korinek et al. 2005. Technology: Beyond Malthus Reading: Boserup 1965; Johnson and Nurick 1995; McNeil 2006. Population Structures I: Age Structure Dynamics. Reading: Lee and Mason 2006; Eastwood and Lipton 2007. Current Development Initiatives Reading: Lagarde et al. 2007
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<b>Equivalent Course(s)</b>	MPH 5301
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## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Professional Ethics	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5107	<b>Prerequisite(s)</b>	None

### Course Description

It is essential for professionals in any field to have an understanding of the ethical problems and principles in their field. But anyone, no matter what their job, must deal with many other professions as well. Part of professional ethics is the understanding of the professionalism and ethics of other professions: how they interact and what can be expected from them as correct ethical behavior. In turn, any professional will benefit from a critical scrutiny of their own ethics by those from other professions. The general principles of professional ethics will be examined, as well as the distinctive problems of the different fields. The course covers the ethics of several major professions: Business Ethics, Media Ethics, Police Ethics, Medical Ethics, Legal Ethics, and Research Ethics. Topics covered will also include: the nature of a profession, professional codes of ethics, confidentiality, whistle-blowing, the responsibility of business to the environment, uses and abuses of human research, and animal ethics in research.

### Equivalent Course(s)

MPH 5307

<b>Course Name</b>	Mental Health	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5105	<b>Prerequisite(s)</b>	None

### Course Description

Introduction to Mental Health, Prevention of Mental ill health and promote mental health, Risk and protective factors for mental disorders, Socioeconomic determinants of Mental health, Mental Health and Quality of life, Strengthening Community Network, Reducing Harm from Addictive Substances, Prevention of Child abuse and neglect, Coping with parental mental illness, Management of mental health in Rehabilitation Centers

### Equivalent Course(s)

MPH 5201

<b>Course Name</b>	Microbiology	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5206	<b>Prerequisite(s)</b>	None

### Course Description

Fundamentals of Microbiology, Introduction to medical Microbiology, Gen. Immunology, Microbial Taxonomy, Gen. Virology, Mycology, Familiarize students with fundamental concept of Microbiology

### Equivalent Course(s)

None

## 6.2.1 Master of Public Health (MSPH)

<b>Course Name</b>	Entomology	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5204	<b>Prerequisite(s)</b>	None

**Course Description** Common arthropod borne diseases, Arthropods of medical importance (mosquito, flies, flees, ticks, mites and human lice), Principles of arthropods control (environmental, chemical, biological and genetics), Insecticides and their public health importance

**Equivalent Course(s)** None

<b>Course Name</b>	Research Methods: Quantitative and Qualitative	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5203	<b>Prerequisite(s)</b>	None

**Course Description** Principles of critical reading of a scientific paper, Definition of research, Importance of research in public health, Selection of topic for research, Literature Search using internet and library, Preparing the background for the proposal writing. Parts of proposal writing. Study design, sampling techniques, inclusion and exclusion criteria. Methodology, Choosing the statistical techniques. Reference writing, Abstract writing, Title writing for the proposals

**Equivalent Course(s)** MPH 5205, BIO 5101

<b>Course Name</b>	Health Care Risk Management	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5205	<b>Prerequisite(s)</b>	None

**Course Description** The course will provide a historical perspective on the development of health care risk management, the role of the health care risk manager, the principles of health care risk management and the connection between risk management, quality improvement and corporate compliance in various health care settings. Development of a Risk Management Program, The Process of Professional Regulation, Identification of Organizational Risks and Ethics, Risk Financing Insurance

**Equivalent Course(s)** MPH 5401

<b>Course Name</b>	Parasitology	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	MSP 5207	<b>Prerequisite(s)</b>	None

**Course Description**

**Protozoa**  
*Plasmodium and malaria, Entameobahistolytica and dysentery, Giardia lamblia and giardiasis, Trichomonas and trichomoniasis, Leishmania and leishmaniasis*

**Helminths**  
*Taeniasaginata, Ancylostomaduodenale, Ascaris, enterobiusvermicularis and worm infestation*

**Ectoparasites**  
*Pediculushumanus and Head lice, Sarcoptescabei and scabies*

**Equivalent Course(s)** None

## 6.2 Master & PhD

### 6.2.3 Doctor of Philosophy in Biosciences (Ph.D-BIO)

Students enrolled in Doctor of Philosophy in Biosciences (MS-BIO) program are required to complete 48 credit hours, within eight (8) years to become eligible for obtaining the Ph.D. degree in Biosciences. The break-up of 48 credit hours is as follows:

- 2 Compulsory Courses (6 Credit Hours)
- 4 Electives (12 Credit Hours) OR 1 IRS (3 Credit Hours) with 3 Electives (9 Credit Hours)
- 1 Dissertation (30 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BIO 6101	Statistical Tools for Research	0
BIO 6xxx	Elective-I	0
BIO 6xxx	Elective-II	0
<b>Spring Semester</b>		
BIO 6201	Research Methodology	0
BIO 6xxx	Elective-III	0
BIO 6xxx	Elective-IV	0
<b>Second Year</b>		
<b>Fall Semester</b>		
BIO 6xxx	Dissertation	-
<b>Spring Semester</b>		
BIO 6xxx	Dissertation	-
<b>Third Year</b>		
<b>Fall Semester</b>		
BIO 6xxx	Dissertation	-
<b>Spring Semester</b>		
BIO 6xxx	Dissertation	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 6.2.3 Doctor of Philosophy in Biosciences (Ph.D-BIO)

<b>Course Name</b>	Statistical Tools for Research	<b>Credit Hours</b>	<b>3 (3,0)</b>
<b>Course Code</b>	BIO 6101	<b>Prerequisite(s)</b>	None

**Course Description** In this course, concepts, techniques and applications of quantitative methods for decision making are introduced. The topics include forecasting, regression analysis, analysis of variance, statistical decision theory, utility theory, linear programming, and waiting lines. The course incorporates computer software packages.

**Equivalent Course(s)** ELM 6102, SS 6105

<b>Course Name</b>	Research Methodology	<b>Credit Hours</b>	<b>3 (3,0)</b>
<b>Course Code</b>	BIO 6201	<b>Prerequisite(s)</b>	None

**Course Description** The course covers concept of research, definitions, quantitative and qualitative approaches, proposal for research, identification of research problem, forming hypotheses, critical analysis methods; reading for research; data collection, information gathering; writing literature review, presentation of information, writing academic papers, content and referencing, writing a research proposal and presenting the oral and written research proposals.

**Equivalent Course(s)** ELM 6101, SS 6313

The background of the page is a light blue color with a word cloud of various degree programs. The words are in different sizes and orientations, creating a textured effect. The programs listed include BA, BE Mechatronics, EMBA, BS Biosciences, BBA, Ph.D, LLB, MBA, BS Social Sciences, MS Computing, BS Media Sciences, MS Management Sciences, BS Media Sciences, Business Studies (BABS), MS Media Sciences, EMBA, Ph.D, BBAMBA Banking and Finance, MS Computing, BS Biosciences, BS Social Sciences, BS Biosciences, BS Social Sciences, BE Mechatronics, MBA Banking and Finance, Business Studies (BABS), BS Media Sciences, EMBA, BBA, BE Mechatronics, EMBA, BS Biosciences, LLB, MBA, BS Social Sciences, MS Computing, BS Media Sciences, MS Management Sciences, Ph.D, BS Media Sciences, Business Studies (BABS), MS Media Sciences, EMBA, Ph.D, BBAMBA Banking and Finance, MS Computing, Business Studies (BABS), BS Biosciences, MBA Banking and Finance, Social Sciences, BBA, BE Mechatronics, MS Computing, BS Media Sciences, MBA, BS Social Sciences, BS Media Sciences, BE Mechatronics, EMBA, BS Social Sciences, BS Media Sciences, MBA, BE Mechatronics, FMBA, BS Social Sciences, BS Media Sciences, BE Mechatronics, BA, BS Computing, BA, BS Media Sciences, Business, EMBA, Ph.D, BA, MBA, Banking and Finance, EMBA, Ph.D, Business Studies (BABS), LLB, BS Biosciences, MS Computing.



# 7.1 Bachelor

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

*Bachelor of Education (B.Ed.) Secondary is 1.5 years duration program to cater the intellectual and professional need of pre-service and in-service teachers who have completed 16 years of prior education. Students enrolled B.Ed. program are required to complete a total of 54 Credit Hours within 4 years.*

The break-up of 54 credit hours is as follows:

- 12 Compulsory Courses (36 Credit Hours)
- 4 Content Specialized Courses<sup>1</sup> (12 Credit Hours)
- One Action Research Study (3 credit hours)
- Teaching Practice (3 credit hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BED 5105	Foundations of Education	225
BED 5102	Educational Leadership and Management	225
BED 5104	Effective Communication in Education	225
BED 5103	Educational Psychology	226
BED 5106	Testing and Evaluation	226
BED 5101	Curriculum Design and Development	226
<b>Spring Semester</b>		
BED 5201	Academic Content I and Pedagogy	226
BED 5202	Academic Content II and Pedagogy	227
BED 5203	Academic Content III and Pedagogy	227
BED 5204	Academic Content I V and Pedagogy	228
BED 5205	Research Methods and Techniques	228
BED 5206	School, Community and Teacher	228
<b>Second Year</b>		
<b>Fall Semester</b>		
BED 5304	ICT in Education	229
BED 5303	Educational Policies and Practices	229
BED 5305	Teaching Practice	229
BED 5302	Critical Thinking and Reflective Practice	230
BED 5301	Classroom Management	230
BED 5308	Research project	230

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	Foundations of Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5105	<b>Prerequisite(s)</b>	None

### Course Description

This course will focus on the ideological, philosophical, psychological, socio-economic and historical foundations of education. The major focus will be on developing an understanding of the participants how different philosophical theories affect education. The course will also include historical development of education of the Pakistan. Emphasize will be given on analyzing various sociological, political, economic and ideological forces that influence the process of education in our culture context. This course will also be used to develop the ability in prospective teachers to interpret knowledge within its historical, philosophical, ideological, and social contexts, which will lead to produce critical perspectives on education both within, and outside of schools.

### Equivalent Course(s)

None

<b>Course Name</b>	Educational Leadership and Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5102	<b>Prerequisite(s)</b>	None

### Course Description

This course aims to provide students with the opportunity to explore issues linked to effective educational leadership and management. It intends to improve the quality and effectiveness of school management by introducing current methods of educational administration, with a focus on important issues such as cultural influence, power, conflict, time management, and other problems associated with management of teaching and learning. Participants are going to audit their professional skills with an ongoing reflective practice and will identify particular areas for personal and professional development.

### Equivalent Course(s)

EDU 5107

<b>Course Name</b>	Effective Communication in Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5104	<b>Prerequisite(s)</b>	None

### Course Description

Leadership competence is the product of communication competence and the communication discipline has experienced a great deal of change and growth over the last fifty years. This course will act as an invitation to join in this debate about the nature, functions, and processes underlying leadership and human communication. It will explore the connection between communication and leadership. Particularly, we will examine how the field of communication contributes to effective teaching and learning. In addition, to adequately understand communication theory one must do practical work in communication as well because leadership is a symbolic process and leaders are made, not born. This class will integrate both theory and practice.

### Equivalent Course(s)

None

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	Educational Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5103	<b>Prerequisite(s)</b>	None

**Course Description** The purpose of this course is to develop learner's insight. Its unique approach helps students\teachers to understand different psychological concepts by encouraging them to examine their own learning and then showing them how to apply these concepts as teachers. This course concentrates on core concepts and principles. It gives readers an in-depth understanding of the central ideas of educational psychology.

**Equivalent Course(s)** None

<b>Course Name</b>	Testing and Evaluation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5106	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to develop prospective teachers towards adequate knowledge of the concept of evaluation and test construction during the course. The teacher will develop skills to construct classroom based tests to evaluate students learning outcomes. The learner will also be able to report the result to different stake holders in a professional manner.

**Equivalent Course(s)** None

<b>Course Name</b>	Curriculum Design and Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5101	<b>Prerequisite(s)</b>	None

**Course Description** The course is designed to develop the theoretical and practical knowledge of participants about issues in curriculum development. The course intends to examine various approaches to curriculum development together with latest trends in curriculum innovation. Moreover, it will highlight the role of teachers in curriculum development and instruction, and distinguish between curriculum assessment and evaluation. The course will also enable participants to design a new curricular unit on the basis of assessment by using an innovative strategy.

**Equivalent Course(s)** None

<b>Course Name</b>	Academic Content IV and Pedagogy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5201	<b>Prerequisite(s)</b>	None

**Course Description** This course will equip prospective teachers with knowledge and skills to teach English in secondary grades. They will become familiar with the English curriculum and expected student learning outcomes. Prospective teachers will learn the use of different language skills to enhance variety of instructional methods that promote active learning of English, including making and using teaching and learning materials. They will plan English lessons and activities.

**Equivalent Course(s)** None

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	Academic Content I and Pedagogy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5202	<b>Prerequisite(s)</b>	None

### Course Description

The study of General Science in Primary and Secondary school is linked to National prosperity and economic development. The course is designed for the effective interactive ways of teaching science. The course will highlight the power of observation and inquisitiveness in general sciences studies. It will also focus on how to relate facts, concepts, and theories to every day experience

### Equivalent Course(s)

None

<b>Course Name</b>	Academic Content II and Pedagogy	<b>Credit Hours</b>	3
<b>Course Code</b>	BED 5203	<b>Prerequisite(s)</b>	

### Course Description

This course is designed to prepare Student/Teachers for teaching mathematics in elementary grades. It provides opportunities for Student/Teachers to strengthen their mathematical knowledge and skills and to gain confidence in their understanding of mathematics. An important outcome of this course for Student Teachers is to be able to teach mathematics successfully in the primary, elementary, and middle grades. Research-based knowledge about good mathematics instruction provides a solid base of information for educators to use as they identify mathematics skills that Student/Teachers need to develop, as well as teaching strategies and instructional approaches that best support the development of these skills. The course design is based on what research tells us about good mathematics instruction. Student Teachers will learn to use a variety of instructional methods that promote active learning of mathematics, including making and using teaching and learning materials. They will plan mathematics lessons and activities, and engage in practice teaching of mathematics.

