NOTE: It is the student’s responsibility to read the atlas carefully. Not knowing this information is *NOT* an excuse. Failure to meet the prerequisites will result in withdrawal from the class.

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### General Education Mapping 2011 onwards

Any course taken (including major courses) may fulfill these requirements

#### Humanities

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#### Foundations of University Education

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15 courses
BIOLOGICAL SCIENCES

BIOL 100: Introductory Biology  (4 credits)
Only for students who have not studied Biology in higher secondary school or A level or equivalent
Basic concepts of Biology including cell as a building block, its function, reproduction, genetics and inheritance, basic concepts in evolution, ecology and principles of living systems, an overview of modern Biology and its importance in everyday life.

Reserved for freshmen (A, E Sections)

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BIOL 102: Introductory Plant Biology  (4 credits)
Only for students who have studied biology in higher secondary school/A level or equivalent
Structure-function relationship of plants, basic principles of genetics and molecular genetics and Biotechnology and its use in modifying plants. Ecosystems, environmental issues, relevance of flowering plants in human life.

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<th>Section</th>
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<td>S-433</td>
<td>Dr. A. S. Khan</td>
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<td>Dr. M. R. Siddiqi</td>
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<td>LAB</td>
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</table>

BIOL 105: General Zoology  (4 credits)
Only for students who have studied Biology in higher secondary school/A- Level or equivalent
The structure, functions, ecology and evolution of all major animal groups including invertebrates and chordates. The origin of multicellular forms and basic environmental factors affecting them.

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<th>Section</th>
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</table>
BIOL 201: Cell Biology  
Ultra structure of cell, the cell membrane, cytoskeleton, nucleus, mitochondria, chloroplast, ribosome, dictyosome, vacuole, microbodies, and cell surface. Protein synthesis and secretion, chromosomal aberration, mitosis, meiosis and cell cycle regulation will also be discussed.

Reserved for freshmen (B, C Sections)

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<th>Section</th>
<th>Time</th>
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<th>Instructor</th>
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<tr>
<td>A</td>
<td>Monday, Wednesday 02:00-02:50</td>
<td>S-410</td>
<td>Dr. S. Butt</td>
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<td>B</td>
<td>Monday, Wednesday 11:00-11:50</td>
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<td>Dr. A. Maqbool</td>
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<td>C</td>
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<td>S-425</td>
<td>Dr. S. Mehnaz</td>
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<td>LAB Monday 02:00-03:50</td>
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BIOL 202: Diversity in Plants  
Classification of organism, survey of algae, fungi and various groups of plants with emphasis on evolutionary trends.

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<td>Dr. H. Saeed</td>
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BIOL 203: General Genetics  
Concept of gene, Mendelian inheritance, sex-linked inheritance, linkage and crossing over, cytoplasmic inheritance, structure, chemistry, functions and types of DNA and RNA, recombination in viruses, bacteria, fungi and eukaryotes, Operon model, transposable elements, genetic code, variation in chromosomal number and structure, population genetics and problems related to the theoretical course.

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BIOL 205: Biostatistics  
Introduction to statistics including mean, mode, median, standard error and standard deviation, probability and test of significance, correlation, analysis of variance, regression and experimental design.

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BIOL 302: Animal Form and Function  
Comparison of animals with one another. Similarities and differences among the major phyla of animal kingdom. External and internal variations in organs and systems; adaptations that enable them to live successfully in their respective environments.

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<tr>
<td>A</td>
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<td>Dr. W. George</td>
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<td>LAB Friday 10:00-11:50</td>
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</table>
BIOL 313: Biochemistry  (4 credits)
Prerequisite for non-science students: CHEM 110
Understanding of organic structure of living systems including structure, specific roles of carbohydrates, lipids, amino acids, proteins and nucleic acids. General characteristics and properties of enzymes including enzyme kinetics.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-424  Dr. H. Butt
LAB  Tuesday 08:00-09:50  S-329

BIOL 315: Fundamentals of Microbiology  (3 credits)
This course deals with the study of microbial life and its function using pure culture techniques, microscopy, bacterial morphology, anti-microbial resistance and their applications in industry, biotechnology, environmental science and basic research.

Section A  Monday, Wednesday 10:00-10:50  S-410  Dr. S. Mehnaz
LAB  Friday 10:00-11:50  S-321
Section B  Monday, Wednesday 11:00-11:50  S-410  Dr. S. Butt
LAB  Thursday 11:00-12:50  S-321

BIOT 201: Introduction to biotechnology  (3 credits)
Brief history of biotechnology, different aspects of biotechnology and its future development as a cornerstone in human welfare.

Section A  Monday, Wednesday 09:00-09:50  S-424  Dr. M. Irfan
LAB  Tuesday 02:00-03:50  S-329
Section B  Tuesday, Thursday 08:00-08:50  S-410  Dr. M. Mohsin
LAB  Tuesday 11:00-12:50  S-329

BIOT 202: Protoplast, Cell & Tissue Culture  (4 credits)

Section A  Monday, Wednesday, Friday 08:00-08:50  S-416  U. Mubeen
LAB  Wednesday 10:00-11:50  S-329
Section B  Tuesday, Thursday 11:00-12:15  S-424  Dr. H. Butt
LAB  Thursday 02:00-03:50  S-329

BIOT 301: Analytical Techniques in Biology  (3 credits)
Fundamental techniques in Biological Sciences involving vast array of methodologies that a biologist requires to step in any area of research. Various types of Chromatographies, Gel Electrophoresis, Staining procedures, Spectrophotometry and Microtomy.

Section A  Tuesday, Thursday 08:00-08:50  S-417  Dr. M. Irfan
LAB  Thursday 11:00-12:50  S-329
Section B  Monday, Wednesday 12:00-12:50  S-424  Dr. S. Mehnaz
LAB  Friday 02:00-03:50  S-331
**BIOT 302: fundamentals of Enzymology** (4 credits)
Brief history of enzymes, the nature of the enzyme structure, an introduction to the amino acids that make up protein structure and determine function relationships, specificity of enzyme, action, physical organization of enzymes (multienzyme complex), chemical and enzymatic kinetics, enzyme-substrate interaction and the roles that enzymes play as the fountain of life.

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**BIOT 305: Commercialization of Biotechnology Products** (3 credits)
An overview of commercial products and services that biotechnology offers, general aspects related to quality control and criterion for industrially important bioprocesses, their management and impact on present day market. Resource planning and management of bio-inoculants; antimicrobial agents; metabolites, enzymes and therapeutic proteins. Biotechnology an intellectual property right, industry interaction and technology transfer, basics of effective marketing and promotion of biotechnology products and steps involved in commercialization of biotechnological merchandise.

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<th>Section</th>
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<td>S-008</td>
<td>Dr. K. A. Malik</td>
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</table>

**BIOT 307: Molecular Immunology** (3 credits)
Introduction to immunology; the basic processes involved in triggering the immune system and rendering it resistant or susceptible to different infections, study of molecular and biochemical events and influence immune responses, innate (Non-specific) and adaptive (Specific) immunity, immunoglobulins; structure and functions, antigens, antibody formaton and hypersensitivity.

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<td>Dr. N. Anwar</td>
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**BIOT 309: Microbial Biotechnology** (3 credits)
Microbial growth: Mathematical expression of growth, growth curve, measurement of growth and continuous culture, metabolic diversity among microorganisms, metabolism of carbohydrates, lipids, amino acid, purines and pyrimidines in prokaryotes, antimicrobial agents: mode of action and resistance to antibiotics.

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<td>A</td>
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<td>Dr. L. Johnson</td>
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<tr>
<td>LAB</td>
<td>Thursday</td>
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</table>
BIOT 313: Molecular Biology  (4 credits)
Prerequisite: BIOL 201
History, structure and function of DNA, DNA replication in prokaryotes and eukaryotes, Structure, function and types of RNA, transcription, post transcriptional processing, translation, post translational processing in prokaryotes and eukaryotes, Control of gene regulation in prokaryotes and eukaryotes, Mutation and mutagens, DNA damage and repair, recombination and transposable elements.

