SZABIST

Shaheed Zulfikar Ali Bhutto Institute of Science & Technology

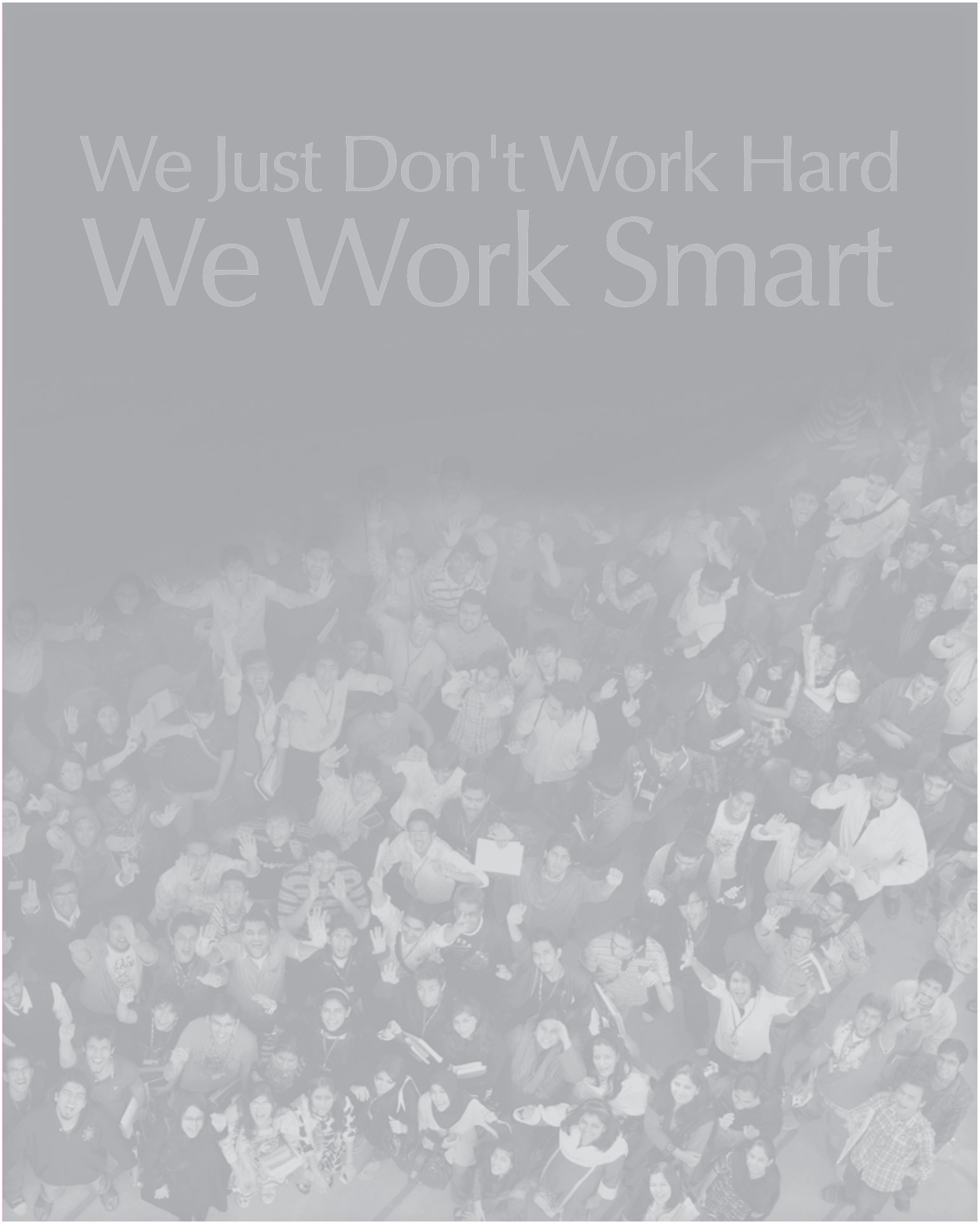
KARACHI CAMPUS

Discover Yourself

Course Catalogue 2014

www.szabist.edu.pk

We Just Don't Work Hard
We Work Smart



Course Catalogue 2014

The Vision

Shaheed Zulfikar Ali Bhutto Institute of Science and Technology shall be a world class institute recognized globally for its excellence in education, scholarship in research and distinction in service.

The Mission

The Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST) has been established with the objectives of producing highly qualified, scientific and technical personnel to meet the country's requirements; of conducting state-of-the-art scientific and technological research and development in support of the private and public sector; of providing hi-tech scientific and technological assistance to the Pakistan industry to enable it to compete with the world industries in global trading; of providing highly trained scientific and technological personnel to be able to attract the growth of high-tech industries and foreign and Pakistani investment; and of providing a sound socio-economic and scientific base and infrastructure to Pakistan to be able to meet the economic and technological challenges of the 21st century.

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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 MBA with only 96 students. Since then, SZABIST has made tremendous progress and now offers programs in the disciplines of Management Sciences, Computing,
Social Sciences, Media Sciences, Law, Mechatronics Engineering, and Biosciences.

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.

A Message by the Chancellor

I'm pleased to welcome you all to the Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), one of the highest ranked Higher Education Institutes of Pakistan.

This year SZABIST's Course Catalogue 2014, will specifically assist the students in independently selecting their courses, and planning their academic future. Furthermore, it will provide Program Managers a tool for guiding and counseling students more effectively. A wide range of enriched courses are offered in each discipline, which are in line with the Higher Education Commission of Pakistan (HEC) requirements and guidelines.

This Catalogue is one more indicator of SZABIST's growth into a mature institution, with five university campuses; Karachi, Islamabad, Larkana, Hyderabad and Dubai, and twenty one diversified disciplines in Management Sciences, Computing, Social Sciences, Media Sciences, Mechatronics Engineering, Biosciences, and its International Programs including LLB (University of London, UK) and BA (Hons.) in Business Studies in collaboration with University of South Wales, UK.

To ensure that SZABIST upholds its promise of delivering quality education, we are constantly striving for improvements in all areas and disciplines of SZABIST.

I wish all the students great success in their educational endeavor at SZABIST.

Dr. Azra Fazal Pechuho
Chancellor SZABIST

A Message by the Acting President

It is indeed a pleasure to welcome you to SZABIST; a multidisciplinary institution with a tradition of providing holistic and market-relevant education and producing corporate leaders.

At SZABIST, the focus is on a wholesome academic life that will prepare you for the challenges of the 21st century. You will be imparted with skills that are market relevant, personally enriching and socially beneficial. In addition, you will have the benefit of having the best quality faculty, very supportive staff and a safe, comfortable environment with latest equipment in the laboratories.

The Course Catalogue 2014 includes details and standardized description for courses being offered in Management Sciences, Computing, Social Sciences, Media Sciences, Mechatronics, Biosciences, and the University of London Law Program. The document has been prepared to facilitate both students and Program Managers and is fully compatible with the Higher Education Commission's (HEC) guidelines.

I thank the staff members associated with the review and compilation of this document.

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.

Ms. Shahnaz Wazir Ali
Acting President, SZABIST

Welcome Message by the Vice President Administration & Finance

I welcome you to SZABIST, which has been imparting higher education for almost two decades, and has become a multidisciplinary institution with a variety of programs catering to the academic, social, professional, and creative needs of its students.

Top ranking and successful universities are not only recognized for their faculty and research but also for the quality and market relevant courses that they offer. SZABIST, since its inception has ensured that courses offered are regularly revised and updated according to the changing requirements of our increasingly globalized and complex world.

This process of streamlining has not only made the SZABIST course outlines compatible with other universities but has also fulfilled one of the HEC criteria regarding quality management in the field of higher education.

In addition to the faculties of Management Sciences, Computer Science, Social Sciences, Media Sciences, Mechatronic Engineering, Law, and Biosciences, there are other departments in the Academics and Administration that will assist you in your academic journey at SZABIST.

I am confident that the Course Catalogue 2014 will be a useful guide for the students, both new and current. I encourage you to work hard and strive for excellence in every aspect of your academic career and also wish that you have a productive, intellectually stimulating, and socially responsible journey at SZABIST.

Ms. Nasreen Haque
Vice President (Administration & Finance)
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.

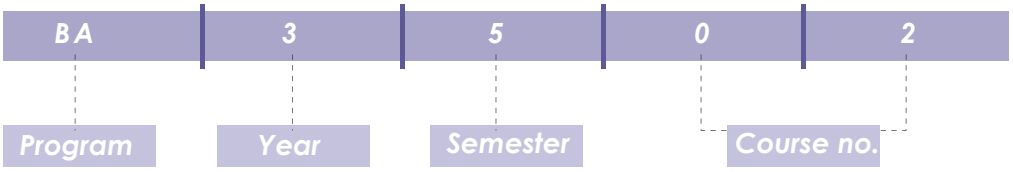
This Catalogue covers the core and/or compulsory courses for all the programs, offered in the following seven faculties:

- **Management Sciences**
- **Computing**
- **Social Sciences**
- **Media Sciences**
- **Mechatronics Engineering**
- **Biosciences**
- **External Programs**

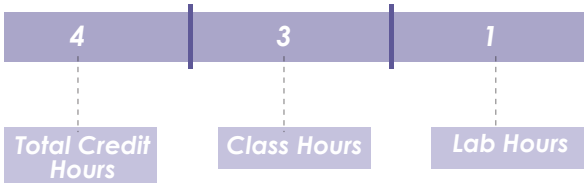
It provides information on the course credits, prerequisites (if any), course descriptions, and finally the equivalent courses. The students should consult the catalogue before registering for courses on ZabDesk.

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[1] 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:



Ms. Wajeeha Fatima Javed
Head of Academic Services
SZABIST, Karachi

1 Please note that in case of Law Program and a few courses in other programs, identification of courses for a particular semester by their codes may not apply.

Acronyms

BA	***Business Administration***
BABS	***Bachelor of Arts in Business Administration***
BBA	***Bachelor of Business Administration***
BEME	***Bachelor of Engineering in Mechatronics***
B&F	***Banking & Finance***
BS (Bioscience)	***Bachelor of Science in Biosciences***
BSCS	***Bachelor of Science in Computer Science***
BSSS	***Bachelor of Science in Social Sciences***
EMBA	***Executive Master of Business Administration***
HEC	***Higher Education Commission of Pakistan***
IR	***Institutional Research***
IT	***Information Technology***
MBA	***Master of Business Administration***
MD	***Media***
ME	***Mechatronics Engineering***
MPM	***Master in Project Management***
MS	***Master of Science***
MSCS	***Master of Science in Computer Science***
MSMS	***Master of Science in Management Sciences***
MSSS	***Master of Science in Social Science***
PhD	***Doctor of Philosophy***
SE	***Software Engineering***
SS	***Social Science***

Schematic Illustration

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

This is the duration of a particular course, divided into lecture plus lab hours.

This is the title for the course.

Course Name	Analysis of Financial Statements	***Credit Hours***	***3*** (3,0)

A code has been assigned to each of the respective course for identification.

Course Code	BA5132	***Prerequisite(s)***	BA5401

This is the course that a student is required to pass before taking this course.

Course Description

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.

This contains the topics that would be covered in the course.

Equivalent Course(s) 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.


Faculty Of
Management
Sciences

1.1 Bachelor

1.1.1 Bachelor of Business Administration (BBA)

Students enrolled in the BBA program are required to complete 46 courses with a 6 credit hour Research Project within seven (7) years. The break-up of 46 courses (144 credit hours) is as follows:

- *40 Compulsory Courses*
- *2 Optional Courses*[2]
- *1 Research Project*
- *4 Electives*[3]

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 1101	Introduction to Accounting	4
BA 1102	Microeconomics	4
BA 1105	English Writing Skills	4
BA 1106	Islamiat and Pakistan Studies/Humanities	4
BA 1108	IT in Business	5
BA 1109	Personal Management and Communication	5
	Spring Semester	
BA 1201	Financial Accounting	5
BA 1202	Macroeconomics	6
BA 1203	Management Principles	6
BA 1204	Maths for Business	6
BA 1206	Oral Communication and Presentation Skills	7
BA 1211	Logic and Critical Thinking	7
	Second Year	
	Fall Semester	
BA 2301	Introduction to Business Finance	7
BA 2303	Marketing Principles	7
BA 2307	Sociology	8
BA 2311	Business Statistics	8
BA 2312	Human Behavior	8
BA 2408	Cost Accounting	8
	Spring Semester	
BA 2401	Money and Banking	9
BA 2402	Retail Management	9
BA 2403	Business Ethics	9
BA 2406	Business and Electronic Communication	10
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BA 3507	Consumer Behavior	10

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

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

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:

Course Name	Introduction to Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 1101	**Prerequisite(s)**	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)	None		

Course Name	Microeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 1102	**Prerequisite(s)**	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, BA 5302		

Course Name	English Writing Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 1105	**Prerequisite(s)**	None
Course Description	The course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, and writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.		
Equivalent Course(s)	CSC 1102, MD 1102, SS 1118, BA 5317, BIO 1103		

Course Name	Islamiat and Pakistan Studies/Humanities	**Credit Hours**	**3** (3,0)
Course Code	BA 1106	**Prerequisite(s)**	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. The second part of the course focuses on Islam and the present-day Muslim world		
Equivalent Course(s)	CSC 1105, MD 2402, SS 1109, BIO 2303		

1.1.1 Bachelor of Business Administration (BBA)

Course Name	IT in Business	**Credit Hours**	**3** (3,0)
Course Code	BA 1108	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) BA 5306, BA 1103,CSC 1104, ME 1105, BIO 1104

Course Name	Personal Management and Communication	**Credit Hours**	**3** (3,0)
Course Code	BA 1109	**Prerequisite(s)**	None

Course Description

This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work and 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 5311

Course Name	Financial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 1201	**Prerequisite(s)**	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. MS Excel is used; necessary accounting software is introduced.

Equivalent Course(s) BA 5301

Course Name	Macroeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 1202	**Prerequisite(s)**	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) BA 5402, SS 1205

Course Name	Management Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 1203	**Prerequisite(s)**	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 5303, BA 5108

Course Name	Maths for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 1204	**Prerequisite(s)**	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, 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, applications of integration.

Equivalent Course(s) BIO 1107

Course Name	Oral Communication and Presentation Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 1206	**Prerequisite(s)**	BA 1105

Course Description

In this course students learn the principles of a good presentation and have 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 and 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

Course Name	Logic and Critical Thinking	**Credit Hours**	**3** (3,0)
Course Code	BA 1211	**Prerequisite(s)**	BA 1105

Course Description

The 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 1207

Course Name	Introduction to Business Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 2301	**Prerequisite(s)**	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

Course Name	Marketing Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 2303	**Prerequisite(s)**	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

Course Name	Sociology	**Credit Hours**	**3** (3,0)
Course Code	BA 2307	**Prerequisite(s)**	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) BA 2306, MD 1104, SS 2307

Course Name	Business Statistics	**Credit Hours**	**3** (3,0)
Course Code	BA 2311	**Prerequisite(s)**	BA1204

Course Description

This basic course aims to enhance the capacity of the students to solve the research problems and 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) BA 5305, SS 2309, BA 2305, BIO 1208

Course Name	Human Behavior	**Credit Hours**	**3** (3,0)
Course Code	BA 2312	**Prerequisite(s)**	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) MD 2424, BA 2306

Course Name	Cost Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 2408	**Prerequisite(s)**	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

Course Name	Money and Banking	**Credit Hours**	**3** (3,0)
Course Code	BA 2401	**Prerequisite(s)**	BA 1202

Course Description

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 is also introduced.

Equivalent Course(s) None

Course Name	Retail Management	**Credit Hours**	**3** (3,0)
Course Code	BA 2402	**Prerequisite(s)**	BA 2303

Course Description

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 HR management.

Equivalent Course(s) BA 5228, Marketing Elective

Course Name	Business Ethics	**Credit Hours**	**3** (3,0)
Course Code	BA 2403	**Prerequisite(s)**	BA 1203

Course Description

This course introduces contemporary and controversial ethical issues facing 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) None

Course Name	Business and Electronic Communication	**Credit Hours**	**3** (3,0)
Course Code	BA 2406	**Prerequisite(s)**	BA 1206

Course Description

This introductory course teaches students to communicate at both personal and professional levels. In addition, 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 5304

Course Name	Organizational Behavior	**Credit Hours**	**3** (3,0)
Course Code	BA 3504	**Prerequisite(s)**	BA 2312

Course Description

The 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 cover 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

Course Name	Consumer Behavior	**Credit Hours**	**3** (3,0)
Course Code	BA 3507	**Prerequisite(s)**	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

Course Name	Financial Markets and Institutions	**Credit Hours**	**3** (3,0)
Course Code	BA 3501	**Prerequisite(s)**	BA 2401

Course Description

This theoretical course focuses on financial markets including 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 and based on that, 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 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

Course Name	Media Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3508	**Prerequisite(s)**	BA 2303

Course Description

The 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) None

Course Name	Statistical Inference	**Credit Hours**	**3** (3,0)
Course Code	BA 3605	**Prerequisite(s)**	BA 2311

Course Description

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.

Equivalent Course(s) BA 5405, SS 2409

Course Name	Development Economics	**Credit Hours**	**3** (3,0)
Course Code	BA 4706	**Prerequisite(s)**	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 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

Course Name	Law and Taxation	**Credit Hours**	**3** (3,0)
Course Code	BA 4801	**Prerequisite(s)**	BA 1211

Course Description

The 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 kinds of taxes in Pakistan. Furthermore it also identifies the intellectual property rights in Pakistan.

Equivalent Course(s) None

Course Name	Financial Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3601	**Prerequisite(s)**	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

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3602	**Prerequisite(s)**	BA 2303

Course Description

The 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

Course Name	Operations Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3607	**Prerequisite(s)**	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 also include the complex understanding of services operations management with the help of real life case studies, processes and methodologies applied worldwide.

Equivalent Course(s) None

Course Name	Business Research Methods	**Credit Hours**	**3** (3,0)
Course Code	BA 3603	**Prerequisite(s)**	BA 3605, BA 2407

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

Course Name	Human Resource Management	**Credit Hours**	**3** (3,0)
Course Code	BA 4804	**Prerequisite(s)**	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 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 current issues (such as diversity training, sexual harassment policies, rising benefit costs), and best practices of employers of choice.

Equivalent Course(s) BA 5205

Course Name	Quantitative Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 3505	**Prerequisite(s)**	BA 1204

Course Description

The 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

Course Name	Management Information Systems	**Credit Hours**	**3** (3,0)
Course Code	BA 4704	**Prerequisite(s)**	BA 1108

Course Description

This course covers different information technology applications in business to manage better so as to providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

Equivalent Course(s) BA 5403, BA 4704

Course Name	Services Marketing	**Credit Hours**	**3** (3,0)
Course Code	BA 4705	**Prerequisite(s)**	BA 3602

Course Description

The course 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) BA 5129, Marketing Elective

Course Name	Project Management	**Credit Hours**	**3** (3,0)
Course Code	BA 4814	**Prerequisite(s)**	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

Course Name	Entrepreneurship	**Credit Hours**	**3** (3,0)
Course Code	BA 3502	**Prerequisite(s)**	BA 2301, 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 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 5406, MD 4769, BA 4859

Course Name	Pakistan Economy	**Credit Hours**	**3** (3,0)
Course Code	BA 3609	**Prerequisite(s)**	BA 4706

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) SS 4249

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	BA 4807	**Prerequisite(s)**	BA 4702

Course Description

The research project course is the application of the theory and concepts learned across various courses in BBA 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) None

1.2.1 Master of Business Administration (MBA)

Students enrolled in MBA-36 credit hours are required to complete 10 courses and a Thesis/Research Project (6 credits) within five (5) years. The break-up of the 10 courses is as follows:

- *6 Core Courses (18 Credit Hours)*
- *4 Elective Courses[4] (12 Credit Hours)*
- *1Research Project/Thesis (6 Credit Hours)*

MBA (36 credit hours)

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 5103	Advanced Research Methods	18
BA 5104	Strategic Management	18
BA 5xxx	Elective-I	191
BA 5xxx	Elective-II	191
	Spring Semester	
BA 5203	Strategic Marketing	18
BA 5208	Strategic Finance	19
BA 5xxx	Elective-III	191
BA 5xxx	Elective-IV	191
	Second Year	
	Fall Semester	
BA 5308	International Business	19
BA 5318	Organizational Development and Analysis	19
BA 5319	Research Project (6 Credits) or	20
BA 5xxx	Thesis	20

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

4 List of Electives is given in Appendix B.

1.2.1 Master of Business Administration in (MBA)

Course Name	Advanced Research Methods	**Credit Hours**	**3** (3,0)
Course Code	BA 5103	**Prerequisite(s)**	None

Course Description

The course provides the practical understanding of advanced research techniques like identifying and relating research problem through literature and practice, writing different types of research proposals, reviewing and analyzing scholarly literature, designing and developing the theoretical and conceptual framework, constructing and validating primary data collection tools; collecting, analyzing and interpreting both qualitative and quantitative data, reporting and presenting the research work through coherent report. It also equips the students to perform academic- and industry-based research and present the findings in a conference and publish in a journal.

Equivalent Course(s) None

Course Name	Strategic Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5104	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Strategic Marketing	**Credit Hours**	**3** (3,0)
Course Code	BA 5203	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

1.2.1 Master of Business Administration in (MBA)

Course Name	Strategic Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 5208	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	International Business	**Credit Hours**	**3** (3,0)
Course Code	BA 5308	**Prerequisite(s)**	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 and helps to investigate the political economy of international business, trade and investment, describe and explain trade and the investment environment in which international business transactions occur.

Equivalent Course(s) None

Course Name	Organizational Development and Analysis	**Credit Hours**	**3** (3,0)
Course Code	BA 5318	**Prerequisite(s)**	None

Course Description

This course provides an overview of two categories of interventions: human resource management interventions, which include performance management, career development and diversity; and strategic interventions, which include strategic change, transformation, organization learning and cultural change.

Equivalent Course(s) BA 5147

1.2.1 Master of Business Administration in (MBA)

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	BA 5319	**Prerequisite(s)**	BA 5103

Course Description

The research project course is the application of the theory and concepts learned across various courses in MBA 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) Thesis

Course Name	Thesis	**Credit Hours**	**6** (6,0)
Course Code	BA 5xxx	**Prerequisite(s)**	BA 5103

Course Description

The research project course 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

Equivalent Course(s) BA 5319

MBA (72 credit hours)

Students enrolled in MBA-72 credit hours are required to complete 22 courses and a Thesis/Research Project (6 credits) within five (5) years. The break-up of the 22 courses is as follows:

- *18 Core Courses (54 Credit Hours)*
- *4 Elective Courses[5] (12 Credit Hours)*
- *1 Thesis /Research Project (6 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 5301	Financial Accounting	22
BA 5305	Statistics and Mathematics for Business	22
BA 5401	Introduction to Business Finance	22
BA 5404	Marketing Principles	23
BA 5418	Managerial Communication	23
BA 5419	Business Management &Ethics	23
	Spring Semester	
BA 5105	Financial Management	24
BA 5106	Marketing Management	24
BA 5205	Human Resource Management	24
BA 5403	Management Information Systems	25
BA 5406	Entrepreneurship	25
BA 5408	Business Economics	25
	Second Year	
	Fall Semester	
BA 5206	Business Research Methods	26
BA 5104	Strategic Management	26
BA 5208	Strategic Finance	26
BA 5308	International Business	27
BA 5xxx	Elective-I	191
BA 5xxx	Elective-II	191
	Spring Semester	
BA 5203	Strategic Marketing	27
BA 5318	Organizational Development and Analysis	27
BA 5xxx	Elective-III	191
BA 5xxx	Elective-IV	191
BA 5319	Research Project (6 credits) or	28
BA 5xxx	Thesis	28

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

5 List of Electives is given in Annexure B.

1.2.1 Master of Business Administration in (MBA)

Course Name	Financial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 5301	**Prerequisite(s)**	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.MS Excel is used; necessary accounting software is introduced.

Equivalent Course(s) BA 1201

Course Name	Statistics and Mathematics for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 5305	**Prerequisite(s)**	None

Course Description

The statistical portion of this course consists of three parts. The first part consists of the introduction to statistics, types of data, frequency distribution, graphs, and charts. The second part covers measures of central tendency, and measures of dispersion. The third part is based on the concept of curve fitting techniques, regression analysis, correlation analysis, MS Excel tools for statistics using add-on analysis tool pack. The mathematical portion of this course covers by three parts. The first part based on systems of linear equations and its solutions: construction of linear and quadratic equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, cramer's rule and inverse method. The second part develops the concept of linear and nonlinear functions, and differentiation of basic functions with applications. The third part includes, higher order differentiation, optimization of functions, linear programming, and simplex method. The aim of this course is to prepare student to solve economic and managerial research problem through quantitative tools.