The overall organization of the course is divided into four units:

- 1) Numbers and operations
- 2) Algebra
- 3) Geometry and geometric measurement
- 4) Information handling

Each unit of study has a consistent design or organization and is meant to maximize Student/Teachers' time for learning

### Equivalent Course(s)

None

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	Academic Content III and Pedagogy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5204	<b>Prerequisite(s)</b>	None

**Course Description** This course will equip prospective teachers with knowledge and skills to teach social studies in grade I through VIII and Pakistan studies for grade IX and X. They will become familiar with the social studies and Pakistan studies' curriculum and expected student learning outcomes. Prospective teachers will learn to use variety of instructional methods that promote active learning of social studies including making and using teaching and learning materials. They will plan social studies lessons and activities and practice teaching social studies with peers.

**Equivalent Course(s)** None

<b>Course Name</b>	Research Methods and Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5205	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed for students to prepare them to situate themselves as researching professionals and at the same time enhance their own professional practice. Students will engage in a critical analysis of different research work and relate it to their own context. The unit provides students with the opportunity to engage with research literature and to establish how different researchers techniques help improve the overall classroom situation.

**Equivalent Course(s)** MS 5137

<b>Course Name</b>	School, Community and Teacher	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5206	<b>Prerequisite(s)</b>	None

**Course Description** This course is designed to provide an opportunity to develop awareness about linkage among school, community and teacher for effective education program. Through this course the student have an exploration of interaction between teaching and learning within school and community. The course emphasized that how to experience the social contact with the community, and how to mobilize community for the development of the school. The course include a wider issue include culture, gender, special needs, equity and equality and collaborative working condition within the school and community. This course will provide an orientation for the process of socialization and social development. It's also emphasize on social factors which may affect education. This course have not only a theoretical perspective, it has some practical aspects as well like community work, health promotion activities, and promotion of healthy environment.

**Equivalent Course(s)** None

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	ICT in Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5304	<b>Prerequisite(s)</b>	None

### Course Description

Information and Communication Technologies (ICTs) in Education is a broad and constantly changing subject. This course will prepare teachers to understand, use and apply a range of technologies and platforms in teaching and learning, in line with international standards.

With the changing face of technologies and related application, this course will primarily focus on using technologies for learning 'how to learn' to cope with change. It will provide opportunities to prospective teachers to collaborate with students, educators, peers, parents, and global community using digital tools and resources to support learning, success and innovation. Teachers-in-training will engage with the design and creation of exciting, intellectually challenging and authentic learning environments in which ICT changes not only what students learn but also how they learn, as we move forward in the 21st century. Trainees in this course will examine how ICT might be used to both enhance and transform learning.

### Equivalent Course(s)

None

<b>Course Name</b>	Educational Policies and Practices	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5303	<b>Prerequisite(s)</b>	None

### Course Description

The course explores and furthers understanding of reforms in education over the past two decades in Pakistan and South Asia. Through academic readings, the role of educational policies over the years will be analyzed and examined against the backdrop of various political policies in the country. It will also examine how and why particular policy discourses have become accepted in recent years. The course will further consider the implications of policy reforms for practices within educational organizations. The design of this course reflects the view that reforms cannot be comprehended without considering the social, political, economic and historical contexts in which they arise.

### Equivalent Course(s)

None

<b>Course Name</b>	Teaching Practice	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5305	<b>Prerequisite(s)</b>	None

### Course Description

The course is designed to equip prospective teachers with teaching skills in real setting, Teachers will be able to apply and test their knowledge in schools.

### Equivalent Course(s)

None

## 7.1.1 Bachelors of Education (B.Ed.) Secondary

<b>Course Name</b>	Critical Thinking and Reflective Practice	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5302	<b>Prerequisite(s)</b>	None

### Course Description

This course is aimed at introducing the participants to the concept of reflective practice as a critical process of inquiry and a means to reach new understandings of various disciplines. The reflective input aims to make participants critically reflect and evaluate their own practices and that of other practitioners. In the course, different levels, models and techniques of reflective practice will be discussed. Also, the effectiveness of the role of reflective practice in promoting individual and professional growth will be highlighted through the development of critical thinking skills. Moreover, the participants will interpret critical thinking as a way to acquire knowledge, improve established theories, and strengthen arguments. They will be able to use critical thinking to enhance work processes and improve social institutions. They will practice some of the most central and important skills of critical thinking, and focus on applying those strategies to understanding current issues, belief systems, and ethical positions. Further, through processes of critical inquiries participants will gather evidence of how to enhance the learning capabilities and achievement of their learners.

### Equivalent Course(s)

None

<b>Course Name</b>	Classroom Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BED 5301	<b>Prerequisite(s)</b>	None

### Course Description

In this course, prospective teachers will be encouraged to explore their own beliefs about teaching and learning to arrive at a philosophy of classroom management that places learning as an ultimate goal. Prospective teachers will be given the chance to explore curricular concerns of what to teach and how to teach it and to view lesson planning as the consequence of these decisions. They will also study research and best practices on differentiation of instruction, classroom structures, routines, procedures, and community building.

### Equivalent Course(s)

None

<b>Course Name</b>	Research Project	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5308	<b>Prerequisite(s)</b>	None

### Course Description

The purpose of this course is to provide teachers with the knowledge and skills to integrate Action Research as a teaching and problem solving methodology, as well as teaching students to use Action Research to achieve lesson objectives.

Action Research is a specific process for problem solving, verification, and discovery. The process can be used by an individual, teacher or student, but experience indicates the process works best through cooperation and collaboration. This course will be taught by employing the attributes of the Action Research process, which includes: Problem definition, A plan to answer or resolve the problem, Use of objective data, Collection of data, Data recording, and Reporting

### Equivalent Course(s)

None

## 7.2 Master of Science and PhD

### 7.1.1 Masters of Arts in Education

MA Education is a 2 years degree program offered to candidates who wish to pursue teaching as their career. The candidates will have the opportunity to specialize in the fields of Teacher Education, Educational Leadership and Management, or Early Childhood Education. Students enrolled in Master of Arts in Education (MA EDU) are required to complete 63 Credit Hours, within four (4) years.

The break-up of 63 credit hours is as follows:

- 13 Compulsory Courses (39 Credit Hours)
- 4 Electives (12 Credit Hours)
- 2 Content Specialization and Pedagogy related Courses (6 Credit Hours)
- 1 Teaching practice (3 Credit Hours)
- 1 Thesis (3 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
EDU 5103	Foundations of Education	232
EDU 5107	Educational Leadership and Management	232
EDU 5105	Trends in Teacher Education	232
EDU 5101	Classroom Management	233
EDU 5102	Effective Communication in Education	233
<b>Spring Semester</b>		
EDU 5305	Testing and Evaluation	233
EDU 5302	Educational Psychology	234
EDU 5202	Curriculum Design and Development	234
EDU 5201	Critical Thinking and Reflective Practices	234
EDU 5204	School, Community and Teacher	235
<b>Second Year</b>		
<b>Fall Semester</b>		
EDU 5401	ICT in Education	235
EDU 5308	Academic Content-I and Pedagogy	235
EDU 5303	Research Methods and Techniques	236
EDU 5309	Academic Content-II and Pedagogy	236
EDU 5301	Educational Policies in Pakistan	237
EDU 5xxx	Elective I	-
<b>Spring Semester</b>		
EDU 5403	Teaching Practice	237
EDU 5408	Thesis	237
EDU 5xxx	Elective- III	-
EDU 5xxx	Elective IV	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

00- List of Electives is provided in Appendix B.



## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	Foundations of Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5103	<b>Prerequisite(s)</b>	None

**Course Description** This course will focus on the ideological, philosophical, psychological, socio-economic and historical foundations of education. The major focus will be on developing an understanding of the participants how different philosophical theories affect education. The course will also include historical development of education of the Pakistan. Emphasize will be given on analyzing various sociological, political, economic and ideological forces that influence the process of education in our culture context. This course will also be used to develop the ability in prospective teachers to interpret knowledge within its historical, philosophical, ideological, and social contexts, which will lead to produce critical perspectives on education both within, and outside of schools.

**Equivalent Course(s)** None

<b>Course Name</b>	Educational Leadership and Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5107	<b>Prerequisite(s)</b>	None

**Course Description** This course aims to provide students with the opportunity to explore issues linked to effective educational leadership and management. It intends to improve the quality and effectiveness of school management by introducing current methods of educational administration, with a focus on important issues such as cultural influence, power, conflict, time management, and other problems associated with management of teaching and learning. Participants are going to audit their professional skills with an ongoing reflective practice and will identify particular areas for personal professional development.

**Equivalent Course(s)** None

<b>Course Name</b>	Trends in Teacher Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5105	<b>Prerequisite(s)</b>	None

**Course Description** This course introduces participants to the relevant theories, current issues, and the prevalent practices in teacher development. It focuses on the various stages of pre-service and in-service course design to help participants arrive at an informed engagement with teacher training theory and practice. This involves taking participants from needs analyses to evaluation as well as introducing the concept of supervision, mentoring and observations of classroom practice

**Equivalent Course(s)** None

## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	Classroom Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5101	<b>Prerequisite(s)</b>	None

### Course Description

In this course, prospective teachers will be encouraged to explore their own beliefs about teaching and learning to arrive at a philosophy of classroom management that places learning as an ultimate goal. Prospective teachers will be given chance to explore curricular concerns of what to teach and how to teach it and to view lesson planning as the consequence of these decisions. They will also study research and best practices on differentiation of instruction, classroom structures, routines, procedures, and community building.

### Equivalent Course(s)

None

<b>Course Name</b>	Effective Communication in Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5102	<b>Prerequisite(s)</b>	None

### Course Description

Leadership competence is the product of communication competence and the communication discipline has experienced a great deal of change and growth over the last fifty years. This course will act as an invitation to join in this debate about the nature, functions, and processes underlying leadership and human communication. It will explore the connection between communication and leadership. Particularly, we will examine how the field of communication contributes to effective teaching and learning. In addition, to adequately understand communication theory one must do practical work in communication as well because leadership is a symbolic process and leaders are made, not born, this class will integrate both theory and practice.

### Equivalent Course(s)

None

<b>Course Name</b>	Testing and Evaluation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5305	<b>Prerequisite(s)</b>	None

### Course Description

This course is designed to develop prospective teachers towards adequate knowledge of the concept of evaluation and test construction during the course. The teacher will develop skills to construct classroom based tests to evaluate students learning outcomes. The learner will also be able to report the result to different stake holders in a professional manner.

### Equivalent Course(s)

None

## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	Educational Psychology	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5302	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The purpose of this course is to develop learner's insight. Its unique approach helps students/teachers to understand different psychological concepts by encouraging them to examine their own learning and then showing them how to apply these concepts as teachers. This course concentrates on core concepts and principles. It gives readers an in-depth understanding of the central ideas of educational psychology.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Curriculum Design and Development	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5202	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The course is designed to develop the theoretical and practical knowledge of participants about issues in curriculum development. The course intends to examine various approaches to curriculum development together with latest trends in curriculum innovation. Moreover, it will highlight the role of teachers in curriculum development and instruction, and distinguish between curriculum assessment and evaluation. The course will also enable participants to design a new curricular unit on the basis of assessment by using an innovative strategy.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Critical Thinking and Reflective Practices	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5201	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course is aimed at introducing the participants to the concept of reflective practice as a critical process of inquiry and as a mean to reach new understandings of various disciplines. The reflective input aims to make participants critically reflect and evaluate their own practices and that of other practitioners. In the course, different levels, models and techniques of reflective practice will be discussed. Also, the effectiveness of the role of reflective practice in promoting individual and professional growth will be highlighted through the development of critical thinking skills. Moreover, the participants will interpret critical thinking as a way to acquire knowledge, improve established theories, and strengthen arguments. They will be able to use critical thinking to enhance work processes and improve social institutions. They will practice some of the most central and important skills of critical thinking, and focus on applying those strategies to understanding current issues, belief systems, and ethical positions. Further, through processes of critical inquiries participants will gather evidence of how to enhance the learning capabilities and achievement of their learners.
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<b>Equivalent Course(s)</b>	None
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## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	School, Community and Teacher	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5204	<b>Prerequisite(s)</b>	None

### Course Description

This course is designed to provide an opportunity to develop awareness about linkage among school, community and teacher for effective education program. Through this course the student have an exploration of interaction between teaching and learning within school and community. The course emphasized that how to experience the social contact with the community, and how to mobilize community for the development of the school. The course include a wider issue include culture, gender, special needs, equity and equality and collaborative working condition within the school and community. This course will provide an orientation for the process of socialization and social development. It also emphasize on social factors which may affect education. This course have not only a theoretical perspective, it has some practical aspects as well like community work, health promotion activities, and promotion of healthy environment.

### Equivalent Course(s)

None

<b>Course Name</b>	ICT in Education	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5401	<b>Prerequisite(s)</b>	None

### Course Description

Information and Communication Technologies (ICTs) in Education is a broad and constantly changing subject. This course will prepare teachers to understand, use and apply a range of technologies and platforms in teaching and learning, in line with international standards.

With the changing face of technologies and related application, this course will primarily focus on using technologies for learning 'how to learn' to cope with change. It will provide opportunities to prospective teachers to collaborate with students, educators, peers, parents, and global community using digital tools and resources to support learning, success and innovation. Teachers-in-training will engage with the design and creation of exciting, intellectually challenging and authentic learning environments in which ICT changes not only what students learn but also how they learn, as we move forward in the 21st century. Trainees in this course will examine how ICT might be used to both enhance and transform learning.

### Equivalent Course(s)

None

<b>Course Name</b>	Academic Content-I and Pedagogy	<b>Credit Hours</b>	3 (3, 0)
<b>Course Code</b>	EDU 5308	<b>Prerequisite(s)</b>	None

### Course Description

The study of General Science in Primary and Secondary school is linked to National prosperity and economic development. The course is designed for the effective interactive ways of teaching science. The course will highlight the power of observation and inquisitiveness in general sciences studies. It will also focus on how to relate facts, concepts, and theories to every day experience.