Section A  Tuesday, Thursday 02:00-03:15  S-416  Dr. A. Maqbool
LAB  Tuesday 11:00-12:50  S-331
Section B  Tuesday, Thursday 09:30-10:45  S-410  Dr. N. Anwar
LAB  Thursday 11:00-12:50  S-341

BIOT 314: Bioenergetics and Metabolism  (3 credits)
Prerequisites: BIOL 313
Intermediate metabolism in biological systems. Pathways of breakdown and synthesis of biological molecules such as carbohydrates, lipids and nitrogenous compounds, thermodynamics of the reactions and the regulatory mechanism of pathways.

Section A  Monday, Wednesday 10:00-10:50  S-424  Dr. A. S. Khan
LAB  Friday 10:00-11:50  S-431

BIOT 407: Aquaculture Technology  (4 credits)
Introduction, sources and quality of water, culture systems (open, semi-closed and closed system). Water flow and pumps, filtration and water treatment, culture methods for seaweed, molluscs, crustacean fishes and higher vertebrates, natural food and artificial feed, harvesting techniques. Policies on leasing.

Section A  Monday, Wednesday, Friday 02:00-02:50  S-416  Dr. W. George
LAB  Monday, Wednesday, Friday 02:00-03:50  S-416

BIOT 412: Medical Biotechnology  (4 credits)
Prerequisite: BIOT 313
Nanobiotechnology, cancer immunotherapy, gene therapy, stem cell biotechnology, knockout mice and gene insects, siRNA, genetically engineered animals, infectious diseases, diagnostics and antibiotic resistance, biomaterials, in regenerative medicine, vaccine technology, novel antimicrobial agents, their design and other future medical biotechnologies.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-417  Dr. L. Johnson
LAB  Monday, Wednesday, Friday 08:00-09:50  S-331

ENVR 301: Introduction to Environmental Sciences  (4 credits)
Prerequisite: Instructor's approval required
Biological and physical environmental problems focusing on geological hazards, water quality, water supply, solid waster, introduced and endangered species, preservation of wetland ecosystem, social and political approaches to environmental managements.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-410  Dr. F. Iqbal
LAB  Monday, Wednesday, Friday 11:00-12:50  S-431
ENVR 402: Solid Waste Management (3 credits)
Sources, classification, generations, onsite handling and storage, collection, transfer
recycling and disposal techniques of municipal solid waste (MSW), land filling, thermal
conservation, composting, concept of integrated solid waste management, existing
practices and their hazards, economic evolution of the systems, hospital waste
management.

Section A: Monday, Wednesday 02:00-02:50  S-425  Dr. H. Saeed
  LAB: Friday 10:00-11:50  S-329

ZOOI 304: Development Biology and Animal Behavior (4 credits)
Prerequisite: BIOL 302
Early stages of development involving the cellular basis of morphogenesis in representative
animals, fundamentals of behavior, innate and learning orientation, feeding and social
behavior, animal communication, physiological basis and evolution.

Section A: Monday, Wednesday, Friday 10:00-10:50  S-417  Dr. S. Butt
  LAB: Friday 08:00-09:50  S-341

ZOOI 305: Integrated Pest Management (4 credits)
Prerequisite: BIOL 302
People, plants and pests, dynamics of pest populations, intensive agriculture, pest
problems, cultural control, host plant resistance, parasitoids and predators, microbial control,
botanical pest control, synthetic organic insecticides biotechnology approaches, bio-rational
and other innovative approaches, IPM achievements, potential and challenges.

Section A: Monday, Wednesday, Friday 12:00-12:50  S-425  Dr. K. Z. Rasi
  LAB: Tuesday 02:00-03:50  S-341
**BUSINESS**

**BUSN 101: Principles of Financial Accounting**  (3 credits)
Understanding of accounting records; entering transactions applying accounting concepts, principles and practices; reading financial statements.

*Reserved for freshmen (A Section)*
*Section A & B Tuesday, Thursday 11:00-12:15  E-025  A. Naveed*

**BUSN 170: Principles of Management**  (3 credits)
Basic management concepts, tools, and techniques for improving organizational efficiency and effectiveness are introduced. Management process consisting of planning, organizing, staffing, directing, coordination, reporting and budgeting (PODSCORB) are covered.

*Reserved for freshmen (A Section)*
*Section A & B Monday, Wednesday 09:30-10:45  E-025  Dr. A. Chughtai*

**BUSN 201: Intermediate Accounting**  (3 credits)
Prerequisite: BUSN 101
Develop a deeper understanding of the concepts, standards and principles underlying various accounting practice and techniques in order to develop higher level accounting competencies; it also looks at reporting requirements, group accounts, and corporate financing.

*Section A  Monday, Wednesday 08:00-09:15  E-103  B. H. Awan (ACA)*
*Section B  Monday, Wednesday 09:30-10:45  E-103  B. H. Awan (ACA)*

**BUSN 230: Entrepreneurship**  (3 credits)
Prerequisite: BUSN 170
This course develops an understanding of entrepreneurship and entrepreneurial skills for successful formation and growth of companies, including topics like team formation, concepts generation, design thinking, marketing mix, etc.

*Section A & B Tuesday, Thursday 09:30-10:45  E-025  M. Amin*

**BUSN 280: Marketing & Selling Skills**  (3 credits)
Prerequisite: BUSN 170
Basic tools and skills to develop an effective marketing orientation for developing and marketing products and services. Identifying problems and solutions and application of concepts is integral to the course. There is also a strong emphasis on the development of selling skills.

*Section A  Tuesday, Thursday 02:00-03:15  E-105  I. Nasir*
*Section B  Tuesday, Thursday 03:30-04:45  E-105  I. Nasir*
BUSN 301: Financial Reporting
(Accounting & Finance specialization only)
(3 credits)
Prerequisite: BUSN 201
Prepares students to generate accounting information needed by different stakeholders, and includes leasing, stakeholder’s equity, earning per share, and financial instruments such as government issues.

Section A Monday, Wednesday 11:00-12:15 E-103 M.B.Ahmed (FCA)

BUSN 321: Financial Management I
(3 credits)
Prerequisite: BUSN 201
Introductory course focuses on tools, techniques and concepts of Finance, such as financial analysis, financing options, capital budgeting, risk analysis, and the role financial markets and intermediaries.

Section A Monday, Wednesday 08:00-09:15 E-104 Dr. B. A. Khan
Section B Monday, Wednesday 09:30-10:45 E-104 Dr. B. A. Khan

BUSN 360: Operations & Project Management I
(3 credits)
Prerequisite: BUSN 170
This course focuses on evaluation and implementation of projects with in organizations, as well as managing operational structures and systems to achieve organizational goals and objectives.

Section A Tuesday, Thursday 09:30-10:45 E-104 M. Saleem
Section B Tuesday, Thursday 11:00-12:15 E-104 M. Saleem

BUSN 364: Production, Planning & Control
(Operation Management specialization only)
(3 credits)
This course introduces critical operational processes from manufacturing. Scheduling and factory loading play a key role in meeting production targets, requiring constant supervision and monitoring.

Section A Tuesday, Thursday 02:00-03:15 E-103 M. Saleem

BUSN 380: Advanced Marketing & Sales
(Marketing & Sales specialization only)
(3 credits)
Prerequisite: BUSN280
This course builds upon the tools, concepts and techniques of the introductory marketing course, and also introduces more advanced topics in international marketing, and marketing strategy.

Section A Tuesday, Thursday 03:30-04:45 E-103 S. Ahmed

BUSN 404: Taxation
(Accounting & Finance specialization only)
(3 credits)
Prerequisite: BUSN 301
Focuses on analyzing the law pertaining to taxation and tax structure. The emphasis is on corporate taxation and related issues.