Equivalent Course(s) BA 2305, BA 2311, SS 2309

Course Name	Introduction to Business Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 5401	**Prerequisite(s)**	None

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

1.2.1 Master of Business Administration in (MBA)

Course Name	Marketing Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 5404	**Prerequisite(s)**	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 2303		

Course Name	Managerial Communication	**Credit Hours**	**3** (3,0)
Course Code	BA 5418	**Prerequisite(s)**	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 vs. external audiences, communicating change, intercultural communication, and ethics.		
Equivalent Course(s)	BA 5304, BA 2406		

Course Name	Business Management & Ethics	**Credit Hours**	**3** (3,0)
Course Code	BA 5419	**Prerequisite(s)**	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 facing the business community.		
Equivalent Course(s)	BA 5303, BA 1203		

1.2.1 Master of Business Administration in (MBA)

Course Name	Financial Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5105	**Prerequisite(s)**	BA 5401, BA 5301

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 3601

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5106	**Prerequisite(s)**	BA 5404

Course Description

The 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 3602

Course Name	Human Resource Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5205	**Prerequisite(s)**	BA 5108

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 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, rising benefit costs), and best practices of employers of choice.

Equivalent Course(s) BA 4804

1.2.1 Master of Business Administration in (MBA)

Course Name	Management Information Systems	**Credit Hours**	**3** (3,0)
Course Code	BA 5403	**Prerequisite(s)**	None
Course Description	This course covers different information technology applications in business to manage better so as to providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.		
Equivalent Course(s)	BA 4704		

Course Name	Entrepreneurship	**Credit Hours**	**3** (3,0)
Course Code	BA 5406	**Prerequisite(s)**	BA 5401, BA 5404
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		

Course Name	Business Economics	**Credit Hours**	**3** (3,0)
Course Code	BA 5408	**Prerequisite(s)**	None
Course Description	This course aims at imparting knowledge of basic economic principles to the business students. It covers micro-and macroeconomic issues that are essential for managers and professionals. The course starts with basic microeconomics concepts such as demand, supply, elasticity, production and cost. Having established the solid ground of the basics of microeconomics, parts of macroeconomics including national income accounts, aggregate demand, aggregate supply, concepts of inflation and unemployment, exchange rate, balance of payments, international trade, business cycles, money and banking, economic growth & major macroeconomic policy operations are dealt with. After completing the course the students will be able to apply principles of economics to understand and analyze economic problems being faced by both public and private sectors of Pakistan.		
Equivalent Course(s)	None		

1.2.1 Master of Business Administration in (MBA)

Course Name	Business Research Methods	**Credit Hours**	**3** (3,0)
Course Code	BA 5206	**Prerequisite(s)**	None

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) BA 3603

Course Name	Strategic Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5104	**Prerequisite(s)**	BA 5105, BA 5106 BA 5205

Course Description

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

Equivalent Course(s) None

Course Name	Strategic Finance	**Credit Hours**	3 (3,0)
Course Code	BA 5208	**Prerequisite(s)**	None

Course Description

This is an advanced course in finance that focuses the linkages that exist between corporate strategy and objectives, financial policy and 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.

Equivalent Course(s) None

1.2.1 Master of Business Administration in (MBA)

Course Name	International Business	**Credit Hours**	**3** (3,0)
Course Code	BA 5308	**Prerequisite(s)**	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, describes and explains trade and the investment environment in which international business transactions occur.

Equivalent Course(s) None

Course Name	Strategic Marketing	**Credit Hours**	**3** (3,0)
Course Code	BA 5203	**Prerequisite(s)**	BA 5105, BA 5106
			BA 5205

Course Description

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.

Equivalent Course(s) None

Course Name	Organizational Development and Analysis	**Credit Hours**	**3** (3,0)
Course Code	BA 5318	**Prerequisite(s)**	None

Course Description

This course introduces and provides an overview of two categories of interventions; human resource management interventions which includes performance management, career development and diversity; and strategic Interventions which includes strategic change, transformation, organization learning, and cultural change.

Equivalent Course(s) BA 5147

1.2.1 Master of Business Administration in (MBA)

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	BA 5319	**Prerequisite(s)**	BA 5103

Course Description

The research project course is the application of the theory and concepts learned across various courses in MBA 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) Thesis

Course Name	Thesis	**Credit Hours**	**6** (6,0)
Course Code	BA 5xxx	**Prerequisite(s)**	BA 5103

Course Description

The research project course 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.

Equivalent Course(s) BA 5319

MBA (90 credit hours)

Students enrolled in MBA-72 credit hours are required to complete 22 courses and a Thesis/Research Project (6 credits) within five (5) years. The break-up of the 22 courses is as follows:

- *18 Core Courses (54 Credit Hours)*
- *4 Elective Courses[6] (12 Credit Hours)*
- *1 Thesis /Research Project (6 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 5301	Financial Accounting	30
BA 5306	Computer Orientation and Packages	30
BA 5311	Personal Management	30
BA 5317	English Writing Skills	31
BA 5419	Business Management & Ethics	31
	Spring Semester	
BA 5305	Statistics and Mathematics for Business	31
BA 5401	Introduction to Business Finance	32
BA 5404	Marketing Principles	32
BA 5408	Business Economics	32
BA 5418	Managerial Communication	33
	Second Year	
	Fall Semester	
BA 5105	Financial Management	33
BA 5106	Marketing Management	33
BA 5207	Organizational Behavior	34
BA 5403	Management Information Systems	34
BA 5405	Statistical Inference	34
	Spring Semester	
BA 5205	Human Resource Management	35
BA 5406	Entrepreneurship	35
BA 5411	Cost and Management Accounting	35
BA 5xxx	Elective-I	191
BA 5xxx	Elective-II	191
	Third Year	
	Fall Semester	
BA 5104	Strategic Management	36
BA 5206	Business Research Methods	36
BA 5208	Strategic Finance	36
BA 5308	International Business	37
BA 5xxx	Elective-III	191
	Spring Semester	
BA 5203	Strategic Marketing	37
BA 5318	Organizational Development and Analysis	37
BA 5xxx	Elective-IV	191
BA 5319	Research Project (6 credits) or	38
BA 5xxx	Thesis	38

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

6 List of Electives is given in Appendix B.

1.2.1 Master of Business Administration in (MBA)

Course Name	Financial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 5301	**Prerequisite(s)**	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. MS Excel is used; necessary accounting software is introduced.

Equivalent Course(s) BA 1201

Course Name	Computer Orientation and Packages	**Credit Hours**	**3** (3,0)
Course Code	BA 5306	**Prerequisite(s)**	None

Course Description

This course is designed to cover topics, including computers in today's digital age, how to use computers in different professions, latest technologies and terms, and how to access information on the world wide web with the help of topics such as introduction to computers, hardware, software, different types of operating systems, and Microsoft Office.

Equivalent Course(s) BA 3604

Course Name	Personal Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5311	**Prerequisite(s)**	None

Course Description

This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work and 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

1.2.1 Master of Business Administration in (MBA)

Course Name	English Writing Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 5317	**Prerequisite(s)**	None

Course Description

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

Equivalent Course(s) MD 1102, BA 1105, CSC 1102, SS 1118, BIO 1103

Course Name	Business Management & Ethics	**Credit Hours**	**3** (3,0)
Course Code	BA 5419	**Prerequisite(s)**	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 facing the business community.

Equivalent Course(s) BA 5303, BA 1203

Course Name	Statistics and Mathematics for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 5305	**Prerequisite(s)**	None

Course Description

The statistical portion of this course consists of three parts. The first part consists of the introduction to statistics, types of data, frequency distribution, graphs, and charts. The second part covers measures of central tendency, and measures of dispersion. The third part is based on the concept of curve fitting techniques, regression analysis, correlation analysis, MS Excel tools for statistics using add-on analysis tool pack. The mathematical portion of this course covers by three parts. The first part based on systems of linear equations and its solutions: construction of linear and quadratic equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, cramer's rule and inverse method. The second part develops the concept of linear and nonlinear functions, and differentiation of basic functions with applications. The third part includes, higher order differentiation, optimization of functions, linear programming, and simplex method. The aim of this course is to prepare student to solve economic and managerial research problem through quantitative tools.

Equivalent Course(s) BA 2305, BA 2311, SS 2309

1.2.1 Master of Business Administration in (MBA)

Course Name	Introduction to Business Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 5401	**Prerequisite(s)**	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

Course Name	Marketing Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 5404	**Prerequisite(s)**	BA 5108

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 2303

Course Name	Business Economics	**Credit Hours**	**3** (3,0)
Course Code	BA 5408	**Prerequisite(s)**	None

Course Description

This course aims at imparting knowledge of basic economic principles to the business students. It covers micro-and macroeconomic issues that are essential for managers and professionals. The course starts with basic microeconomics concepts such as demand, supply, elasticity, production and cost. Having established the solid ground of the basics of microeconomics, parts of macroeconomics including national income accounts, aggregate demand, aggregate supply, concepts of inflation and unemployment, exchange rate, balance of payments, international trade, business cycles, money and banking, economic growth & major macroeconomic policy operations are dealt with. After completing the course the students will be able to apply principles of economics to understand and analyze economic problems being faced by both public and private sectors of Pakistan.

Equivalent Course(s) None

1.2.1 Master of Business Administration in (MBA)

Course Name	Managerial Communication	**Credit Hours**	**3** (3,0)
Course Code	BA 5418	**Prerequisite(s)**	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 vs. external audiences, communicating change, intercultural communication, and ethics.

Equivalent Course(s) BA 5304, BA 2406

Course Name	Financial Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5105	**Prerequisite(s)**	BA 5401

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 3601

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5106	**Prerequisite(s)**	BA 5404

Course Description

The 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 3602

1.2.1 Master of Business Administration in (MBA)

Course Name	Organizational Behavior	**Credit Hours**	**3** (3,0)
Course Code	BA 5207	**Prerequisite(s)**	BA 5108

Course Description

The 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 cover 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

Course Name	Management Information Systems	**Credit Hours**	**3** (3,0)
Course Code	BA 5403	**Prerequisite(s)**	BA 5306

Course Description

This course covers different information technology applications in business to manage better so as to providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

Equivalent Course(s) BA 4704

Course Name	Statistical Inference	**Credit Hours**	**3** (3,0)
Course Code	BA 5405	**Prerequisite(s)**	BA 5305

Course Description

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.

Equivalent Course(s) BA 3605

1.2.1 Master of Business Administration in (MBA)

Course Name	Human Resource Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5205	**Prerequisite(s)**	BA 5207

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 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, rising benefit costs), and best practices of employers of choice.

Equivalent Course(s) BA 4804

Course Name	Entrepreneurship	**Credit Hours**	**3** (3,0)
Course Code	BA 5406	**Prerequisite(s)**	BA 5401, BA 5404

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

Course Name	Cost and Management Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 5411	**Prerequisite(s)**	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

1.2.1 Master of Business Administration in (MBA)

Course Name	Strategic Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5104	**Prerequisite(s)**	BA 5108, BA 5106 BA 5105
Course Description	The 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)	Non		

Course Name	Business Research Methods	**Credit Hours**	3 (3,0)
Course Code	BA 5206	**Prerequisite(s)**	None
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)	BA 3603		

Course Name	Strategic Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 5208	**Prerequisite(s)**	BA 5105, BA 5401 BA 5411
Course Description	This is an advanced course in finance that covers 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.		
Equivalent Course(s)	None		

1.1.2 Master of Business Administration in (MBA)

Course Name	International Business	**Credit Hours**	3 (3,0)
Course Code	BA 5308	**Prerequisite(s)**	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 and helps to investigate the political economy of international business, trade and investment, describes and explains trade, and the investment environment in which international business transactions occur.

Equivalent Course(s) None

Course Name	Strategic Marketing	**Credit Hours**	**3** (3,0)
Course Code	BA 5203	**Prerequisite(s)**	BA 5404

Course Description

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.

Equivalent Course(s) None

Course Name	Organizational Development and Analysis	**Credit Hours**	**3** (3,0)
Course Code	BA 5318	**Prerequisite(s)**	None

Course Description

This course introduces and provides an overview of two categories of interventions human resource management interventions, which include performance management, career development and diversity; and strategic interventions, which includes strategic change, transformation, organization learning and cultural change.

Equivalent Course(s) BA 5147

1.2.1 Master of Business Administration in (MBA)

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	BA 5319	**Prerequisite(s)**	BA 5103

Course Description

The research project course is the application of the theory and concepts learned across various courses in MBA 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) Thesis

Course Name	Thesis	**Credit Hours**	**6** (6,0)
Course Code	BA 5xxx	**Prerequisite(s)**	BA 5103

Course Description

The research project course 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.

Equivalent Course(s) BA 5319

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Students enrolled for the 36 credit hours MBA Banking and Finance Program, are required to complete 10 courses and a research project (6 credits) within five (5) years. The break-up of the 10 courses is as follows:

- *6 Compulsory Courses (18 Credit Hours)*
- *4 Elective Courses[7] (12 Credit Hours)*
- *1 Research Project (6 Credit Hours)*

MBA B&F - 36 Credit Hours

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 5103	Advanced Research Methods	40
BA 5132	Analysis of Financial Statements	40
BA 5235	Treasury and Funds Management	40
BA 5xxx	Elective-I	192
	Spring Semester	
BA 5139	Financial Risk Analysis	41
BA 5175	Banking Operations	41
BA 5273	Prudential Regulations	14
BA 5xxx	Elective-II	192
	Second Year	
	Fall Semester	
BA 5xxx	Elective-III	192
BA 5xxx	Elective-IV	192
BA 5319	Research Project (6 credits) or	42
BA 5xxx	Thesis	42

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

7 List of Electives is given in Appendix B.

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Advanced Research Methods	**Credit Hours**	3 (3,0)
Course Code	BA 5103	**Prerequisite(s)**	None

Course Description

The course provides the practical understanding of advanced research techniques like identifying and relating research problem through literature and practice, writing different types of research proposals, reviewing and analyzing scholarly literature, designing and developing the theoretical and conceptual framework, constructing and validating primary data collection tools; collecting, analyzing and interpreting both qualitative and quantitative data, reporting and presenting the research work through coherent report. It also equips the students to perform academic- and industry-based research and present the findings in a conference and publish in a journal.

Equivalent Course(s) None

Course Name	Analysis of Financial Statements	**Credit Hours**	**3** (3,0)
Course Code	BA 5132	**Prerequisite(s)**	None

Course Description

This course includes detailed analysis of financial statements of manufacturing and services sector. The topics include; cash flow statement, and statement of owner's equity; accounting principles, financial analysis and reporting process. Further, the course also includes; ratio analysis, trend analysis, and horizontal and vertical analysis, operating and financial leverage, financial reporting practice and their impact on a firm's performance analysis.

Equivalent Course(s) None

Course Name	Treasury and Funds Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5235	**Prerequisite(s)**	None

Course Description

The course focuses on the banking aspects of treasury and funds management and it enables budding financial managers to gain insights into different treasury products and their features. The course incorporates practical aspects pertaining to the actual dealing room scenarios including but not limited to dealing ethics, and actual transaction types. It covers the understanding of FIs, financial instruments, and linkages between the financial system and the macro-economy, elaborates on how interest rates are determined, and the role of the federal reserve in formulating monetary policy.

Equivalent Course(s) None

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Financial Risk Analysis	**Credit Hours**	**3** (3,0)
Course Code	BA 5139	**Prerequisite(s)**	BA 5132

Course Description

This course focuses on the risks faced by the manager of a portfolio of financial assets. Such risks include credit, liquidity, interest rate, currency, and country risks. These risks frequently have lumpy and unpredictable characteristics. Elements of immeasurability often frustrate the empirical estimation of the potential impacts of such risks. The course examines the various risk management techniques used by financial managers to address these problems, and the strengths and limitations of each of the techniques within an operational business setting.

Equivalent Course(s) None

Course Name	Banking Operations	**Credit Hours**	3 (3,0)
Course Code	BA 5175	**Prerequisite(s)**	None

Course Description

Banking Operations areas includes, but is not limited to, various operations of commercial banks, central bank and NBFIs. The course covers; banking theory and practice, evolution and emerging trends in banking and financial markets, the role of central bank and other regulatory agencies, front office operations, bank payments, audit and internal control systems, financial management, compliance and reporting, operational planning, management information systems (ICT & Business Processes), products and services: deposits, credits, asset and liability management, trade finance, and asset finance.

Equivalent Course(s) None

Course Name	Prudential Regulations	**Credit Hours**	**3** (3,0)
Course Code	BA 5273	**Prerequisite(s)**	None

Course Description

This course focuses on the Prudential Regulations of the State Bank of Pakistan. In addition, this course introduces the current law and practices of State Bank and their implication for the banking industry stake holders like banks, consumers, and various corporate clients.

Equivalent Course(s) None

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	BA 5319	**Prerequisite(s)**	BA 5103

Course Description	The research project course is the application of the theory and concepts learned across various courses in MBA 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)	Thesis

Course Name	Thesis	**Credit Hours**	**6** (6,0)
Course Code	BA 5xxx	**Prerequisite(s)**	BA 5103

Course Description	The research project course 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.
Equivalent Course(s)	BA 5319

MBA B&F (72 credit hours)

MBA B&F-72 Credit Hours
Students enrolled for the MBA Banking and Finance Program-72 credit hours are required to complete 23 courses and 1Research Project (3 credit hours) within five (5) years. The break-up of the 24 courses is as follows:

- *19 Compulsory Courses (57 Credit Hours)*
- *4 Elective Courses[8] (12 Credit Hours)*
- *1Research Project (3 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BA 5301	Financial Accounting	44
BA 5302	Microeconomics	44
BA 5303	Management Principles	44
BA 5304	Business and Electronic Communication	44
BA 5305	Statistics and Mathematics for Business	45
BA 5403	Management Information Systems	45
	Spring Semester	
BA 5104	Strategic Management	45
BA 5105	Financial Management	46
BA 5106	Marketing Management	46
BA 5135	Financial Markets and Institutions	46
BA 5205	Human Resource Management	47
BA 5402	Macroeconomics	47
	Second Year	
	Fall Semester	
BA 5103	Advanced Research Methods	47
BA 5132	Analysis of Financial Statements	48
BA 5175	Banking Operations	48
BA 5273	Prudential Regulations	48
BA 5xxx	Elective-I	192
BA 5xxx	Elective-II	192
	Spring Semester	
BA 5139	Financial Risk Analysis	49
BA 5219	Research Project (03 credit)	49
BA 5235	Treasury and Funds Management	49
BA 5417	Advanced Credit Management	50
BA 5xxx	Elective-III	192
BA 5xxx	Elective-IV	192

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

8 List of Electives is given in Appendix B.

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Financial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 5301	**Prerequisite(s)**	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 cash flow statements MS Excel is used as well as necessary accounting software is introduced.

Equivalent Course(s) BA 1201

Course Name	Microeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 5302	**Prerequisite(s)**	None

Course Description

Microeconomics is a basic introductory course for management sciences students it is a comprehensive subject that aims at polishing basic economic principles that apply to day life. The course explains economic problems, demand and supply forces related to products and market structures.

Equivalent Course(s) BA 1102

Course Name	Management Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 5303	**Prerequisite(s)**	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 1203

Course Name	Business and Electronic Communication	**Credit Hours**	**3** (3,0)
Course Code	BA 5304	**Prerequisite(s)**	None

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 2406

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Statistics and Mathematics for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 5305	**Prerequisite(s)**	None

Course Description

The statistical portion of this course consists of three parts. The first part consists of the introduction to statistics, types of data, frequency distribution, graphs, and charts. The second part covers measures of central tendency, and measures of dispersion. The third part is based on the concept of curve fitting techniques, regression analysis, correlation analysis, MS Excel tools for statistics using add-on analysis tool pack. The mathematical portion of this course covers three parts. The first part is based on systems of linear equations and its solutions: construction of linear and quadratic equations, graphical interpretation of data, systems of linear equations and solutions, introduction to matrix algebra, determinants, cramer's rule and inverse method. The second part develops the concept of linear and nonlinear functions, and differentiation of basic functions with applications. The third part includes, higher order differentiation, optimization of functions, linear programming, and simplex method. The aim of this course is to prepare student to solve economic and managerial research problem through quantitative tools.

Equivalent Course(s) BA 2305, BA 2311

Course Name	Management Information Systems	**Credit Hours**	**3** (3,0)
Course Code	BA 5403	**Prerequisite(s)**	None

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) BA 4704

Course Name	Strategic Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5104	**Prerequisite(s)**	BA 5303

Course Description

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

Equivalent Course(s) None

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Financial Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5105	**Prerequisite(s)**	None

Course Description

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 3601

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5106	**Prerequisite(s)**	None

Course Description

The 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 project through close observations of marketing management at different levels in marketing channels.

Equivalent Course(s) BA 3602

Course Name	Financial Markets and Institutions	**Credit Hours**	**3** (3,0)
Course Code	BA 5135	**Prerequisite(s)**	None

Course Description

A theoretical course that focuses on financial markets including 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 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 3501

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Human Resource Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5205	**Prerequisite(s)**	BA 5303

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 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, rising benefit costs), and best practices of employers of choice.

Equivalent Course(s) BA 4804

Course Name	Macroeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 5402	**Prerequisite(s)**	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) BA 1202

Course Name	Advanced Research Methods	**Credit Hours**	**3** (3,0)
Course Code	BA 5103	**Prerequisite(s)**	None

Course Description

The course provides the practical understanding of advanced research techniques like identifying and relating research problem through literature and practice, writing different types of research proposals, reviewing and analyzing scholarly literature, designing and developing the theoretical and conceptual framework, constructing and validating primary data collection tools; collecting, analyzing and interpreting both qualitative and quantitative data, reporting and presenting the research work through coherent report. It also enables the students to perform academic and industry-based research and present the findings in a conference and publish in a journal.

Equivalent Course(s) None

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Analysis of Financial Statements	**Credit Hours**	**3 (3,0)**
Course Code	BA 5132	**Prerequisite(s)**	BA 5301, BA 5105

Course Description

This course includes detailed analysis of financial statements of manufacturing and services sector. The topics include; cash flow statement, and statement of owner's equity; accounting principles, financial analysis and reporting process. Further, the course also includes; ratio analysis, trend analysis, and horizontal and vertical analysis, operating and financial leverage, financial reporting practice and their impact on a firm's performance analysis.

Equivalent Course(s) None

Course Name	Banking Operations	**Credit Hours**	**3** (3,0)
Course Code	BA 5175	**Prerequisite(s)**	BA 5105, BA 5135

Course Description

Banking Operations studies areas includes, but is not limited to, various operations of commercial banks, Central bank and NBFIs. The course covers; banking theory and practice, evolution and emerging trends in banking and financial markets, the role of Central Bank and other regulatory agencies, front office operations, bank payments, audit and internal control systems, financial management, compliance and reporting, operational planning, management information systems (ICT & business processes), products and services, deposits, credits, asset and liability management, trade finance, and asset finance.

Equivalent Course(s) None

Course Name	Prudential Regulations	**Credit Hours**	**3** (3,0)
Course Code	BA 5273	**Prerequisite(s)**	BA 5135

Course Description

This course focuses on the Prudential Regulations of the State Bank of Pakistan. In addition, this course introduces the current law and practices of State Bank and their implication on the banking industry stake holders like banks, consumers, and various corporate clients.

Equivalent Course(s) None

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Financial Risk Analysis	**Credit Hours**	**3** (3,0)
Course Code	BA 5139	**Prerequisite(s)**	BA 5132

Course Description

This course focuses on the risks faced by the manager of a portfolio of financial assets. Such risks include credit, liquidity, interest rate, currency, and country risks. These risks frequently have lumpy and unpredictable characteristics. Elements of immeasurability often frustrate the empirical estimation of the potential impacts of such risks. The course examines the various risk management techniques used by financial managers to address these problems, and the strengths and limitations of each of the techniques within an operational business setting.

Equivalent Course(s) None

Course Name	Research Project	**Credit Hours**	**3** (3,0)
Course Code	BA 5219	**Prerequisite(s)**	BA 5103

Course Description

The research project course is the application of the theory and concepts learned across various courses in BBA 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) None

Course Name	Treasury and Funds Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5235	**Prerequisite(s)**	BA 5105, BA 5132

Course Description

The course focuses on the banking aspects of treasury and funds management and it enables budding financial managers to gain insights into different treasury products and their features. The course incorporates practical aspects pertaining to the actual dealing room scenarios including, but not limited to, dealing ethics, and actual transaction types. It covers the understanding of FIs, financial instruments, and linkages between the financial system and the macro-economy, elaborates on how interest rates are determined, and the role of the federal reserve in formulating monetary policy.