### Equivalent Course(s)

None

## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	Research Methods and Techniques	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5303	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course is designed for students to prepare them to situate themselves as researching professionals and at the same time enhance their own professional practice. Students will engage in a critical analysis of different research work and relate it to their own context. The units provides students with the opportunity to engage with the research literature and to establish how different researchers techniques help improve the overall classroom situation.
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<b>Equivalent Course(s)</b>	MS 5137
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<b>Course Name</b>	Academic Content and Pedagogy	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5309	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	<p>This course is designed to prepare Student Teachers for teaching mathematics in elementary grades. It provides opportunities for Student Teachers to strengthen their mathematical knowledge and skills and to gain confidence in their understanding of mathematics. An important outcome of this course is for Student Teachers to be able to teach mathematics successfully in the primary, elementary, and middle grades. Research-based knowledge about good mathematics instruction provides a solid base of information for educators to use as they identify mathematics skills that Student Teachers need to develop, as well as teaching strategies and instructional approaches that best support the development of these skills. The course design is based on what research tells us about good mathematics instruction. Student Teachers will learn to use a variety of instructional methods that promote active learning of mathematics, including making and using teaching and learning materials. They will plan mathematics lessons and activities, and engage in practice teaching of mathematics.</p>
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The overall organization of the course is divided into four units:

- 1) Numbers and operations
- 2) Algebra
- 3) Geometry and geometric measurement
- 4) Information handling

Each unit of study has a consistent design or organization and is meant to maximize Student Teachers' time for learning.

<b>Equivalent Course(s)</b>	None
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## 7.2.1 Masters of Arts in Education (MA EDU)

<b>Course Name</b>	Educational Policy and Politics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5301	<b>Prerequisite(s)</b>	None

### Course Description

This course explores and furthers understanding of reforms in education over the past two decades in Pakistan and South Asia. Through academic readings, the role of educational policies over the years will be analyzed and examined against the backdrop of various political policies in the country. It will also examine how and why particular policy discourses have become accepted in recent years. The course will further consider the implications of policy reforms for practices within educational organizations. The design of this course reflects the view that reforms cannot be comprehended without considering the social, political, economic and historical contexts in which they arise.

### Equivalent Course(s)

None

<b>Course Name</b>	Teaching Practice	<b>Credit Hours</b>	3
<b>Course Code</b>	EDU 5403	<b>Prerequisite(s)</b>	

### Course Description

### Equivalent Course(s)

None

<b>Course Name</b>	Thesis	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	EDU 5408	<b>Prerequisite(s)</b>	None

### Course Description

The purpose of this course is to provide teachers with the knowledge and skills to integrate Action Research as a teaching and problem solving methodology, as well as teaching students to use Action Research to achieve lesson objectives.

Action Research is a specific process for problem solving, verification, and discovery. The process can be used by an individual, teacher or student, but experience indicates the process works best through cooperation and collaboration. This course will be taught by employing the attributes of the Action Research process, which includes: Problem definition, A plan to answer or resolve the problem, Use of objective data, Collection of data, Data recording, and Reporting

### Equivalent Course(s)

None

# 7.1 Master of Science and PhD

## 7.1.1 Master of Science in Educational Leadership and Management (MSELM)

The Master of Science in Educational Leadership and Management (MS ELM) is a 1.5 - 2 years program having two streams i.e. Course Work Based Stream and Research Based Stream. Students enrolled in the either stream of MS ELM program are required to complete a total of 30 credit hours within four (4) years

### Course Based Stream:

The following is the break-up of the 30 credit hour courses:

- 4 Compulsory Courses (12 Credit Hours)
- 6 Elective<sup>00</sup> Courses (18 Credit Hours)

### Research Stream:

The following is the break-up of the 30 credit hour courses:

- 4 Compulsory Courses (12 Credit Hours)
- 4 Elective<sup>00</sup> Courses (12 Credit Hours)
- 2 Independent Research Studies (IRS)/ 1 Thesis (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
ELM 5102	Advance Research Methods and Techniques (ARMT)- I (Qualitative)	239
ELM 5103	Advance Research Methods and Techniques (ARMT)- II (Quantitative)	239
ELM 5xxx	Elective-I	-
ELM 5xxx	Elective-II	-
<b>Spring Semester</b>		
ELM 5xxx	Elective- -III	-
ELM 5xxx	Elective-IV	-
ELM 5xxx	Elective-V	-
ELM 5xxx	Elective-VI	-
<b>Second Year</b>		
<b>Fall Semester</b>		
ELM5xxx	2 Independent Research Studies/Thesis I (03 credit hours)	-
<b>Spring Semester</b>		
ELM5xxx	Thesis II (03 credit hours)	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

00- List of Electives is given in Appendix. B  
00- List of Electives is given in Appendix. B

## 7.2.2 Master of Science in Educational Leadership and Management (MSELM)

<b>Course Name</b>	Advance Research Methods and Techniques-I (Qualitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ELM 5102	<b>Prerequisite(s)</b>	None

**Course Description** This course develops critical and practical understandings for evaluating and conducting research from five qualitative research traditions (narrative research, grounded theory, phenomenology, ethnography and case studies). It enables students to develop; ethically and procedurally sound qualitative research proposal for qualitative research designs, collect, analyze and interpret qualitative, textual, and other non-traditional forms of data obtained through various tools and sources.

**Equivalent Course(s)** SS 6313, SS 5229, ELM 6101

<b>Course Name</b>	Advance Research Methods and Techniques-II (Quantitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ELM 5103	<b>Prerequisite(s)</b>	None

**Course Description** In this course, concepts, techniques and applications of quantitative methods for decision making are introduced. Topics include: forecasting, regression analysis, analysis of variance, statistical decision theory, utility theory, linear programming, and waiting lines. The course incorporates computer software packages.

**Equivalent Course(s)** SS 5122, SS 6105, ELM 6102



# 7.1 Master of Science and PhD

## 7.1.1 Doctor of Philosophy in Educational Leadership and Management (PhD ELM)

Students enrolled in the Doctor of Philosophy in Educational Leadership and Management (PhD ELM) program are required to complete a total of 48 credit hours within eight years. The following is the break-up of the 48 credit hour courses:

- 2 Compulsory Courses (6 Credit Hours)
- 3 Electives<sup>00</sup> (9 Credit Hours)
- 1 Independent Research Studies (3 Credit Hours)
- 1 Dissertation (30 Credit Hours)

Course Code	Course Title	Page #
<b>PhD</b>		
<b>First Year</b>		
<b>Fall Semester</b>		
ELM 6101	Advance Research Methods and Techniques- I (Qualitative)	241
ELM 6102	Advance Research Methods and Techniques- II (Quantitative)	241
ELM 6xxx	Elective I	-
<b>Spring Semester</b>		
ELM 6108	Independent Research Study I	0
ELM 6xxx	Elective II	-
ELM 6xxx	Elective III	-
<b>Second Year</b>		
<b>Fall Semester</b>		
ELM 6xxx	Dissertation	-
<b>Spring Semester</b>		
ELM 6xxx	Dissertation	-
<b>Third Year</b>		
<b>Fall Semester</b>		
ELM 6xxx	Dissertation	-
<b>Spring Semester</b>		
ELM 6xxx	Dissertation	-

All courses may not be offered every year. Alternate courses may be substituted as and when needed.

## 7.2.3 Master of Science in Educational Leadership and Management (MSELM)

<b>Course Name</b>	Advance Research Methods and Techniques-I (Qualitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ELM 6101	<b>Prerequisite(s)</b>	None

**Course Description** This course develops critical and practical understandings for evaluating and conducting research from five qualitative research traditions (narrative research, grounded theory, phenomenology, ethnography and case studies). It enables students to develop; ethically and procedurally sound qualitative research proposal for qualitative research designs, collect, analyze and interpret qualitative, textual, and other non-traditional forms of data obtained through various tools and sources.

**Equivalent Course(s)** SS 6313, SS 5229, ELM 5102

<b>Course Name</b>	Advance Research Methods and Techniques-II (Quantitative)	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	ELM 6102	<b>Prerequisite(s)</b>	None

**Course Description** In this course, concepts, techniques and applications of quantitative methods for decision making are introduced. Topics include; forecasting, regression analysis, analysis of variance, statistical decision theory, utility theory, linear programming, and waiting lines. The course incorporates computer software packages.

**Equivalent Course(s)** SS 5122, SS 6105, ELM 5103





# International Programs

## 8.0 Bachelor

### 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Students enrolled in the BA (Hons) in Business Studies (BABS) program are required to complete 27 courses with 81 Credit Hours. Upon completion of the required courses at SZABIST, students can proceed for the Final Year to the Coventry University, UK to obtain their Bachelor (Honors) degree. If the student wish to continue at SZABIST Karachi, they can obtain BABS degree by completing additional 19 courses and a Research Project. The break-up of the courses offered is given below:

- 46 Compulsory Courses (138 Credit Hours)
- 1 Research Project (6 Credit Hours)

Course Code	Course Title	Page #
<b>First Year</b>		
<b>Fall Semester</b>		
BA 1101	Introduction to Accounting	245
BA 1102	Microeconomics	245
BA 1103	Introduction to Computers	245
BA 1104	Personal Management	245
BA 1206	Oral Communication and Presentation Skills	246
BA 1204	Math for Business	246
<b>Spring Semester</b>		
BA 1201	Financial Accounting	246
BA 1202	Macroeconomics	247
BA 1203	Management Principles	247
BA 1105	English Writing Skills	247
BA 2305	Statistics and Mathematics for Business	247
BA 2312	Human Behavior	248
<b>Summer Semester</b>		
BA 2301	Introduction to Business Finance	248
BA 2302	Graphic Design in Multimedia Presentations	248
<b>Second Year</b>		
<b>Fall Semester</b>		
BA 2303	Marketing Principles	248
BA 2304	Managerial Accounting	249
BA 2306	Introduction to Social Sciences	249
BA 2403	Business Ethics	249
BA 3504	Organizational Behavior	250
BA 1207	Introduction to Logic	250
<b>Spring Semester</b>		
BA 3505	Quantitative Skills	250
BA 3601	Financial Management	251
BA 3602	Marketing Management	251
BA 4704	Management Information Systems	251
BA 4721	Advertising	252
BA 4801	Law and Taxation	252

All courses may not be offered every year. Alternate courses may be substituted as and when required.

## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

All courses may not be offered every year. Alternate courses may be substituted as and when required. Alternate courses may be substituted as and when required. Full – time academic load is six courses (18 credit hours). All students are required to register for full load in the first semester.

<b>Course Name</b>	Introduction to Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1101	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers the purpose and nature of accounting, forms of business enterprises, accounting information users, Generally Accepted Accounting Principles, accounting equation, accounting process, the accounting cycle, ledgers and entries, accounting for receivables, inventory and depreciation.
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<b>Equivalent Course(s)</b>	AF 1104, EN 1103
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<b>Course Name</b>	Microeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1102	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Microeconomics studies how the individual parts of the economy, the households and the firms, make decisions to allocate limited resources. This course is based on a comprehensive study of the market structures, product markets and resource markets. It also deals with application of demand and supply, cost analysis and factors of production.
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<b>Equivalent Course(s)</b>	SS 1105, AF 2405, EN 1205
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<b>Course Name</b>	Introduction to Computers	<b>Credit Hours</b>	3 (1,2)
<b>Course Code</b>	BA 1103	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course introduces fundamental computer concepts, including basic functions and operations of the computer. Course topics include; identification of hardware, operating system, application software, programming languages, files and data basics, data communication, networking basics, computer graphics, computer security and controls, MS Word, MS Excel, MS Access, MS Power Point, MS Project, internet browsers, databases and e-banking.
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<b>Equivalent Course(s)</b>	BA 1108, BIO 1104, AF 1102, EN 1102, CSC 1104
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<b>Course Name</b>	Personal Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1104	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work, and in personal and interpersonal relationship. Students learn the combination of factors such as personality, communication style, self-esteem, time management, conflict, negotiation and others that impact their personal effectiveness. They also learn methods, and techniques required to work effectively and confidently with others, using time management, negotiation and presentation skills with a positive mindset.
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<b>Equivalent Course(s)</b>	BA 1109, EN 1206
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## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Oral Communication and Presentation Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1206	<b>Prerequisite(s)</b>	None

**Course Description** In this course student' learns the principles of a good presentation and has the opportunity to practice and experience these principles during this highly participative course. The course explores in detail, both verbal and non-verbal communication characteristics, and the importance of body-language expressions. Students are challenged through participative exercises with focus on active listening and observation techniques, that aim to make them competent in all facets of effective speech communication.

**Equivalent Course(s)** CSC 2101, ME 1101, AF 1203, EN 1106, SS 1116

<b>Course Name</b>	Maths for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1204	<b>Prerequisite(s)</b>	None

**Course Description** The aim of this course is to prepare students to solve economic and managerial problem through mathematical concepts. This course is covered in four parts, first part is based on systems of linear equations and its solutions provide preliminary concept, construction of linear equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, Cramer's rule & inverse method to solve system of linear equations. The second part develops the concept of linear and nonlinear functions and their application, and linear programming. The third part provides mathematics for finance, which covers simple, and compound interest rate computations and present and future annuity calculations. The last part of the course provides differentiation of basic functions, higher order differentiation, optimization of functions, definite and indefinite integration, and applications of integration.

**Equivalent Course(s)** BIO 1107, AF 1102, EN 1101

<b>Course Name</b>	Financial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1201	<b>Prerequisite(s)</b>	BA 1101

**Course Description** This course includes accounting for merchandise business, classified balance sheet, simple and multiple income statement, design of accounting system, accounts receivable, notes receivable, inventories, cost of goods sold, liabilities, corporation and measuring cash flow statements. Also, MS Excel is used and necessary accounting software is introduced.

**Equivalent Course(s)** AF 1201

## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Macroeconomics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1202	<b>Prerequisite(s)</b>	BA 1102

**Course Description**

This course introduces key economic indicators, role of government in an economy, measurement of gross domestic product, components of aggregate demand, consumption function and Keynesian multiplier, investment function, government intervention through monetary and fiscal policies, impact of government intervention on economic activity, inflation and unemployment, aggregate supply and demand, balance of payments and trade, public finance, growth, and development.