Section A Monday, Wednesday 11:00-12:15 E-104 B. H. Awan (ACA)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
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<tbody>
<tr>
<td>BUSN 410</td>
<td>Accounting Information Systems</td>
<td>3</td>
<td>BUSN 301</td>
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<tr>
<td>BUSN 460</td>
<td>Business Law</td>
<td>3</td>
<td>BUSN 301</td>
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<tr>
<td>BUSN 461</td>
<td>New Product Development</td>
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<td>BUSN 361</td>
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<td>BUSN 464</td>
<td>Total Quality Management</td>
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<td>BUSN 480</td>
<td>Marketing Research</td>
<td>3</td>
<td>BUSN 380</td>
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<td>BUSN 484</td>
<td>Brand Management</td>
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**BUSN 410: Accounting Information Systems**
(Accounting & Finance specialization only)
Prerequisite: BUSN 301
This course looks at the complementarity and application of information technology to accounting, including the development of systems and software for the profession.

**Section A**  
Tuesday, Thursday 08:00-09:15  
E-103  
M.B.Ahmed (FCA)

**BUSN 460: Business Law**
For Senior Year Business Students Only
Introductory course on laws pertaining to the functioning of business with strong emphasis on theory and practice in Pakistan. Includes, some elements of tax law and labor law.

**Section A**  
Tuesday, Thursday 02:00-03:15  
E-104  
S. S. Hamid
**Section B**  
Tuesday, Thursday 03:30-04:45  
E-104  
S. S. Hamid

**BUSN 461: New Product Development**
(Operation Management specialization only)
Prerequisite: BUSN 361
This course covers the range of issues associated new productions: from conception to marketing, with a strong focus on satisfying customer needs. The importance of technological and management challenges is also addressed.

**Section A**  
Tuesday, Thursday 09:30-10:45  
E-103  
Dr. F. A. Malik

**BUSN 464: Total Quality Management**
(Operation Management specialization only)
Prerequisite: BUSN 361
This is a critical course for operations specialists. It examines the philosophy of TQM focusing on continuous improvements for customer satisfaction. Key principles and concepts will be discussed with many real world examples.

**Section A**  
Tuesday, Thursday 11:00-12:15  
E-103  
Dr. F. A. Malik

**BUSN 480: Marketing Research**
(Marketing & Sales specialization only)
Prerequisite: BUSN 380
This course introduces students to qualitative and quantitative research methods used in marketing. There is a strong emphasis on the application of technical and conceptual tools to real world situations through projects and case studies.

**Section A**  
Wednesday 02:00-03:15 & 03:30-04:45  
E-104  
I. Nasir

**BUSN 484: Brand Management**
(Marketing & Sales specialization only)
Prerequisite: BUSN 380
This is a specialization course looking at creating and sustaining brands. The course uses all the tools and concepts of marketing and applies them to analyzing the evolution of brands. There is a very strong “hands on” focus to the course.

**Section A**  
Tuesday, Thursday 11:00-12:15  
E-105  
S. Ahmed
CHEMISTRY

**CHEM 100: Introduction to Chemistry**  (3+1 credits)
Open for those students who have not taken chemistry at Intermediate or A. Level
Chemistry as a basic science, matter and states of matter, elements and periodicity, atomic structure, concept of mole and elementary stoichiometric calculations, acids and basis, elementary redox reactions and electrochemical cells, organic functional groups and major classes of organic compounds and their importance, and environmental aspects of chemistry.

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<td>A</td>
<td>Tuesday, Thursday 08:00-09:15</td>
<td>S-116</td>
<td>Dr. S. Jelani</td>
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<td>Lab</td>
<td>Thursday 02:00-03:50</td>
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<td>B</td>
<td>Monday, Wednesday, Friday 08:00-08:50</td>
<td>S-216</td>
<td>S. Azeem</td>
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<tr>
<td>Lab</td>
<td>Tuesday 09:30-10:45</td>
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<td>C</td>
<td>Tuesday, Thursday 11:00-12:15</td>
<td>S-116</td>
<td>Dr. M. Al Rashida</td>
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<td>Lab</td>
<td>Thursday 12:30-01:45</td>
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<td>D</td>
<td>Monday, Wednesday Friday 11:00-11:50</td>
<td>S-216</td>
<td>Dr. A. M. Khan</td>
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**Reserved for freshmen (E, F Sections)**

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<td>E</td>
<td>Tuesday, Thursday 11:00-12:15</td>
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<td>Dr. M. Abbas</td>
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<td>F</td>
<td>Monday, Wednesday, Friday 03:00-03:50</td>
<td>S-216</td>
<td>Dr. I. Aujla</td>
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<td>Lab</td>
<td>Tuesday 11:00-12:15</td>
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**CHEM 150: Introduction to Inorganic Chemistry**  (3+1 credits)
Prerequisite: F.Sc. or A-Level Chemistry
Various theories of bonding including valence bond theory, molecular orbital theory, Werner’s theory, crystal/ligand field theory, thee center bonds, bonding theory of metal and intermetallic compounds, bonding in electron deficient compounds, hydrogen bonding, shapes of molecules (VSEPR model).

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<td>A</td>
<td>Monday, Wednesday, Friday 02:00-02:50</td>
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<td>Dr. N. Asghar</td>
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**Reserved for freshmen (C Section)**

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<td>Dr. M. Al Rashida</td>
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<td>Lab</td>
<td>Thursday 09:30-10:45</td>
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**CHEM 160: Introduction to Organic and Biochemistry**  (3+1 credits)
Prerequisite: F.Sc. or A-Level Chemistry
Bonding and structure of organic compounds, study of hydrocarbons including additions to multiple bonds and substitution reactions of benzene, petroleum products, chemistry of food and its components including carbohydrates, proteins, lipids, nutrition and caloric intake.

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<td>Dr. M. Abbas</td>
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**Reserved for freshmen (B Section)**

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<td>B</td>
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<td>S-215</td>
<td>Dr. S. Jelani</td>
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<tr>
<td>Lab</td>
<td>Tuesday 11:00-12:15</td>
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</table>
CHEM 170: Introductory Physical Chemistry  (3+1 credits)
Prerequisite: F.Sc. or A-Level Chemistry

Section A  Monday, Wednesday, Friday 12:00-12:50  S-116  Dr. A. Y. Khan
Lab  Thursday 12:30-01:45  S-148
Section B  Tuesday, Thursday 08:00-09:15  S-216  Dr. A. M. Khan
Lab  Wednesday 02:00-03:50  S-148

CHEM 250: Chemistry of Main Groups Elements  (3+1 credits)
Prerequisite: F.Sc. or A-Level Chemistry
Structural characteristics, reactivities, simple compounds, coordination compounds, metal crowns, organometallic compounds of s and p block elements, noble gases and their compounds, interhalogens, pseudohalogenes and polyhalides. Anomalies in periodicity, the use of d-orbitals by non-metals, reactivity and d-orbital participation, Pπ-dπ bonds, multicenter bonding in electron deficient molecules, three-centre-two electron and three center fur electron bonds.

Section A  Tuesday, Thursday 12:30-01:45  S-216  S. Azeem
Lab  Wednesday 10:00-11:50  S-148

CHEM 260: Principles of Organic Chemistry  (3+1 credits)
Prerequisite: Intermediate or A Level Chemistry
Basic concepts of organic chemistry like resonance, inductive effect, isomerism including stereochemistry, geometric isomerism, acids and bases, their relative strength and factors affecting acidity and basicity, significance of pH, pka and pKb, chemistry of alcohols, phenols, thiols and ethers and their industrial applications.

Section A  Monday, Wednesday, Friday 02:00-02:50  S-116  Dr. S. Jelani
Lab  Thursday 11:00-12:15  S-135

CHEM 261: Organic Chemistry I  (3+1 credits)
Prerequisite: CHEM 160 or CHEM 260
Reaction mechanisms including free radical, electrophillic and nucleophillic substitution addition and elimination reaction; chemistry of alkyl halides, amines and organometallic compounds, catalytic reactions and their importance.