Equivalent Course(s) **None**

1.2.2 Master of Business Administration in Banking & Finance (MBA B&F)

Course Name	Advanced Credit Management	**Credit Hours**	**3** (3,0)
Course Code	BA 5417	**Prerequisite(s)**	BA 5132

Course Description

The main goal of this course is to develop a foundation of financial management concepts in relation to credit management which enables the student to understand lending objectives, the credit process, credit selection, credit portfolio, measuring credit risk, credit (risk) management, credit risk loss distribution, and economics of credit. This course also describes the credit rating systems and the Basel Accord.

Equivalent Course(s)

None

1.2.3 Master in Project Management (MPM)

Students enrolled in the MPM program are required to complete 33credit hours within five (5) years. The breakup of the courses is as follows:

- *8 Core Courses (24 Credit Hours)*
- *2 Electives (6 Credit Hours)*
- *1 Project (3 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
PM 5101	Financial Management for Project Management	52
PM 5102	Fundamentals of Project Management	52
PM 5310	SAP Training	52
PM 5xxx	Elective-I	192
	Spring Semester	
PM 5103	Project Cost Management	53
PM 5201	Project Scheduling, Planning and Time Management	53
PM 5301	Project Quality Management	53
PM 5309	Project in Primavera	54
PM 5xxx	Elective-II	192
	Summer Semester	
PM 5209	Project	54
PM 5303	Project Monitoring, Evaluation and Control Management	54

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

1.2.3 Master in Project Management (MPM)

Course Name	Financial Management for Project Management	**Credit Hours**	**3** (3,0)
Course Code	PM 5101	**Prerequisite(s)**	None

Course Description

This course is designed to 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.

Equivalent Course(s) None

Course Name	Fundamentals of Project Management	**Credit Hours**	**3** (3,0)
Course Code	PM 5102	**Prerequisite(s)**	None

Course Description

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. 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.

Equivalent Course(s) None

Course Name	SAP Training	**Credit Hours**	**3** (3,0)
Course Code	PM 5310	**Prerequisite(s)**	None

Course Description

The course is designed to provide participants an overview of the basic functions in SAP Project System for structuring, planning, executing, and monitoring projects. It is based on software release SAP ERP 6.0 with Enhancement Package 5. The course covers work breakdown structure, network, project builder, project planning board, progress tracking, access control list, scheduling, resource and material planning, cost and revenue planning, cash management, budgeting, reporting, and integration with other applications.

Equivalent Course(s) None

1.2.3 Master in Project Management (MPM)

Course Name	Project Cost Management	**Credit Hours**	**3** (3,0)
Course Code	PM 5103	**Prerequisite(s)**	None

Course Description

This course provides the general approaches to cost management, such as the methods used to estimate costs, preparing budgets and controlling/monitoring a project's finances. It also furnishes the knowledge regarding the costing of a project from various approaches like top-down and bottom-up. In addition, the topics include preparation of feasibility reports for projects, forecasting the project cost, interrelationship of various cost control concepts, and possible responses of a project management team which will provide insight on whether a project is falling behind schedule or overrunning its budget in real time.

Equivalent Course(s) None

Course Name	Project Scheduling, Planning and Time Management	**Credit Hours**	**3** (3,0)
Course Code	PM 5201	**Prerequisite(s)**	None

Course Description

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 WBS–Work Breakdown Structure. By utilizing the PDM (Precedence Diagramming Method) 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).

Equivalent Course(s) None

Course Name	Project Quality Management	**Credit Hours**	**3** (3,0)
Course Code	PM 5301	**Prerequisite(s)**	None

Course Description

The 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. The course also 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.

Equivalent Course(s) None

1.2.3 Master in Project Management (MPM)

Course Name	Project in Primavera	**Credit Hours**	**3** (3,0)
Course Code	PM 5309	**Prerequisite(s)**	None

Course Description

This course provides hands-on training for Primavera's client/server based solution. Participants gain a thorough background in the concepts of planning and scheduling, resource and cost management. It is based on hands-on workshops that create and track an entire project to completion. The major areas covered in this training course are; maintaining the project documents library, assigning and analyzing resources and costs, optimizing project plan, project execution and control, reporting performance, top-down budgeting and estimating, Primavera report wizard, Primavera report editor, exporting data directly to other applications, and publishing Primavera data.

Equivalent Course(s) None

Course Name	Project	**Credit Hours**	**3** (3,0)
Course Code	PM 5209	**Prerequisite(s)**	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

Course Name	**Project Monitoring, Evaluation and Controlling Management**	**Credit Hours**	**3** (3,0)
Course Code	PM 5303	**Prerequisite(s)**	None

Course Description

The aim of this course is to develop the analysis and reporting skills necessary for project managers to monitor, evaluate, assess, and control projects. It equips participants with core theoretical, as well as, hands-on practical knowledge of standard project management practices used to develop a comprehensive configuration management and change control mechanism, which enables them to bring their projects back on track. The focus of this course is to bring to the participants the proven techniques, guidelines, and strategies for successfully completing projects within resources and under hard and soft constraints.

Equivalent Course(s) None

1.2.4 Executive Master of Business Administration (EMBA)

Students enrolled in the EMBA program are required to complete 20 course 01 business project & Research project within five (5) years. The break-up of 20 courses & projects (66 credit hours) is as follows:

- *17 Compulsory Courses*
- *3 Electives*[9]
- *1 Business Project (3 Credit Hours)*
- *1 Research Project (3 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
BE 417	Accounting for Business	56
BE 447	Managerial Communication	56
BE 492	Business Management	56
	Spring Semester	
BE 413	Quantitative Analysis for Decision Making	57
BE 415	Contemporary Marketing	57
BE 421	Economics for Business	57
	Summer Semester	
BE 414	Business Finance	58
BE 416	Organizational Behavior	58
BE 418	Business Research Methods	58
BE 434	Marketing Management	59
	Second Year	
	Fall Semester	
BE 423	Human Resource Management	59
BE 443	Entrepreneurship and Family Businesses	59
BE 478	Business Project	60
BE 4xx	Elective-I (Marketing, HR, Finance and Supply Chain)	192
	Spring Semester	
BE 419	Strategic Management	60
BE 444	Ethics and Corporate Governance	60
BE 4xx	Elective-II (Marketing, HR, Finance and Supply Chain)	192
BE 4xx	Elective-III (Marketing, HR, Finance and Supply Chain)	192
	Summer Semester	
BE 445	Managerial Accounting and Control	60
BE 448	Research Project (3 Credits)	61
BE 449	Operations and Supply Chain Management	61
BE 451	Business Application of IT	61

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

9 List of Electives is given in Appendix B.

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Accounting for Business	**Credit Hours**	**3** (3,0)
Course Code	BE 417	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Managerial Communication	**Credit Hours**	**3** (3,0)
Course Code	BE 447	**Prerequisite(s)**	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 vs. external audiences, communicating change, intercultural communication, and ethics.

Equivalent Course(s) BA 5418

Course Name	Business Management	**Credit Hours**	**3** (3,0)
Course Code	BE 492	**Prerequisite(s)**	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 facing the business community.

Equivalent Course(s) BA 5108

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Quantitative Analysis for Decision Making	**Credit Hours**	**3** (3,0)
Course Code	BE 413	**Prerequisite(s)**	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) None

Course Name	Contemporary Marketing	**Credit Hours**	**3** (3,0)
Course Code	BE 415	**Prerequisite(s)**	None

Course Description

The 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.

Equivalent Course(s) BA 5404

Course Name	Economics for Business	**Credit Hours**	**3** (3,0)
Course Code	BE 421	**Prerequisite(s)**	None

Course Description

This course aims at imparting knowledge of basic economic principles to the business students. It covers micro-and macroeconomic issues that are essential for managers and professionals. The course starts with basic microeconomics concepts such as demand, supply, elasticity, production and cost. Having established the solid ground of the basics of microeconomics, parts of macroeconomics including national income accounts, aggregate demand, aggregate supply, concepts of inflation and unemployment, exchange rate, balance of payments, international trade, business cycles, money and banking, economic growth & major macroeconomic policy operations are dealt with. After completing the course the students will be able to apply principles of economics to understand and analyze economic problems being faced by both public and private sectors of Pakistan.

Equivalent Course(s) BA 5408

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Business Finance	**Credit Hours**	**3** (3,0)
Course Code	BE 414	**Prerequisite(s)**	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 5105

Course Name	Organizational Behavior	**Credit Hours**	**3** (3,0)
Course Code	BE 416	**Prerequisite(s)**	BE 492

Course Description

The 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 cover 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

Course Name	Business Research Methods	**Credit Hours**	**3** (3,0)
Course Code	BE 418	**Prerequisite(s)**	BE 413

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) None

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BE 434	**Prerequisite(s)**	BE415

Course Description

The 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

Course Name	Human Resource Management	**Credit Hours**	**3** (3,0)
Course Code	BE 423	**Prerequisite(s)**	BE 416

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 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, rising benefit costs), and best practices of employers of choice.

Equivalent Course(s) BA 5205

Course Name	Entrepreneurship and Family Businesses	**Credit Hours**	**3** (3,0)
Course Code	BE 443	**Prerequisite(s)**	BE 492

Course Description

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.

Equivalent Course(s) BA 5406

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Business Project	**Credit Hours**	**3** (3,0)
Course Code	BE 478	**Prerequisite(s)**	BE 418

Course Description

This course is designed to ensure that the students demonstrate their understanding to develop 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.

Equivalent Course(s) None

Course Name	Strategic Management	**Credit Hours**	**3** (3,0)
Course Code	BE 419	**Prerequisite(s)**	BE 414, BE 423, BE 492

Course Description

The 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

Course Name	Ethics and Corporate Governance	**Credit Hours**	**3** (3,0)
Course Code	BE 444	**Prerequisite(s)**	BE 492

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

Course Name	Managerial Accounting and Control	**Credit Hours**	**3** (3,0)
Course Code	BE 445	**Prerequisite(s)**	BE 417, BE 414

Course Description

The course includes the study of management accounting for internal reporting and decisionmaking. 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) None

1.2.4 Executive Master of Business Administration (EMBA)

Course Name	Research Project	**Credit Hours**	**3** (3,0)
Course Code	BE 448	**Prerequisite(s)**	BE 418

Course Description

The research has to be based on scientific study in a specialized field of business, such as marketing, finance, HRM, MIS 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

Course Name	Operations and Supply Chain Management	**Credit Hours**	**3** (3,0)
Course Code	BE 449	**Prerequisite(s)**	BE 492

Course Description

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 that supply chain and its significant impact on all aspects of business while gaining an understanding of the synchronism and synergies of all its components.

Equivalent Course(s) BA 3607

Course Name	Business Application of IT	**Credit Hours**	**3** (3,0)
Course Code	BE 451	**Prerequisite(s)**	

Course Description

The course discusses why technology and IT systems are needed in organizations and how they help improve on business model enablement, process rationalization and improvement, and customer product/service delivery. The course introduces students to computer software system development, life-cycle, and highlight the problems and enhancements that business organizations are faced with in this changing day and age. Solutions are formulated through analysis of operations, business goals and 'business modeling', while product and services roadmaps are analyzed for possible technological solutions.

Equivalent Course(s) None

1.2.5 Master of Science in Management Sciences (MSMS)

Students enrolled in the MS in Management Sciences program are required to complete 30 credits within five (5) years. Minimum time to complete MS is 1½ years.

A student can take six courses (18 credit hours), two Independent Studies (6 credit hours) and a thesis (6 credit hours) to complete MS degree with minimum 30 credit hours. In lieu of thesis two elective courses can be taken to complete the credit hours requirement. Break-up of 30 credit hour courses is as follows:

- *3 Compulsory Courses (9 Credit Hours)*
- *3 Elective[10] Courses (9 Credit Hours)*
- *2 Independent Studies (6 Credit Hours)*
- *1 Thesis (6 Credit Hours) or 2 additional courses instead of Thesis (6 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MS 5204	Quantitative Tools for Research v	63
MS 5239	Advance Research Methods and Techniques	63
MS 5416	Research Philosophy	63
MS 5xxx	Elective-I	193
	Spring Semester	
MS 5xxx	Elective-II	193
MS 5xxx	Elective-III	193
MS 5108	Independent Study-I	-
MS 5208	Independent Study-II	-
	Second Year	
	Fall Semester	
MS 5xxx	Electives IV/Thesis	193
MS 5xxx	Electives V/Thesis	193

Summer is not a regular semester. Students can however register in IS/Thesis/Dissertation in 3 credit hours only.
All courses may not be offered every year. Alternate courses may be substituted as and when required.

10 List of Electives is given in Appendix B.

1.2.5 Master of Science in Management Sciences (MSMS)

Course Name	Quantitative Tools for Research	**Credit Hours**	**3** (3,0)
Course Code	MS 5204	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Advance Research Methods and Techniques	**Credit Hours**	**3** (3,0)
Course Code	MS 5239	**Prerequisite(s)**	None

Course Description

Advance Research Methods and Techniques is a compulsory course at the MS level. This course introduces students to the concepts of research techniques, and the challenges scholars face in scientific investigation. The major areas of learning in this course include identification of research problem, writing a research proposal, development of research framework, probing for primary and secondary data, writing coherent literature review, and presenting the oral and written research reports.

Equivalent Course(s) None

Course Name	Research Philosophy	**Credit Hours**	**3** (3,0)
Course Code	MS 5416	**Prerequisite(s)**	None

Course Description

This course stems from the belief that an examination of the intimate relationship between philosophy and research is important and useful. One area where philosophical ideas and contemporary research practices have come together is related to discussions about the epistemological and ontological underpinnings of qualitative and quantitative research methods. This discussion can be understood through different positions labeled as positivist or naturalist on the one hand and phenomenological, hermeneutical, interpretivist or discourse and narrative analyst on the other. This course aims at communicating the relevance of philosophical ideas in conducting research today. Through a selection of readings it provides a historical overview of the development of philosophical thought which is indispensible for the understanding of the contemporary world and its fundamental theoretical bases.

Equivalent Course(s) None

1.2.6 Doctor of Philosophy in Management Sciences (PhD)

Students enrolled in PhD Management Sciences program are required to complete 48 credit hours within five (5) years. Following is the breakup of the 54 Credit Hour courses.

- *3 Compulsory Courses (9 Credit Hours)*
- *3 Elective Course (9 Credit Hours)*
- *2 Independent Studies (6 Credit Hours)*
- *1 Dissertation (30 Credit Hours)*

In order to pursue PhD from SZABIST, continuing students, who have previously completed compulsory courses may substitute them with other elective courses offered in PhD program.

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MS 6106	Advanced Research Methods and Techniques (Compulsory)	65
MS 6212	Quantitative Tools for Research (Compulsory)	65
MS 6214	Research Philosophy (Compulsory)	65
MS 6xxx	Elective-I	193
	Spring Semester	
MS 6xxx	Elective-II	193
MS 6xxx	Elective-III	193
MS 6xxx	Independent Study-I	-
MS 6xxx	Independent Study-II	-
	Second Year	
	Fall Semester	
MS 6xxx	Dissertation (Proposal)	-
	Spring Semester	
MS 6xxx	Dissertation	-
	Third Year	
	Fall Semester	
MS 6xxx	Dissertation	-
	Spring Semester	
MS 6xxx	Dissertation	-

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

1.2.6 Doctor of Philosophy in Management Sciences (PhD)

Course Name	Advanced Research Methods and Techniques	**Credit Hours**	**3** (3,0)
Course Code	MS 6106	**Prerequisite(s)**	None

Course Description

Advance Research Methods and Techniques is a compulsory course at the MS level. This course introduces students to the concepts of research techniques, and the challenges scholars face in scientific investigation. The major areas of learning in this course include identification of research problem, writing a research proposal, development of research framework, probing for primary and secondary data, writing coherent literature review, and presenting the oral and written research reports.

Equivalent Course(s) None

Course Name	Quantitative Tools for Research	**Credit Hours**	**3** (3,0)
Course Code	MS 6212	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Research Philosophy	**Credit Hours**	**3** (3,0)
Course Code	MS 6214	**Prerequisite**	None

Course Description

This course stems from the belief that an examination of the intimate relationship between philosophy and research is important and useful. One area where philosophical ideas and contemporary research practices have come together is related to discussions about the epistemological and ontological underpinnings of qualitative and quantitative research methods. This discussion can be understood through different positions labeled as positivist or naturalist on the one hand and phenomenological, hermeneutical, interpretivist or discourse and narrative analyst on the other. This course aims at communicating the relevance of philosophical ideas in conducting research today. Through a selection of readings it provides a historical overview of the development of philosophical thought which is indispensible for the understanding of the contemporary world and its fundamental theoretical bases.

Equivalent Course(s) None

Faculty Of Computing

2.1 Bachelor of Science

2.1.1 Bachelor of Science in Computer Science (BSCS)

The 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[11] (6 Credit Hours)*
- *7 CS Electives[12] (21 Credit Hours)*
- *2 Final Year Project (6 Credit Hours)*

Course Code	Course Title	Page #
First Year		
Fall Semester		
CSC 1101	Calculus and Analytical Geometry	70
CSC 1102	English Composition and Comprehension	70
CSC 1103	Fundamentals of Programming	70
CSC 1104	Introduction to Computing	71
CSC 1105	Islamiat & Pakistan Studies/Humanities	71
	Total Credit Hrs. 16	
Spring Semester		
CSC 1201	Discrete Mathematical Structures	71
CSC 1202	Multivariate Calculus	72
CSC 1203	Object Oriented Programming	72
CSC 1204	Physics	72
CSC 1205	Technical and Business Writing	72
	Total Credit Hrs. 16	
Second Year		
Fall Semester		
CSC 2101	Communication & Presentation Skills	73
CSC 2102	Data Structures and Algorithms	73
CSC 2103	Digital Logic Design	73
CSC 2104	Linear Algebra & Differential Equations	74
CSC 2105	Statistics & Probability	74
	Total Credit Hrs. 18	
Spring Semester		
CSC 2201	Computer Organization and Assembly Language	74
CSC 2202	Data Communications and Computer Networks	75
CSC 2203	Database Systems	75
CSC 2204	Finite Automata Theory and Formal Languages	75
CSC 2205	Operating Systems	75
	Total Credit Hrs. 18	

11 List of University electives is given in Appendix B.

12 List of CS electives is given in Appendix B.

2.1.1 Bachelor of Science in Computer Science (BSCS)

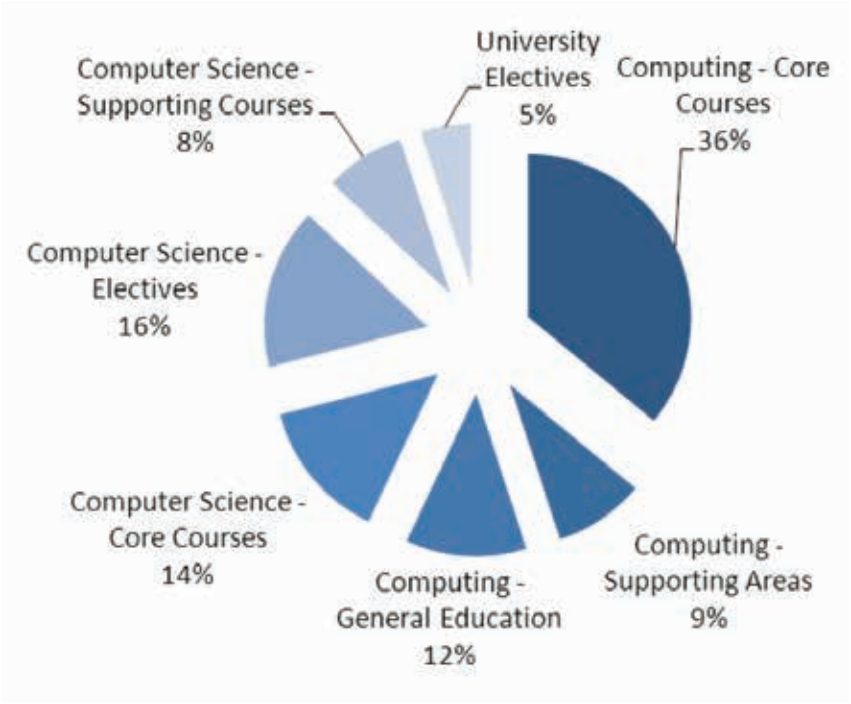
Course Code	Course Title	Page #
Third Year		
Fall Semester		
CSC 3101	Computer Architecture	76
CSC 3102	Human Computer Interaction	76
CSC 3103	Introduction to Software Development	76
CSC 3104	Software Engineering-I	77
CSC 4xxx	University Elective-1	194
	Total Credit Hrs. 17	
Spring Semester		
CSC 3201	Compiler Construction	77
CSC 3202	Design & Analysis of Algorithms	77
CSC 3203	Numerical Computing	77
CSC 4xxx	CS Elective-I	194
CSC 4xxx	CS Elective-II	194
	Total Credit Hrs. 15	
Fourth Year		
Fall Semester		
CSC 4101	Artificial Intelligence	78
CSC 4102	Professional Practices	78
CSC 4105	Final Year Project-I	78
CSC 4xxx	CS Elective-III	194
CSC 4xxx	CS Elective-IV	194
	Total Credit Hrs. 15	
Spring Semester		
CSC 4205	Final Year Project-II	79
CSC 4xxx	CS Elective-V	194
CSC 4xxx	CS Elective-VI	194
CSC 4xxx	CS Elective-VII	194
CSC 4xxx	University Elective-II	194
	Total Credit Hrs. 15	

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

2.1.1 Bachelor of Science in Computer Science (BSCS)

DISTRIBUTION OF CREDIT HOURS

Course Group		Cr. Hrs.	%
Computing	Core Courses	47	36%
	Supporting Areas	12	9%
	General Education	15	12%
Computer Science	Core Courses	18	14%
	Electives	21	16%
	Supporting Courses	11	8%
University Electives	6	5%	
	Total	**130**	**100%**



Course Name	Calculus and Analytical Geometry	**Credit Hours**	**3** (3,0)
Course Code	CSC 1101	**Prerequisite(s)**	None

Course Description

The course covers an introduction to calculus, derivatives, applications of the derivative, maximum and minimum problems, minimum maximum graphs, ellipses, parabolas, and hyperbolas, the mean value theorem and L'Hopital's rule, the chain rule, integrals, integrals of exponentials and logarithms, techniques of integration, applications of the Integra. areas and volumes length of a plane curve, area of a surface of revolution, masses and moments, force, work, and energy, polar coordinates and complex numbers, infinite series, vectors and matrices, motion along a curve, partial derivatives, multiple integrals, vector calculus.

Equivalent Course(s) BA 2404, ME 1104

Course Name	English Composition and Comprehension	**Credit Hours**	**3** (3,0)
Course Code	CSC 1102	**Prerequisite(s)**	None

Course Description

The course teaches reading and writing skills. Topics include basics of grammar, parts of speech, use of articles, sentence structure, analysis of phrase and clause, punctuation and spellings, comprehension and paragraph writing.

Equivalent Course(s) BA 1105, MD 1102, BA 5317

Course Name	Fundamentals of Programming	**Credit Hours**	**4** (3,1)
Course Code	CSC 1103	**Prerequisite(s)**	None

Course Description

The course covers an overview of computers and programming, computer language for example C language, basics of structured and modular programming, basic algorithms and problem solving, development of basic algorithms, analyzing problem, designing solution, testing designed solution. In addition, it will also cover fundamental programming constructs, translation of algorithms to programs, data types, control structures, functions, arrays, records, files, testing programs.

Equivalent Course(s) None

2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Name	Introduction to Computing	**Credit Hours**	**3** (2,1)
Course Code	CSC 1104	**Prerequisite(s)**	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 5306, BA 1108, BA 1103

Course Name	Islamiat and Pakistan Studies/Humanities	**Credit Hours**	**3** (3,0)
Course Code	CSC 1105	**Prerequisite(s)**	None

Course Description

This course covers the fundamentals of Islam (Aqaid, Ibadat, Islamic Dawah etc.); ethical values of Islam; serah 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; Allamaiqbal: independence movement; Lahore Resolution; Pakistan culture and society, constitutional and administrative issues, Pakistan and its geo-political dimension, Pakistan and international affairs, Pakistan and the challenges ahead.

Equivalent Course(s)

BA 1106, MD 2402, SS 1109, BIO 2303

Course Name	Discrete Mathematical Structures	**Credit Hours**	**3** (3,0)
Course Code	CSC 1201	**Prerequisite(s)**	None

Course Description

This course introduces the foundations of discrete mathematics as they apply to Computer Science, focusing on providing a solid theoretical foundation for further work. Further, this course aims to develop understanding and appreciation of the finite nature inherent in most Computer Science problems and structures through study of combinatorial reasoning, abstract algebra, iterative procedures, predicate calculus, tree and graph structures.