**Equivalent Course(s)**

SS 1205, AF 3505, EN 2303

<b>Course Name</b>	Management Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1203	<b>Prerequisite(s)</b>	None

**Course Description**

This course introduces the basic concepts of management, evolution and emergence of management thought, management function, planning concepts, decision-making, organizing, staffing, leading, controlling, and future of management and society.

**Equivalent Course(s)**

BA 5419, AF 1106, EN 1204

<b>Course Name</b>	English Writing Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1105	<b>Prerequisite(s)</b>	None

**Course Description**

This course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses on grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.

**Equivalent Course(s)**

CSC 1102, MD 1122, SS 2316, BIO 1111, AF 1103

<b>Course Name</b>	Statistics and Mathematics for Business	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2305	<b>Prerequisite(s)</b>	BA 1204

**Course Description**

The course covers descriptive statistical tools and mathematical methods. Statistical tools consist of: frequency distribution, graphs, charts, mean, and variance, percentiles, correlation, and regression analysis. Mathematical methods consist of matrices, system of linear equations, differentiation and optimization, linear programming, and simplex method. The topics are taught in relation to their application in business and economics.

**Equivalent Course(s)**

BA 2311, BIO 1208, AF 2406, EN 2304, SS 2318



## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Human Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2312	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This course covers the basics of psychological features of human behavior with applications in real life situations. In addition, the aspects of personal growth and understanding are also covered.
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<b>Equivalent Course(s)</b>	BA 2306, SS 2306, AF 2303, EN 1104
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<b>Course Name</b>	Introduction to Business Finance	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2301	<b>Prerequisite(s)</b>	BA 1201

<b>Course Description</b>	This course covers the concepts of business environment, forms of business organization, overview of financial environment, cost markets, institutions and interest rates, analyses of financial statements, time value of money, sources of short-term and long-term finance, break even analysis, working capital management, valuation of financial securities (debt/equity) and introduction to capital budgeting.
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<b>Equivalent Course(s)</b>	BA 5401, AF 4703, EN 2301
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<b>Course Name</b>	Graphic Design in Multimedia Presentations	<b>Credit Hours</b>	3 (1,2)
<b>Course Code</b>	BA 2302	<b>Prerequisite(s)</b>	BA 1103

<b>Course Description</b>	This course introduces the computer system developed for graphics. It covers topics such as hardware and software components for multimedia production, basic computer operations, ergonomics, file management, scanning techniques, archiving capabilities, and utilization of the multimedia department server and internet connection. Software such as Adobe Photoshop, and Freehand are introduced.
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<b>Equivalent Course(s)</b>	BA 4842
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<b>Course Name</b>	Marketing Principles	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2303	<b>Prerequisite(s)</b>	BA 1203

<b>Course Description</b>	This course introduces the basic concepts of marketing, marketing environment, planning and research, market segmentation and targeting, consumer behavior, industrial marketing, product planning, product-mix, pricing, distribution, placement, promotional mix, and marketing in global scenarios.
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<b>Equivalent Course(s)</b>	BA 5404, AF 1206, EN 2305
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## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Managerial Accounting	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2304	<b>Prerequisite(s)</b>	BA 1201

**Course Description** This course focuses on cost allocation, process costing systems and spoilage. Specific topics include relevancy of revenues and costs, cost allocation decisions (joint and byproducts), process costing systems, Factory overhead applied, Standard Costing: Setting of Standards, Analysis of Variance and Controlling and Costing Material.

**Equivalent Course(s)** BA 2408, BA 5411, AF 2302

<b>Course Name</b>	Introduction to Social Sciences	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2306	<b>Prerequisite(s)</b>	None

**Course Description** This is an interdisciplinary course combining the perspectives of two or more of the social and behavioral sciences (anthropology, economics, geography, history, political science, psychology and sociology) on the central issues in social science studies. This course explores the relationship between the social and behavioral sciences being studied. It reviews the application of the scientific method, compares theory and concepts, and reviews the different perspectives of the discipline being studied. This course is broad in nature and scope and provides the basis for further study in other various social and behavioral sciences.

**Equivalent Course(s)** BA 2307, MD 1104, SS 2307, AF 2304, EN 1203

<b>Course Name</b>	Business Ethics	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 2403	<b>Prerequisite(s)</b>	BA 1203

**Course Description** This course introduces contemporary and controversial ethical issues faced by the business community. Topics include: moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Upon completion, students would be able to demonstrate an understanding of their moral responsibilities and obligations as members of the workforce and society.

**Equivalent Course(s)** AF 3503, EN 2402

## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Organizational Behavior	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3504	<b>Prerequisite(s)</b>	BA 2312

**Course Description** This course covers the subject matter on three levels: individual, group and interpersonal, and organizational. At the individual level, the focus is to examine individual behavior and differences, learning, perception, personality, motivation, and stress. The group/ interpersonal level covers group and inter-group behavior, creativity, and team decision-making. It also includes power, conflict, leadership, and communication. At the organizational level, it reviews the basics of organizational culture, organizational change and development, structure, design, employment relationship, and career management.

**Equivalent Course(s)** BBA 5207, AF 2305, EN 2306, SS 2414

<b>Course Name</b>	Introductin to Logic	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 1207	<b>Prerequisite(s)</b>	BA 1105

**Course Description** This course covers scope and laws of logic, deduction and induction, inferences, forms of discourse, emotive words, kinds of disputes and disagreements, rules and fallacies, classical (Aristotelian) logic, standard-form categorical syllogisms and testing, uniform translation, dilemma and enthymemes, and Mills' Methods of scientific investigation. Critical thinking skills and techniques are also introduced.

**Equivalent Course(s)** BA 1211, EN 2302

<b>Course Name</b>	Quantitative Skills	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3505	<b>Prerequisite(s)</b>	BA 2305

**Course Description** This course is an introduction to quantitative skills essentially required to business students. The course consists of several parts. First is related to arithmetic techniques like: numbers, exponents and roots, ratio and proportion, averages etc. and their usage in solving common problems. The second part consists of algebra, equations, and their applications in solving business problems. The third part comprises of coordinate geometry and combination of above parts. The fourth part covers graphical analysis and interpretation of the data. The fifth and last part consists of data sufficiency problems related to arithmetic, algebra and geometry.

**Equivalent Course(s)** None

## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Financial Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3601	<b>Prerequisite(s)</b>	BA 2301

### Course Description

Building upon the concepts already laid down in its pre-requisite, financial management helps students in exploring the depths of the relatively complex aspects of the financial world, with prime focus on the present value and opportunity cost of capital. This course covers topics such as nature, scope, and function of financial decision areas, objectives of financial management, financial forecasting; working capital management, valuation of stocks, valuation of fixed income securities, project cash flow analysis, capital budgeting and decision making, determination of the required rate of return via asset pricing models, dividend policy, debt policy; introduction to financial risk management, and derivatives and role of financial markets in Pakistan.

### Equivalent Course(s)

BA 5105, AF 4702

<b>Course Name</b>	Marketing Management	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 3602	<b>Prerequisite(s)</b>	BA 2303

### Course Description

This course introduces the concept of customer and market-driven management. This course covers organizations' external and internal environment, strengths, weaknesses, opportunities and threats, marketing information system, buyer behavior analysis, segmenting, targeting and positioning strategies, product and pricing strategies, an in-depth study of strategy building by organizations with the help of case studies and a practical, hands-on learning experience of marketing management through close observations of marketing management at different levels in marketing channels.

### Equivalent Course(s)

BA 5106, AF 2403

<b>Course Name</b>	Management Information Systems	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4704	<b>Prerequisite(s)</b>	BA 1103

### Course Description

This course covers different information technology applications in business for efficient management of business operations by providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

### Equivalent Course(s)

AF 2402

## 8.1 Bachelor of Arts (Hons) in Business Studies (BABS)

<b>Course Name</b>	Advertising	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4721	<b>Prerequisite(s)</b>	BA 2303

<b>Course Description</b>	This course introduces students to the principles and practices of contemporary advertising, marketing and public relations. In this course students explore these roles in the marketplace, the elements of a successful advertisement, advertising production, and tasks accomplished by media professionals while promoting products and service businesses.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Law and Taxation	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	BA 4801	<b>Prerequisite(s)</b>	BA 1211

<b>Course Description</b>	This course covers process of legislation in Pakistan, Contract Act, Law of Sale of Goods, Partnership Law and Company laws, Sales Tax, Income Tax Law and Intellectual Property Laws. This course identifies the legal rights of persons in case of nonperformance of contracts, it also identifies the taxation system as well as kinds of taxes in Pakistan. Furthermore, it identifies the intellectual property rights in Pakistan.
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<b>Equivalent Course(s)</b>	AF 3606, EN 2401
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## 8.0 Bachelor

# 8.2 LLB (University of London) International Program

The University of London – Bachelor of Laws program requires the students to complete a total of 12 modules (Standard entry route) with a minimum of 24 credit hours. The following is the break-up of the 12 Modules.

- 9 Compulsory Modules (3 Credit hour each)
- 3 Optional Modules (3 credit hour each)

In addition, the modules have been listed in order of Level for the convenience of the students.

Module Code	Module Title	Page #
<b>Level 4</b>		
LA 1010	Criminal Law	254
LA 1020	Public Law	254
LA 1031	Legal System and Method	254
LA 1040	Contract Law	255
<b>Level 5</b>		
LA 2024	EU Law	255
LA 2001	Tort Law	255
LA 3003	Property Law	256
	Any <b>One (1)</b> Optional Module:	
LA 3008	• Administrative Law	-
LA 3017	• Commercial Law	-
<b>Level 6</b>		
LA 3005	Jurisprudence and Legal Theory	257
LA 3002	Equity and Trusts	256
	Any <b>Two (2)</b> Optional Modules:	
LA 3021	• Company Law	-
LA 3026	• Intellectual Property	-
LA 3013	• International Public Law	-
LA 3028	• Introduction to Islamic Law	-

## 8.2 LLB (University of London) International Program

<b>Course Name</b>	Criminal Law	<b>Credit Hours</b>	3
<b>Course Code</b>	LA 1010	<b>Prerequisite(s)</b>	

<b>Course Description</b>	This course examines general principles of criminal liability, a range of fatal and non-fatal offences against the person and selected offences against property. Attempts to commit offences, secondary liability and defences also form part of the University of London criminal law curriculum. Criminal law consists of a highly developed body of precisely formulated legal rules but as criminal conduct is subject to punishment it thus engages with broad issues of morality and policy. Understanding the tension between certainty in the law and social adaptation affects the development of criminal law will take students beyond the basic stage of understanding the substantive rules of criminal law.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Public Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 1020	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	The UK constitution is famously 'unwritten' and thus contrasts with other constitutional models. Analysing key issues of sovereignty and the division of powers between legislature, executive and administration, one key question is how far the UK lives up to classic doctrine. Equally, membership of the European Union, and the Human Rights Act 1998, affect the overall picture of the relation between citizen and the state. To fully engage with this subject, students need to take an interest in current affairs and debates about what is involved in constitutional issues and reforms.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Legal System and Methods	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 1031	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	This comprehensive introduction to the English legal system seeks to convey what is distinctive about the common law approach as a legal methodology and as it reflects the history and politics of England and Wales. It examines the sources of law, the civil and criminal court structures, the role of judges and the jury. A running concern of the course is the question of fairness: the impact of the Human Rights Act on the criminal justice system and the issues of access to justice in the civil courts. This course is also vital in initiating students into the process of legal research and the final examination has a compulsory section on research activities carried out during the year.
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<b>Equivalent Course(s)</b>	None
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## 8.2 LLB (University of London) International Program

<b>Course Name</b>	Contract Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 1040	<b>Prerequisite(s)</b>	None

### Course Description

Contracts are the legal basis of all commercial transactions. Covering the core topics including: formation of contracts, capacity to contract and privity, performance and breach of contract and remedies for breach of contract, the emphasis is on understanding the key underlying principles of English law. This is very much a case law subject, with judicial precedents stretching back nearly 400 years in some instances (but more usually of 19<sup>th</sup> and 20<sup>th</sup> century origin) and a small number of statutory provisions, as well as the impact of EU law. An understanding of what factors judges may, or must, take into account when exercising their discretion is crucial.

### Equivalent Course(s)

None

<b>Course Name</b>	EU Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 2024	<b>Prerequisite(s)</b>	None

### Course Description

The law of tort concerns the civil liability for the wrongful infliction of injury by one person upon another. The characteristic claim in tort is for monetary compensation or damages. There is no single principle of liability, which makes tort law complex; also there are other sources of monetary compensation for personal injuries (such as unemployment / social security payments, private insurance, criminal injuries compensation schemes, etc.) as well as the fact that the same harms may be pursued through the criminal justice system. Negligence is a key topic and other topics include: interference with economic interest; trespass; defamation; vicarious liability as well as defences and remedies, and sources of w.

### Equivalent Course(s)

None

<b>Course Name</b>	Tort Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 2001	<b>Prerequisite(s)</b>	None

### Course Description

The law of tort concerns the civil liability for the wrongful infliction of injury by one person upon another. The characteristic claim in tort is for monetary compensation or damages. There is no single principle of liability, which makes tort law complex; also there are other sources of monetary compensation for personal injuries (such as unemployment / social security payments, private insurance, criminal injuries compensation schemes, etc.) as well as the fact that the same harms may be pursued through the criminal justice system. Negligence is a key topic and other topics include: interference with economic interest; trespass; defamation; vicarious liability as well as defences and remedies, and sources of future development including EU law.