Section A  Tuesday, Thursday 09:30-10:45  S-215  Dr. D. Ahmed
Lab  Wednesday 02:00-03:50  S-135
CHEM 270: Thermodynamics and Equilibrium  
(3+1 credits)
Prerequisite: CHEM 150 or CHEM 170
Chemical Thermodynamics: Second and Third laws of thermodynamics, concepts of entropy, Helmholtz and Gibbs Energy functions, Spontaneity and equilibrium, chemical potential system of variable composition, interrelationship of thermodynamic functions. Pleaser equilibrium: Clapeyron equation, solid-liquid, liquid-gas, solid gas equilibria, Please diagrams, Phase rule. Solutions: Ideal and non-ideal solutions, Raoults law, Colligative properties, Osmotic pressure, depression of freezing point elevation of boiling point

Section A  Monday, Wednesday, Friday 11:00-11:50  S-116  Dr. A. Y. Khan
Lab  Tuesday 08:00-09:15  S-148

CHEM 311: Fundamental Analytical Chemistry  
(3+1 credits)
Open to Junior and Senior Year Students
Gravimetric and volumetric methods of analysis including buffers, complexometric titrations, redox titration, non-aqueous titrations, Karl-Fischer titrations, UV / VIS spectroscopic analysis, IR Spectroscopy, treatment of measurement errors; usage and handling of standards, sampling precision, accuracy, signal-to-noise ratio, limits of detection and quantization, statistical evaluation of data; quality control and quality assurance.

Section A  Tuesday, Thursday 12:30-01:45  S-215  Dr. N. Asghar
Lab  Wednesday 10:00-11:50  S-138

CHEM 320: Industrial Chemistry  
(3+1 credits)
Open to Junior and Senior Year Students
Efficiency and yield, common chemical industries with special reference to Pakistan including cement, surfactants, paper and pulp, glass and ceramics, leathers, metallurgies of important metals, liquids crystals and inorganic polymers. Environmental industrial impacts and industrial environmental management.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-216  Dr. M. Abbas
Lab  Thursday 02:00-03:15  S-148

CHEM 330: Biochemistry  
(3+1 credits)
Prerequisite: CHEM 160 or equivalent
Detailed structure and physiological function of primary metabolites including carbohydrates, proteins, lipids and nucleic acids, nature and role of enzymes and coenzymes, metallo-proteins and enzymes, mechanism of enzyme action, kinetics and regulation of enzymes and their industrial applications.

Section A  Tuesday, Thursday 02:00-03:15  S-215  Dr. A. Iqbal
Lab  Friday 02:00-03:50  S-135
CHEM 350: Coordination Chemistry (3+1 credits)
Prerequisite: CHEM 150 or CHEM 250
Historical background of coordination compounds, nomenclature and stability, geometry of complexes having coordination numbers 2 to 9, explanation of optical and magnetic properties of coordination compounds, Jahn-Teller effect, isomerism and stereochemistry, stabilities of coordination compounds, characterization and applications of coordination compounds, metal based drugs, metal carbonyls and nitrosyls, organic reagents used in inorganic analysis.

Section A  Tuesday, Thursday 09:30-10:45  S-116  Dr. C. Munir  
Lab  Monday 10:00-11:50  S-138

CHEM 361: Organic Chemistry II (3+1 credits)
Prerequisite: CHEM 260 or 261
Study of carbonyl compounds including aldehydes, ketones, carboxylic acids, esters, amides, enolates and conjugate additions. Chemistry of vegetable oils and waxes.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-215  Dr. A. Iqbal  
Lab  Friday 08:00-09:50  S-135

CHEM 370: Kinetics & Mechanism (3+1 credits)
Prerequisite: CHEM 170 or 270
Chemical Kinetics: first and second order reactions, reaction mechanism, unimolecular reactions, complex and chain reactions, theories of reactions rates fast reactions reaction in Solutions. Electrochemistry: electrode potential, ion selective electrodes, electrochemical cells, measurement of electrode potential, electrical work, temperature dependence of cell potential, electrolysis, polarography, cyclic voltammetry, impedance. Surface chemistry: adsorption, chemisorptions heterogeneous catalysis.

Section A  Monday, Wednesday, Friday 10:00-10:50  S-216  Dr. A. M. Khan  
Lab  Thursday 12:30-01:45  S-135

CHEM 413: Instrumental Methods of Analysis (3+1 credits)
Prerequisite: CHEM 311 or CHEM 370
Atomic spectroscopic techniques: atomic absorption and emission techniques. Thermal analysis: TGA, DTA, DSC. Chromatography: introduction to separation techniques, solvent extraction, chromatography (Paper, TLC, HPLC, GC, GPC) and electrophoresis. Hyphenated techniques: gas chromatography-mass spectrometry (GC-MS), liquid chromatography-mass spectrometry (LC-MS), MS-MS, LC-FTIR; inductively coupled plasmas-mass spectrometry, matrix-assisted laser desorption / ionization-time of flight (MALDI-TOF) mass spectrometry, tanden mass spectrometry, ion trap mass spectrometry, other topics of interest. Nuclear techniques: Neutron activation analysis, nuclear quadrupole resonance, isotope dilution methods, isotope ratio mass spectrometry, mossbuer spectroscopy, radio-immuno assay, x-ray techniques.

Section A  Tuesday, Thursday 09:30-10:45  S-216  Dr. S. Iqbal  
Lab  Friday 02:00-03:50  S-148
CHEM 421: Pharmaceutical Chemistry  (3+1 credits)
Prerequisites: CHEM 260 or CHEM 261 or CHEM 330
Types and physiochemical properties of drugs and pharmacologically active products, structure and activity relationship, drug design, metal ions as information carriers, chemistry and mode of action of some common drugs.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-116  Dr. G. Johnson
Lab  Wednesday 10:00-11:50  S-135

CHEM 430: Chemical Principles in Biology  (3+1 credits)
Prerequisite: CHEM 330 or equivalent
Interconnections between chemistry, biology and underlying chemical logic of biomolecules and metabolic pathways, genes and genomics.

Section A  Tuesday, Thursday 02:00-03:15  S-116  Dr. G. Johnson
Lab  Thursday 11:00-12:15  S-148

CHEM 440: Environmental Chemistry  (3+1 credits)
Prerequisite: Open for Juniors And Seniors
Introduction to environment, air pollution, water pollution, noise pollution, solid waste pollution and environment, ecotoxicology, hazardous waste and its management.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-215  Dr. I. Aujla
Lab  Thursday 11:00-12:15  S-138

CHEM 442: Green Chemistry  (3+1 credits)
Prerequisite: Open for juniors and seniors
Green Chemistry, principles, evaluating materials, feed stocks and starting materials, types of reactions in chemical transformation, evaluation of methods to design safer chemicals, green chemistry and future trends.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-116  Dr. S. Jelani
Lab  Tuesday 09:30-10:45  S-135

CHEM 450: Advanced Inorganic Chemistry  (3+1 credits)
Prerequisite: CHEM 250 or CHEM 351
Non-aqueous solvents, chemistry of carbonyl and nitrosyl compounds, lanthanides and actinides.

Section A  Monday, Wednesday, Friday 02:00-02:50  S-216  Dr. M. Al Rashida
Lab  Tuesday 12:30-01:45  S-138

CHEM 454: Inorganic Electronic Spectroscopy  (3 credits)
Prerequisite: CHEM 250 or CHEM 350
Electronic spectroscopy of coordination compounds, Russell-Sanders coupling scheme, derivation of term symbols of for p1-p6 and d1-d10 systems, pigeon holes diagram, magnetism, magnetic susceptibility, magnetic moments, Faraday’s and Guy’s methods orbital contribution to magnetic moment, effect of temperature on magnetic properties of complexes.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-116  Dr. C. Munir
**CHEM 455: Inorganic Reactions Mechanism** *(3+1 credits)*
Prerequisite: CHEM 250 or CHEM 350
Classification of reaction mechanisms, rate laws, steady state approximation, inert and labile complexes, substitution reactions, octahedral complexes, acid hydrolysis, acid catalyzed reaction, base hydrolysis, attack on ligands, steric effects of ligands, square planer complexes, nucleophilic reactivity, trans-effect, cis-effect, effect of leaving group, mechanism of substitution, and racemization reactions, reactions in non-aqueous inorganic solvents, classification of solvents, types of reactions in solvents, effect of physical and chemical properties of solvents, detailed study of liquid NH3, H2SO4, HF, BrF3 and supercritical fluid (water and CO2), reactions in molten salts and ionic liquids.