Equivalent Course(s)

None

Course Name	Multivariate Calculus	**Credit Hours**	**3** (3,0)
Course Code	CSC 1202	**Prerequisite(s)**	CSC 1101

Course Description

The course aims to make students able to handle vectors fluently in solving problems involving the geometry of line, curves, planes and surfaces in space. They should be able to differentiate scalar function of vectors and integrate functions of vectors. Students are expected to calculate extreme values using Lagrange multipliers and solve double and triple integration.

Equivalent Course(s) None

Course Name	Object Oriented Programming	**Credit Hours**	**3** (2,1)
Course Code	CSC 1203	**Prerequisite(s)**	CSC 1103

Course Description

The course introduces the concepts of object oriented programming and environment and the basic concepts of classes, objects and applying programming techniques that features, abstraction, polymorphism, encapsulation, modularity and inheritance.

Equivalent Course(s) None

Course Name	Physics	**Credit Hours**	**4** (3,1)
Course Code	CSC 1204	**Prerequisite(s)**	None

Course Description

The general objective of the course is to acquire an understanding of physical processes which govern the nature and concepts of Electronic devices. This helps in developing strong concepts of Physics and basic electronics which is very essential for all electronic and communication devices.

Equivalent Course(s) None

Course Name	Technical and Business Writing	**Credit Hours**	**3** (3,0)
Course Code	CSC 1205	**Prerequisite(s)**	None

Course Description

The course covers, principles, techniques, and skills needed to conduct scientific, technical, or business writing. In addition, report writing, letter writing, research techniques, information design, effective use of graphics and preparation and presentation of oral reports with emphasis on clarity, conciseness, and accuracy of expression is also covered.

Equivalent Course(s) None

2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Name	Communication and Presentation Skills	**Credit Hours**	**3** (3,0)
Course Code	CSC 2101	**Prerequisite(s)**	CSC 1102

Course Description

The course teaches critical competencies of communication and presentation, skills of speaking confidently and listening carefully, analyzing and utilizing body language, steering conversations and influencing people. In addition, the course also covers, public speaking and presentation structuring, along with a variety of vocal and practical exercises and interactive discussions.

Equivalent Course(s) BA 1206

Course Name	Data Structures and Algorithms	**Credit Hours**	**4** (3,1)
Course Code	CSC 2102	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Digital Logic Design	**Credit Hours**	**4** (3,1)
Course Code	CSC 2103	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Linear Algebra and Differential Equations	**Credit Hours**	**4** (4,0)
Course Code	CSC 2104	**Prerequisite(s)**	None

Course Description

Linear Algebra introduces types of matrices: invertible matrices, echelon matrices, algebra of square matrices, determinants, application of linear equations, solution of elimination, linear equation and representation by matrices and linear transformation. Differential equation and their classification, formation of differential equations, separable equations, integration function and reduction of order are also included.

Equivalent Course(s) ME 1202

Course Name	Statistics and Probability	**Credit Hours**	**3** (3,0)
Course Code	CSC 2105	**Prerequisite(s)**	CSC 1101

Course Description

This course covers basic probability models, sample space, outcomes, and events; random variable; discrete distribution functions and axioms of probability; infinite sample spaces with discrete probabilities, combinatory, counting problems, permutations, tree diagrams; combinations, binomial coefficients, binomial theorem, and Pascal's triangle; Bernoulli trials, Bernoulli probabilities, Random variables; discrete and continuous probability distributions, binomial distributions, normal (Gaussian) distribution; chi-squared distribution, uniform continuous distributions; geometric distribution; Poisson distribution; exponential and gamma distributions, statistical estimation and testing, confidence intervals, linear regression and queuing theory.

Equivalent Course(s) BA 3605, BA 5405, SS 2309

Course Name	Computer Organization & Assembly Language	**Credit Hours**	**3** (3,0)
Course Code	CSC 2201	**Prerequisite(s)**	CSC 2103

Course Description

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, Using an assembler of choice.

Equivalent Course(s) None

2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Name	Data Communications and Computer Networks	**Credit Hours**	**4** (3,1)
Course Code	CSC 2202	**Prerequisite(s)**	None

Course Description

This course gives a basic understanding of computer network and data communication. Students are given awareness about OSI Reference Model, Guided and Un-Guided Transmission, Encoding Schemes, Modulation Schemes, Multiplexing schemes, Amplitude Shift Keying, Frequency Shift Keying, Phase shift keying, Internet Architecture, Routing Protocols, Routed Protocols, IPv4 and IPv6 Sub-netting, CIDR, VLSM, and Application layer protocols.

Equivalent Course(s) None

Course Name	Database Systems	**Credit Hours**	**4** (3,1)
Course Code	CSC 2203	**Prerequisite(s)**	None

Course Description

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; Database security and authorization. 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

Course Name	Finite Automata Theory and Formal Languages	**Credit Hours**	3 (3,0)
Course Code	CSC 2204	**Prerequisite(s)**	CSC 1201

Course Description

This course introduces the theory of computing including Mathematical Preliminaries and Notation, basic concepts of languages grammars and automata and some applications the course covers finite automata; transition graphs regular languages and regular grammars; content free language simplification, normal form and pushdown in detail. Context-free languages ambiguity in Grammars and Languages, Context-Free Grammars and Programming Languages.

Equivalent Course(s) None

Course Name	Operating Systems	**Credit Hours**	**4** (3,1)
Course Code	CSC 2205	**Prerequisite(s)**	None

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. 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

Course Name	Computer Architecture	**Credit Hours**	**3** (3,0)
Course Code	CSC 3101	**Prerequisite(s)**	CSC 2103

Course Description

To know about different computer architectures based on Flynn's clarification. How Architecture and Organization of any system are related. Get a deeper understanding of how computers work, how instruction set is designed, how various blocks of a computer executes instructions, working knowledge of various subsystems and the factors that affect their performance, such as pipelines, cache memories, clock-synchronization, etc. to analyze the performance of systems and quantify the performance measurements, such as MIPS, MFLOPS, Throughputs, etc. high performance processors, such as RISC.

Equivalent Course(s) None

Course Name	Human Computer Interaction	**Credit Hours**	**3** (3,0)
Course Code	CSC 3102	**Prerequisite(s)**	None

Course Description

This course is in four parts; foundations; that includes human, computer, interaction and paradigms, design process; including interaction design, HCI in software process, rules and evaluation techniques for design, models and theories including cognitive models and ubiquitous computing and augmented realities hypertext, multimedia, and the world wide.

Equivalent Course(s) None

Course Name	Introduction to Software Development	**Credit Hours**	**4** (3,1)
Course Code	CSC 3103	**Prerequisite(s)**	CSC 1203

Course Description

This hands-on course is designed for those with no previous programming experience and is also appropriate for experienced developers who want to learn modern object-oriented (OO) languages such as Java and C#. Using an "objects first" approach, students receive an intensive introduction to object-oriented programming. Topics include classes and objects and their relationship, primitive data types, constructors, methods, repetition and selection, collections, abstraction and modularization. Upon successful completion, participants will have a basic understanding of programming concepts and objects, and be prepared to move on to higher level OO programming language courses.

Equivalent Course(s) None

2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Name	Software Engineering-I	**Credit Hours**	**4** (3,1)
Course Code	CSC 3104	**Prerequisite(s)**	None

Course Description

This course introduces different stages of the software life cycle, compares development models such as waterfall, prototyping, incremental/iterative and agile methods. Moreover, it also covers requirements analysis, architecture and design areas.

Equivalent Course(s) None

Course Name	Compiler Construction	**Credit Hours**	**3** (3,0)
Course Code	CSC 3201	**Prerequisite(s)**	CSC 2204

Course Description

To develop the ability to design and implement compilers for diverse purposes. To Equip students with concepts and techniques used to develop Compilers, Since it is important to know how a software generator works.

Equivalent Course(s) None

Course Name	Design & Analysis of Algorithms	**Credit Hours**	**3** (3,0)
Course Code	CSC 3202	**Prerequisite(s)**	CSC 2102

Course Description

Introduction; Asymptotic notations; Recursion and recurrence relations; Divide-and-conquer approach; Sorting; Search trees; Heaps; Hashing; Greedy approach; Dynamic programming; Graph algorithms; Shortest paths; Network flow; Disjoint Sets; Polynomial and matrix calculations; String matching; NP complete problems; Approximation algorithms.

Equivalent Course(s) None

Course Name	Numerical Computing	**Credit Hours**	**3** (3,0)
Course Code	CSC 3203	**Prerequisite(s)**	CSC 1101

Course Description

The concepts of efficiency, reliability and accuracy of a method. Minimizing computational errors. Theory of Differences, Difference Operators, Difference Tables, Forward Differences, Backward Differences and Central Differences. Mathematical Preliminaries, Solution of Equations in one variable, Interpolation and Polynomial Approximation, Numerical Differentiation and Numerical Integration, Initial Value Problems for Ordinary Differential Equations, Direct Methods for Solving Linear Systems, Iterative Techniques in Matrix Algebra, Solution of non-linear equations.

Equivalent Course(s) None

2.1.1 Bachelor of Science in Computer Science (BSCS)

Course Name	Artificial Intelligence	**Credit Hours**	**3** (3,0)
Course Code	CSC 4101	**Prerequisite(s)**	CSC 2102, CSC 2204

Course Description

Artificial Intelligence: Introduction, Intelligent Agents. Problem-solving: Solving Problems by Searching, Informed Search and Exploration, Constraint Satisfaction Problems, 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, Making Complex Decisions. Learning: Learning from Observations, Knowledge in Learning, Statistical Learning Methods, 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

Course Name	Professional Practices	**Credit Hours**	**3** (3,0)
Course Code	CSC 4102	**Prerequisite(s)**	None

Course Description

Historical, social, and economic context of Computing (software engineering, Computer Science, Information Technology); Definitions of Computing (software engineering, Computer Science, Information Technology) subject areas and professional activities; professional societies; professional ethics; professional competency and life-long learning; uses, misuses, and risks of software; information security and privacy; business practices and the economics of software; intellectual property and software law (cyber law); social responsibilities, software related contracts, Software house organization.

Equivalent Course(s) None

Course Name	Final Year Project-I	**Credit Hours**	**3** (0,3)
Course Code	CSC 4105	**Prerequisite(s)**	CSC 3103

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 the 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

Course Name	Final Year Project-II	**Credit Hours**	**3** (0,3)
Course Code	CSC 4205	**Prerequisite(s)**	CSC 4105

Course Description	This is in continuation to 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.
Equivalent Course(s)	None

2.2 Master of Science and PhD

2.2.1 Master of Science in Computer Sciences (MSCS)

SZABIST offers MS (CS) 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 3 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, which consist of 9 courses (27 credit hours) and Thesis/Research Work (6 credit hours).

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

- *5 Compulsory and/or 5 Core Courses (15 Credit Hours)*
- *4 Electives[13] (12 Credit Hours)*
- *1Thesis (6 Credit Hours) or 2 Course Work (3 Credit Hours each)*

Course Code	Course Title	Page #
MSCS	**First Year**	
	First Semester	
CSC 5105	Research Methodology	81
CSC 5101	Advanced Algorithms Analysis	81
CSC 5102	Theory of Computation	82
	Second Semester	
CSC 5201	Advanced Operating Systems	82
CSC 5202	Advanced Computer Architecture	83
CSC 5xxx	Elective-I (Independent Study-Topic related to CS/SE/N&S Stream-I or II)	177
	Second Year	
	Third Semester	
CSC 5xxx	Thesis or course work (from CS/SE/N&S Stream-II)	177
CSC 5xxx	Elective-II (from CS/SE/N&S-Stream-I)	177
CSC 5xxx	Elective-III (from CS/SE/N&S-Stream-I)	177
	Fourth Semester	
CSC 5xxx	Thesis or Course Work (from CS/SE/N&S-Stream-II)	177
CSC 5xxx	Elective-IV (from CS/SE/N&S-Stream-I)	177

13 List of electives and description is given in Appendix A.

2.2.1 Master of Science in Computer Sciences (MSCS)

Course Name	Research Methodology	**Credit Hours**	**3** (3,0)
Course Code	CSC 5105	**Prerequisite(s)**	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

Course Name	Advanced Algorithms Analysis	**Credit Hours**	**3** (3,0)
Course Code	CSC 5101	**Prerequisite(s)**	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)

Course Name	Theory of Computation	**Credit Hours**	**3** (3,0)
Course Code	CSC 5102	**Prerequisite(s)**	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

Course Name	Advanced Operating Systems	**Credit Hours**	**3** (3,0)
Course Code	CSC 5201	**Prerequisite(s)**	None

Course Description

The 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

2.2.1 Master of Science in Computer Sciences (MSCS)

Course Name	Advanced Computer Architecture	**Credit Hours**	**3** (3,0)
Course Code	CSC 5202	**Prerequisite(s)**	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 v/s 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 v/s hardwired controller, CPU performance metrics, pipelining, multiprogramming and time-Sharing operating systems, design of a generic processor and its architecture, designing of executable v/s hardwired instructions, microcode v/s 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

2.2.2 Doctor of Philosophy in Computing-PhD

PhD in Computing program requires completion of a total of 48 credit hours with 4 courses, 2 Independent Studies (IS) 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 three (3) years.

- *4 Elective Courses (12 Credit Hours)*
- *2 Independent Studies (06 Credit Hours)*
- *1 Dissertation (30 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
CSC 6101	Research Methodology (Elective-I)	85
CSC 6xxx	Elective-II	177
CSC 6xxx	Elective-III	177
	Spring Semester	
CSC 6xxx	Elective-IV	177
CSC 6xxx	Independent Study-I	-
CSC 6xxx	Independent Study-II	-
	Second Year	
	Fall Semester	
CSC 6x09	Dissertation	-
	Spring Semester	
CSC 6x09	Dissertation	-
	Third Year	
	Fall Semester	
CSC 6x09	Dissertation	-
	Spring Semester	
CSC 6x09	Dissertation	-

All courses may not be offered every year. Alternate courses may be substituted as and when required.
The course of Research Methodology is compulsory if not done earlier in Masters.

2.2.2 Doctor of Philosophy in Computing-PhD

Course Name	Research Methodology	**Credit Hours**	**3** (3,0)
Course Code	CSC 6101	**Prerequisite(s)**	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

Faculty Of Social Sciences

3.1 Bachelor of Science

3.1.1 Bachelor of Science in Social Sciences (BSSS)

Students enrolled in BS Social Sciences 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)*
- *2 Electives[14] (6 Credit Hours)*
- *12 Major Courses[15] (36 Credit Hours)*
- *1 Research Project (6 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
SS 1105	Microeconomics	89
SS 1109	Islamiat/Ethics and Pakistan Studies	89
SS 1115	Community Services	89
SS 1117	Computer and Web Skills	89
SS 1118	English for Academic Purposes and Presentation Skills	90
SS 1201	Introduction to Social Sciences	90
	Spring Semester	
SS 1155	Introduction to Political Science	90
SS 1205	Macroeconomics	90
SS 1209	Social Policy	91
SS 2306	Psychology	91
SS 2307	Sociology	91
SS 2412	International Relations	91
	Second Year	
	Fall Semester	
SS 2313	Introduction to Social Psychology	92
SS 2314	Study of Anthropology	92
SS 2318	Mathematics and Statistics	92
SS 2413	Philosophy	92
SS 4705	Sindh Studies	93
SS 1xxx	Elective-I	195
	Spring Semester	
SS 2406	Gender Studies	93
SS 2411	Environmental Studies	93
SS 2414	Introduction to Organizational Psychology	94
SS 2418	Statistical Inferences	94
SS 1255	Linguistics	94
SS 1xxx	Elective-II	195

14 List of electives is given in Appendix A.
15 List of Major Courses is given in Appendix B.

Course Code	Course Title	Page #
	Third Year	
	Fall Semester	
SS 2312	Culture, Art and Society	94
SS 3509	Language-I	95
SS 3606	Political Economy	95
SS 4xxx	Major-I	186
SS 4xxx	Major-II	186
SS 4xxx	Major-III	186
	Spring Semester	
SS 3504	Research Methods	95
SS 3605	International Law and Human Rights	96
SS 3609	Language-II	96
SS 4xxx	Major-IV	-
SS 4xxx	Major-V	-
SS 4xxx	Major-VI	-
	Fourth Year	
	Fall Semester	
SS 3503	Development Studies	96
SS 4707	Introduction to Health Psychology	97
SS 4709	Research Project-I	97
SS 4xxx	Major-VII	186
SS 4xxx	Major-VIII	186
SS 4xxx	Major-IX	186
	Spring Semester	
SS 2405	Enlightenment	97
SS 4804	Public Policy	97
SS 4809	Research Project-II	98
SS 4xxx	Major-X	186
SS 4xxx	Major-XI	186
SS 4xxx	Major-XII	186

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

Course Name	Microeconomics	**Credit Hours**	**3** (3,0)
Course Code	SS 1105	**Prerequisite(s)**	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

Course Name	Islamiat/Ethics and Pakistan Studies	**Credit Hours**	**3** (3,0)
Course Code	SS 1109	**Prerequisite(s)**	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)

BA1106, CSC 1105, MD 2402, BIO 2303

Course Name	Community Services	**Credit Hours**	**3** (3,0)
Course Code	SS 1115	**Prerequisite(s)**	None

Course Description

This course is comprising of two components (i) 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. (ii) 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

Course Name	Computer and Web Skills	**Credit Hours**	**3** (3,0)
Course Code	SS 1117	**Prerequisite(s)**	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)

BIO 1104, CSC 1104, BA 1103, BA 1108

3.1.1 Bachelor of Science in Social Sciences (BSSS)

Course Name	English for Academic Purposes and Presentation Skills	**Credit Hours**	**3** (3,0)
Course Code	SS 1118	**Prerequisite(s)**	None
Course Description	The course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, and writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.		
Equivalent Course(s)	BA 1105, BA 1206, CSC 1102, CSC 2101, MD 1102		

Course Name	Introduction to Social Sciences	**Credit Hours**	**3** (3,0)
Course Code	SS 1201	**Prerequisite(s)**	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		

Course Name	Introduction to Political Science	**Credit Hours**	**3** (3,0)
Course Code	SS 1155	**Prerequisite(s)**	None
Course Description	This course provides students introduction to major concept of political systems including system of governance, nature of political and social fabrics. Constitutions and rule of business for the success of political system will be taught to students. Different political ideologies and political systems will be part of this course.		
Equivalent Course(s)	None		

Course Name	Macroeconomics	**Credit Hours**	**3** (3,0)
Course Code	SS 1205	**Prerequisite(s)**	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		

Course Name	Social Policy	**Credit Hours**	**3** (3,0)
Course Code	SS 1209	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Psychology	**Credit Hours**	**3** (3,0)
Course Code	SS 2306	**Prerequisite(s)**	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

Course Name	Sociology	**Credit Hours**	**3** (3,0)
Course Code	SS 2307	**Prerequisite(s)**	None

Course Description

The 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

Course Name	International Relations	**Credit Hours**	**3** (3,0)
Course Code	SS 2412	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Introduction to Social Psychology	**Credit Hours**	**3** (3,0)
Course Code	SS 2313	**Prerequisite(s)**	SS 2306

Course Description

The 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.

Equivalent Course(s) None

Course Name	Study of Anthropology	**Credit Hours**	**3** (3,0)
Course Code	SS 2314	**Prerequisite(s)**	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, economic systems).

Equivalent Course(s) None

Course Name	Mathematics and Statistics	**Credit Hours**	**3** (3,0)
Course Code	SS 2318	**Prerequisite(s)**	None

Course Description

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. Mathematics.

Equivalent Course(s) BA 5305, BA 2305

Course Name	Philosophy	**Credit Hours**	**3** (3,0)
Course Code	SS 2413	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Sindh Studies	**Credit Hours**	**3** (3,0)
Course Code	SS 4705	**Prerequisite(s)**	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

Course Name	Gender Studies	**Credit Hours**	**3** (3,0)
Course Code	SS 2406	**Prerequisite(s)**	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

Course Name	Environmental Studies	**Credit Hours**	**3** (3,0)
Course Code	SS 2411	**Prerequisite(s)**	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

Course Name	Introduction to Organizational Psychology	**Credit Hours**	**3** (3,0)
Course Code	SS 2414	**Prerequisite(s)**	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

Course Name	Statistical Inferences	**Credit Hours**	3 (3,0)
Course Code	SS 2418	**Prerequisite(s)**	SS

Course Description

This course covers; sets and probability, concept of random variable, possibilities, sample 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 3606

Course Name	Linguistics	**Credit Hours**	**3** (3,0)
Course Code	SS 1255	**Prerequisite(s)**	None

Course Description

This course covers techniques used in the elicitation and analysis of linguistic data. The themes of the course include the grammatical structure of a language and test hypotheses about that structure, phonetic, phonological, morphological and syntactic structure of a selected little-known language, and developing an increasingly sophisticated understanding of how the language operates.

Equivalent Course(s) None

Course Name	Culture, Art and Society	**Credit Hours**	**3** (3,0)
Course Code	SS 2312	**Prerequisite(s)**	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, public relations.

Equivalent Course(s) None

Course Name	Language-I	**Credit Hours**	**3** (3,0)
Course Code	SS 3509	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Political Economy	**Credit Hours**	**3** (3,0)
Course Code	SS 3606	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Research Methods	**Credit Hours**	**3** (3,0)
Course Code	SS 3504	**Prerequisite(s)**	None

Course Description

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 SPSS (Statistical Product and Service Solutions).

Equivalent Course(s) BA 3603, BA 5206

Course Name	International Law and Human Rights	**Credit Hours**	**3** (3,0)
Course Code	SS 3605	**Prerequisite(s)**	None

Course Description

The 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.

Equivalent Course(s) None

Course Name	Language-II	**Credit Hours**	**3** (3,0)
Course Code	SS 3609	**Prerequisite(s)**	SS 3509

Course Description

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.

Equivalent Course(s) None

Course Name	Development Studies	**Credit Hours**	**3** (3,0)
Course Code	SS 3503	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Introduction to Health Psychology	**Credit Hours**	**3** (3,0)
Course Code	SS 4707	**Prerequisite(s)**	SS 2306

Course Description

The 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

Course Name	Research Project-I	**Credit Hours**	**3** (3,0)
Course Code	SS 4709	**Prerequisite(s)**	SS 3504, SS 2309 SS 2409

Course Description

The 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 or Harvard styles.

Equivalent Course(s) None

Course Name	Enlightenment	**Credit Hours**	**3** (3,0)
Course Code	SS 2405	**Prerequisite(s)**	SS 2413

Course Description

The 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.

Equivalent Course(s) None

Course Name	Public Policy	**Credit Hours**	**3** (3,0)
Course Code	SS 4804	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Research Project-II	**Credit Hours**	**3** (3,0)
Course Code	SS 4809	**Prerequisite(s)**	SS 4709

Course Description	The 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 or Harvard styles.
Equivalent Course(s)	None

3.2 Master of Science and PhD

3.2.1 Master of Science in Social Science (MSSS)

Students enrolled in the Master of Science in Social Sciences and Economics Program are required to complete a minimum of 30 credit hours within five (5) years. The break-up of 30 credit hour courses is as follows:

- *1-2 Compulsory Courses[16] (3-6 Credit Hours)*
- *2 Independent Studies (IS) (6 Credit Hours)*
- *4-5 Electives[17] (12-15 Credit Hours)*
- *1 Thesis/2 additional electives instead of thesis (6 Credit Hours)*

Course Code	Course Title	Page #
MSSS	**First Year**	
	Fall Semester	
SS 5117	Advanced Research Methods and Techniques	100
SS 5207	Quantitative Tools for Decision Making	100
SS 5xxx	Elective-I	195
SS 5xxx	Elective-II	195
	Spring Semester	
SS 5116	Econometrics	100
SS 5108	Independent Study-I	-
SS 5xxx	Elective-III	195
SS 5xxx	Elective-IV	195
	Summer Semester	
SS 5208	Independent Study-II	-
	Second Year	
	Fall Semester	
SS 5xxx	Thesis or 2 additional courses instead of Thesis	-

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

16 Advanced Research Methods and Techniques, and Quantitative Tools for Decision Making are compulsory for students pursing MS in Economics. For Non-Economics students, only Advanced Research Methods and Techniques is a mandatory course.

17 List of Electives is given in Appendix B.

3.2.1 Master of Science in Social Science (MSSS)

Course Name	Advanced Research Methods and Techniques	**Credit Hours**	**3** (3,0)
Course Code	SS 5117	**Prerequisite(s)**	None

Course Description

This course is an overview of the fundamentals of research methods applicable to the broad field of social sciences. The topics include introduction to research, descriptive research methods, quantitative and qualitative forms of analysis, ethical issues in research, and appropriate documentation of research processes and outcomes. Additionally, the course covers research process and design, characteristics of good research and choice of research topic, components of research proposal, literature review, research strategies, sampling analysis, data collection, research access, data analysis and report writing.