### Equivalent Course(s)

None

### Equivalent Course(s)

None



## 8.2 LLB (University of London) International Program

<b>Course Name</b>	Property Law	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 3003	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	Much of the work of solicitors turns around property law in the form of conveyancing (buying and selling dwellings or commercial enterprises) or the relations between landlords and tenants. Here the central principles of English law are portrayed, including the necessary historical context, as many of the basic concepts were established in social conditions very different from today. Property law centres on the concept of the nature and quantum of the various interests that can exist in land, the principles governing the creation, transfer and extinction of these interests and the extent that those interests are enforceable against third parties.
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<b>Equivalent Course(s)</b>	None
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<b>Course Name</b>	Equity and Trusts	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 3002	<b>Prerequisite(s)</b>	None

<b>Course Description</b>	A part of Equity law, the law of trusts deals with the rules and principles governing the creation and operation of trusts – a particular method of holding property that developed historically primarily to preserve family wealth, particularly by minimising liability to taxation. The syllabus focuses on three broad areas:
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- 1) the requirements for establishing a valid trust (including express private trusts; charitable trusts; implied and resulting trusts; constructive trusts);
- 2) the powers and obligations of trustees under a valid trust (including appointment, retirement and removal of trustees); and
- 3) the remedies available when trustees act improperly.

<b>Equivalent Course(s)</b>	None
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## 8.2 LLB (University of London) International Program

<b>Course Name</b>	Jurisprudence and Legal Theory	<b>Credit Hours</b>	3 (3,0)
<b>Course Code</b>	LA 3005	<b>Prerequisite(s)</b>	None
<b>Course Description</b>	<p>The nature of jurisprudence: methodology, analysis, theory and the idea of definition, the relevance of language and ideology.</p> <p>Legal positivism and its critics: the command theory, Hart-Fuller debate, Dworkin's criticism of positivism, Kelsen (including the use of Kelsenian principles in revolution cases), Raz's theory of law.</p> <p>Moral theory and the law: the history of natural law, Finnis's natural law theory, liberalism and the Hart-Devlin debate, moral rights, utilitarianism and its critics, utilitarianism and the economic analysis of law.</p> <p>Legal reasoning: Dworkin's theory of law as integrity, Dworkin's methodology, practical reasoning, Hohfeld's analysis of legal rights.</p> <p>Social theory and critical accounts of law, including the American Critical Legal Studies movement, Marxist theories of law and state, feminist jurisprudence.</p> <p>A study in depth of a text prescribed by the examiners on which there will be one compulsory question in the examination.</p>		
<b>Equivalent Course(s)</b>	None		



A BE Mechatronics EMBA BS Biosciences BBA  
h.D LLB MBA LLB BS Social Sciences MS Computing LL  
Media Sciences BS Computing Ph.D BE Mechatr  
A BS Computing MS Management Sciences BB  
BS Media Sciences Business Studies (BABS) MS Media Sciences  
A BBAMBA Banking and Finance MS Computin  
Biosciences BS Social Sciences BS Bioscie  
BS Social Sciences BE Mechatronics MBA Banking and Finance  
A Business Studies (BABS) BS Media Sciences EMBA  
A BE Mechatronics EMBA BS Biosciences BBA  
Ph.D LLB MBA LLB BS Social Sciences MS Computing L  
S Media Sciences BS Computing Ph.D BE Mecha  
A BS Computing MS Management Sciences BE  
BS Media Sciences Business Studies (BABS) MS Media Sciences  
A BBAMBA Banking and Finance MS Computin  
Business Studies (BABS) BS Biosciences MBA Banking and  
Social Sciences BBA BE Mechatronics MS Computing LL  
A Ph.D MBA BS Media Sciences LL  
B MBA BE Mechatronics EMBA BS Biosciences  
S Media Sciences LL  
A BS Computing  
BS Media Sciences Business  
A BBA MBA Banking and Finance EMBA Ph.D  
Business Studies (BABS) LLB BS Biosciences MS Computin

# Appendix

# 9.0 Appendix A - Optional Courses

## 9.1 Management Sciences

### BACHELOR OF BUSINESS ADMINISTRATION (BBA)

#### Optional Courses

#### University Electives offered as Compulsory Courses)

BA 3506	Foreign Languages
BA 3515	Graphic Design for Multimedia*
BA 3519	Current Affairs
BA 3521	Auditing
BA 3522	Social Advocacy and Community Service
BA 3613	World Economy
BA 3614	Business Analysis and Forecasting*
BA 3619	Enterprise Management
BA 3621	Professional Development
BA 4701	Islamic Banking and Finance*
BA 4707	Marketing Research*

\*Can be taken as an Elective if not offered by Campus as a compulsory course.

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# 10.0 Appendix B - Electives

## 10.1 Management Sciences

### BACHELOR OF BUSINESS ADMINISTRATION (BBA)

#### Elective Courses

##### Finance

BA 4115	Derivatives
BA 4214	Micro Finance
BA 4218	Financial Research
BA 4735	Islamic Banking and Finance*
BA 4719	Investment Banking
BA 4724	Financial Modeling
BA 4727	Dynamics of Banking
BA 4734	International Banking
BA 4752	Financial Reporting and Analysis
BA 4756	Econometrics
BA 4831	Portfolio and Investment Management
BA 4833	Security Analysis
BA 4834	Treasury and Funds Management
BA 4855	Financial Risk Analysis
BA 4867	Business Analysis and Forecasting*

##### Marketing

BA 4116	Supply Chain Management
BA 4125	Emerging Media
BA 4126	Trade Marketing
BA 4217	Experiential Marketing
BA 4836	Marketing Research*
BA 4721	Advertising
BA 4722	Brand Management
BA 4739	Export Marketing
BA 4815	Event Management
BA 4816	Industrial Marketing
BA 4821	Media Planning
BA 4824	Sales Management
BA 4842	Graphic Design for Multimedia*
BA 4859	Product Innovation and Design
BA 4866	Integrated Marketing Communications

##### Supply Chain Management

BA 4116	Supply Chain Management
BA 4126	Trade Marketing
BA 4211	Production Management
BA 4768	Total Quality Management
BA 4739	Export Marketing
BA 4742	Customer Relationship Management
BA 4764	Dynamics of Logistics and Distribution
BA 4824	Sales Management
BA 4844	Operations Research
BA 4859	Product Innovation and Design
BA 4766	Purchase Management

**Management**

BA 4116	Supply Chain Management
BA 4117	Salary and Compensation
BA 4711	Change Management
BA 4712	Industrial Relations and Labor Laws
BA 4713	Leadership and Motivation Techniques
BA 4812	Recruitment and Selection
BA 4813	Training and Development
BA 4815	Event Management
BA 4826	Talent Management
BA 4837	Performance Appraisal
BA 4844	Operations Research

**Information Technology**

BA 4224	e-Marketing Strategies
BA 4714	e-Business and e-Commerce Management
BA 4745	Information System Audit
BA 4822	Media Production
BA 4842	Graphic Design for Multimedia*
BA 4844	Operations Research

**BACHELOR OF SCIENCE IN ENTREPRENEURSHIP — BS-ENTREPRENEURSHIP****Elective Courses**

EN 4xxx	Mergers and Acquisition
EN 4xxx	Legal Framework for Entrepreneurs
EN 4xxx	Trade and Retail Management
EN 4xxx	Export Marketing
EN 4xxx	Services Marketing
EN 4xxx	Business Development
EN 4xxx	Social Entrepreneurship
EN 4xxx	Technopreneurship
EN 4xxx	Intrapreneurship
EN 4xxx	Agribusiness Management
EN 4xxx	Family Business Management
EN 4xxx	Women Entrepreneurship and Leadership
EN 4xxx	Crisis Management
EN 4xxx	Managing and Growing a Business
EN 4xxx	Creativity and Business
EN 4xxx	Applied Game Theory
EN 4xxx	Executive Leadership

**MASTER OF BUSINESS ADMINISTRATION - MBA**

**Elective Courses**

**Finance**

BA 5131	Advance Financial Management
BA 5132	Analysis of Financial Statements
BA 5133	Corporate Finance
BA 5134	Derivatives
BA 5135	Financial Markets and Institutions
BA 5138	Econometrics
BA 5139	Financial Risk Analysis
BA 5151	International Finance
BA 5155	Mergers and Acquisitions
BA 5179	Commodity Pricing
BA 5187	Business Analysis and Forecasting
BA 5229	Financial Modeling
BA 5232	Portfolio and Investment Management
BA 5254	Fundamentals of Financial Engineering
BA 5262	Behavioral Finance
BA 5273	Prudential Regulations
BA 5278	Banking Crises and Management
BA 5284	Theory and Practice of Lending
BA 5192	Financial Management Policy
BA 5294	Venture Capital and Private Equity
BA 5298	Financial Reporting and Analysis

**Human Resource Management**

BA 5114	Leadership and Motivation Techniques
BA 5118	Compensation Management
BA 5117	Performance Appraisal
BA 5159	Salary and Compensation
BA 5164	Human Resources Information Systems
BA 5165	Job Analysis and Design
BA 5167	Talent Management and Succession Planning
BA 5185	Leadership Development
BA 5193	HR Operations and Business Partnering
BA 5196	Conflict Resolution
BA 5215	Recruitment and Selection
BA 5216	Training and Development
BA 5239	HR Policy Development
BA 5251	Human Resource Development
BA 5285	Performance Management
BA 5292	HR Analytics
BA 5297	Human Capital Development and Analytics
BA xxx	Human Resource Audit
BA xxx	Contemporary Issues in Human Resource Management
BA xxx	Human Resource Management and Technology



### Management

BA 5111	Business Process Re-engineering
BA 5112	Change Management
BA 5113	Industrial Management and Labor Relations
BA 5116	Industrial Relations and Labor Laws
BA 5136	Business Strategy and Policy
BA 5152	Event Management
BA 5172	Entrepreneurial Business Strategy
BA 5213	Project Management
BA 5295	Crisis Management
BA xxx	Corporate Sustainability
BA 5242	Lean Six Sigma Manufacturing
BA xxx	Hospitality and Tourism Management
BA xxx	Business Theory
BA xxx	Business Application

### MIS

BA 5156	e-Commerce Strategies and Management
BA 5163	Enterprise Resource Planning
BA 5169	Technology Management and Innovation
BA 5181	Business Intelligence and Data Warehousing
BA 5241	e-Commerce

### Supply Chain Management

BA 5191	Advance Manufacturing and TPM in SCM
BA 5194	Supply Chain Finance
BA 5214	Supply Chain Management
BA 5263	Dynamics of Logistics and Distribution
BA 5265	Operational Planning in Supply Chain
BA 5266	Strategic Procurement in SCM
BA 5287	Execution and Control of Operations in SCM
BA 5291	Detailed Scheduling and Planning in SCM
BA 5142	Materials Management
BA 5xxx	Shipping in SCM
BA 5xxx	Green Supply Chain Management
BA 5xxx	Supply Chain Operations

**Marketing**

BA 5121	Advertising
BA 5122	Brand Management
BA 5123	Consumer Behavior
BA 5124	Customer Relationship Management
BA 5126	Export Marketing
BA 5127	Global Marketing
BA 5129	Services Marketing
BA 5171	Strategic Advertising
BA 5182	Trade Marketing
BA 5186	Social Marketing
BA 5199	Integrated Brand Communication
BA 5217	Industrial Marketing
BA 5224	Media Planning and Management
BA 5225	Personal Selling
BA 5226	Pharmaceutical Marketing
BA 5227	Sales Management
BA 5228	Retail Management
BA 5246	Public Relations
BA 5256	Integrated Marketing Communications
BA 5259	Emerging Media
BA 5264	Interactive Global and Regional Marketing
BA 5269	Marketing Intelligence
BA 5281	Digital Marketing
BA 5286	Media Marketing
BA 5293	New Product Development
BA 5296	Process and Innovation
	Rural Marketing
BA 5198	Experiential and Content Marketing
BA 5299	Media Management
BA 5141	Public Relations Management
BA 5xxx	Marketing Practices in Pakistan
BA 5xxx	Marketing Analytics
BA 5xxx	Packaging for Brands

**MASTER IN PROJECT MANAGEMENT (MPM)**

**Elective Courses**

PM 5151	Enterprise Resource Planning
PM 5152	Innovation and Technology Management
PM 5251	Procurement and Contract Management
PM 5252	Project Change Management
PM 5253	Project Human Resource Management
PM 5255	Project Change and Risk Management
PM 5257	Simulation for Project Management
PM 5303	Project Monitoring, Evaluation and Control Management
PM 5352	Project Stakeholders Management
PM 5353	Research Methods for Project Managers
PM 5354	Leadership, Team and Communication for Project Management
PM 5355	Project Communication, Reporting and Presentation

**EXECUTIVE MBA**

**Elective Courses**

**Marketing**

BE 432	Services Marketing
BE 436	Retail Management
BE 472	Media Planning and Management
BE 473	Advertising
BE 474	Brand Management
BE 484	Consumer Behavior
BE 491	Customer Relationship Management
BE xxx	Integrated Marketing Communications
BE xxx	Digital Marketing
BE xxx	Emerging Media
BE xxx	Experiential and Content Marketing
BE xxx	Export Marketing
BA xxx	Global Marketing

**Finance**

BE 424	International Banking and Finance
BE 481	Corporate Finance
BE 482	Islamic Banking and Finance
BE 483	Analysis of Financial Statements
BE 487	Portfolio and Investment Management
BE 488	Project Evaluation
BE xxx	Banking Operations
BE 409	Financial Modeling
BE 487	Portfolio and Investment Management
BE 477	Treasury and Funds Management

**Human Resource Management**

BE 427	Leadership and Motivational Techniques
BE 471	Compensation Management
BE 476	Recruitment and Selection
BE 485	Performance Appraisal
BE 486	Training and Development
BE xxx	Conflict Resolution
BE xxx	Crisis Management
BE xxx	HR Analytics
BE xxx	Salary and Compensation
BE xxx	Talent Management and Succession Planning

**Supply Chain Management**

BE 428	Supply Chain Management
BE 493	Dynamics of Logistics and Distribution
BE 494	Operational Planning in Supply Chain
BE 495	Strategic Procurement in SCM
BE xxx	Advance Manufacturing and TPM in SCM
BE xxx	Detailed Scheduling and Planning in SCM
BE xxx	Execution and Control of Operations in SCM
BE xxx	Supply Chain Finance

**MASTER OF SCIENCE IN PROJECT MANAGEMENT (MSPM)**

**Elective Courses**

MP 5102	Project Management Constraints
MP 5201	Quality Management Tools
MP 5205	Theories of Management
MP 5215	Human Resource Management Communication
MP 5217	Financial Decision Analysis
MP 5218	Software Project Management
MP 5314	Project Review, Assurance and Governance
MP 5317	Supply Chain Management
MP 5318	Business Analysis
MP 5324	Risk Management Dynamics
MP 5325	Project Simulation
MP xxxx	Project Scope
MP 5223	Project Scheduling, Planning and
MP xxxx	Time Management
MP xxxx	Project Risk Management

Elective courses may vary from time to time. All courses may not necessarily be offered every year. Alternate courses may be substituted as and when required.