| Section A | Monday, Wednesday, Friday 10:00-10:50 | S-116 | Dr. M. S. Iqbal |
| Lab | Monday 02:00-03:50 | S-138 |

**CHEM 464: Advanced Organic Chemistry** *(3+1 credits)*
Prerequisite: CHEM 260 or CHEM 261 or CHEM 360
Study of reactive intermediates, pericyclic reactions, rearrangement reactions and oxidation-reduction reactions, retro-synthesis and disconnections approach, design and synthesis of organic compounds of industrial importance.

| Section A | Tuesday, Thursday 12:30-01:45 | S-116 | Dr. D. Ahmed |
| Lab | Friday 10:00-11:45 | S-135 |

**CHEM 473: Surface and Solid State Chemistry** *(3+1 credits)*
Prerequisite: CHEM 270 or CHEM 370
Crystal structures, unit cells and Miller indices, X-ray diffraction, adsorption and desorption, Langmuir and BET isotherms, surface reactions and reactivity ultrathin films and interfaces, techniques of the study of surfaces.

| Section A | Tuesday, Thursday 11:00-12:15 | S-216 | Dr. A. M. Khan |
| Lab | Monday 02:00-03:50 | S-148 |

**ENVR 413: Environmental Toxicology** *(3 credits)*
Prerequisite: CHEM 311 or CHEM 370
Introduction to the principles of environmental toxicology, toxicants, sources, chemistry, cycling, transport, impacts and fate in aquatic and terrestrial environments, effects on biogeochemical cycles and uptake by organisms, interaction of drugs, chemicals and pollutants with biological systems.

| Section A | Tuesday, Thursday 08:00-09:15 | S-215 | Dr. I. Aujla |
| Lab | Friday 10:00-11:50 | S-138 |
COMP 102: Programming I  
(3 credits, (2+2)
Basic skills of problem solving and programming, problem analysis, algorithm design, program development and testing, structured design techniques, object-oriented thought process and basic tool.

Reserved for freshmen (B, C, D Sections)
Section A Monday, Wednesday 08:00-09:50 S-218 TBD
Section B Monday, Wednesday 08:00-09:50 S-219 S. Anwar
Section C Monday, Wednesday 10:00-11:50 S-218 S. Zehra
Section D Monday, Wednesday 10:00-11:50 S-219 A. H. Zahid

COMP 111: Programming II  
(3 credits) (2+2)
Prerequisite: COMP 102
Classes, Inheritance, class hierarchy, polymorphism, basic data structures, analysis of algorithms, basic searching and sorting techniques.

Section A Monday, Wednesday 08:00-09:50 S-319 TBD
Section B Monday, Wednesday 12:00-01:50 S-219 Dr. I. H. Shah

COMP 113: Discrete Mathematics  
(3 credits)
Prerequisites: MATH 101 or A-Level or Intermediate Mathematics
Foundations of discrete mathematics as they apply to Computer Science, understanding and appreciation of the finite nature inherent in most Computer Science problems and structures through study of Logic, Set Theory, Functions, Recursive relations, combinatorial reasoning, iterative procedures, predicate, calculus, tree and graph structures.

Reserved for freshmen (A, B Sections)
Section A Monday, Wednesday, Friday 12:00-12:50 S-316 Z. A. Shah
Section B Tuesday, Thursday 02:00-03:15 S-316 Dr. S. Abbasi
Section C Monday, Wednesday, Friday 02:00-02:50 S-316 TBD
Section D Monday, Wednesday, Friday 03:00-03:50 S-316 TBD

COMP 200: Data Structures and Algorithms  
(3 credits (2+2)
Prerequisite: COMP 111, COMP 113
More sophisticated data structures and algorithms required to manipulate them, selection or construction of suitable data structures for a wide range of problems, analysis of the efficiency of chosen solutions, standard problems such as sorting and searching time and space complexity of computer programs,

Section A Monday, Wednesday 12:00-01:50 S-218 Dr. N. Ashraf
Section B Monday, Wednesday 02:00-03:50 S-218 Dr. S. Abbasi

COMP 205: Introduction to Information Technology  
(3 credits)
Prerequisites: COMP 102

Section A Tuesday, Thursday 11:00-12:15 S-319 Dr. A. Aziz
**COMP 206: Hardware Logic and Design** (3 credits)
Prerequisite: Math 101 or A-Level or Intermediate Mathematic
Fundamentals of hardware system design, beginning at the digital logic level with bits, binary representations and basic binary operations, combinational and sequential logic circuits, basic functional units, higher level computing functions, hardware description languages, basic elements of some real life architectures.

Section A  Tuesday, Thursday 08:00-09:15  S-316  Z. A. Shah
Section B  Tuesday, Thursday 11:00-12:15  S-210  A. H. Zahid

**COMP 213: Database Systems** (3 credits (2+2))
Prerequisite: COMP 200
Databases, various data models, data storage and retrieval techniques, and database design techniques, relational data model, the relational algebra as a basis for queries in SQL and normalization techniques to optimize database structure.

Section A  Monday, Wednesday 10:00-11:50  S-319  TBD

**COMP 220: Software Engineering** (3 credits)
Prerequisite: COMP 111
Basic of software Engineering, the terminologies involved and various principles, methods, tool, and techniques used to produce quality software, two fundamental approaches of software engineering: structural and object-oriented. Various techniques used for requirements engineering, systems / software design, implementation, and testing fundamental issues of software measurement and project management.

Section A  Monday, Wednesday Friday 08:00-08:50  S-316  TBD
Section B  Monday, Wednesday Friday 08:00-08:50  S-317  TBD

**COMP 301: Operating Systems** (3 credits)
Prerequisite: COMP 200, COMP 206
Construction and working of operating systems, understanding management and sharing of the computer resources communications and concurrency, developing effective and efficient applications, problems and issues regarding multi-user, multi-tasking, and distributed system.

Section A  Tuesday, Thursday 09:30-10:45  S-317  Dr. I H. Shah
Section B  Tuesday, Thursday 11:00-12:15  S-317  TBD

**COMP 303: Design and Analysis of Algorithms** (3 credits)
Prerequisite: COMP 200
Basic notions of the design of algorithms and the underlying data structures, measures of complexity, structure, complexity and efficiency of algorithms, techniques of algorithm.

Section A  Monday, Wednesday Friday 12:00-12:50  S-317  Dr. S. Abbasi
COMP 311: Computer Networks  (3 credits)
Prerequisite: COMP 301
Engineering concepts underlying computer communications, including analogue and digital transmission, circuit switching and packet switching, logic network structure and operations including network layers, network models (OSI, TCP / IP) and protocol standards, understanding of modern network concepts.

Section A  Tuesday, Thursday 09:30-10:45  S-316  TBD
Section B  Tuesday, Thursday 11:00-12:15  S-316  S. Zehra

COMP 350: Object-Oriented Analysis and Design.  (3 credits)
Prerequisite: COMP 220
Exploration of the rich object-oriented modeling provided by Unified Modeling Language (UML), adaptation to changing requirements with iterative techniques and component-based design, design solutions optimized for modern object-oriented languages and platforms, application of proven design patterns, design heuristics, anti-patterns and refactoring techniques to refine analysis and design models, construction of unit and system tests to verify implemented designs.

Section A  Tuesday, Thursday 09:30-10:45  S-210  S. Mehmood

COMP 400A: Senior Project  (3 credits)
Prerequisite: COMP 213, COMP 220, Senior standing
Requires students to research, conceive, plan and develop a real and substantial project related to computer science over the course of two semesters. It provides an opportunity to students to realize their acquired professional competence in the form of a demonstrable software product or other tangible result. The students must also make an oral and written project presentations.

Section A  Tuesday, Thursday 12:30-01:45  S-317  Dr. A. Aziz

COMP 400B: Senior Project  (3 credits)
Prerequisite: COMP 213, COMP 220, COMP 400A, Senior standing
Requires students to research, conceive, plan and develop a real and substantial project related to computer science over the course of two semesters. It provides an opportunity to students to realize their acquired professional competence in the form of a demonstrable software product or other tangible result. The students must also make an oral and written project presentations.