Equivalent Course(s) MS 5239

Course Name	Quantitative Tools for Decision Making	**Credit Hours**	**3** (3,0)
Course Code	SS 5207	**Prerequisite(s)**	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) MS 5204

Course Name	Econometrics	**Credit Hours**	**3** (3,0)
Course Code	SS 5116	**Prerequisite(s)**	None

Course Description

This course focuses on the application of statistical methods to the testing and estimation of economic relationships. After developing the theoretical constructs of classical least squares, common problems encountered when applying this approach, including serial correlation, heteroscedasticity, and multi-collinearity, are discussed. Techniques for dealing with these problems are then examined. Models with lagged variables are considered, as is estimation with instrumental variables and two-stage least squares. The topics include simple and multiple linear regression models-assumptions about the disturbances, estimating and testing hypotheses about the regression coefficients, goodness-of-fit, prediction. Additionally, the course covers the linear regression model, functional forms, dummy variables, linear restrictions, parameter stability. Violations of classical assumptions–heteroscedasticity and autocorrelation. Qualitative response regression models-the Linear Probability Model, Logit and Probit Models, Panel data regression models-the fixed effect and random effect models.

Equivalent Course(s) MS 5105

3.2 Master of Science and PhD

3.2.2 DOCTOR OF PHILOSOPHY IN SOCIAL SCIENCES (PhD)

Students enrolled in the PhD in Social Sciences and Economics Program with a MA/MS/MBA/M.Phil (with minimum 5 years of formal university education) are required to complete a total of 48 credit hours within five (5) years. The following is the break-up of the 48 credit hour courses:

- *1-2 Compulsory[18] Courses (3-6 Credit Hours)*
- *2 Electives[19] (6 Credit Hours)*
- *2 Independent Studies (6 Credit Hours)*
- *1 Thesis (30 Credit Hours)*

Course Code	Course Title	Page #
PhD	**First Year**	
	Fall Semester	
SS 6103	Quantitative Tools for Decision Making	102
SS 6106	Advanced Research Methods and Techniques	102
SS 5xxx	Elective-I	195
	Spring Semester	
SS 6108	Independent Study-I	-
SS 6208	Independent Study-II	-
SS 5xxx	Elective-II	195
	Summer Semester	
MS 6x09	Dissertation	-
	Second Year	
	Fall Semester	
MS 6x09	Dissertation	-
	Spring Semester	
MS 6x09	Dissertation	-

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

18 Advanced Research Methods and Techniques is for all social science degrees and for Economics, two more additional courses like Quantitative Tools for Decision Making and Econometrics are for students with background in Economics, those who have already done the Quantitative Tools for Research will have to register in Applied Econometrics. For Non-Economics students, only Advanced Research Methods is a mandatory course.

19 List of Electives is given in Appendix B.

3.2.2 DOCTOR OF PHILOSOPHY IN SOCIAL SCIENCES (PhD)

Course Name	Quantitative Tools for Decision Making	**Credit Hours**	**3** (3,0)
Course Code	SS 6103	**Prerequisite(s)**	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) MS 6212

Course Name	Advanced Research Methods and Techniques	**Credit Hours**	**3** (3,0)
Course Code	SS 6106	**Prerequisite(s)**	None

Course Description

This is a compulsory course at the Masters and PhD level. It entails concepts and nature of investigations through quantitative tools for decision-making. It covers the broad range of topics related to the research-based decision-making, such as; identification, collection, analysis of data, and application of the mathematical models for the decision making in organizations, testing the decisions made and presenting the quantitative-based decision summaries.

Equivalent Course(s) MS 6106

Faculty Of Media Sciences

4.1 Bachelor of Science

4.1.1 Bachelor of Science in Media Science (BSMS)

Students enrolled in the Bachelor of Media Science 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*
- *7 Major Requirements*[20]
- *3 Open Electives*[21]
- *1 Thesis (6 Credit Hour)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MD 1107	Drawing and Perspective	106
MD 1102	English Writing Skills	106
MD 1116	Civilization Studies-I	106
MD 2322	Visual Communications	106
MD 3601	Art of Music	107
MD 1115	Introduction to Media Industries	107
	Spring Semester	
MD 1104	Culture, Media, and Society	107
MD 1106	Photography	108
MD 1119	Play Analysis	108
MD 1216	Civilization Studies-II	108
MD 2323	Production Practices-I	109
MD 2402	Islamiat and Pakistan Studies/Humanities	109
	Second Year	
	Fall Semester	
MD 1211	Basic Design	109
MD 2325	Media Research	109
MD 1217	Introduction to Sound	110
MD 2321	History and Aesthetics of Film	110
MD 2313	Idea Development	110
MD 2423	Theater Project	111
	Spring Semester	
MD 1118	Topics in Asian Literature	111
MD 2318	History of Commercial Art	111
MD 2427	Design Practices-I	112
MD 3523	Production Practices-II	112
MD 3505	Principles of Journalism	112
MD 2425	Audiovisual Editing	113

20 List of major requirements and open electives is given in Appendix B.

21 List of Electives is given in Appendix B.

4.1.1 Bachelor of Science in Media Science (BSMS)

Course Code	Course Title	Page #
Third Year		
Fall Semester		
MD 1213	Creative Writing	113
MD 3518	Animation and Motion Graphics	113
MD 3527	Design Practices-II	113
MD 3511	Radio Channel Project-I	114
MD 2424	Media Psychology	114
MD 4714	Producing Short Narratives	114
Spring Semester		
MD 2405	Media Laws and Ethics	115
MD 4xxx	Major-I	188
MD 4xxx	Major-II	188
MD 4xxx	Major-III	188
MD 4xxx	Major-IV	188
MD 4xxx	Elective-I	196
Fourth Year		
Fall Semester		
MD 4701	State and Nation Building in Pakistan	115
MD 4xxx	Major-V	189
MD 4xxx	Major-VI	189
MD 4xxx	Major-VII	189
MD 4xxx	Elective-II	196
Spring Semester		
MD 4807	Thesis-I	115
MD 3506	Theories of Visual Culture	116
MD 4xxx	Elective-III	196
Summer Semester		
MD 4808	Thesis-II	116

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

Course Name	Drawing and Perspective	**Credit Hours**	**3** (3,0)
Course Code	MD 1107	**Prerequisite(s)**	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

Course Name	English Writing Skills	**Credit Hours**	**3** (3,0)
Course Code	MD 1102	**Prerequisite(s)**	None

Course Description

The focus of the course is to teach students how to communicate effectively through writing. It covers parts of speech, sentence structure, diction, usage, and grammar, punctuation; argumentative logic, clarity, precision, organization, and coherence, tone, voice, and style, effective rhetorical strategies and techniques, essay structures, the use of primary and secondary sources, modes of reference and citation, format, and presentation.

Equivalent Course(s) BA 1105, SS 1118, BIO 1103, CSC 1102

Course Name	Civilization Studies-I	**Credit Hours**	**3** (3,0)
Course Code	MD 1116	**Prerequisite(s)**	None

Course Description

The course introduces students to the concepts of 'culture' and 'society'. It 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.

Equivalent Course(s) None

Course Name	Visual Communications	**Credit Hours**	**3** (3,0)
Course Code	MD 2322	**Prerequisite(s)**	None

Course Description

This course covers the historical, psychological, cognitive, and perceptual aspects of visual communication. The topics include sensing, selection, and perception, the effects and uses of light, the biology of seeing, color, form, depth, and movement, sensual and perceptual theories of visual communication, visual persuasion and pictorial stereotyping, and visual modes and technologies.

Equivalent Course(s) None

Course Name	Art of Music	**Credit Hours**	**3** (3,0)
Course Code	MD 3601	**Prerequisite(s)**	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

Course Name	Introduction to Media Industries	**Credit Hours**	**3** (3,0)
Course Code	MD 1115	**Prerequisite(s)**	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. Functions and evolution of journalism, film, TV, print media, advertising, and digital technologies. Introduction to media convergence environment.

Equivalent Course(s) None

Course Name	Culture, Media and Society	**Credit Hours**	**3** (3,0)
Course Code	MD 1104	**Prerequisite(s)**	MD 1115, MD 1102 MD 2322

Course Description

The 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

Course Name	Photography	**Credit Hours**	**3** (3,0)
Course Code	MD 1106	**Prerequisite(s)**	MD 1107

Course Description

This course introduces students to the history, science, and art of photography. It covers cameras, their construction and use, digital vs. film, set-up, focus, framing, composition, indoor vs. outdoor photography (studio vs. landscape), lenses, apertures, lighting, film and shutter speed, exposure, and depth of field, panning, zooming, and light-painting, black-and-white vs. color, basic Photoshop editing and manipulating, narrative photography, developing and printing, and portfolio presentation.

Equivalent Course(s) None

Course Name	Play Analysis	**Credit Hours**	**3** (3,0)
Course Code	MD 1119	**Prerequisite(s)**	MD 1102

Course Description

The focus of this course is upon a variety of techniques and strategies through which to analyze and understand theatrical texts. 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

Course Name	Civilization Studies-II	**Credit Hours**	**3** (3,0)
Course Code	MD 1216	**Prerequisite(s)**	MD 1116

Course Description

This course discusses societies, cultures, and art of major Islamic civilizations through history. The topics include Rashidun, Umayyad, Abbasid Caliphates; medieval Iran; Moorish Spain, the Ottoman and Mughal empires, 18th and 19th century European colonization; and the emergence of third-world independence movements.

Equivalent Course(s) None

Course Name	Production Practices-I	**Credit Hours**	**3** (3,0)
Course Code	MD 2323	**Prerequisite(s)**	MD 2322

Course Description

The 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) None

Course Name	Islamiat and Pakistan Studies/Humanities	**Credit Hours**	**3** (3,0)
Course Code	MD 2402	**Prerequisite(s)**	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. It covers History of Islam, Islamic religious practice and thought, major interpretive traditions, Islam and society, Islam and politics, mysticism and orthodoxy, Comparative religion, Islam and gender, Islam and other Abrahamic religions, Islam and modernity.

Equivalent Course(s) SS 1109, BIO 2303, CSC 1105, BA 1106

Course Name	Basic Design	**Credit Hours**	**3** (3,0)
Course Code	MD 1211	**Prerequisite(s)**	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

Course Name	Media Research	**Credit Hours**	**3** (3,0)
Course Code	MD 2325	**Prerequisite(s)**	MD 1104

Course Description

The 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) None

Course Name	Introduction to Sound	**Credit Hours**	**3** (3,0)
Course Code	MD 1217	**Prerequisite(s)**	MD 3601

Course Description

The course introduces students to the properties and uses of sound in media texts, to 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

Course Name	History and Aesthetics of Film	**Credit Hours**	**3** (3,0)
Course Code	MD 2321	**Prerequisite(s)**	MD 1104

Course Description

The 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 WadiaMovietone), 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

Course Name	Idea Development	**Credit Hours**	**3** (3,0)
Course Code	MD 2313	**Prerequisite(s)**	MD 2322

Course Description

The 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 vs. 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

Course Name	Theater Project	**Credit Hours**	**3** (3,0)
Course Code	MD 2423	**Prerequisite(s)**	MD 1119

Course Description

The 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

Course Name	Topics in Asian Literature	**Credit Hours**	**3** (3,0)
Course Code	MD 1118	**Prerequisite(s)**	MD 1102, MD 1116

Course Description

The 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) None

Course Name	History of Commercial Art	**Credit Hours**	**3** (3,0)
Course Code	MD 2318	**Prerequisite(s)**	MD 1107, MD 1211

Course Description

The 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 vs. advertising design, impact of new technologies from the printing press to computers, and the past, present, and future of commercial design in Pakistan.

Equivalent Course(s) None

Course Name	Design Practices-I	**Credit Hours**	**3** (3,0)
Course Code	MD 2427	**Prerequisite(s)**	MD 1211

Course Description

The course covers the theory and practice of design to inculcate logical methods of reasoning through design problems, and to polish aesthetic sensibilities. The topics include history of design, aesthetic, social, and cultural sources of design, design languages, package design, basic typography (Urdu and English), signs, symbols, logos and identities, illustration, photography, 2-D vs. 3-D design, visual problem-solving, symmetry and asymmetry, rhythm and balance, hierarchies, layers, transparencies, and visual thinking.

Equivalent Course(s) None

Course Name	Production Practices-II	**Credit Hours**	**3** (3,0)
Course Code	MD 3523	**Prerequisite(s)**	MD 1217, MD 2323
			MD 3601

Course Description

The course develops and extends the theories and techniques introduced in Production Practices-I. It covers advanced single-camera techniques, using camera angles, jibs, cranes, tracks, and dolleys; 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 postproduction strategies.

Equivalent Course(s) None

Course Name	Principles of Journalism	**Credit Hours**	**3** (3,0)
Course Code	MD 3505	**Prerequisite(s)**	MD1102, MD2313

Course Description

The 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 vs. digital, and evidence and inference.

Equivalent Course(s) None

Course Name	Audiovisual Editing	**Credit Hours**	**3** (3,0)
Course Code	MD 2425	**Prerequisite(s)**	MD 2323, MD1217

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, musical scoring.

Equivalent Course(s) None

Course Name	Creative Writing	**Credit Hours**	**3** (3,0)
Course Code	MD 1213	**Prerequisite(s)**	MD 1102, MD 1119

Course Description

The 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 both fiction and non-fiction, understanding and writing poetry, and creative expression in different genres and languages.

Equivalent Course(s) None

Course Name	Animation and Motion Graphics	**Credit Hours**	**3** (3,0)
Course Code	MD 3518	**Prerequisite(s)**	MD2425, MD2427

Course Description

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 vs. 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.

Equivalent Course(s) None

Course Name	Design Practices-II	**Credit Hours**	**3** (3,0)
Course Code	MD 3527	**Prerequisite(s)**	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) None

Course Name	Radio Channel Project-I	**Credit Hours**	**3** (3,0)
Course Code	MD 3511	**Prerequisite(s)**	MD 1217, MD 3601

Course Description

The 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 music production using Loops, sampling using IMPACT, MIDI sequencing using IMPACT via Mojito Synth, vocal recording techniques, creating jingles, audio mixing, and mastering.

Equivalent Course(s) None

Course Name	Media Psychology	**Credit Hours**	**3** (3,0)
Course Code	MD 2424	**Prerequisite(s)**	MD 1104

Course Description

The 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) None

Course Name	Producing Short Narratives	**Credit Hours**	**3** (3,0)
Course Code	MD 4714	**Prerequisite(s)**	MD 2313, MD 2321
			MD 3523

Course Description

The 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) None

Course Name	Media Laws and Ethics	**Credit Hours**	**3** (3,0)
Course Code	MD 2405	**Prerequisite(s)**	MD 1115

Course Description

The 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, PEMRA, new media technologies and the law, and contempt of court.

Equivalent Course(s) None

Course Name	State and Nation Building in Pakistan	**Credit Hours**	**3** (3,0)
Course Code	MD 4701	**Prerequisite(s)**	MD 1216

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 vs. 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) None

Course Name	Thesis-I	**Credit Hours**	**3 (3,0)**
Course Code	MD 4807	**Prerequisite(s)**	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

Course Name	Theories of Visual Culture	**Credit Hours**	**3** (3,0)
Course Code	MD 3506	**Prerequisite(s)**	MD 1104, MD 2322

Course Description

The 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 vs. 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 vs. style, and McLuhan, media, and messages.

Equivalent Course(s) None

Course Name	Thesis-II	**Credit Hours**	**3** (3,0)
Course Code	MD 4808	**Prerequisite(s)**	MD 4807

Course Description

A two-semester class that allows Advertising Strategy Design, journalism, and film/TV students the opportunity to demonstrate to the Media Sciences faculty their proficiency in their chosen area of specialization. It covers production, presentation, and assessment.

Equivalent Course(s) None

4.2.1 MASTER OF ADVERTISING

Students enrolled in Master of Advertising program are required to complete 10 courses and a 6-credit hour research project within five (5) years. The breakup of the courses is as follows:

- *10 core courses (30 Credit Hours)*
- *1 Research Project (6 Credit Hours)*

Master of Advertising (36 credit hours)

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MD 5102	Media and Contemporary Culture	118
MD 5141	Idea Development	118
MD 5161	Integrated Marketing Communications	118
MD 5207	Media Evolution and Innovation	119
	Spring Semester	
MD 5261	Advertising Research	119
MD 5262	Brand Management	119
MD 5263	Consumer Behavior	119
MD 5264	Copywriting and Advertising Conceptualization	120
	Summer Semester	
MD 5351	Campaign Strategy	120
MD 5352	New Media Advertising	120
	Second Year	
	Fall Semester	
MD 5349	Research Project (6 credits)	120

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

Course Name	Media and Contemporary Culture	**Credit Hours**	**3** (3,0)
Course Code	MD 5102	**Prerequisite(s)**	None

Course Description

The course introduces students to the theoretical foundations of contemporary cultural criticism, especially as this relates to aesthetic, social, and political practices across media. It also covers theories of language and representation, signification and textuality, narrative and image, fantasy and ideology, modernity and post modernity, and theories of Marx, Freud, Saussure, Horkheimer, Adorno, Barthes, Williams, Hall, Mulvey, Fiske, and Shohat.

Equivalent Course(s) None

Course Name	Idea Development	**Credit Hours**	**3** (3,0)
Course Code	MD 5141	**Prerequisite(s)**	None

Course Description

This course develops an understanding of students about strategies that help them generate narrative ideas applicable to advertising, journalism, and film and video production. The topics include theories and structures of narrative, elements of storytelling, the psychology of narrative, effective brainstorming, visual vs. 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

Course Name	Integrated Marketing Communications	**Credit Hours**	**3** (3,0)
Course Code	MD 5161	**Prerequisite(s)**	None

Course Description

The course teaches students how Integrated Marketing Communication combines traditionally separate advertising, public relations, and marketing functions into a seamless program. It covers corporate image and brand management, consumer behavior, forging brand loyalty, situation analysis, marketing objectives, marketing budgets, media synergy, mass vs. niche audiences, 4 Ps vs. 4 Cs, elements of effective communication and promotion, creating opportunities, and product positioning.

Equivalent Course(s) BA 5121

4.2.1 Master of Advertising

Course Name	Media Evolution and Innovation	**Credit Hours**	**3** (3,0)
Course Code	MD 5207	**Prerequisite(s)**	None

Course Description

The course analyzes 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 Course(s) None

Course Name	Advertising Research	**Credit Hours**	**3** (3,0)
Course Code	MD 5261	**Prerequisite(s)**	MD 5181

Course Description

This course teaches students how to conduct research that helps them understand how 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) BA 5221

Course Name	Brand Management	**Credit Hours**	**3** (3,0)
Course Code	MD 5262	**Prerequisite(s)**	MD 5161

Course Description

The course aims to teach students how advertising and management divisions within advertising agencies and client organizations cooperate to define and sustain a cogent brand identity. The topics include defining, developing and sustaining brands, the brand lifecycle, consumer aspiration function, the advertising spiral, brand planning, pioneering, competitive, and retentive stages, generational marketing, positioning, and client-agency relationships.

Equivalent Course(s) BA 5122

Course Name	Consumer Behavior	**Credit Hours**	**3** (3,0)
Course Code	MD 5263	**Prerequisite(s)**	None

Course Description

This course introduces students to the processes of consumer decision-making (why, how, when, and where people buy or reject products). The course also covers the anthropology, psychology, and economics of consumer behavior; demographics and identity formations; black box models, social, cultural, and market-driven influences and peer groups, and need vs. desire.

Equivalent Course(s) BA 5123

4.2.1 Master of Advertising

Course Name	Copywriting and Advertising Conceptualization	**Credit Hours**	**3** (3,0)
Course Code	MD 5264	**Prerequisite(s)**	MD 5141

Course Description

This course teaches students how to conceive, write and layout copy for print, internet, and television advertising. The topics include copy devices (clichés, action words, emotive words, alliteration, assonance, colloquialisms, repetition, widows, and orphans), copy elements (overlines, headlines, subheads, taglines, action calls), negative vs. positive copy, humor and risk, layout and balance, sensory appeal, copywriting brochures, billboards, and posters.

Equivalent Course(s) None

Course Name	Campaign Strategy	**Credit Hours**	**3** (3,0)
Course Code	MD 5351	**Prerequisite(s)**	MD 5161

Course Description

This course discusses how to analyze advertising research in order to arrive at a central concept or idea around which to build an advertising campaign. It also covers identifying communication objectives, data correlation and analysis, the 360 degree campaign, identifying common conceptual threads, using metaphor and displacement, budgeting, viral and buzz marketing, social media and new media advertising, consumer feedback, and campaign effectiveness.

Equivalent Course(s) None

Course Name	New Media Advertising	**Credit Hours**	**3** (3,0)
Course Code	MD 5352	**Prerequisite(s)**	None

Course Description

The course teaches students the history, evolution, nature, and influence of new media technologies. The topics include Social networks (facebook, twitter, MySpace, Orchid, GoogleBuzz), viral campaigns, alternate reality gaming, virtual brand identities, banner advertising, crowd-sourcing, mobile advertising, instantaneous consumer feedback, interaction and web design, and interactive design physical computing.

Equivalent Course(s) None

Course Name	Research Project	**Credit Hours**	**6** (6,0)
Course Code	MD 5349	**Prerequisite(s)**	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

4.2.2 Master of Television Production

Students enrolled in Master of Television Production are required to complete 10 courses and 6 credit hour projects within five (5) years. The breakup of course is as follows:

- *8 Core Courses (24 Credit Hours)*
- *2 Electives[22] (06 Credit Hours)*
- *Project (06 Credit Hours)*

Master of Television Production (36 credit hours)

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MD 5142	Acting Fundamentals	122
MD 5144	Audio Visual Editing for Television	122
MD 5145	Story and Script for Television	122
MD 5146	Visual Structure-I	122
	Spring Semester	
MD 5245	Acting for Camera	123
MD 5246	Visual Structure-II	123
MD 5247	Narrative Direction	123
MD 5xxx	Elective-I	196
	Summer Semester	
MD 5xxx	Project-I	124
MD 5341	Production Design	123
	Second Year	
	Fall Semester	
MD 5xxx	Elective-II	196
MD 5xxx	Project-II	124

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

22 List of Electives is provided in Appendix B

4.2.2 Master of Television Production

Course Name	Acting Fundamentals	**Credit Hours**	**3** (1,2)
Course Code	MD 5142	**Prerequisite(s)**	None
Course Description	**Objective:** To introduce students to the basics of the Stanislavsky Method of acting, and how they can work with their bodies in a systematic way. This is a studio based course and requires intensive work by instructor and student to prepare the mind and body of the student for acting work. **Topics covered:** Emotional Memory, Motivation, Objective, and Method.		
Equivalent Course(s)	None		

Course Name	Audio Visual Editing for Television	**Credit Hours**	**3** (1,2)
Course Code	MD 5144	**Prerequisite(s)**	None
Course Description	**Objective:** To teach students how television programs are edited with specific reference to serialized television dramas. **Topics covered:** basics of editing, drama structure, exercises in editing dramas and sitcoms.		
Equivalent Course(s)	None		

Course Name	Story and Script for Television	**Credit Hours**	**3** (3,0)
Course Code	MD 5145	**Prerequisite(s)**	None
Course Description	**Objective:** To give students a starting point for finding and telling stories through writing stories and scripts. **Topics covered:** Idea development, observation, brainstorming, script writing techniques.		
Equivalent Course(s)	None		

Course Name	Visual Structure-I	**Credit Hours**	**3** (1,2)
Course Code	MD 5146	**Prerequisite(s)**	None
Course Description	**Objective:** To introduce students to working with camera and lighting in studio environment. Topics covered: digital camera operations and handling, lighting setup for studio use, exercises in camera operation and lighting setups for drama production.		
Equivalent Course(s)	None		

4.2.2 Master of Television Production

Course Name	Acting for Camera	**Credit Hours**	**3** (1,2)
Course Code	MD 5245	**Prerequisite(s)**	MD xxxx, Acting Fundamentals
Course Description	**Objective:** To apply the Stanislavsky Method to working on Camera. This course works in conjunction with the narrative direction course. **Topics covered:** Working with single camera and multiple camera setups, Various techniques for acting on camera.		
Equivalent Course(s)	None		

Course Name	Visual Structure-II	**Credit Hours**	**3** (1,2)
Course Code	MD 5246	**Prerequisite(s)**	MD xxxx, Visual Structure-I
Course Description	**Objective:** To introduce students to techniques of live video and multicamera shooting and switching. **Topics covered:** Distinction between single camera and multicamera shoots, lighting for multicamera live and as live events and productions		
Equivalent Course(s)	None		

Course Name	Narrative Direction	**Credit Hours**	**3** (1,2)
Course Code	MD 5247	**Prerequisite(s)**	MD xxxx, Acting Fundamentals
Course Description	**Objective:** To teach students how to direct narrative projects for camera. This course works in conjunction with the Acting for Camera course **Topics covered:** Shot breakups, continuity, working with actors, production related issues.		
Equivalent Course(s)	None		

Course Name	Production Design	**Credit Hours**	**3** (3,0)
Course Code	MD 5341	**Prerequisite(s)**	None
Course Description	**Objective:** To teach students the fundamentals of production design. **Topics covered:** Colour Theory, Art Direction, Props and Costumes, Set Design, Post production – colour correction, basics of compositing		
Equivalent Course(s)	None		

4.2.2 Master of Television Production

Course Name	Project-I and II	**Credit Hours**	**6** (0,6)
Course Code	MD 5xxx MD 5xxx	**Prerequisite(s)**	MD 5xxx (for Project II, Project I is the pre-requisite)

Course Description	**Objective:** Students will work together to plan, produce, direct and act in a complete studio based production.
Equivalent Course(s)	None

4.2.3 Master of Science in Media Studies (MS in Media Studies)

Students enrolled in MS in Media Studies program are required to complete 36 credits within five (5) years. The breakup of the courses is as follows:

- *8 Core Courses (24 Credit Hours)*
- *2 Electives[23] (6 Credit Hours)*
- *1 Thesis (6 Credit Hours)*

Course Code	Course Title	Page #
	First Year	
	Fall Semester	
MD 5102	Media and Contemporary Culture	126
MD 5104	Research Methodology	126
MD 5207	Media Evolution and Innovation	126
	Spring Semester	
MD 5106	Media Policy	127
MD 5112	Media and Post-Colonialism	127
MD 5212	Theories of Visual Culture	127
	Second Year	
	Fall Semester	
MD 5103	Media Management	128
MD 5201	Communication for Social Change	128
MD 5xxx	Elective-I	196
	Spring Semester	
MD 5xxx	Elective-II	196
MD 5109	Thesis-I	128
	Summer Semester	
MD 5209	Thesis-II	128

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

23 List of Electives is given in Appendix B.

4.2.3 Master of Science in Media Studies (MS in Media Studies)

Course Name	Media and Contemporary Culture	**Credit Hours**	**3** (3,0)
Course Code	MD 5102	**Prerequisite(s)**	None

Course Description

The course discusses theoretical foundations of contemporary cultural criticism, especially as this relates to aesthetic, social and political practices across media. It covers topics such as Theories of language and representation, signification and textuality, narrative and image, fantasy and ideology, modernity and post- modernity, theories of Marx, Freud, Saussure, Horkheimer, Adorno, Barthes, Williams, Hall, Mulvey, Fiske, Shohat.