Students cannot register in Independent Research Study (IRS) or Thesis without completion of Research Methodology and Quantitative Tools for Research.

Maximum course load for a semester is 4 courses (12 credit hours). Summer is not a regular semester; therefore, courses are not offered on a regular basis in summer.

**MASTER OF SCIENCE IN MANAGEMENT SCIENCES (MSMS)**

**Finance**

MS 5113	Financial Time Series
MS 5103	Managerial Economics
MS 5105	Econometrics
MS 5111	Derivatives and Financial Risk
MS 5115	Operations and Mathematical Modeling
MS 5134	Behavioral Finance
MS 5206	Modern Financial Applications
MS 5215	Corporate Finance
MS 5217	Corporate Finance Planning and Decisions
MS 5218	Financial Markets
MS 5237	Business Finance and Decision Making
MS 5414	Applied Econometrics
MS 5421	Capital Asset Pricing Model
MS 5425	Empirical Asset Pricing
MS 5317	Seminars in Finance
MS 5xxx	Mathematical Modeling in Finance
MS 5xxx	Islamic Banking and Finance

**Marketing**

MS 5249	Advanced Marketing Strategies
MS 5301	Seminars in Marketing
MS 5422	Distribution and Channel Management
MS 5424	Strategic Brand Management
MS 5XXX	Strategic Social Marketing
MS 5XXX	Marketing Metrics
MS 5XXX	Global Marketing Strategies
MS 5XXX	Strategic Entrepreneurial Marketing

**Human Resource Management**

MS 5101	Change Management
MS 5102	Organizational Development
MS 5202	Organizational Strategies and Effectiveness
MS 5203	Global Corporate Strategy
MS 5205	International Business Management
MS 5211	Creative Leadership
MS 5216	Corporate Governance
MS 5225	Leadership and Motivation Techniques
M 5229	Negotiations and Conflict Resolution
MS 5241	Public Administration and Governance
MS 5245	System Thinking and Organizational Learning
MS 5303	Issues in Strategic Management
MS 5415	NGO Management

MS 5423 Global Governance and Development  
MS 5xxx Seminars in HRM

Elective courses may vary from time to time. All courses may not necessarily be offered every year. Alternate courses may be substituted as and when required.

Students cannot register in Independent Research Study (IRS) OR thesis without completing six compulsory courses.

Maximum course load for a semester is 4 courses (12 credit hours). Summer is not a regular semester; therefore, courses are not offered on a regular basis in summer. A student can take maximum two interdisciplinary elective courses in SS/CS/IT/Media/MBA program with the prior approval of respective program managers.

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**DOCTOR OF PHILOSOPHY IN MANAGEMENT SCIENCES (PhD-MS)**

**Elective Courses**

**Finance**

MS 6111	Business Finance and Decision Making
MS 6113	Applied Econometrics
MS 6202	Econometrics
MS 6315	Capital Asset Pricing Model
MS 6317	Empirical Asset Pricing
MS 6318	Financial Markets
MS 6319	Modern Financial Applications
MS 6322	Behavioral Finance
MS 6323	Corporate Finance
MS 6411	Financial Time Series
MS 6418	Operations and Mathematical Modeling
MS 6421	Corporate Finance Planning and Decision
MS 6422	Derivatives and Financial Risk
MS 6423	Managerial Economics
MS 6325	Seminars in Finance
MS 6425	Strategic Finance
MS 6xxx	Islamic Banking and Finance

**Marketing**

MS 6204	Strategic Marketing Decisions
MS 6215	Seminars in Marketing
MS 6312	Advanced Marketing Strategy
MS 6316	Distribution and Channel Management
MS 6415	Strategic Brand Management
MS 6XXX	Strategic Social Marketing
MS 6XXX	Marketing Metrics
MS 6XXX	Global Marketing Strategies
MS 6XXX	Strategic Entrepreneurial Marketing

**Research**

MS 6112	Strategic Human Resource Development
MS 6114	NGO Management
MS 6201	Change Management
MS 6205	Public Administration and Governance
MS 6211	Organizational Development
MS 6311	Corporate Governance
MS 6314	Global Corporate Strategy
MS 6321	Organizational Strategies and Effectiveness
MS 6324	Issues in Strategic Management
MS 6412	Creative Leadership
MS 6413	International Business Management
MS 6414	Global Governance and Development
MS 6416	Negotiations and Conflict Resolution
MS 6417	Leadership and Motivation Techniques
MS 6419	System Thinking and Organizational Learning
MS 6xxx	Applied Strategic Management
MS 6xxx	Seminars in HRM

# 10.0 Appendix B - Electives

## 10.2 Computer Science

### BACHELORS OF SCIENCE IN COMPUTER SCIENCE (BSCS)

#### Elective Courses

Each campus may offer university electives as per convenience and availability of resources. The Electives being offered at Karachi Campus as are as follows:

CSC 4501	Business and Technology Ethics
CSC xxxx	Psychology
CSC 4605	Sociology
CSC 4601	Foreign Languages
CSC 4502	Design and Creativity
CSC 4602	History of Scientific Ideas
CSC 4503	Introduction to Accounting
CSC 4603	Management Principles
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration
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CSC 4802	Android Application Development
CSC 4703	Applied Data Mining
CSC 4803	Auditing Information Systems
CSC 4804	Business Process Re-engineering
CSC 4705	Control Systems
CSC 4805	Data and Network Security
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration
CSC 4807	Embedded Programming
CSC 4708	Enterprise Resource Planning
CSC 4808	Ethical Hacking
CSC 4709	Internet Business Models
CSC 4809	iOS Development
CSC 4712	IT Innovations
CSC 4713	Managing Data-Center Projects
CSC 4812	Mechatronics
CSC 4813	Modeling and Simulation
CSC 4714	Network Security and Encryption
CSC 4815	Software Engineering-II
CSC 4814	Software Project Management
CSC 4716	Switching and Routing
CSC 4816	Technopreneurship
CSC 4717	Web Technologies-I
CSC 4817	Web Technologies-II
CSC 4718	Wireless and Mobile Technologies
CSC xxxx	Interaction Design
CSC 4719	Game Development
CSC 4721	Introduction to Cloud Computing
CSC xxxx	Software Engineering Economics
CSC 4818	Data Sciences
CSC xxxx	Embedded Systems
CSC xxxx	Computer Graphics



### MASTER OF SCIENCE IN COMPUTER SCIENCES (MSCS)

#### Elective Courses

CSC 4802	Android Application Development
CSC 4703	Applied Data Mining
CSC 4803	Auditing Information Systems
CSC 4804	Business Process Re-engineering
CSC 4705	Control Systems
CSC 4805	Data and Network Security
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration
CSC 4807	Embedded Programming
CSC 4708	Enterprise Resource Planning
CSC 4808	Ethical Hacking
CSC 4709	Internet Business Models
CSC 4809	iOS Development
CSC 4712	IT Innovations
CSC 4713	Managing Data-Center Projects
CSC 4812	Mechatronics
CSC 4813	Modeling and Simulation
CSC 4714	Network Security and Encryption
CSC 4815	Software Engineering-II
CSC 4814	Software Project Management
CSC 4716	Switching and Routing
CSC 4816	Technopreneurship
CSC 4717	Web Technologies-I
CSC 4817	Web Technologies-II
CSC 4718	Wireless and Mobile Technologies
CSC xxxx	Interaction Design
CSC 4719	Game Development
CSC 4721	Introduction to Cloud Computing
CSC xxxx	Software Engineering Economics
CSC 4818	Data Sciences
CSC xxxx	Embedded Systems
CSC xxxx	Computer Graphics

Each campus may offer university electives as per convenience and availability of resources. The Electives being offered at Karachi Campus as are as follows:

CSC 4501	Business and Technology Ethics
CSC xxxx	Psychology
CSC 4605	Sociology
CSC 4601	Foreign Languages
CSC 4502	Design and Creativity
CSC 4602	History of Scientific Ideas
CSC 4503	Introduction to Accounting
CSC 4603	Management Principles
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration

Coverage of relevant pre-requisite will be ensured while allowing any of the following courses from this category:

CSC xxxx	Differential Equations
CSC xxxx	Multivariate Calculus
CSC xxxx	Graph Theory
CSC xxxx	Theory of Programming Languages
CSC xxxx	Numerical Computing

### DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCES (PhD CS)

#### Elective Courses

CSC 4802	Android Application Development
CSC 4703	Applied Data Mining
CSC 4803	Auditing Information Systems
CSC 4804	Business Process Re-engineering
CSC 4705	Control Systems
CSC 4805	Data and Network Security
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration
CSC 4807	Embedded Programming
CSC 4708	Enterprise Resource Planning
CSC 4808	Ethical Hacking
CSC 4709	Internet Business Models
CSC 4809	iOS Development
CSC 4712	IT Innovations
CSC 4713	Managing Data-Center Projects
CSC 4812	Mechatronics
CSC 4813	Modeling and Simulation
CSC 4714	Network Security and Encryption
CSC 4815	Software Engineering-II
CSC 4814	Software Project Management
CSC 4716	Switching and Routing
CSC 4816	Technopreneurship
CSC 4717	Web Technologies-I
CSC 4817	Web Technologies-II
CSC 4718	Wireless and Mobile Technologies
CSC xxxx	Interaction Design
CSC 4719	Game Development
CSC 4721	Introduction to Cloud Computing
CSC xxxx	Software Engineering Economics
CSC 4818	Data Sciences
CSC xxxx	Embedded Systems
CSC xxxx	Computer Graphics

Each campus may offer university electives as per convenience and availability of resources. The Electives being offered at Karachi Campus as are as follows:

CSC 4501	Business and Technology Ethics
CSC xxxx	Psychology
CSC 4605	Sociology
CSC 4601	Foreign Languages
CSC 4502	Design and Creativity
CSC 4602	History of Scientific Ideas
CSC 4503	Introduction to Accounting
CSC 4603	Management Principles
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	Systems Administration

Coverage of relevant pre-requisite will be ensured while allowing any of the following courses from this category:

CSC xxxx	Differential Equations
CSC xxxx	Multivariate Calculus
CSC xxxx	Graph Theory
CSC xxxx	Theory of Programming Languages
CSC xxxx	Numerical Computing

# 10.0 Appendix B - Electives

## 10.3 Social Sciences

### BACHELOR OF SCIENCE IN SOCIAL SCIENCES (BSSS)

#### Elective Courses

SS 1154	Literature
SS 2305	Human Geography
SS 1157	Comparative Religion
SS 1254	World History
SS 1262	Mass Media
SS 1163	Development and Politics
SS 1263	Culture and Media in Sindh
SS xxx	History of Ideas

SS 4111	Abnormal Psychology
SS 4112	Developmental Psychology
SS 4134	Cognitive Psychology
SS 4135	Educational Psychology
SS 4234	Psychodynamics
SS 4268	History of Psychology
SS 4167	Child Psychology
SS 4156	Clinical Psychology
SS 4114	Personality Theories
SS 4255	Counseling and Psychotherapy
SS 4211	Psychological Testing
SS 4236	Positive Psychology
SS 4168	Experimental Psychology
SS 4267	Forensic Psychology
SS 4262	Physiological Psychology

SS 4269	Civil Society
SS 4271	Peace Movements
SS 4138	Corporate Social Responsibility
SS 4141	Mass, Media and Society
SS 4237	Post-Colonial State and Social Development
SS 4238	Social Entrepreneurship
SS 4239	Social Justice
SS 4241	Sociology of Education
SS 4242	The Sociology of Poverty
SS 4196	Social Theories-I
SS 4296	Social Theories-II
SS 4171	Class, Caste, and Ethnicity in South Asia
SS 4172	Political Sociology
SS 4272	Social Change in Pakistan
SS 4169	Citizenship
SS 4273	Urbanization
SS 4295	Criminology
SS 4197	The Sociology of Religion

### **International Relations**

- SS 4275 Foreign Policy and International Politics
- SS 4274 Diplomacy, Conflict Resolution and Confidence Building Measures
- SS 4219 Peace Research
- SS 4222 Strategic Studies
- SS 4176 Globalization and Global Governance
- SS 4277 Modern Ideologies
- SS 4174 Central and West Asian Studies
- SS 4175 European Studies
- SS 4177 Middle Eastern Studies
- SS 4179 Politics of Terrorism
- SS 4178 Muslim World
- SS 4276 International Institutions
- SS 4278 Political Geography
- SS 4119 Arms Control and Disarmament
- SS 4279 US and International Politics

### **Sindh Studies**

- SS 4188 Geography and Geology of Sindh
- SS 4287 History and Politics of Sindh
- SS 4288 Irrigation System of Sindh
- SS 4185 Agriculture in Sindh
- SS 4285 Archaeology of Sindh
- SS 4186 Anthropology and Culture of Sindh
- SS 4286 Art and Architecture in Sindh
- SS 4187 Ethnomusicology of Sindh
- SS 4289 Sindh's Economy and Commerce
- SS 4292 Survey of Sindhi Literature
- SS 4189 Philosophy of Sindh
- SS 4192 Sindh's Sociology-I: Education and Language Policy
- SS 4193 Sindh's Sociology-II: Social Structures and Development
- SS 4194 Sindh's Sociology-III: Health, Gender, and Feminism
- SS 4293 The Sindhi Diaspora
- SS 4291 Sindh's Geopolitical Exigencies
- SS 4191 Sindh's Botanical and Zoological Heritage

### **Economics**

- SS 4139 Gender and Development
- SS 4147 Development and Planning
- SS 4181 Capabilities and Human Development
- SS 4281 Fiscal and Monetary Economics
- SS 4261 Mathematical Economics
- SS 4183 Industrial Economics
- SS 4284 Trade Economics
- SS 4128 Agriculture Economics
- SS 4182 Game Theory