Section A  Tuesday, Thursday 08:00-09:15  S-210  Dr. A. Aziz

COMP 401: Ethics for Computing Professionals  (1 credits)
Prerequisite: COMP 220
Introduction to ethical questions faced by designers developers, managers and users of information systems including intellectual property rights, privacy concerns, professional responsibilities and deliberate destructive use of IT recourses.

Section A  Monday 01:00-01:50  S-316  A. H. Zahid
COMP 463: Mobile Application Development  (3 credits (2+2)
Prerequisite: COMP 301
Programming of applications for mobile phones and mobile devices such as tablets in a
popular mobile device platform and programming language.

Section A  Monday, Wednesday 02:00-03:50  S-219  TBD

CSCS 100: Introduction to Computing  (3 credits)
Introduction to computing environments, general applications software, computing
hardware, operating systems, desktop publishing, internet, software applications and tools
and computer usage concepts, introductions to software engineering and information
technology within the broader domain of computing.

Reserved for freshmen (C, D, G, H, J Sections)
Section A  Tuesday, Thursday 08:00-09:15  S-218  TBD
Section B  Tuesday, Thursday 08:00-09:15  S-219  TBD
Section C  Tuesday, Thursday 08:00-09:15  S-319  S. Zehra
Section D  Tuesday, Thursday 09:30-10:45  S-218  TBD
Section E  Tuesday, Thursday 09:30-10:45  S-219  TBD
Section F  Tuesday, Thursday 09:30-10:45  S-319  TBD
Section G  Tuesday, Thursday 11:00-12:15  S-218  Dr. N. Ashraf
Section H  Tuesday, Thursday 11:00-12:15  S-219  S. Anwar
Section J  Tuesday, Thursday 02:00-03:15  S-319  Dr. A. Aziz
Section K  Monday, Wednesday, Friday 02:00-02:50  S-319  Dr. A. Aziz
Section L  Monday, Wednesday, Friday 03:00-03:50  S-319  TBD

CSCS 302: Theory of Automata  (3 credits)
Prerequisite: COMP 200
Mathematical models of computation, definition and properties of formal languages and
grammars, finite automata, regular languages and regular expressions pushdown automata
and context free languages, pumping lemmas and normal forms, Turning machines,
Church’s Thesis, Halting Problem and undesirability, overview of the theory of computational
complexity.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-317  A. H. Zahid

CSCS 323: Computer Organization with Assembly Language  (3 credits)
Prerequisite: COMP 111, COMP 206
Introduction to computer systems and usage of assembly language for optimization and
control, low-level logic employed for problem solving while using assembly language as a
tool, writing moderately complex assembly language subroutines and interfacing them to
any high level language.

Section A  Tuesday, Thursday 02:00-03:15  S-219  Dr. I. H. Shah

CSCS 350: Introduction to Artificial Intelligence  (3 credits)
Prerequisite: COMP 200
Computational tools and techniques which mimic the human decision-making process and
capability.

Section A  Tuesday, Thursday 11:00-12:15  S-120  Z. A. Shah
**CSCS 457: Computer Vision**  (3 credits)
Prerequisite: COMP 200
Introduction to theory and applications of computer vision and current problems, techniques and applications, computer vision systems, interaction of different components in a complete systems, writing programs to solve computer vision problems, through the use of several programming assignments and examples.

*Section A*  Monday, Wednesday, Friday 08:00-08:50   S-120  Dr. N. Ashraf

**CSIT 312: System and Network Administration**  (3 credits)
Prerequisite: COMP 311
Tools and techniques used in the administration and management of computing, computing systems and networks, file systems and directory permission structures, user account administration, client administration, remote access and remote administration, run levels and services, network services configuration, defining security, firewalling, defending against malicious users.

*Section A*  Tuesday, Thursday 08:00-09:15   S-120  TBD

**CSIT 313: Database Administration**  (3 credits)
Prerequisite: COMP 213
Installation and configuration of database systems, database backup and maintenance, performance analysis, monitoring and tuning, access control and user management, management of competing applications.

*Section A*  Monday, Wednesday, Friday 11:00-11:50   S-120  S. Anwar

**CSIT 400 / CSSE 405: Human Computer Interaction**  (3 credits)
Prerequisite: COMP 220
Identical with CSSE 405—Students may earn credit in only one of the two courses. Exploration of the differences in information processing by humans and machines using insights from Psychology and cognitive science, design of human-computer interfaces and systems involving both human and computer components.

*Section A*  Monday, Wednesday, Friday 12:00-12:50   S-210  TBD

**CSSE 313: Software Requirements Engineering**  (3 credits)
Prerequisite: COMP 220
Role of requirements engineering within the software life cycle, comparison, contrast and evaluation of structured, object-oriented, data-oriented and formal approaches to requirements analysis, gathering necessary requirements from a customer to develop specifications and software.

*Section A*  Monday, Wednesday, Friday 08:00-08:50   S-210  S. Mahmood

**CSSE 400: Software Projects Management**  (3 credits)
Prerequisite: CSSE 351
Planning and managing software development projects successfully maximizing the return form each stage.

*Section A*  Monday, Wednesday Friday 10:00-10:50   S-316  S. Mahmood
ECONOMICS

ECON 100: Basic Economics (3 credits)
Economics Juniors and Seniors are not allowed to register for this course. Students who have not studied Economics at Intermediate should register for this course before ECON 101, 102; students who have passed ECON 101 and/or ECON 102 are not allowed to register for this course. This course is counted towards General Education credits. Basic concepts of Economics such as demand, supply, allocation of resources, opportunity cost, national income, inflation, unemployment, international trade and development economics.

Reserved for freshmen (B, E, F Sections)

Section A  Monday, Wednesday Friday 09:00-09:50  E-214  Dr. M. Akbar
Section B  Monday, Wednesday, Friday 11:00-11:50  E-203  A. Anwar
Section C  Monday, Wednesday, Friday 12:00-12:50  E-214  A. Batool
Section D  Monday, Wednesday Friday 10:00-10:50  E-213  Dr. R. Aslam
Section E  Monday, Wednesday, Friday 09:00-09:50  E-221  Dr. R. Ahmed
Section F  Monday, Wednesday, Friday 02:00-02:50  E-203  S. A. Abbas
Section G  Tuesday, Thursday 09:30-10:45  E-214  TBD
Section H  Monday, Wednesday, Friday 02:00-02:50  E-214  TBD

ECON 101: Microeconomics I (3 credits)
Students cannot register for this course with or before ECON 100. Basic methods and subject matter of microeconomics, consumer behavior theory, producer theory, cost theory, output and price strategies under perfect and imperfect completion market structure.

Section A  Tuesday, Thursday 09:30-10:45  E-213  Dr. R. Martin
Section B  Tuesday, Thursday 08:00-09:15  E-213  Dr. R. Ahmed
Section C  Monday, Wednesday, Friday 10:00-10:50  E-202  Dr. S. H. Syed
Section D  Monday, Wednesday, Friday 12:00-12:50  E-202  Dr. S. H. Syed

ECON 102: Macroeconomics I (3 credits)
Students cannot register for this course with or before ECON 100. Key macroeconomic concepts, national income accounting, productivity, standard of living growth and public policy issues, introduction to consumption, saving and capital formation, inflation, unemployment, monetary system, quantity theory of money, introduction to monetary and fiscal policies.

Section A  Tuesday, Thursday 09:30-10:45  E-221  Z. Iqbal
Section B  Monday, Wednesday, Friday 09:00-09:50  E-202  Dr. M. Aslam
Section C  Monday, Wednesday, Friday 09:00-09:50  E-213  TBD
Section D  Tuesday, Thursday 09:30-10:45  E-202  M. S. Ayyubi
ECON 103: Mathematics for Economists  
(3 credits)  
Basic tools of mathematical economics and their application to economic analysis, nature of mathematical economics, real number system, set theory and economics, comparative static analysis, linear models and matrix algebra, tools of algebra and calculus, application of calculus in economics, optimization of one and multivariable functions, optimization with constraints and economic application of optimization.