Equivalent Courses

None

Course Name	Research Methodology	**Credit Hours**	**3** (3,0)
Course Code	MD 5104	**Prerequisite(s)**	None

Course Description

The 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.

Equivalent Courses

None

Course Name	Media Evolution and Innovation	**Credit Hours**	**3** (3,0)
Course Code	MD 5207	**Prerequisite(s)**	None

Course Description

The 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

None

4.2.3 Master of Science in Media Studies (MS in Media Studies)

Course Name	Media Policy	**Credit Hours**	**3** (3,0)
Course Code	MD 5106	**Prerequisite(s)**	None

Course Description

In this course, students are introduced to media policy issues and debates; the principles and procedures of law, legislation, regulation, and action that govern or guide the various uses of mass communication, cultural and media resources, and technologies. The topics include Freedom of expression, privacy, standards, and media regulation; public vs. private media; stakeholders and vested interests (governments, industry, civil society); social and governmental protections; intellectual, economic and technological tensions in media policy; law, governance, and policy-making within global media systems; ethics and responsibilities; the challenges posed by new media technologies; and case studies.

Equivalent Courses

None

Course Name	Media and Post-Colonialism	**Credit Hours**	**3** (3,0)
Course Code	MD 5112	**Prerequisite(s)**	MD 5102

Course Description

This course discusses theories and practices of media representation as these relate to the formation of post-colonial societies. It covers topics such as Theories of post-colonialism; the politics of post-colonial representation; post-modernism and post-colonialism; nationalism, nation building, and identity; media and resistance; ethnicity, indigeneity, and hybridity; language and representation; empire and liberation; alternative media and representations of the local.

Equivalent Courses

None

Course Name	Theories of Visual Culture	**Credit Hours**	**3** (3,0)
Course Code	MD 5212	**Prerequisite(s)**	MD 5102

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 topics: Theory vs. 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 vs. style; Marshal McLuhan, media, and messages.

Equivalent Courses

None

4.2.3 Master of Science in Media Studies (MS in Media Studies)

Course Name	Media Management	**Credit Hours**	**3** (3,0)
Course Code	MD 5103	**Prerequisite(s)**	None

Course Description

The course develops a broad understanding of management practices necessary to run a media organization. The topics include Functions of media management; external, internal factors and influences; information systems; business models and budget strategies; creative management and content development; marketing and sales; operations; research and monitoring; distribution; HR issues; non-profit management and social entrepreneurship; and case studies.

Equivalent Courses None

Course Name	Communication for Social Change	**Credit Hours**	**3** (3,0)
Course Code	MD 5201	**Prerequisite(s)**	MD 5208

Course Description

The 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

Course Name	Thesis	**Credit Hours**	**3** (3,0) + **3** (3,0)
Course Code	MD 5109 & MD 5209	**Prerequisite(s)**	Dept. Permission

Course Description

The course requires students to write a well-researched, well-documented, publishable thesis on a subject of the student's choice that explores any of the areas covered by courses over previous semesters.

Equivalent Courses None

Faculty Of Mechatronic Engineering

5.1 Bachelor of Engineering

5.1.1 BE-Mechatronic Engineering

Students enrolled in the BE Mechatronics Engineering program, are required to complete 45 courses of 140 Credit Hours, within seven (7) years, to be eligible for BE (Mechatronics Engineering) degree. The following is the break-up of the 45 courses:

- *41 Compulsory Courses*
- *3 Electives*[24]
- *6 Credit Hour Final Year Project (to be completed in 7th & 8th semesters)*

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24 List of Electives is given in Appendix B.

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

Course Name	Communication and Presentation Skills	**Credit Hours**	**2** (2,0)
Course Code	ME 1101	**Prerequisite(s)**	None

Course Description

In this course students learn the principles of a good presentation and have 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 and focus on active listening and observation techniques, that aim to make them competent in all facets of effective speech communication.

Equivalent Course(s) None

Course Name	Electric Circuits	**Credit Hours**	**4** (3,1)
Course Code	ME 1102	**Prerequisite(s)**	None

Course Description

The 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

Course Name	Engineering Drawing and CAD	**Credit Hours**	**3** (2,1)
Course Code	ME 1107	**Prerequisite(s)**	None

Course Description

Graphics is means of communication for engineers. This course introduces students to the communications through sketching, use of instruments, computers (AutoCAD) 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, planning of drawing sheet. Then students are given practice of making engineering drawings of different objects. Furthermore, students are also made to practice to draw orthographic projections in first and third angles. Subsequently, they are exposed to make the projections using the AutoCAD software. This helps them in understanding the engineering drawings and then making and modifying them efficiently.

Equivalent Course(s) None

Course Name	Engineering Mathematics-I: Calculus and Analytical Geometry	**Credit Hours**	**3** (3,0)
Course Code	ME 1104	**Prerequisite(s)**	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

Course Name	Introduction to Computer System and Programming	**Credit Hours**	**2** (1,1)
Course Code	ME 1108	**Prerequisite(s)**	**None**

Course Description

This is the first course in computing for students of mechatronics engineering. It aims to provide students with an understanding of the role computation can play in solving problems. It also aims to help students, to feel justifiably confident of their ability to write small programs that allow them to accomplish useful goals. The class uses the Turbo C programming language. Laboratory sessions introduce students to a variety of software packages that include word processing, spreadsheets, graphics and communications.

Equivalent Course(s) None

Course Name	Engineering Physics	**Credit Hours**	**3** (2,1)
Course Code	ME 1203	**Prerequisite(s)**	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

Course Name	Islamic Studies	**Credit Hours**	**2** (2,0)
Course Code	ME 1106	**Prerequisite(s)**	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

Course Name	Electronic Devices and Circuits	**Credit Hours**	**4** (3,1)
Course Code	ME 1201	**Prerequisite(s)**	ME 1102

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

Course Name	Engineering Mathematics-II: Linear Algebra and Ordinary Differential Equations (ODES)	**Credit Hours**	**3** (3,0)
Course Code	ME 1202	**Prerequisite(s)**	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

Course Name	Engineering Statics	**Credit Hours**	**3** (3,0)
Course Code	ME 1204	**Prerequisite(s)**	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

Course Name	Engineering Workshop	**Credit Hours**	**2** (0,2)
Course Code	ME 1207	**Prerequisite(s)**	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

Course Name	Computer Programming	**Credit Hours**	**3** (2,1)
Course Code	ME 2301	**Prerequisite(s)**	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

Course Name	Digital Logic Design	**Credit Hours**	**3** (2,1)
Course Code	ME 2302	**Prerequisite(s)**	None

Course Description

The 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. Concept of finite state machine.

Equivalent Course(s) None

Course Name	Engineering Dynamics	**Credit Hours**	**3** (3,0)
Course Code	ME 2303	**Prerequisite(s)**	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

Course Name	Engineering Mathematics-III: 3-D Geometry and Vector Calculus	**Credit Hours**	**3** (3,0)
Course Code	ME 2304	**Prerequisite(s)**	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. 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

Course Name	Network Analysis	**Credit Hours**	**3** (3,0)
Course Code	ME 2305	**Prerequisite(s)**	ME 1102

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

Course Name	Pakistan Studies	**Credit Hours**	**2** (2,0)
Course Code	ME 2306	**Prerequisite(s)**	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 form a major part of the course.

Equivalent Course(s) None

Course Name	Data Structures and Object- Oriented Programming	**Credit Hours**	**3** (2,1)
Course Code	ME 2307	**Prerequisite(s)**	ME 2301

Course Description

The 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

Course Name	Electronics Circuit Design	**Credit Hours**	**4** (3,1)
Course Code	ME 2401	**Prerequisite(s)**	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

Course Name	Electro-Mechanical Systems	**Credit Hours**	**4** (3,1)
Course Code	ME 2402	**Prerequisite(s)**	ME 2305

Course Description

The course topics include; magnetic circuits, transformers, principles of electro-mechanical energy conversion. Faraday's Law, rotating machines, construction and operation of synchronous generators and motors, operation and performance of DC machines, small power AC motors, brush-less DC motors, stepper motors, and servo motors. In addition, sensors and microprocessor technologies are also discussed. The course includes a number of lab experiments to explain the theoretical aspect.

Equivalent Course(s) None

Course Name	Engineering Mathematics-IV: Transformation Techniques	**Credit Hours**	**3** (3,0)
Course Code	ME 2403	**Prerequisite(s)**	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

Course Name	Strength of Materials	**Credit Hours**	**4** (3,1)
Course Code	ME 2406	**Prerequisite(s)**	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

Course Name	Thermodynamics	**Credit Hours**	3 (2,1)
Course Code	ME 2405	**Prerequisite(s)**	ME 1203

Course Description

This course gives introduction to basic laws of thermodynamics and control volume/mass 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, refrigeration, heat pump systems, combustion and fuel cells are also discussed.

Equivalent Course(s) None

Course Name	Engineering Mathematics-V: Numerical Methods	**Credit Hours**	**3** (3,0)
Course Code	ME 3501	**Prerequisite(s)**	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

Course Name	Fluid Mechanics	**Credit Hours**	**4** (3,1)
Course Code	ME 3502	**Prerequisite(s)**	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 later part of the course particular attention is paid to application of hydraulics and pneumatics in Mechatronics systems.

Equivalent Course(s) None

Course Name	Microcontroller-Based Systems	**Credit Hours**	**3** (2,1)
Course Code	ME 3503	**Prerequisite(s)**	ME 2301, 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

Course Name	Sensors, Actuators and Instrumentation	**Credit Hours**	**4** (3,1)
Course Code	ME 3504	**Prerequisite(s)**	ME 2402

Course Description

This course begins with an intensive review of passive circuit analysis, active semiconductor devices, analog circuits with a focus on the operational amplifier, and digital devices. Then, the response of electromechanical systems is studied as a basis for the proper selection and/or design of a measurement system. The next topic treats the conversion from analog to digital signals and interfacing the analog world to computers and controllers. The course concludes with the topic about theory and applications of sensors and actuators.

Equivalent Course(s) None

Course Name	Materials and Manufacturing Processes	**Credit Hours**	**3** (3,0)
Course Code	ME 3506	**Prerequisite(s)**	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

Course Name	Theory of Machines	**Credit Hours**	3 (2,1)
Course Code	ME 3507	**Prerequisite(s)**	ME 2303

Course Description

The objective of the 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

Course Name	CAD/CAM	**Credit Hours**	**1** (0,1)
Course Code	ME 3601	**Prerequisite(s)**	ME 1107

Course Description

This course is taught with a combination of theory and practice. Alongside theory, the course requires a student to undertake assignments using major commercial software packages. Throughout the course intensive hand-on training on leading commercial CAD/CAM packages is provided to enable students to develop the knowledge of the complete concept from 3D Solid Modeling.

Equivalent Course(s) None

Course Name	Control Systems	**Credit Hours**	**4** (3,1)
Course Code	ME 3602	**Prerequisite(s)**	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, the 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

Course Name	Engineering Mathematics-VI: Probability and Statistics	**Credit Hours**	**3** (3,0)
Course Code	ME 3603	**Prerequisite(s)**	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

Course Name	Machine Design	**Credit Hours**	**3** (3,0)
Course Code	ME 3604	**Prerequisite(s)**	ME 2303

Course Description

This course aims to synergize forces, moments, torques, stress and strength information to develop among students the 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

Course Name	Power Electronics	**Credit Hours**	**4** (3,1)
Course Code	ME 3605	**Prerequisite(s)**	ME 2401

Course Description

The objective of the course is to expose the students to electric power conversion i.e. from AC to DC and DC to AC. Special semi conductor 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

Course Name	Technical Writing Skills	**Credit Hours**	**2** (2,0)
Course Code	ME 1205	**Prerequisite(s)**	None

Course Description

This course introduces research process to undergraduate 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/ACM style formatted article.

Equivalent Course(s) None

Course Name	Engineering Economics and Project Management	**Credit Hours**	**3** (3,0)
Course Code	ME 4702	**Prerequisite(s)**	None

Course Description

Engineering Economics and Project Management covers; basic economic concepts, such as types of costs, cash flow diagrams, The market mechanism and market mechanism, equivalence, project feasibility analysis, equity vs. 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

Course Name	Robotics	**Credit Hours**	**4** (3,1)
Course Code	ME 4802	**Prerequisite(s)**	ME 2303

Course Description

During this course a detailed study of robotics is undertaken with particular 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

Course Name	Mechanical Vibrations	**Credit Hours**	**2** (2,0)
Course Code	ME 4704	**Prerequisite(s)**	ME 2303

Course Description

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

Course Name	Mechatronics System Design	**Credit Hours**	**4** (3,1)
Course Code	ME 4705	**Prerequisite(s)**	ME 2402

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

Course Name	Industrial Automation	**Credit Hours**	**4** (3,1)
Course Code	ME 4801	**Prerequisite(s)**	ME 3503

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 particular 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

Course Name	Heat Transfer	**Credit Hours**	**3** (2,1)
Course Code	ME 4703	**Prerequisite(s)**	ME 3502

Course Description

This course introduces the basic concepts of heat transfer, in conduction, convection, and radiation. It also deals with extended surfaces to increase heat transfer and its applications in heat sinks and in heat exchangers. The effect of heat transfer on cooling and heating is also discussed.

Equivalent Course(s) None

Course Name	Final Year Project	**Credit Hours**	**6** (0,6)= (0,3) + (0,3)
Course Code	ME 4708 and ME 4808	**Prerequisite(s)**	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

Faculty Of Biosciences

6.1 Bachelor of Science

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Students enrolled in BS in Biosciences are required to complete 44 courses 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 44 courses is as follows:

- *39 Compulsory Courses*
- *4 Electives[26] (3 Credit Hour)*
- *1 Research Report (6 Credit Hours)*

The courses have been listed in order of semester/year.

25 List of Electives is given in Annexure B.

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

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)

Course Name	English-I	**Credit Hours**	**3** (3,0)
Course Code	BIO 1103	**Prerequisite(s)**	None

Course Description

The course topics include: basics of grammar, parts of speech and use of articles; sentence structure, active and passive voice; practice in unified sentence, analysis of phrase, clause and sentence structure, transitive and intransitive verbs; punctuation and spelling, comprehension, answers to questions on a given text, discussions, general topics and every-day conversation, paragraph writing, and presentation skills. In addition, in order to improve the listening skills, documentaries/films carefully selected by subject teachers, are a part of curriculum.

Equivalent Course(s) CSC 1102, BA 1105, SS1118, MD 1102

Course Name	Fundamental Mathematics	**Credit Hours**	**3** (3,0)
Course Code	BIO 1107	**Prerequisite(s)**	None

Course Description

The course topics include; *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 and trigonometric identities.

Equivalent Course(s) BA 1204

Course Name	Physiology-I	**Credit Hours**	**3** (2,1)
Course Code	BIO 1206	**Prerequisite(s)**	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

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Introduction to Microbiology	**Credit Hours**	**3** (2,1)
Course Code	BIO 1209	**Prerequisite(s)**	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, H2O, 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

Course Name	Biochemistry-I	**Credit Hours**	**3** (2,1)
Course Code	BIO 2301	**Prerequisite(s)**	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

Course Name	English-II	**Credit Hours**	**3** (3,0)
Course Code	BIO 1202	**Prerequisite(s)**	BIO 1103

Course Description

The course topics include; paragraph writing, practices for writing good, unified and coherent paragraphs, introduction to essay writing, CV and job applications, translation skills, Urdu to English, study skills, skimming and scanning, intensive and extensive reading, speed reading, summary, précis writing and comprehension, academic skills, letter/memo writing, minutes of meetings, use of library and internet, presentation skills and personality development (emphasis on content, style and pronunciation).

Equivalent Course(s) BA 1206, CSC 2101

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Advanced Microbiology	**Credit Hours**	**3** (2,1)
Course Code	BIO 1207	**Prerequisite(s)**	BIO 1209

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 also covered.

Equivalent Course(s) None

Course Name	Statistics	**Credit Hours**	**3** (3,0)
Course Code	BIO 1208	**Prerequisite(s)**	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 interquartiles range. Standard distribution (Binomial, poison 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, Computer based statistical software applications.

Equivalent Course(s) CSC 2105, BA 3605, BA 5405, SS 2309

Course Name	Physiology-II	**Credit Hours**	**3** (2,1)
Course Code	BIO 2305	**Prerequisite(s)**	BIO 1206

Course Description

This course we 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

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Biochemistry-II	**Credit Hours**	**3** (2,1)
Course Code	BIO 2401	**Prerequisite(s)**	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, introduction to endocrinology.

Equivalent Course(s) None

Course Name	Immunology	**Credit Hours**	**3** (2,1)
Course Code	BIO 3504	**Prerequisite(s)**	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. Immunization (methods of immunization, vaccines and adjuvants).

Equivalent Course(s) None

Course Name	Cell Biology	**Credit Hours**	**3** (2,1)
Course Code	BIO 1101	**Prerequisite(s)**	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, the cell cycle. Fundamentals of Eukaryotic Gene Expression, reproduction in Eukaryotic cell.

Equivalent Course(s) None

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Introduction to Computing	**Credit Hours**	**3** (2,1)
Course Code	BIO 1104	**Prerequisite(s)**	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

Course Name	Islamiat and Pakistan Studies/Humanities	**Credit Hours**	**3** (3,0)
Course Code	BIO 2303	**Prerequisite(s)**	None

Course Description

Islamiat: The course topics include; Introduction to Quranic Studies, study of selected text of the Holy Quran, Seerat of Holy Prophet (S.A.W), introduction to Sunnah, introduction to Islamic law and jurisprudence, Islamic culture and civilization, Islam and science, and the social system of Islam.

Pakistan Studies: Topics include; historical perspective of the Indo-Pak subcontinent; government and politics in Pakistan and contemporary Pakistan.

Humanities: Topics include; meaning and scope of ethics, relation of ethics with: (a) religion (b) science (c) law, historical development of morality, instinctive moral life, customary morality, reflective morality, moral ethics, and society.

Equivalent Course(s)

BA 1106, CSC 1105, MD 2402, SS 1109

Course Name	Plant Tissue Culture	**Credit Hours**	**3** (2,1)
Course Code	BIO 2307	**Prerequisite(s)**	None

Course Description

The course includes 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 signal cell culture, synseeds or synthetic seeds production, soma clonal 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.

Equivalent Course(s)

None

Course Name	Lab Management	**Credit Hours**	**3** (3,0)
Course Code	BIO 2404	**Prerequisite(s)**	BIO 1209

Course Description

The course topics include; Introduction-Laboratory Quality Management System, Basic Principles of Biosafety, clinical laboratory regulation, quality control, laboratory safety, basic safe use of equipment and quality assurance, Basic Elements of Biosafety Management Program, Packaging and shipment of Biological Material, Animal Biosafety Considerations, Hazardous Material Spill and Preparedness and response, Hazards of Biological Lab, waste disposal laboratory accreditation and audit, efficiency and effectiveness, health safety and welfare of the workforce, work safety legislation, hazards of the work place, risk assessment, safety policies, and safety audit and inspection.

Equivalent Course(s) None

Course Name	Hematology	**Credit Hours**	**3** (2,1)
Course Code	BIO 2405	**Prerequisite(s)**	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'sdisease, idiopathic and thrombotic purpura, thalassemia and its types, hematology laboratory procedures, clotting mechanisms and disorders, and detection of coagulation disorders.

Equivalent Course(s) None

Course Name	Psychology	**Credit Hours**	**3** (3,0)
Course Code	BIO 2306	**Prerequisite(s)**	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, social evils.

Equivalent Course(s) SS 2306, BA 2312

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Genetic Engineering	**Credit Hours**	**3** (2,1)
Course Code	BIO 2406	**Prerequisite(s)**	BIO 4803

Course Description

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 genime project, are included in the course, along with stem cells and therapeutic cloning and social considerations.

Equivalent Course(s)

None

Course Name	Basic Endocrinology	**Credit Hours**	**3** (3,0)
Course Code	BIO 2407	**Prerequisite(s)**	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

Course Name	Neurochemistry	**Credit Hours**	**3** (3,0)
Course Code	BIO 3604	**Prerequisite(s)**	BIO 2301, BIO 1206, BIO 2305

Course Description

The course topics include; organization of nervous system, sympathetic and parasympathetic nervous system, motor nervous system, brain cells, structure of neuron, glial cells and its type, blood brain barrier, signaling in the brain, action potential, resting membrane potential, synapse, synaptic events, receptors in the brain, signal transduction, protein phosphorylation, G-protein, excitatory and inhibitory neurotransmitters and their function, role of neurotransmitter in cognitive functions, behaviors, psychotic disorders, and diseases associated with the malfunctioning of these neurotransmitters.

Equivalent Course(s)

None

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Molecular Biology	**Credit Hours**	**3** (2,1)
Course Code	BIO 4803	**Prerequisite(s)**	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

Course Name	Biotechnology	**Credit Hours**	**3** (2,1)
Course Code	BIO 2302	**Prerequisite(s)**	BIO 4803, BIO 2307

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

Course Name	Bioinformatics	**Credit Hours**	**3** (2,1)
Course Code	BIO 2402	**Prerequisite(s)**	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 4704

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Genetics	**Credit Hours**	**3** (2,1)
Course Code	BIO 3503	**Prerequisite(s)**	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, multiple alleles. ABO blood type alleles in humans, Rh factor alleles in humans, probability in Mendetion 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

Course Name	Pharmacology-I	**Credit Hours**	**3** (2,1)
Course Code	BIO 3505	**Prerequisite(s)**	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 parentral 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 (t½), dose-response curve, area under curve, volume of distribution, pharmaco dynamics, 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

Course Name	Animal Cell and Tissue Culture	**Credit Hours**	**3** (3,0)
Course Code	BIO 3506	**Prerequisite(s)**	BIO 2307

Course Description

The course topics include; Introduction, types of cell culture, primary explanation versus disaggregation, proliferation versus differentiation, organotypic culture, substrates and matrices, isolation of cells for culture, tissue collection and transportation, disaggregation and primary culture, subculture, life span, growth cycle, serial subculture, cryopreservation, characterization and validation, cross-contamination, microbial contamination.

Equivalent Course(s) None

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Nutrition and Dietetics	**Credit Hours**	**3** (3,0)
Course Code	BIO 2304	**Prerequisite(s)**	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, screening of deficiencies.