## 10.3 Social Sciences

SS 4283	Labour Economics
SS 4282	Growth
SS 4184	Poverty and Inequality
SS 4228	History of Economic Thoughts
SS 4249	Pakistan Economy
SS 4251	Sustainable Development

**MASTER OF SCIENCE IN SOCIAL SCIENCE (MSSS)****Elective Courses**

\* Electives (Electives in any of the following specializations)

- International Relations
- Economics
- Psychology
- Sociology

**MS (International Relations)**

SS 5xxx	Dynamics of Security
SS 5xxx	Globalization in the 21st Century: Challenges and Opportunities
SS 5xxx	Role of Great Powers and International Relations
SS 5xxx	Critical Geo-Politics
SS 5104	Politics of Geo-Economics
SS 5111	Democratization as a Global Process
SS 5212	NGO Management
SS 5306	Sacred and Secular
SS 5311	Environmental Studies
SS 5312	Globalization and Developing Countries
SS 5313	Intellectual Property Rights and Laws
SS 5321	History of Ideas
SS 5206	Political Economy in the Global Perspective
SS 5402	Law and Human Rights
SS 5xxx	Globalization: Issues and Debates
SS 5xxx	Political Theory
SS 5xxx	History of Economic Thought in Contemporary Perspective
SS 5xxx	Foreign Policy of Pakistan

**MS (Economics)**

SS 5xxx	International Trade
SS 5xxx	Economic Growth and Development
SS 5xxx	Monetary Economics
SS 5xxx	Public Finance
SS 5xxx	Globalization in the 21st Century: Challenges and Opportunities
SS 5223	Financial Time Series
SS 5104	Politics of Geo-Economics
SS 5305	Political Economy of Pakistan
SS 5214	Public Policy Management
SS 5322	Topics in Political Economy
SS 5206	Political Economy in the Global Perspective
SS 5327	Development Economics and Sustainability
SS 5312	Globalization and Developing Countries
SS 5321	History of Ideas
SS 5228	Corporate Governance
SS 5xxx	Advanced Microeconomics
SS 5xxx	Advanced Macroeconomics
SS 5xxx	Advanced Econometrics
SS 5xxx	History of Economic Thought in Contemporary Perspective
SS 5xxx	Gender Work and Economy
SS 5xxx	Gender issues in Rural Development

## 10.3 Social Sciences

### MS (Sociology)

	Sociology of Development
	Population Dynamics
	Social Statistics
	Cultural Anthropology
SS 5212	NGO Management
SS 5xxx	Gender and Human Rights
SS 5402	Law and Human Rights
SS 5xxx	Community Development and Social Mobilization
SS 5xxx	Gender Issues in Global Scenario
SS 5xxx	Sociology of Gender Issues
SS 5xxx	Women Studies
SS 5306	Sacred and Secular
SS 5xxx	Sociology of Sexuality
SS 5xxx	Globalization: Issues and Debates
SS 5xxx	Global Governance
SS 5xxx	Sociology of Science, Knowledge and Technology
SS 5xxx	Industrial Sociology
SS 5xxx	Immigration in Contemporary Perspectives
SS 5xxx	Sociology of Migration and Urbanization
SS 5302	Sustainable Development
SS 5xxx	Social Change and Development
SS 5xxx	Rethinking Global Development: New Frameworks for Understanding Poverty, Inequality and Growth in 21 Century
SS 5xxx	Community Organizing and Development
SS 5xxx	Religion and Development
SS 5xxx	Population and Development: Current Issues and Future Implications
SS 5xxx	Contemporary Sociological Thoughts
SS 5xxx	Leadership in Sociology: Theory and Practice

### MS (Psychology)

SS 5xxx	Applications of Contemporary Data Analysis Tools
SS 5xxx	Use, Construction and Interpretation of Tests
SS 5xxx	School Psychology
SS 5xxx	Cross-Cultural Psychology
SS 5xxx	Community Psychology
SS 5xxx	Environmental Psychology
SS 5xxx	Gender Psychology
SS 5xxx	Consumer Behavior
SS 5xxx	Perspective in Organizational Psychology
SS 5xxx	Psychological Assessment in Organizational Psychology
SS 5xxx	Psychology of Leadership
SS 5xxx	Organizational Culture and Development
SS 5xxx	Marketing and Consumer Psychology
SS 5xxx	Organizational Conflict and Management
SS 5xxx	Assessment and Diagnosis-I
SS 5xxx	Assessment and Diagnosis-II
SS 5xxx	Psychotherapy and Counseling-I
SS 5xxx	Psychotherapy and Counseling-II
SS 5xxx	Psychophysiology and Psychopharmacology
SS 5xxx	Clinical Internship

## DOCTOR OF PHILOSOPHY IN SOCIAL SCIENCES (PhD)

## Elective Courses

**PhD (International Relations)**

SS 6xxx	Dynamics of Security
SS 6xxx	Globalization in the 21st Century: Challenges and Opportunities
SS 6xxx	Role of Great Powers and International Relations
SS 6xxx	Critical Geo-Politics
SS 6104	Politics of Geo-Economics
SS 6111	Democratization as a Global Process
SS 6212	NGO Management
SS 6306	Sacred and Secular
SS 6311	Environmental Studies
SS 6312	Globalization and Developing Countries
SS 6313	Intellectual Property Rights and Laws
SS 6xxx	Foreign Policy of Pakistan
SS 6321	History of Ideas
SS 6206	Political Economy in the Global Perspective
SS 6402	Law and Human Rights
SS 6xxx	Globalization: Issues and Debates
SS 6xxx	Political Theory
SS 6xxx	History of Economic Thought in Contemporary Perspective

**PhD (Economics)**

SS 6xxx	International Trade
SS 6xxx	Economic Growth and Development
SS 6xxx	Monetary Economics
SS 6xxx	Public Finance
SS 6xxx	Globalization in the 21st Century: Challenges and Opportunities
SS 6223	Financial Time Series
SS 6104	Politics of Geo-Economics
SS 6305	Political Economy of Pakistan
SS 6214	Public Policy Management
SS 6322	Topics in Political Economy
SS 6206	Political Economy in the Global Perspective
SS 6327	Development Economics and Sustainability
SS 6xxx	History of Economic Thought in Contemporary Perspective
SS 6312	Globalization and Developing Countries
SS 6321	History of Ideas
SS 6228	Corporate Governance
SS 6xxx	Advanced Microeconomics
SS 6xxx	Advanced Macroeconomics
SS 6xxx	Advanced Econometrics
SS 6xxx	Gender Work and Economy
SS 6xxx	Gender issues in Rural Development

**PhD (Sociology)**

SS 6xxx	Sociology of Development
SS 6xxx	Population Dynamics
SS 6xxx	Social Statistics
SS 6xxx	Cultural Anthropology



## 10.3 Social Sciences

SS 6212	NGO Management
SS 6xxx	Gender and Human Rights
SS 6402	Law and Human Rights
SS 6xxx	Community Development and Social Mobilization
SS 6xxx	Gender Issues in Global Scenario
SS 6xxx	Sociology of Gender Issues
SS 6xxx	Women Studies
SS 6xxx	Sociology of Sexuality
SS 6xxx	Globalization: Issues and Debates
SS 6xxx	Global Governance
SS 6xxx	Sociology of Science, Knowledge and Technology
SS 6xxx	Industrial Sociology
SS 6xxx	Immigration in Contemporary Perspectives
SS 6xxx	Sociology of Migration and Urbanization
SS 6302	Sustainable Development
SS 6xxx	Social Change and Development
SS 6xxx	Rethinking Global Development: New Frameworks for Understanding Poverty, Inequality and Growth in 21 Century
SS 6xxx	Community Organizing and Development
SS 6xxx	Religion and Development
SS 6xxx	Population and Development: Current Issues and Future Implications
SS 6xxx	Leadership in Sociology: Theory and Practice
SS 6xxx	Sacred and Secular

### PhD (Psychology)

SS6xxx	Applications of Contemporary Data Analysis Tools
SS 6xxx	Use, Construction and Interpretation of Tests
SS 6xxx	School Psychology
SS 6xxx	Cross-Cultural Psychology
SS 6xxx	Community Psychology
SS 6xxx	Environmental Psychology
SS 6xxx	Gender Psychology
SS 6xxx	Consumer Behavior
SS 6xxx	Perspective in Organizational Psychology
SS 6xxx	Psychological Assessment in Organizational Psychology
SS 6xxx	Psychology of Leadership
SS 6xxx	Organizational Culture & Development
SS 6xxx	Marketing and Consumer Psychology
SS 6xxx	Organizational Conflict and Management
SS 6xxx	Assessment and Diagnosis-I
SS 6xxx	Assessment and Diagnosis-II
SS 6xxx	Psychotherapy and Counseling-I
SS 6xxx	Psychotherapy and Counseling-II
SS 6xxx	Psychophysiology and Psychopharmacology
SS 6xxx	Clinical Internship

# 10.0 Appendix B - Electives

## 10.4 Media Sciences

### BACHELOR OF MEDIA SCIENCES (BMS)

#### Elective Courses

MD 4854	Illustration
MD 4732	Typography
MD 4867	Topics in film and television
MD 4878	Design for Social change
MD 4886	Game design
MD 4883	Urdu literature in South Asian Cinema
MD 4873	Modernity in Cinema in Bengal
MD 4774	Media Anthropology
MD 4776	Media convergence and innovation
MD 4888	Culture and Media in Sind
MD 4792	Music Production and Design
MD 4892	Music Theory and Performance
MD 4788	Sind Studies

### MASTER OF SCIENCE IN MEDIA STUDIES (MSMD)

#### Elective Courses

MD 5xxx	Media, Politics, and Governance
MD 5xxx	Issues in International Media
MD 5xxx	Theories of Communication Design
MD 5xxx	Theories of Film and Television
MD 5xxx	Urban Geographies and Visual Cultures
MD 5xxx	Media, Art, and Technology

### MASTER OF ADVERTISING

#### Elective Courses

MD 5153	Campaign Strategy
MD 5264	Copywriting and Advertising Conceptualization
MD 5265	Digital Advertising
MD 5xxx	Advanced Integrated Marketing Communication
MD 5352	New Media Advertising
MD 5xxx	Strategic Brand Management
MD 5269	Strategic Creative Development
MD 5353	Media Planning & Strategy
MD 5xxx	Consumer Engagement
MD 5xxx	Advertising Account management

# 10.0 Appendix B - Electives

## 10.6 Biosciences

### BACHELOR OF SCIENCE IN BIOSCIENCES (BS-Biosciences)

#### Elective Courses

##### Molecular Biology

BIO 4721	Advance Biochemical Techniques
BIO 4722	Medical Transcription
BIO 4723	Virology
BIO 4822	Nanotechnology
BIO 4725	Advanced Molecular Techniques
BIO 4726	Applied Enzymology
BIO 4727	Systems Biology

##### Biotechnology

BIO 4721	Advance Biochemical Techniques
BIO 4724	Telemedicine
BIO 4823	Stem Cell Research
BIO 4727	Food Biotechnology
BIO 4825	Fermentation Biotechnology
BIO 4826	Medical Biotechnology
BIO 4726	Applied Enzymology
BIO 4728	Techniques in Biotechnology

### BACHELOR OF SCIENCE IN BIOTECHNOLOGY (BS-BTC)

#### Elective Courses

BTC xxxx	Medical Transcription
BTC xxxx	Nanotechnology
BTC xxxx	Advanced Molecular Techniques
BTC xxxx	Virology
BTC xxxx	Systems Biology
BTC xxxx	Advance Biochemical Techniques
BTC xxxx	Stem cell Research
BTC xxxx	Telemedicine
BTC xxxx	Marine Biotechnology
BTC xxxx	Fungal Biotechnology

### MASTER OF SCIENCE IN BIOSCIENCES (MS-BIO)

#### Elective Courses

5xxx	Applied Biotechnology
5xxx	Environmental and Industrial Biotechnology
5xxx	Plant Biotechnology
5xxx	Fermentation Design and Engineering
5xxx	Medical Biotechnology
5xxx	Biocatalysis and Enzymology
5xxx	Clinical Biochemistry
5xxx	Drug Discovery and Development
5xxx	Biocomputation
5xxx	Cancer Biology
5xxx	Applied Immunology
5xxx	Techniques in Diagnostics
5xxx	Molecular Dynamics
5xxx	Food Sampling Techniques and Analysis
5xxx	Food Quality Management System
5xxx	Food Toxicology and Adulteration

### DOCTOR OF PHILOSOPHY IN BIOSCIENCES (PH.D. BIO)

#### Elective Courses

BIO xxxx	Advances in Molecular Genetics
BIO xxxx	Computational and Systems Biology
BIO xxxx	Advanced Immunology
BIO xxxx	Next Generation Sequencing Techniques
BIO xxxx	Analytical Techniques for Biomolecules
BIO xxxx	Advances in Plant Biotechnology
BIO xxxx	Oncobiology
BIO xxxx	Recombinant DNA Technology
BIO xxxx	Cell Signaling Mechanisms
BIO xxxx	Biomaterials Science and Engineering
BIO xxxx	Principles of Synthetic Biology

# 10.0 Appendix B - Electives

## 10.7 Education

### MASTERS OF ARTS IN EDUCATION (MA EDU)

#### Elective Courses

EDU 5321	Affective Education (TE)
EDU 5221	Guidance and Counselling in Education (TE)
EDU 5421	Education for Sustainable Development (TE)
EDU 5322	Gender and Education (TE)
EDU 55422	Human Development and Learning (ECE)
EDU 5323	Language and Literacy Experiences (ECE)
EDU 5324	Supportive and Safe Environment (ECE)
EDU 5423	Play and Enquiry Based Learning (ECE)
EDU 5222	Effective Change Management in Education (ELM)
EDU 5225	Organizational Development in Education (ELM)
EDU 5224	Human Resource Management (ELM)
EDU 5223	Entrepreneurship in Education (ELM)

Please note that there will be no internship or comprehensive exam in the MA Education program.