Section A: Monday, Wednesday, Friday 11:00-11:50  
Section B: Monday, Wednesday, Friday 09:00-09:50  
E-221  
L. Saeed  
A. Batool

ECON 201: Microeconomics II  
(3 credits)  
Prerequisites: ECON 101 and 103  
Continuation of Microeconomics I using mathematical models to analyze consumer theory, producer theory, firm behavior under perfect and imperfect market structure. Input markets with both perfect and imperfect competition.

Section A: Monday, Wednesday, Friday 12:00-12:50  
Section B: Tuesday, Thursday 02:00-03:15  
E-203  
Dr. M. Akbar  
A. Anwar

ECON 202: Macroeconomics II  
(3 credits)  
Prerequisites: ECON 102 and 103  
Classical and Keynesian economic theory policy, Derivation of AD and AS models and their implication for stabilization policies, short term and long term inflation-unemployment relationship, consumption and investment theories and economic growth, Growth accounting and convergence.

Section A: Monday, Wednesday, Friday 11:00-11:50  
Section B: Tuesday, Thursday 12:30-01:45  
E-202  
Dr. M. Aslam  
M. S. Ayyubi

ECON 203: Statistics for Economists  
(3 credits)  
Application of statistics tools in economics, basic concepts and terminology of statistics, presentation of data, measures of central tendency, dispersion, shape and relationship, probability and probability distributions, random variables, probability density functions of discrete and continuous random variables, joint, marginal and conditional probability density functions, Bernoulli Binomial, Binomial, poisson, normal, X2, t, F definitions, properties and their relationship, sampling and sampling distributions, statistical inference: estimation and testing of hypothesis.

Section A: Monday, Wednesday, Friday 12:00-12:50  
Section B: Tuesday, Thursday 12:30-01:45  
E-221  
L. Saeed  
E-214  
L. Saeed

ECON 300: Fundamentals of Econometrics  
(3 credits)  
Prerequisites: ECON 201,202 and 203  
Regression analysis and ordinary least squares, dummy variable regression models, relaxing the assumption of classical model, multicollinearity heteroskedasticity, autocorrelation, right hand-side endogenous variables, WLS and GLS, model specification and diagnostic testing.

Section A: Tuesday, Thursday 11:00-12:15  
Section B: Tuesday, Thursday 11:00-12:15  
E-221  
Z. Iqbal  
E-213  
Dr. M. Akbar
ECON 302: Research Methods and Computer Applications (3 credits)
Prerequisite: ECON 300
Methods and methodologies of research used in Economics; Techniques of investigation; Data collection methods; Research design; Sampling; Report writing and use of econometric software.

Section A  Tuesday, Thursday 12:30-01:45  E-213  A. J. Khan
Section B  Monday, Wednesday Friday 02:00-02:50  E-202  A. J. Khan

ECON 303: Environmental Economics (3 credits)
Prerequisite: ECON 10
Introduction to economic and ecological principles essential for a clear understanding of contemporary environmental and natural resource management issues, integrated understanding of the field combining economic, legal and ecological perspectives to better understand the causes and solutions to market failure and environmental degradation, economic efficiency and market failure, property rights, externality, measuring social welfare and welfare improvements, demand for environmental goods, environmental valuation methodologies, environmental benefit-cost analysis and other marking criteria, environmental policy and environmental regulations, common pool resource management, depletable resource management.

Section A  Tuesday, Thursday 12:30-01:45  E-203  Dr. R. Martin
Section B  Monday, Wednesday, Friday 10:00-10:50  E-203  Dr. U. Hanif
Section C  Monday, Wednesday, Friday 02:00-02:50  E-221  Dr. U. Hanif

ECON 307: International Trade Theory and Policy (3 credits)
Prerequisite: ECON 201
Evaluation of International Trade: international trade theories and international trade policies. Mercantilists' views on trade and theories like classical theories (absolute & comparative advantage), standard theory of international trade, neo-classical trade theory, offer curve and terms of trade, factor endowments and Heckscher-Ohlin model, factor price equalization and Stolper-Samuelson theorems, H-O Model and new trade theories, trade based on economics of scale, product differentiation, technological gap.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-214  Dr. B. Aziz
Section B  Tuesday, Thursday 02:00-03:15  E-202  M. S. Ayyubi

ECON 309: Econometric Methods (3 credits)
Prerequisite: ECON 300
Econometric models and estimation problems that often arise in economic application, nonlinear regression models, approaches to estimating nonlinear models, qualitative response regression models, LPM, Logit, Probit, panel data regression models, fixed effect approach and random effect approach, simultaneous-equation models, simultaneous equation bias, identification problem, approaches to estimation (ILS, 2SLS).

Section A  Tuesday, Thursday 12:30-01:45  E-221  Z. Iqbal
Section B  Tuesday, Thursday 11:00-12:15  E-214  Dr. M. A. Bhatti
**ECON 311: Development and Growth Economics**  
(3 credits)

Prerequisites: ECON 202

Theory and history of economic growth and development, economic institutions and development, diverse structures and common characteristics, measurement of classic and modern economic development models, economic development and issues of poverty, inequality, population, urbanization, education and health, agriculture and rural development, growth models of Harrod-Domer, Solow-Swan, Kaldor and Joan Robinson, and new growth theories.

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<td>Dr. R. Aslam</td>
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<td>C</td>
<td>Mon, Wed, Fri</td>
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<td>Dr. A. Hussain</td>
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**ECON 313: Monetary Theory**  
(3 credits)

Prerequisites: ECON 202

Determinants of demand and supply of money and role of financial institutions, nature of monetary economics, money supply process and definition of monetary aggregates, theories of money demand microeconomic determinants of demand for money, testing the demand for money, weakness of the link between the theory of the demand for money and the testing of it, monetary, transmission mechanism, price surprise, central banking and the money supply.

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**ECON 402: Project Planning and Appraisal**  
(3 Credits)

Prerequisite: ECON 201

Project planning, its process, appraisal and evaluation with special reference to Pakistan, technical, social financial and economic analysis of projects, discounted measures of project worth i.e. BC Ratio, IRR, NPV etc, techniques used in time and resource management like CPM, PERT and WBS, project monitoring and sensitivity analysis, analysis of mega projects in Pakistan like Gwadar Deep Water Port, Lahore – Islamabad Motorway etc.

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<td>A. J. Khan</td>
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**ECON 406: Introduction to Game Theory**  
(3 credits)

Prerequisite: ECON 201

Analytical tools to understand consequently predict behavior in multi-person decision settings, definitions and rules of games, games with perfect certain, symmetric and complete information, mixed and continuous strategies, dynamic games with symmetric and symmetric information, moral hazard and adverse selection, principal agent models, cooperative and non cooperative games.

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<td>A. Batool</td>
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</table>
UNIV 100: Foundation of University Education  
(3 credits)

Prerequisites: I E Program

This course is especially designed for university freshmen. All entering students must take University 100 during their first semester or after they have finished the Lang program. This course helps them to make the best use of their years of the university study at FC College (University). Each student will become more aware of his or her strengths and weaknesses in learning by working on a variety of skills. By examining their values and developing learning strategies this course will help students become successful in FCC’s liberal arts program. Transfers with 60 or more credits are exempt.