Equivalent Course(s) None

Course Name	Environmental Science	**Credit Hours**	**3** (3,0)
Course Code	BIO 2403	**Prerequisite(s)**	None

Course Description

The course topics include; productivity and biogeochemical cycles, community structure and organization, environmental pollution, sustainable development; and economic importance of microbes, plants and animals, microbial techniques for pollution control, role of microorganisms for the production of food and fodder products from agricultural and forestry wastes, biological and chemical pesticides, their advantages and disadvantages, microbial degradation of toxic and poorly degradable (recalcitrant) compounds, bioremediation of environment contaminated with wood preservatives, petroleum products, hydrocarbons, fuels and industrial wastes,. bioaccumulation of heavy metals and phytoremediation, applications of recombinant microorganisms in reducing environmental pollution, and microbes as a tool for the assessments of risks associated with the environment.

Equivalent Course(s) None

Course Name	Pharmacology-II	**Credit Hours**	**3** (2,1)
Course Code	BIO 3605	**Prerequisite(s)**	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)

Course Name	Advanced Biotechnology	**Credit Hours**	**3** (2,1)
Course Code	BIO 3606	**Prerequisite(s)**	BIO 2302

Course Description

The course topics include; advances in vaccine development, recombinant products expression and transgenics, 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 coliand bacillus subtilis, saccharomyces cerevisiaeas a system for expression of heterologous proteins, expression in non-saccharomycesyeast 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

Course Name	Bioethics	**Credit Hours**	**3** (3,0)
Course Code	BIO 4801	**Prerequisite(s)**	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: Hadood 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

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Agricultural Science	**Credit Hours**	**3** (3,0)
Course Code	BIO 3601	**Prerequisite(s)**	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 tansformation, 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 biofertilizers, biosafety concerns and bioethics on GM crops, and ethical issues in sustainable agriculture and agricultural research.

Equivalent Course(s) None

Course Name	Human Anatomy	**Credit Hours**	**3** (3,0)
Course Code	BIO 3602	**Prerequisite(s)**	BIO 1206,BIO 2305

Course Description

The course topics include; introduction to human body, digestive system including liver, pancreas and gall bladder and spleen, excretory system, respiratory system, and the sense organs; taste, smell, ear, eyes and their histology cells, tissues, integument system, upper limb, lower limb, cardiothoracic region, muscular system, cardiovascular system,

Equivalent Course(s) None

Course Name	Introduction to Pathology	**Credit Hours**	**3** (3,0)
Course Code	BIO 4702	**Prerequisite(s)**	BIO 1206, BIO 2305
			BIO 3502,

Course Description

The course topics include; cellular injury and necrosis, cellular adaptations, inflammation, infectious disease, vascular disorders, hemostasis and thrombosis, immunopathology, environmental pathology, cardiovascular disease, pulmonary disease, renal disease, endocrine disease, bone and joint disease, gastrointestinal tract disease, bone and joint disease, gastrointestinal tract disease, hematopathology-anemia, hematopathology, liver and biliary tract disease, placental disease, breast disease and neuropathology.

Equivalent Course(s) None

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Research Methodology	**Credit Hours**	**3** (3,0)
Course Code	BIO 4703	**Prerequisite(s)**	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)	CS 5105

Course Name	Business Management	**Credit Hours**	**3** (3,0)
Course Code	BIO 4701	**Prerequisite(s)**	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

Course Name	Toxicology	**Credit Hours**	**3** (3,0)
Course Code	BIO 4704	**Prerequisite(s)**	BIO 3605, BIO 3505

Course Description	The course topics include; history and principle of toxicology, absorption, distribution and excretion of toxicants, mechanisms of toxicity, bio information of xenobiotics, toxic effects of solvents and vapors, forensic toxicology, toxic responses of the respiratory system, air pollution, toxic responses of the liver and kidney, toxic responses of heart and vascular system, chemical carcinogenesis, genetic toxicology, toxic effects of radiation, risk assessment, regulatory toxicology, toxic effects of metals, ecotoxicology, toxic responses of blood and immune system, recognition of toxic chemicals, plants petrochemicals, and environmental hazards of use of pesticides and their ecological fallout drug overdose.
Equivalent Course(s)	None

6.1.1 Bachelor of Science in Biosciences (BS-Biosciences)

Course Name	Biophysics	**Credit Hours**	**3** (3,0)
Course Code	BIO 4802	**Prerequisite(s)**	BIO 1206

Course Description

The course topics include; conformational analysis of protein, nucleic acid structures, radiobiology, fundamental laws for current in biological tissues, bio potentials in hearts, electrocardiogram, action potentials in nervous system, thermodynamic principles: first law (energy, enthalpy) and second law of thermodynamics, free energy, standard physical free energy and standard biological free energy, determination of the free energy from equilibrium constant and EMF measurements, thermodynamics of phosphate compounds.

Equivalent Course(s) None

Course Name	Research Report	**Credit Hours**	**6** (3,3)
Course Code	BIO 4804	**Prerequisite(s)**	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 reports and power point presentations.

Equivalent Course(s) None


International
Programs

7.1.1 Bachelor of Arts (Hons.) in Business Studies (BABS)

Students enrolled in the BABS (Honors) program are required to complete 27 courses. Upon completion of the required courses at SZABIST, students can proceed for the Final Year to the University of South Wales, UK and obtain their Bachelor (Hons.) degree from the University of South Wales, UK.

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

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	Introduction to Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 1101	**Prerequisite(s)**	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)	None		

Course Name	Microeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 1102	**Prerequisite(s)**	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)	SS 1105, BA 5302		

Course Name	Introduction to Computers	**Credit Hours**	**3** (1,2)
Course Code	BA1103	**Prerequisite(s)**	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 5306, CSC 1104, BA 1108, ME 1105, BIO 1104		

Course Name	Personal Management	**Credit Hours**	**3** (3,0)
Course Code	BA1104	**Prerequisite(s)**	None
Course Description	This course teaches students to discover themselves and make positive changes to achieve greater effectiveness at work and 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, BA 5311		

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	English Writing Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 1105	**Prerequisite(s)**	None
Course Description	The course covers comprehending problems and statements, developing arguments, and communicating ideas clearly and concisely. It also focuses grammar, forms of punctuation, forms of speech, sentence and paragraph construction, composition, comprehension, and writing styles, presentations, verbal communication skills, formal and informal presentations, interactive discussions, and role-playing.		
Equivalent Course(s)	MD 1102, SS 1118, BA 5317, BIO 1103, CSC 1102		

Course Name	Maths for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 1204	**Prerequisite(s)**	None
Course Description	The aim of this course is to prepare student 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, 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, applications of integration.		
Equivalent Course(s)	BIO 1107		

Course Name	Financial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 1201	**Prerequisite(s)**	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. MS Excel is used as well as necessary accounting software is introduced.		
Equivalent Course(s)	BA 5301, BA 5108		

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	Macroeconomics	**Credit Hours**	**3** (3,0)
Course Code	BA 1202	**Prerequisite(s)**	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) BA 5402, SS 1205

Course Name	Management Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 1203	**Prerequisite(s)**	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 5303

Course Name	Oral Communication and Presentation Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 1206	**Prerequisite(s)**	BA 1105

Course Description

In this course students learn the principles of a good presentation and have 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 and focus on active listening and observation techniques. That aim to make then competent in all facets of effective speech communication.

Equivalent Course(s) ME 1101, CSC 2101

Course Name	Statistics and Mathematics for Business	**Credit Hours**	**3** (3,0)
Course Code	BA 2305	**Prerequisite(s)**	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 5305, SS 2309, BA 2311, BIO 1208

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	Computer Programming for Managers	**Credit Hours**	**3** (1,2)
Course Code	BA 3604	**Prerequisite(s)**	BA 1103
Course Description	This course emphasizes on the ability of information and technology to enhance the capabilities of business enterprises. Topics include: skills in problem solving techniques, flow-charting and algorithm design, processing methods and programs. In addition, the scope of computer programming and its usage in the development of business applications would also be covered.		
Equivalent Course(s)	None		

Course Name	Introduction to Business Finance	**Credit Hours**	**3** (3,0)
Course Code	BA 2301	**Prerequisite(s)**	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		

Course Name	Graphic Design in Multimedia Presentations	**Credit Hours**	**3** (1,2)
Course Code	BA 2302	**Prerequisite(s)**	BA 3604
Course Description	The 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		

Course Name	Calculus	**Credit Hours**	3 (3,0)
Course Code	BA 2404	**Prerequisite(s)**	BA 2305
Course Description	The course covers the derivative, result of differentiation, derivative of logarithmic, exponential and trigonometric function, differential, growth and decay models, definite and indefinite integrals, techniques of integration, integrals involving logarithmic, exponential and trigonometric functions, integration by tables, area under a curve and between curves, functions of several variables, partial derivatives and their applications to optimization.		
Equivalent Course(s)	CSC 1101		

Course Name	Marketing Principles	**Credit Hours**	**3** (3,0)
Course Code	BA 2303	**Prerequisite(s)**	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

Course Name	Managerial Accounting	**Credit Hours**	**3** (3,0)
Course Code	BA 2304	**Prerequisite(s)**	BA 2301

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 by-products), process costing systems, and applied factory overhead. It deals with standard costing, setting of standards, analysis of variance, controlling, costing material, and budgeting.

Equivalent Course(s) BA 5411

Course Name	Social Sciences	**Credit Hours**	**3** (3,0)
Course Code	BA 2306	**Prerequisite(s)**	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, SS 2307, MD 1104

Course Name	Business Ethics	**Credit Hours**	**3** (3,0)
Course Code	BA 2403	**Prerequisite(s)**	BA 1203

Course Description

This course introduces contemporary and controversial ethical issues facing 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) None

Course Name	Organizational Behavior	**Credit Hours**	**3** (3,0)
Course Code	BA 3504	**Prerequisite(s)**	BA 1203

Course Description

The 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 cover 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

Course Name	Statistical Inference	**Credit Hours**	**3** (3,0)
Course Code	BA 3605	**Prerequisite(s)**	BA 1204

Course Description

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.

Equivalent Course(s) BA 5405, SS 2409

Course Name	Quantitative Skills	**Credit Hours**	**3** (3,0)
Course Code	BA 3505	**Prerequisite(s)**	BA 3605

Course Description

The 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

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	Financial Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3601	**Prerequisite(s)**	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

Course Name	Marketing Management	**Credit Hours**	**3** (3,0)
Course Code	BA 3602	**Prerequisite(s)**	BA 2303

Course Description

The 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

Course Name	Management Information Systems	**Credit Hours**	**3** (3,0)
Course Code	BA 4704	**Prerequisite(s)**	BA 3604

Course Description

This course covers different information technology applications in business to manage better so as to providing support to decision makers for strategic business decisions. The course examines various corporate frameworks for information management and their utility.

Equivalent Course(s) BA 5403

7.1.1 Bachelor of Arts (Hons) in Business Studies (BABS)

Course Name	Advertising	**Credit Hours**	**3** (3,0)
Course Code	BA 4721	**Prerequisite(s)**	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

Course Name	Law and Taxation	**Credit Hours**	**3** (3,0)
Course Code	BA 4801	**Prerequisite(s)**	BA 1203

Course Description

The 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 kinds of taxes in Pakistan. Furthermore it also identifies the intellectual property rights in Pakistan.

Equivalent Course(s) None

7.1.2 LLB (University of London) International Program

The LLB Program University of London (International) program requires the students to complete 8 courses with a minimum of 24 credit hours. The break-up of 8 courses is as follows:

- *8 compulsory courses*
- *5 electives[26] (3 credit hour each)*

The courses are listed year wise as bellow.

Course Code	Course Title	Page #
	First Year	
LA 1010	Criminal Law	172
LA 1020	Public Law	172
LA 1030	Common Law Reasoning and Institutions	172
LA 1040	Elements of the Law of Contract	173
	Second Year	
LA 3001	Law of Tort	173
LA 3002	Law of Trusts	173
LA 3003	Land Law	174
	Third Year	
LA 3005	Jurisprudence and Legal Theory	174

26 List of elective provided in Appendix B.

7.1.2 LLB (University of London) International Program

First Year

Course Name	Criminal Law	**Credit Hours**	**3** (3.0)
Course Code	LL 2650010	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Public Law	**Credit Hours**	**3** (3,0)
Course Code	LL 2650020	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Common Law Reasoning and Institutions	**Credit Hours**	**3** (3.0)
Course Code	LL 2650030	**Prerequisite(s)**	None

Course Description

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.

Equivalent Course(s) None

Course Name	Elements of the Law of Contract	**Credit Hours**	**3** (3.0)
Course Code	LL 2650040	**Prerequisite(s)**	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 19th- and 20th-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

Second Year

Course Name	Law of Tort	**Credit Hours**	**3** (3.0)
Course Code	LL 2660001	**Prerequisite(s)**	None

Course Description

The law of tort concerns the civil liability for the wrongful infliction of 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

Course Name	Law of Trusts	**Credit Hours**	**3** (3.0)
Course Code	LL 2660002	**Prerequisite(s)**	None

Course Description

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: 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); 3) the remedies available when trustees act improperly.

Equivalent Course(s) None

Course Name	Land Law	**Credit Hours**	**3** (3,0)
Course Code	LL 2660003	**Prerequisite(s)**	None

Course Description

Much of the work of solicitors turns around land 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 diff erent from today. Land 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.

Equivalent Course(s) None

Third Year

Course Name	Jurisprudence and Legal Theory	**Credit Hours**	**3** (3,0)
Course Code	LL 2670005	**Prerequisite(s)**	None

Course Description

The nature of jurisprudence: methodology, analysis, theory and the idea of definition, the relevance of language and ideology.
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.
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.
Legal reasoning: Dworkin's theory of law as integrity, Dworkin's methodology, practical reasoning, Hohfeld's /> analysis of legal rights.
Social theory and critical accounts of law, including the American Critical Legal Studies movement, Marxist theories of law and state, feminist jurisprudence.
A study in depth of a text prescribed by the examiners on which there will be one compulsory question in the examination.

Equivalent Course(s) None

Elective

Course Name	Company Law	**Credit Hours**	**3** (3,0)
Course Code	LA 3021	**Prerequisite(s)**	Not applicable

Course Description

This area of law is fast moving with frequent legislative change due to pressures for reform from the UK Department of Trade and Industry and from the EU with its policy of harmonising the company law of its member states. The syllabus centres on the way law regulates companies and the facilities company law offers, such as limited liability and transferability of shares – as well as the corresponding burdens (duties of disclosure, compliance with statutory procedures and common law duties) and the dynamics of the often tense relationship between shareholders and management. A vital course for anyone intending to operate in the commercial field; students will benefit from knowledge of Contract, Tort, Trusts and Public law.

Equivalent Course(s) None

Course Name	Public International Law	**Credit Hours**	**3** (3,0)
Course Code	LA 3013	**Prerequisite(s)**	Not applicable

Course Description

Public international law has been increasingly under the spotlight as it governs – among other things – the agreed rules of the use of force. Public international law concerns legal relations between states but also deals with the role of the United Nations and other international organisations and, in the fields of human rights and international criminal law, the rights and duties of individuals. The course moves from examining basic principles – the sources of international law and the bases of recognising statehood – through specific issues of jurisdictional immunities, treaties and state responsibility to go on to see how these principles are applied in specific areas such as international criminal law, human rights, international environmental law and the law of the sea.

Equivalent Course(s) None

Course Name	Islamic Law	**Credit Hours**	**3** (3,0)
Course Code	LA 3028	**Prerequisite(s)**	Not applicable

Course Description

This course offers students an overview of Islamic law, covering its religious, historical and contemporary dimensions. The emphasis of the first part of the course is on the religious and historical foundations of Islamic law, including the emergence of different schools of Islamic law and their consolidation in the main authoritative sources of Islamic law. The course then goes on to examine the application of Islamic law in contemporary jurisdictions, including the reform of Islamic law, focusing on Islamic family law with a shorter section on Islamic criminal law, covering a range of jurisdictions from the Middle East and South Asia. Aspects of civil law and international law are also covered.

Equivalent Course(s) None

7.1.2 LLB (University of London) International Program

Course Name	European Union Law	**Credit Hours**	**3** (3,0)
Course Code	LA 3024	**Prerequisite(s)**	Not applicable

Course Description

The European Union (EU) is a relatively new legal system that combines characteristics of international law and national legal systems. EU institutions and law-making powers are examined as well as the key questions of the impact of EU law on national law and its overall consequences for a) business enterprises and b) individuals. As EU law is highly responsive to economic and social changes, legal rules and judicial decisions are studied in their wider context. The subject will appeal to students who enjoyed studying Public law or who have an interest in public affairs, politics, economics or international relations.

Equivalent Course(s) None

Course Name	Evidence	**Credit Hours**	**3** (3,0)
Course Code	LA 3007	**Prerequisite(s)**	Not applicable

Course Description

The law of evidence governs what facts may be presented – and contested – in the courtroom, the techniques for eliciting evidence, and the role of the lawyers, jury and judge in an adversarial system. The subject is an attractive mixture of the intensely practical (e.g. how is cross-examination controlled? what is a jury permitted to hear? when has the burden of proof been discharged?) and the abstract and academic (what is a 'fact'? what does 'relevance' mean? when is evidence prejudicial?). Highly relevant to actual day-to-day legal practice, the subject will appeal especially to students intending to practise in court.

Equivalent Course(s) None


Appendix

8.0 Appendix A

8.1 Computing Program (MSCS)

The following are the course descriptions for the 9 Co-requisite Courses offered in MSCS Program.

Course Code	Co-requisite Course Title
CS Stream-I	
CSC 5xxx	Real-Time Systems
CSC 5xxx	Digital Image Processing
CSC 5xxx	Machine Learning
CSC 5xxx	Data Mining
CS-Stream-II	
CSC 5xxx	Reverse Engineering
CSC 5xxx	Digital Forensics & Malware Analysis
CSC 5xxx	Advanced Resource Sharing Architecture
CSC 5xxx	Computer Vision
CSC 5xxx	Robotics
CSC 5xxx	Advanced Database Design
CSC 5xxx	Distributed Computing
CSC 5xxx	Systems and Network Programming
SE-Stream-I	
SEC 5xxx	Software Requirement Engineering
SEC 5xxx	Software System Architecture
SEC 5xxx	Software System Quality
SEC 5xxx	Advanced Software Engineering
SE-Stream-II	
SEC 5xxx	Software Analysis & Testing
SEC 5xxx	Web Engineering
SEC 5xxx	Software Project Management
N&S-Stream-I	
NSC 5xxx	Advanced Computer Networks
NSC 5xxx	Network Security
NSC 5xxx	Applied Cryptography
NSC 5xxx	Information Security
N&S-Stream-II	
NSC 5xxx	Telecom Policies and Regulations
NSC 5xxx	Mobile Ad-hoc Networks
NSC 5xxx	Advanced Data Communications

Course Name	Data Mining	**Credit Hours**	**3** (2,1)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course covers the fundamentals of data mining and its applications. It educates the student about the need and importance of data mining for real world applications. It also introduces the attendants with existing research trends and technological advancements in the area of data mining and its applications.

Equivalent Course(s) None

Course Name	Real-Time Systems	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course focuses upon real-time and embedded systems task models, periodic task scheduling and scheduling analysis for uniprocessors. It also covers static and dynamic priority scheduling POSIX standard and RTOS fundamentals, communication between processes and threads, task synchronization, blocking scheduling analysis with synchronization, scheduling aperiodic tasks using servers, complete aperiodic task systems, distributed real-time systems and resource pipelines, multiprocessor real-time systems, soft real-time systems, platform selection and system architecture issues and fault tolerance and reliability.

Equivalent Course(s) None

Course Name	Digital Image Processing	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course focuses upon real-time and embedded systems task models, periodic task scheduling and scheduling analysis for uniprocessors. It also covers static and dynamic priority scheduling POSIX standard and RTOS fundamentals, communication between processes and threads, task synchronization, blocking scheduling analysis with synchronization, scheduling aperiodic tasks using servers, complete aperiodic task systems, distributed real-time systems and resource pipelines, multiprocessor real-time systems, soft real-time systems, platform selection and system architecture issues and fault tolerance and reliability.

Equivalent Course(s) None

Course Name	Machine Learning	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course introduces students to machine learning while covering supervised learning; introduction to artificial neural networks, feed forward and back propagation, using neural nets to estimate / predict, support vector machines, functional and geometric margins, linear classifiers, non-linear classification, kernels, discriminative vs. generative learning, Gaussian discriminant analysis vs. logistic regression and spam classification. In unsupervised learning;
kNN (k nearest neighbors), k means clustering, principal component analysis, independent component analysis, considerations in applying machine learning, bias/variance, complexity vs. number of training examples, performance assessment and error estimators, introduction to robotics, Kalman filters, and particle filters are studied.

Equivalent Course(s) None

Course Name	Reverse Engineering	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description	This course covers introduction to reverse engineering, VM tools and creating the testing environment, dynamic analysis tools and methodologies, static analysis tools and methodologies, combined reverse engineering, re-use and re-purpose.
Equivalent Course(s)	None

Course Name	Digital Forensics & Malware Analysis	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description	This course focuses upon forensic modeling and principles, duplication, analytics and file carving. It also covers cyber forensics tools and testing, mobile device forensics, network surveillance and accountability, network attack trace back and attribution, multicast fingerprinting, multimedia forensics, intrusion and online frauds detection, steganography and steganalysis, anonymity/pseudonymity, cyber law, security and privacy, policies and guidelines and ethical issues, court testimony through case studies and report writing.
Equivalent Course(s)	None

Course Name	Computer Vision	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description	The course covers concepts behind computer-based recognition and extraction of features from raster images; applications of vision systems and their limitations; and overview of early, intermediate and high level vision. It also covers Segmentation: region splitting and merging; quadtree structures for segmentation; mean and variance pyramids; computing the first and second derivatives of images using the isotropic, Sobel and Laplacian operators; grouping edge points into straight lines by means of the Hough transform; limitations of the Hough transform; parameterization of conic sections; perceptual grouping: failure of the Hough transform; perceptual criteria; improved Hough transform with perceptual features and grouping line segments into curves. Overview of mammalian vision: experimental results of Hubel and Weisel; analogy to edge point detection and Hough transform; relaxation labelling of images: detection of image features; grouping of contours and straight lines into higher order features such as vertices and facets and Depth measurement in images are also studied.
Equivalent Course(s)	None

Course Name	Advanced Resource Sharing Architecture	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course introduces students to distributed systems, and architecture, it discusses distributed OS theories, distributed mutual exclusions, agreement protocols, distributed resource management, recovery and fault tolerance, distributed scheduling, and security and protection.

Equivalent Course(s) None

Course Name	Robotics	**Credit Hours**	**3** (2,1)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

The course covers basic components of robot systems; coordinate frames, homogeneous transformations, planar and spatial kinematics and motion planning; mechanism design for manipulators and mobile robots, multi-rigid-body dynamics, 3D graphic simulation; control design, actuators, and sensors; wireless networking, task modeling, human-machine interface and embedded software.

Equivalent Course(s) None

Course Name	Advanced Database Design	**Credit Hours**	**3** (3,0)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course discusses conceptual relational database design, identification of business rules, top-down design: entity relationship modeling, logical relational database design, bottom-up design: end user data views, application relations: integration of user-view relations by common primary keys, final ERD, identification of database transactions in application, physical relational database design including tables, views, indexes and access rights required for a business application; importance of data integrity constraints, elements to improve performance, implementation of transactions for an application, use of locking to insure consistency and accuracy of data, distributed DBMS heterogeneous versus homogenous, role of transaction manager, properties of a DDBM, partitioning and fragmentation of data; two-phase commit protocol, client-server database design, client/server architecture server, database middleware standards: ODBC, JDBC, identification of problem source: ODBC versus DBMS, object-oriented database design and concepts are discussed.

Equivalent Course(s) None

Course Name	Distributed Computing	**Credit Hours**	**3** (2,1)
Course Code	CSC 5xxx	**Prerequisite(s)**	None

Course Description

This course covers the use of parallel and distributed systems and why not to use them, speedup and Amdahl's law, hardware architectures: multiprocessors (shared memory), networks of workstations (distributed memory) and clusters. Software architectures: threads and shared memory, processes and message passing, distributed shared memory (DSM), distributed shared data (DSD) are also covered. Parallel algorithms, concurrency and synchronization, data and work partitioning, common parallelization strategies, granularity, load balancing (parallel search, parallel sorting, etc.) shared-memory programming: threads, p-threads, locks and PVM and other parallel programming systems, distributed shared memory, aurora: scoped behavior and abstract data types, enterprise process templates are also included in the course.