### MASTER OF SCIENCE IN EDUCATIONAL LEADERSHIP AND MANAGEMENT (MSELM)

#### Elective Courses

ELM 5101	Leadership and Management in Educational Contexts
ELM 5201	Curriculum Development and Planning
ELM 5235	Sociological Issues in Education /Access/Out comes and Quality
ELM 5233	Learning Effectiveness in Higher Education Contexts
ELM 5136	Use of Technology in Education
ELM 5231	Education in the Context of Conflict
ELM 5236	Socio-Politics of Language Policy in Educational Contexts
ELM 5133	Change Management in Education
ELM 5134	Educational Policy and Practice
ELM 5135	Assessment and Evaluation in Education
ELM 5138	School Evaluation and Monitoring
ELM 5131	Teacher Education
ELM 5234	Research Philosophy
ELM 5137	Professional Development and Management in Education
ELM 5232	Finance and Resource Management
ELM 5132	Organizational Development
ELM 5237	Advanced Educational Psychology

## DOCTOR OF PHILOSOPHY IN EDUCATIONAL LEADERSHIP AND MANAGEMENT (PhD ELM)

### Elective Courses

ELM 6225	Sociological Issues in Education/Access/Outcomes and Quality
ELM 6223	Learning Effectiveness in Higher Education Contexts
ELM 6128	Use of Technology in Education
ELM 6221	Education in the Context of Conflict
ELM 6226	Socio-Politics of Language Politics in Educational Contexts
ELM 6123	Change Management in Education
ELM 6124	Educational Policy and Practice
ELM 6125	Assessment and Evaluation in Education
ELM 6127	School Evaluation and Monitoring
ELM 6121	Teacher Education
ELM 6224	Research Philosophy
ELM 6126	Professional Development and Management in Education
ELM 6222	Finance and Resource Management
ELM 6122	Organizational Development

All the students are required to appear in Comprehensive Examination at the end of their course work.

\*The research courses are compulsory for all the students except for SZABIST continuing students who will take two elective courses instead.

## Bachelors of Education (B.Ed.) Secondary

### Compulsory Courses

BED 5105	Foundations of Education
BED 5102	Educational Leadership and Management
BED 5104	Effective Communication in Education
BED 5103	Educational Psychology
BED 5106	Testing and Evaluation
BED 5101	Curriculum Design and Development
BED 5205	Research Methods and Techniques
BED 5304	ICT in Education
BED 5303	Educational Policy and Practices
BED 5302	Critical Thinking and Reflective Practices
BED 5206	School, Community and Teacher
BED 5301	Classroom Management
BED 5305	Teaching Practice
BED 5201	Academic Content-I and Pedagogy
BED 5202	Academic Content-II and Pedagogy
BED 5203	Academic Content-III and Pedagogy
BED 5204	Academic Content-IV and Pedagogy
BED 5308	Research Project

# 10.0 Appendix B - Electives

## 10.8 LLB

### LLB (UNIVERSITY OF LONDON)

#### Elective Courses

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LA 3028	Introduction to Islamic Law
LA 3021	Company Law
LA 3013	Commercial Law
LA2029	Protection of Human Rights
LA 3019	Family Law
LA3013	Public International Law
LA 3008	Administrative Law
LA3203	Law Skills Portfolio
LA3024	EU Law

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# 11.0 Appendix C - Major Requirements

## 11.1 Social Sciences

### BACHELOR OF SCIENCE IN SOCIAL SCIENCES (BSSS)

#### Major Courses

##### Psychology

- SS 4111 Abnormal Psychology
- SS 4112 Developmental Psychology
- SS 4134 Cognitive Psychology
- SS 4135 Educational Psychology
- SS 4234 Psychodynamics
- SS 4268 History of Psychology
- SS 4167 Child Psychology
- SS 4156 Clinical Psychology
- SS 4114 Personality Theories
- SS 4255 Counseling and Psychotherapy
- SS 4211 Psychological Testing
- SS 4236 Positive Psychology
- SS 4168 Experimental Psychology
- SS 4267 Forensic Psychology
- SS 4262 Physiological Psychology

##### Sociology

- SS 4269 Civil Society
- SS 4271 Peace Movements
- SS 4138 Corporate Social Responsibility
- SS 4141 Mass Media and Society
- SS 4237 Post-Colonial State and Social Development
- SS 4238 Social Entrepreneurship
- SS 4239 Social Justice
- SS 4241 Sociology of Education
- SS 4242 The Sociology of Poverty
- SS 4196 Social Theories-I
- SS 4296 Social Theories-II
- SS 4171 Class, Caste, and Ethnicity in South Asia
- SS 4172 Political Sociology
- SS 4272 Social Change in Pakistan
- SS 4169 Citizenship
- SS 4273 Urbanization
- SS 4295 Criminology
- SS 4197 The Sociology of Religion

##### International Relations

- SS 4275 Foreign Policy and International Politics
- SS 4274 Diplomacy, Conflict Resolution and Confidence Building Measures
- SS 4219 Peace Research
- SS 4222 Strategic Studies
- SS 4176 Globalization and Global Governance
- SS 4277 Modern Ideologies
- SS 4174 Central and West Asian Studies



## 11.1 Social Sciences

- SS 4175 European Studies
- SS 4177 Middle Eastern Studies
- SS 4179 Politics of Terrorism
- SS 4178 Muslim World
- SS 4276 International Institutions
- SS 4278 Political Geography
- SS 4119 Arms Control and Disarmament
- SS 4279 US and International Politics

### Sindh Studies

- SS 4188 Geography and Geology of Sindh
- SS 4287 History and Politics of Sindh
- SS 4288 Irrigation System of Sindh
- SS 4185 Agriculture in Sindh
- SS 4285 Archaeology of Sindh
- SS 4186 Anthropology and Culture of Sindh
- SS 4286 Art and Architecture in Sindh
- SS 4187 Ethnomusicology of Sindh
- SS 4289 Sindh's Economy and Commerce
- SS 4292 Survey of Sindhi Literature
- SS 4189 Philosophy of Sindh
- SS 4192 Sindh's Sociology I: Education and Language Policy
- SS 4193 Sindh's Sociology II: Social Structures and Development
- SS 4194 Sindh's Sociology III: Health, Gender, and Feminism
- SS 4293 The Sindhi Diaspora
- SS 4291 Sindh's Geopolitical Exigencies
- SS 4191 Sindh's Botanical and Zoological Heritage

### Economics

- SS 4139 Gender and Development
- SS 4147 Development and Planning
- SS 4181 Capabilities and Human Development
- SS 4281 Fiscal and Monetary Economics
- SS 4261 Mathematical Economics
- SS 4183 Industrial Economics
- SS 4284 Trade Economics
- SS 4128 Agriculture Economics
- SS 4182 Game Theory
- SS 4283 Labour Economics
- SS 4282 Growth
- SS 4184 Poverty and Inequality
- SS 4228 History of Economic Thoughts
- SS 4249 Pakistan Economy
- SS 4251 Sustainable Development

# 11.0 Appendix C - Major Requirements

## 11.2 Media Sciences

### BACHELOR OF MEDIA SCIENCES (BMS)

#### Major Courses

##### Film & Television Production

MD 4726	Directing I
MD 4728	Directing II
MD 4781	Sound design
MD 4821	Cinematography
MD 4825	Screen writing
MD 4872	Visual story telling
MD 4868	Production practices III
MD 4724	Documentary vision
MD 4764	Production design
MD 4765	Basic lighting
MD 4829	Screen writing II
MD 4789	Green Screen Keying and Composition for Production VFX
MD 4889	Narrative and Social Change

##### Advertising Strategy & Design

MD 4723	Advance animation
MD 4731	Advertising Research
MD 4739	Advertising design and concepts
MD 4754	Creative aspects in advertising
MD 4779	Digital brand communication
MD 4835	Consumer Behavior
MD 4843	Campaign strategy
MD 4846	New Media Advertising
MD 4847	Copy writing
MD 4736	Integrated marketing communication
MD 4837	Media Planning
MD 4782	Interaction Design
MD 4787	Digital design and publishing
MD 4834	Advertising in Pakistan
MD 4833	Brand Management

##### Journalism

MD 4757	Feature writing I
MD 4879	Multimedia Journalism
MD 4864	Investigative journalism & Crisis reporting
MD 4877	The international newsroom
MD 4783	TV Journalism
MD 4859	Introduction to photo journalism
MD 4839	Reporting the news
MD 4793	Citizen Journalism
MD 4893	Environmental Journalism
MD 4794	Fashion Journalism
MD 4896	Peace Journalism
MD 4795	Reporting of Politicis and Governance
MD 4894	Foreign Correspondence
MD 4896	Sports Reporting

# 12.0 Appendix D - Supporting Courses

## 12.1 Computer Sciences

### BACHELORS OF SCIENCE IN COMPUTER SCIENCES (BSCS)

#### Supporting Courses

CSC xxx	Differential Equations
CSC 1202	Multi-variate Calculus
CSC xxx	Graph Theory
CSC xxx	Theory of Programming Languages
CSC 3203	Numerical Computing

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*Coverage of relevant pre-requisite will be ensured while allowing any of the aforementioned courses from this category*

# 13.0 Appendix E - Guidelines for Thesis

## 13.1 Media Sciences

### BACHELOR OF MEDIA SCIENCES (BMS)

#### Guidelines for Production Thesis

Students are required to produce a short film or documentary of 10-20 minute duration. Students must take 6-7 relevant elective courses.

- Students are also required to develop a screenplay for the film. Students can use build on some exceptional projects/screenplay they developed for a course previously done. Screenplay will be developed through a process of research on situations, locations, and characters. The process must demonstrate involvement in the development of contexts, character bios, etc. Students will be required to work on screenplay in close coordination with the internal faculty and other fellow students who will guide them through critique in a weekly class. Students are required to submit all research/related work in a file along with a screenplay.
- Documentary students are required to do extensive research such as primary research, meetings with related experts, preliminary interviews, archival research, etc. All of this must be submitted in a research file.
- Students are supposed to show a grasp of different areas of production i.e. cinematography, production design, casting, editing, and sound design as a director of the project.
- Students are required to work in coordination with a team of students performing their roles as cinematographers, production designers, gaffers, producers, editors, sound technicians, etc. Only members of current student body – batchmates and juniors – can be a part of student's production crew. Any outside professional help will be penalized unless allowed by the advisor and the department. The advisor must approve shooting schedule and crew list. Advisor or faculty members or staff may visit shooting locations.
- Students are required to utilize the equipment available in the department. Use of some outside equipment will be permitted. Use of outside equipment will require consent and permission of the advisor.
- The advisor will review the editing process.
- Students will be required to have regular meetings with the advisor.
- DEADLINES will be strictly enforced.

### BACHELOR OF MEDIA SCIENCES (BMS)

#### Journalism Thesis Guidelines

Journalism students should take on a substantial theme on issues related to current affairs, international relations, and/or socio-cultural issues demonstrating multimedia, feature writing, investigative reporting, incisive interviewing, editorial judgment and compelling storytelling skills. The central focus should be on taking on a relevant journalistic topic of current and/or historical nature that requires substantial research and a critical analysis of the issues involved.

The project would include two components:

1. Major component of the project should be an investigative or feature piece of at least 5000 words. The piece can also be subdivided into a series of articles or features of maximum five parts of at least 1000-1500 words each.
2. Supplementary component should be multimedia elements incorporating video, stills and/or audio depending on the nature of the topic. Advisor will help decide on the number elements required for the second component.

The final thesis should be presented as a combination of written and multimedia components in an online portal specifically devoted to showcase the project.

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### BACHELOR OF MEDIA SCIENCES (BMS)

#### Guidelines for Advertising Thesis

- Students will be dealt with individually by advisors from the full-time faculty and will be free to choose their own topics, and must commit to either a strategy or design thesis at the very beginning of the semester. Students must take 6-7 relevant elective courses.
- There is a methodical, linear structure of deadlines and presentations that must be given to the advisors and students. The deadlines are:
  - a) Research,
  - b) Ideation & Concepts,
  - c) Prototypes\ Product Strategy (this covers Thesis I), and
  - d) Final Execution\Business and Marketing Strategy (Thesis II)
- Fulltime instructors will give all students a clear process and deliverables in the form of a brief for each step of the thesis and each deadline
- DEADLINES will be strictly enforced

**Note:**

Students must finish at least 38 courses out of 43 in order to enroll for thesis credits. Students on academic probation cannot enroll for thesis credits.

Thesis (6-credits) is offered over two semesters as Thesis I & II in the 8th (Spring) and the following summer semester respectively. Thesis I is pass/fail whereas in thesis II a grade is awarded to students. Final grade comprises 50% of advisors' grade and 50% of the average of 2-3 external jury members' grades.



We Just Don't Work Hard  
We Work Smart





### **SZABIST Karachi Campus**

90 and 100 Clifton, Karachi 75600

Phone: (92-21) 111-922-478. Email: [info@szabist.edu.pk](mailto:info@szabist.edu.pk)  
[www.szabist.edu.pk](http://www.szabist.edu.pk). [www.facebook.com/szabistofficial](http://www.facebook.com/szabistofficial)

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### **Islamabad Campus**

Street # 09, Plot # 67 Sector H-8/4, Islamabad, Pakistan

Phone: 051-4863363-65 Fax: 051-4863367

Email: [info@szabist-isb.edu.pk](mailto:info@szabist-isb.edu.pk)

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### **Larkana Campus**

Sachal Colony, Larkana, Sindh, Pakistan

Phone : (92-74) 4053400-3 Fax: (92-74) 4044760

Email: [info@lrk.szabist.edu.pk](mailto:info@lrk.szabist.edu.pk)

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### **Hyderabad Campus**

Ground & 4th Floor, State Life Building, Thandi Sarak, Hyderabad

Phone # 022-2782441-3 Fax # 022-2782444

Email: [info@hyd.szabist.edu.pk](mailto:info@hyd.szabist.edu.pk)

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### **Dubai Campus**

6<sup>th</sup> Floor, Block-10, Dubai International Academic City, Dubai, U.A.E

Phone: +971 4 3664601 Fax: +971 4 3664607

Email: [info@szabist.ac.ae](mailto:info@szabist.ac.ae), [www.szabist.ac.ae](http://www.szabist.ac.ae)