Equivalent Course(s) None

Course Name	Systems and Network Programming	**Credit Hours**	**3** (2,1)
Course Code	CSC 5xxx	**Prerequisite(s)**	**None**

Course Description

This course is aimed at developing network programming concepts and skills in general. Unix programming environment, TCP protocol suite, socket programming , UDP and TCP sockets, I/O multiplexing including non-blocking I/O, advance socket options, name and address conversions, IPv4 and IPv6 interoperability, Unix domain protocols, broadcasting and multicasting, routing and communication, pipes and FIFO's message queues, mutexes and locks, semaphores, POSIX shared memory, doors and RPC (remote procedure calls) are also studied.

Equivalent Course(s) None

Course Name	Software Requirement Engineering	**Credit Hours**	**3** (3,0)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

This course is designed to introduce students to requirements engineering concepts, activities and role in system development, information elicitation techniques, modeling scenarios and goal-oriented requirements engineering are discussed. Other topics include modeling behavioral and quality goals, goal modeling heuristics, object modeling for requirements engineering, object modeling notations, object modeling identifying heuristics, identifying objects from goals, modeling use cases and state machines, deriving operational requirements from goals, requirements specification, verification and validation; management of inconsistency and conflict, techniques for requirements evaluation, selection and prioritization, requirements management and requirements traceability and impact analysis.

Equivalent Course(s) None

Course Name	Software System Architecture	**Credit Hours**	**3** (3,0)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

This course describes software architecture in context of a design plan, and as an abstraction. Four views of software architecture, their linkages, and engineering concerns and how they are addressed by different views are studied. The four views are: conceptual architecture view, module architecture view, execution architecture view and code architecture view.

Equivalent Course(s) None

Course Name	Software System Quality	**Credit Hours**	**3** (2,1)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

This course introduces students to software quality assurance, the quality challenge, quality control v/s quality assurance, quality assurance in software projects (phases), principles and practices, quality management, verification and validation. It also discusses security assessment, inspections and reviews, principles of software validation, software verification, planning for software quality assurance (SQA), SQA plans, SQA-organizational level initiatives, software testing, specification based test construction techniques, white-box and grey-box testing. Other comprehensive software testing techniques like control flow oriented test construction techniques, data flow oriented test construction techniques, clean-room approach, walkthroughs and inspections, structure, checklist, audits, roles and responsibilities and how to make reviews and inspections most effective are also discussed.

Equivalent Course(s) None

Course Name	Advanced Software Engineering	**Credit Hours**	**3** (3,0)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

The course covers requirements engineering, object-oriented modeling, design strategies, design patterns, object-oriented frameworks, aspect oriented programming, search-based software engineering, software product lines, and security in detail.

Equivalent Course(s) None

Course Name	Software Analysis & Testing	**Credit Hours**	**3** (2,1)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

The topics course includes testing techniques and principles: defects vs. failures, equivalence classes and boundary testing types of defects and black-box vs. structural testing. It also discusses testing strategies: coverage criteria, test instrumentation and tools, and developing test plans as well as problem reporting, tracking and analysis.

Equivalent Course(s) None

Course Name	Web Engineering	**Credit Hours**	**3** (3,0)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

This course discusses concepts, principles, techniques, and methods of web engineering. Topics include requirements engineering, modeling and architectures, design and technologies, testing, operation and maintenance, web project management, application development process, usability and performance, and security of Web applications Technologies (particularly on web 2.0), business models and strategies, and societal issues of web 2.0 and semantic web are also discussed.

Equivalent Course(s) None

Course Name	Software Project Management	**Credit Hours**	**3** (3,0)
Course Code	SEC 5xxx	**Prerequisite(s)**	None

Course Description

This course discusses overview of project management, PMI process groups, software project phases, project charter, statement of work and different phases. In planning phase: matching lifecycles to projects, project plans, work breakdown structures, estimation of effort and cost (Expert Judgment, FP and Use Case point methods) are studied. In scheduling: CPM, PERT, Gantt charts and critical chain scheduling are included. In project monitoring and control: status reporting, project metrics, EVM, risk management and change control, project recovery, documentation, cutover/migration, post project reviews and closing are discussed.

Equivalent Course(s) None

Course Name	Advanced Computer Networks	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

This course covers latest themes of research and development such as routing, congestion control, multicasting and resource reservation in the Internet and wireless networks. Mathematical modeling and queuing theory and asynchronous transfer mode (ATM) are also studied.

Equivalent Course(s) None

Course Name	Network Security	**Credit Hours**	**3** (3,0)
Course Code	NSC xxxx	**Prerequisite(s)**	None

Course Description

The network security focuses on principles and practices of network security, security threats and methods to avoid them, authentication applications, electronic mail security, electronic transaction security and digital signatures, IP security, web security, system security, intruders and viruses, firewalls, introduction to cryptographic algorithms, standard security protocols, cyber-crime, policy and regulations.

Equivalent Course(s) None

Course Name	Applied Cryptography	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

This course discusses basic principles and need for various cryptographic services, historical algorithms, theoretical v practical security, symmetric cryptography, public key cryptography, cryptographic services and protocols, digital signatures and key management.

Equivalent Course(s) None

Course Name	Information Security	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

The course includes mathematical definition and properties of information and codes. It includes entropy, channel capacity, Shannon's law, channel characteristics, transition probabilities, information rate, source encoding (data compression) v/s channel encoding (error control coding), uniquely decodable codes, Kraft's inequality criterion, code length and efficiency, different methods of source encoding, parsing, error control coding & its applications. Types of redundancies, information redundancy, fault tolerance techniques, bit error probability, Galois field, capabilities of codes and classification of codes, design of hamming codes and design of cyclic code are also studied.

Equivalent Course(s) None

Course Name	Telecom Policies and Regulations	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

This course covers categorizing the environment at a national, regional and international level. The elements that affect the behavior of telecommunication organizations, the major goals that drive large companies, politics versus technology and international standards structure are studied. The role of the United Nations and of ITU, Pakistani policy, standards and regulatory environment, main elements of regulatory system, satellite policy, spectrum management, inter connect, the three types of interconnection and technical regulation and compliance approval of CPE are studied.

Equivalent Course(s) None

Course Name	Mobile Ad-hoc Networks	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

The course focuses upon introduction to wireless ad hoc networks, including mobile ad hoc networks (MANETs), wireless sensor networks (WSNs) and wireless mesh networks (WMNs), medium access control (MAC) protocols for MANETs routing protocols for MANETs, transport protocols and congestion control for MANETs, and security issue in MANETs.

Equivalent Course(s) None

Course Name	Advanced Data Communications	**Credit Hours**	**3** (3,0)
Course Code	NSC 5xxx	**Prerequisite(s)**	None

Course Description

The course covers RFC's; underlying network technologies; OSI reference model & protocol layering, TCP/IP reference model, Internet addressing (classful and classless), ARP; RARP; BOOTP; DHCP; DNS, IP; ICMP; router functionality, dynamic versus static routing, routing tables, unicast routing (RIP, BGP, OSPF), routing algorithms (link state, distance vector), a multicast routing algorithm (path vector), multicast routing protocols (MOSPF, DVMRP, CBT, PIM, MBONE, IGMP), end-to-end datagram delivery, flow control, private networks, virtual networks, NAT (address translation), next generation IP (IPv6, ICMPv6), intranet, extranet, VPN technology, privacy, IP level security, and IP Sec are also covered.

Equivalent Course(s) None

8.2 BS Social Sciences Program Major Courses

MAJORS

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

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

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 Thought
SS 4249	Pakistan Economy
SS 4251	Sustainable Development

SINDH STUDEIS

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

8.3 Media Sciences Program Major Courses

MAJORS

Film & Television Production

MD 4765	Basic Lighting
MD 4726	Directing-I
MD 4825	Screenwriting
MD 4821	Cinematography
MD 4764	Production Design
MD 4724	Documentary Vision
MD 4868	Production Practices-III

Advertising Strategy & Design

MD 4739	Advertising Design and Concept
MD 4847	Copywriting
MD 4736	Integrated Marketing Communication
MD 4846	New Media Advertising
MD 4837	Media Planning
MD 4782	Interaction Design
MD 4755	Brand Identity Management
MD 4839	Reporting the News
MD 4759	Editing, Subediting, and Design
MD 4757	Feature Writing
MD 4864	Investigative Journalism and Crisis Reporting
MD 4879	Multimedia Journalism
MD 4859	Introduction to Photojournalism
MD 4783	TV Journalism

8.0 Appendix A

8.4 Management Sciences

BBA Optional Courses

BA 3519	Current Affairs
BA 3506	Foreign Languages
BA 3619	Enterprise Management
BA 3614	Business Analysis and Forecasting
BA 4707	Marketing Research*
BA 4701	Islamic Banking and Finance*
BA 4842	Graphic Design for Multimedia*

*Can be taken as an Elective if not offered by Campus as a compulsory course.

9.0 Appendix B-Electives

9.1 Management Sciences

(A) BBA Elective

Management

BA 4116	Supply Chain Management
BA 4117	Salary and Compensation
BA 4711	Change Management
BA 4712	Industrial Relations & Labor Laws
BA 4713	Leadership and Motivation Techniques
BA 4813	Training and Development
BA 4815	Event Management
BA 4826	Talent Management
BA 4812	Recruitment and Selection
BA 4844	Operations Research

Marketing

BA 4707	Marketing Research*
BA 4116	Supply Chain Management
BA 4217	Experiential Marketing
BA 4721	Advertising
BA 4722	Brand Management
BA 4815	Event Management
BA 4816	Industrial Marketing
BA 4824	Sales Management
BA 4842	Graphic Design for Multimedia*
BA 4739	Export Marketing
BA 4125	Emerging Media
BA 4821	Media Planning
BA 4859	Product Innovation and Design

Finance

BA 4218	Financial Research
BA 4719	Investment Banking
BA 4732	Corporate Finance
BA 4734	International Banking
BA 4831	Portfolio and Investment Management
BA 4833	Security Analysis
BA 4834	Treasury and Funds Management
BA 4855	Financial Risk and Analysis
BA 4752	Financial Reporting and Analysis
BA 4756	Econometrics
BA 4115	Derivatives
BA 4724	Financial Modeling
BA 4701	Islamic Banking and Finance*
BA 3614	Business Analysis and Forecasting*

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

(B) MBA Electives

Management

BA 5111	Business Process Re-engineering
BA 5112	Change Management
BA 5113	Industrial Management and Labor Relations
BA 5114	Leadership and Motivation Techniques
BA 5115	Operations Research
BA 5212	Petroleum Business Management and Risk Analysis
BA 5213	Project Management
BA 5214	Supply Chain Management
BA 5218	Organizational Strategy and Effectiveness
BA 5238	Organization Development

Human Resource Management

BA 5113	Industrial Management and Labor Relations
BA 5114	Leadership and Motivation Techniques
BA 5117	Performance Appraisal
BA 5118	Compensation Management
BA 5128	Leadership Readiness
BA 5216	Training and Development
BA 5215	Recruitment and Selection
BA 5239	HR Policy & Development
BA 5165	Job Analysis & Design
BA 5285	Performance Management

Finance

BA 5119	Micro 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 5137	International Banking
BA 5212	Petroleum Business Management and Risk Analysis
BA 5231	Islamic Banking and Finance
BA 5232	Portfolio and Investment Management
BA 5233	Project Evaluation
BA 5234	Security Analysis
BA 5235	Treasury and Funds Management
BA 5184	Financial Product Regulations
BA 5284	Theory and Practice of Lending
BA 5279	Working Capital Management
BA 5187	Business Analysis and Forecasting
BA 5138	Econometrics
BA 5139	Financial Risk Analysis
BA 5229	Financial Modeling
BA 5175	Banking operations
BA 5244	Investment Banking

Marketing

BA 5121	Advertising
BA 5122	Brand Management
BA 5123	Consumer Behavior
BA 5124	Customer Relationship Management
BA 5125	Ethics in Marketing
BA 5126	Export Marketing
BA 5127	Global Marketing
BA 5129	Services Marketing
BA 5221	Marketing Research
BA 5223	Marketing of Financial Services
BA 5224	Media Planning and Management
BA 5225	Personal Selling
BA 5226	Pharmaceutical Marketing
BA 5227	Sales Management

BA 5228	Retail Management
BA 5241	e-Commerce
BA 5169	Technology Management and Innovation
BA 5163	Enterprise Resource Planning
BA 5111	Business Process Re-engineering
BA 5168	Business Intelligence
BA 5268	Data Warehousing and Mining
BA 5217	Industrial Marketing
BA 5286	Media Marketing
BA 5182	Trade Marketing
BA 5264	IGRM
BA 5186	Social Marketing

Supply Chain Management

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 & Control of operations in SCM

(C) MBA Banking and Finance Electives

BA 5xxx	Asset Management
BA 5xxx	Banking Crises and Management
BA 5xxx	Behavioral Finance
BA 5xxx	Capital Markets
BA 5xxx	Commercial Banking
BA 5xxx	Corporate Investment and Banking
BA 5xxx	Corporate Restructuring and Design
BA 5xxx	Financial Intermediation
BA 5xxx	Financial Modeling
BA 5xxx	Financial Planning and Budgeting
BA 5xxx	Marketing of Financial Services
BA 5xxx	Financial Systems
BA 5xxx	Fixed Income Investments
BA 5xxx	Foreign Exchange Operations and Management
BA 5xxx	Banking Insurance
BA 5xxx	Islamic Banking and finance
BA 5xxx	Information system Audit
BA 5xxx	International Trade and Finance
BA 5xxx	Leasing Strategies and Regulations
BA 5xxx	Mergers and Acquisitions in Banking
BA 5xxx	Operations and Derivatives
BA 5xxx	Project Financing
BA 5xxx	Micro and SME Finance
BA 5xxx	Theory and policy of Modern Finance
BA 5xxx	Venture Capital and Private Equity
BA 5xxx	Working Capital Management

(D) Master in Project Management (MPM) Electives

PM 5151	Enterprise Resource Planning
PM 5152	Innovation and Technology Management
PM 5153	Managing Projects
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 5351	Project Risk Management
PM 5352	Project Stakeholders Management
PM 5353	Research Methods for Project Managers

(E) EXECUTIVE MBA Electives

Marketing

BE 473	Advertising
BE 474	Brand Management

BE 436	Retail Management
BE 432	Services Marketing
BE 472	Media Planning and Management
BE 484	Consumer Behavior
BE xxx	Consumer Relationship Management

Finance

BE 481	Corporate Finance
BE 424	International Banking and Finance
BE 482	Islamic Banking and Finance
BE 487	Portfolio and Investment Management
BE 488	Project Evaluation
BE 483	Analysis of Financial Statements
BE xxx	Advance financial Management

Human Resource Management

BE 427	Leadership and Motivational Techniques
BE 471	Compensation Management
BE 486	Training and Development
BE 476	Recruitment and Selection
BE 485	Performance Appraisal

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

(F) MSMS Electives

MS 5101	Change Management
MS 5102	Organizational Development
MS 5103	Managerial Economics
MS 5104	Strategic Marketing Decisions
MS 5105	Econometrics
MS 5112	Strategic Management
MS 5117	Qualitative Tools and Analysis
MS 5203	Global Corporate Strategy
MS 5205	International Business Management
MS 5215	Corporate Finance
MS 5216	Corporate Governance
MS 5225	Leadership and Motivation Techniques
MS 5237	Business Finance and Decision Making
MS 5238	Strategic Human Resource Development
MS 5241	Public Administration and Governance
MS 5249	Advance Marketing Strategy
MS 5301	Seminars in Marketing
MS 5315	Research Writing

(G) PhD Electives

MS 6201	Change Management
MS 6211	Organizational Development
MS 6204	Strategic Marketing Decisions
MS 6202	Econometrics
MS 6105	Qualitative Tools and Analysis
MS 6314	Global Corporate Strategy
MS 6413	International Business Management
MS 6311	Corporate Governance
MS 6111	Business Finance and Decision Making
MS 6112	Strategic Human Resource Development
MS 6215	Seminars in Marketing

9.2 Computing

BSCS Elective

CSC 4701	Advance Internet Architecture
CSC 4801	Advance Programming Techniques
CSC 4702	Advance Telecommunication Technologies
CSC 4802	Android Application Development
CSC 4703	Applied Data Mining
CSC 4803	Auditing Information System
CSC 4707	Bioinformatics
CSC 4804	Business Process Re-engineering
CSC 4705	Control Systems
CSC 4805	Data and Network Security
CSC 4706	Digital Image Processing
CSC 4806	Digital Signal Processing
CSC 4707	DNA Computing
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 4711	Linux Administrator-I
CSC 4811	Linux Administrator-II
CSC 4713	Managing Data-Center Projects
CSC 4812	Mechatronics
CSC 4813	Modeling and Simulation
CSC 4714	Network Security and Encryption
CSC 4715	Oracle Administration-I
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

University Electives

CSC 4501	Business and Technology Ethics
CSC 4601	Foreign Language
CSC 4502	Design and Creativity
CSC 4602	History of Scientific Ideas
CSC 4503	Introduction to Accounting
CSC 4603	Management Principle
CSC 4504	Organizational Behavior
CSC 4604	Research Report
CSC 4505	System Administration

9.0 Appendix B-Electives

9.3 Social Sciences

(A) BSSS Elective

The following is the list and the course descriptions of the 7 Elective courses offered in the BS Social Sciences Program. Out of these 7 Elective courses, the student is only required to complete 2 courses.

SS 1154	Literature
SS 1157	Comparative Religion
SS1163	Development and Politics
SS 1254	World history
SS 1262	Mass Media
SS 2305	Human Geography

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

(B) MSSS Elective

SS 5104	Politics of Geo-Economics
SS 5111	Democratization as a Global Process
SS 5212	NGO Management
SS 5214	Public Policy Management
SS 5305	Political Economy of Pakistan
SS 5306	Sacred and Secular
SS 5311	Environmental Studies
SS 5312	Globalization and Developing Countries
SS 5313	Intellectual Property Rights and Laws
SS 5322	Topics of Political Economy
SS 5226	Issues in Pakistan's Political and Constitutional History
SS 5321	History of Ideas
SS 5228	Corporate Governance
SS 5206	Political Economy in the Global Perspective
SS 5402	Law and Human Rights
SS 5326	Research Philosophy
SS 5223	Financial Time Series
SS 5227	Research Writing
SS 5229	Qualitative tools and Analysis

(C) PhD SS Elective

SS 5104	Politics of Geo-Economics
SS 5111	Democratization as a Global Process
SS 5212	NGO Management
SS 5214	Public Policy Management
SS 5305	Political Economy of Pakistan
SS 5306	Sacred and Secular
SS 5311	Environmental Studies
SS 5312	Globalization and Developing Countries
SS 5313	Intellectual Property Rights and Laws
SS 5228	Corporate Governance
SS 5206	Political Economy in the Global Perspective
SS 5402	Law and Human Rights
SS 6313	Qualitative tools and Analysis

9.0 Appendix B-Electives

9.4 Media Sciences

(A) BSMS Elective

MD 4862	Advanced Studio Project-I
MD 4786	Directing for Actors
MD 4867	Topics in Film & Television
MD 4886	Game Design
MD 4732	Typography
MD 4854	Illustration
MD 4877	The International Newsroom
MD 4882	Audio Podcasting

(B) MS IN MEDIA STUDIES Elective

MD 5xxx	Media, Politics and Governance
MD 5xxx	Theories of Communication Design
MD 5xxx	Visual Cultures of Pakistan
MD 5xxx	National Cinemas
MD 5xxx	Genres in Television
MD 5xxx	Urban Geographies and Visual Cultures
MD 5xxx	Media, Art, and Technology
MD 5xxx	Issues in International Media
MD 5xxx	Theories of Film and Television

9.5 BE-Mechatronic

BE-MECHATRONIC Elective

Engineering Electives

ME 4722	Digital Signal Processing
ME 4723	Simulation and Modeling
ME 4821	Digital Image Processing
ME 4822	Introduction to Bio-Medical Engineering
ME 4721	Artificial Intelligence and Computer Vision

Management Sciences Electives

ME 4823	Engineering Management
ME 4724	Entrepreneurship
ME 4825	Research Methodology
ME 4725	Leadership and Motivation Techniques
ME 4824	Organizational Behavior

9.0 Appendix B-Electives

9.6 BS Biosciences

BS Biosciences Elective

Molecular Biology

BIO 4721	Advance Biochemical Techniques
BIO 4722	Media Transcription
BIO 4822	Nanotechnology
BIO 4725	Advanced Molecular Techniques
BIO 4726	Applied Enzymology
BIO 4723	Virology
BIO 4727	Systems Biology

Biotechnology

BIO 4721	Advance Biochemical Techniques
BIO 4727	Food Biotechnology
BIO 4826	Medical Biotechnology
BIO 4825	Fermentation Biotechnology
BIO 4823	Stem cell Research
BIO4724	Telemedicine
BIO4726	Applied Enzymology

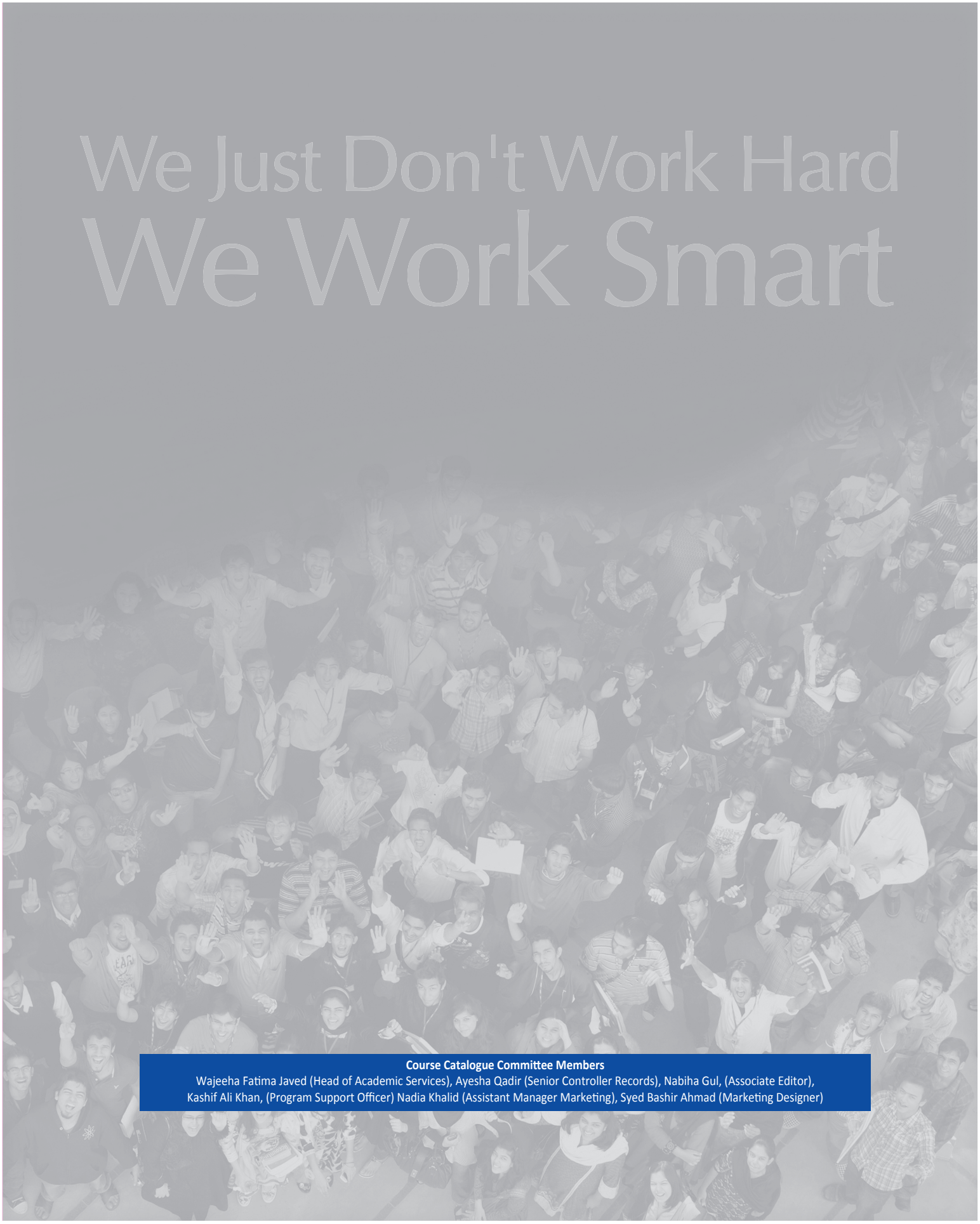
9.0 Appendix B-Electives

9.7 LLB

LLB (University of London) Elective

LA 3021	Company Law
LA 3013	Public International Law
LA 3028	Islamic Law
LA 3024	European Union Law
LA 3007	Evidence

We Just Don't Work Hard
We Work Smart



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