Section B  Monday, Wednesday, Friday 08:00-08:50  E-331  N. Sahar
Section C  Monday, Wednesday, Friday 02:00-02:50  E-331  A. Alphonce
Section E  Tuesday, Thursday 08:00-09:15  E-323  Dr. N. Anwar
Section F  Tuesday, Thursday 08:00-09:15  E-331  M. Amin
Section G  Tuesday, Thursday 11:00-12:15  E-323  U. Mubeen
Section H  Tuesday, Thursday 08:00-09:15  N-209  Z. A. Shah
Section J  Monday, Wednesday, Friday 09:00-09:50  E-323  S. A. Abbas
Section K  Monday, Wednesday, Friday 09:00-09:50  E-331  J. J. Austin
Section L  Monday, Wednesday, Friday10:00-10:50  E-323  S. Zehra
Section M  Monday, Wednesday, Friday 09:00-09:50  N-209  F. Jamil
Section N  Tuesday, Thursday 09:30-10:45  E-323  A. Anwar
Section P  Tuesday, Thursday 09:30-10:45  E-331  Q. Memon
Section R  Tuesday, Thursday 09:30-10:45  N-209  I. S. Samuel
Section S  Monday, Wednesday, Friday 11:00-11:50  E-323  A. Wasim
Section T  Monday, Wednesday, Friday 11:00-11:50  E-331  S. Ahmed
Section U  Monday, Wednesday, Friday 10:00-10:50  E-331  Dr. S. Zaheer
Section V  Monday, Wednesday, Friday 02:00-02:50  N-209  H. A. Ghani
Section W  Tuesday, Thursday 12:30-01:45  E-323  A. Fareed
Section X  Tuesday, Thursday 12:30-01:45  E-331  A. Muzammil
Section Y  Tuesday, Thursday 02:00-03:15  N-209  A. B. Maqbool
Section Z  Tuesday, Thursday 12:30-01:45  N-209  A. Atiq
Section AA Monday, Wednesday, Friday 12:00-12:50  E-323  Dr. R. Ahmed
Section BB Monday, Wednesday, Friday 12:00-12:50  E-331  I. Nasir
Section CC Monday, Wednesday, Friday 02:00-02:50  E-323  R. Hassan
Section DD Monday, Wednesday, Friday 12:00-12:50  N-209  S. Raees
Section EE Tuesday, Thursday 02:00-03:15  E-323  M. W. Azeem
**EDUC 110: Foundations of Education**  
(3 credits)  
Perspectives on economic, cultural, political, ideological, philosophical, aesthetic and psychological foundations of education, history of education in Pakistan.

**Reserved for freshmen (D Section)**  
<table>
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<td>Dr. C. J. Dubash</td>
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<td>B</td>
<td>Monday, Wednesday, Friday</td>
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<td>N-217</td>
<td>M. A. Arshad</td>
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<td>M. A. Arshad</td>
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<td>A. Rashid</td>
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**EDUC 120: Educational Psychology**  
(3 credits)  
Principles of Psychology as applied to the educational process, characteristics of the individual learner, the teacher, the classroom, methods and other relevant factors in the learning process, various stages of growth and development, brief introduction to psychological measurements and creativity in children.

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**EDUC 240: Technology in Education**  
(3 credits)  
Prerequisites: EDUC 110  
Hands-on experience with computer and other technological applications in education, ways of integrating technology and the use of the internet with classroom teaching procedures in the content areas will be explored.

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<td>M. A. Arshad</td>
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**EDUC 300: Instructional Methods and Strategies**  
(3 credits)  
Types of instructional methods and assessment strategies and best uses of each, discussions and practice in choosing and planning for the appropriate instructional methods, classroom arrangement for each instructional methods.

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<th>Section</th>
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<td>Dr. C. J. Dubash</td>
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**EDUC 365: Teaching Science at the Secondary Level**  
(3 credits)  
Prerequisites: EDUC 110, 8 credit hours of lab-based science courses.  
Methods and techniques specific to teaching Biology, Chemistry and Physics to the secondary grades, a hands-on approacy.

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<td>N-217</td>
<td>M. A. Arshad</td>
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</table>
ENGLISH

ENGL 101: Writing and Grammar  
(3 credits)
Teaching of English language through integrated skills (reading, writing, listening, speaking), training students to write coherent paragraphs by practicing short narrative, descriptive, expository and argumentative, essay writing.

Reserved for freshmen (A to Z Sections)

<table>
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<tr>
<th>Section</th>
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<tbody>
<tr>
<td>Section A</td>
<td>Monday, Wednesday, Friday</td>
<td>08:00-08:50</td>
<td>E-204</td>
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<tr>
<td>Section B</td>
<td>Monday, Wednesday, Friday</td>
<td>09:00-09:50</td>
<td>E-204</td>
<td>S. Raees</td>
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<tr>
<td>Section C</td>
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<td>S. Raees</td>
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<td>Section E</td>
<td>Monday, Wednesday, Friday</td>
<td>12:00-12:50</td>
<td>E-204</td>
<td>J. J. Austin</td>
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<tr>
<td>Section F</td>
<td>Monday, Wednesday, Friday</td>
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<td>Section G</td>
<td>Monday, Wednesday, Friday</td>
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<td>Section H</td>
<td>Tuesday, Thursday</td>
<td>08:00-09:15</td>
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<td>R. John</td>
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<td>Section J</td>
<td>Tuesday, Thursday</td>
<td>09:30-10:45</td>
<td>E-204</td>
<td>A. Gill</td>
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<td>Section K</td>
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<td>A. Gill</td>
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<td>E-231</td>
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<td>Section M</td>
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<td>Section N</td>
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<td>Section P</td>
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<td>Section Q</td>
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<td>Section R</td>
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<td>Section S</td>
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<td>Section V</td>
<td>Tuesday, Thursday</td>
<td>08:00-09:15</td>
<td>E-205</td>
<td>A. Waseem</td>
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<td>Section W</td>
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<td>A. Waseem</td>
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<td>Section Y</td>
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<td>E-222</td>
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<td>Tuesday, Thursday</td>
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<td>N. Alam</td>
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<td>Section BB</td>
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<td>09:00-09:50</td>
<td>E-105</td>
<td>F. Zaheer</td>
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ENGL 102: Communication Skills  
(3 credits)
Develops practical communication skills through reading, writing, listening and speaking in real-life situations. One of the major objectives of this course is stimulate student to think about what, why and how they communicate. Emphasis is on verbal and non-verbal messages, identifying the main ideas of conversations, lectures and other spoken texts, deriving the meaning of new words from the context, note-taking skills for participating successfully in social conversation and academic discussions, interactive and effective listening, negotiation for meaning giving effective presentations, conducting seminars, chairing and participating in meetings, and writing emails, letters memos, CVs job applications and reports.

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<td>Section A</td>
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ENGL 103: Advanced Writing Skills  
(3 credits)
Prerequisite: ENGL 101
Proficiency in the skill of academic writing through research, development of a well-argued and well-documented academic paper with clear thesis statement, Critical thinking, argumentation and synthesis of information, using citation and bibliography.

Reserved for freshmen (A, F Sections)

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ENGL 150: Structure of the English Language  
(3 credits)
This course introduces the students to the concepts of language universals in understanding grammatical structure of languages focusing on the structure of the English Language in particular. The course will focus inflexional forms of word, types of phrases, types of clauses and principles of sentence construction. The students will be instructed in the construction of tree diagrams at the phrase and simple sentence level. This course is intended to help students develop sounder concepts of grammar for further study in the field of linguistics.

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ENGL 201: Introduction to Literature  
(3 credits)
This is a core course for the students majoring in English Literature. The students will be introduced to various literary genres such as prose non-fiction (essay, biography) prose fiction (short story, novel, fable, allegory) poetry and drama. The students will learn how these genres differ from each other and what techniques can be used for critically approaching and analyzing a broad range of literary texts. This course prepares students for studying higher level courses in literature.

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**ENGL 203: Introduction to Linguistics**  
(3 credits)  
Acquaints students with four main aspects of the study of language: phonetics and phonology, morphology, syntax, semantics, pragmatics. Considers how social practices shape and are shaped by language use (sociolinguistics), how children acquire language (first language acquisition), and how we learn second languages (second language acquisition / learning).

*Section A*  
Monday, Wednesday, Friday 11:00-11:50  
E-332  
A. Gill

**ENGL 204: English Prose I**  
(3 credits)  
Familiarizes students with a variety of non-fictional prose works. The range includes a selection of essays, letters, speeches, diaries and memoirs written between 18th to 20th centuries by British and American writers, intellectuals, political and historic figures. Through these works students develop critical understanding of various socio-political, religious and cultural issues.

*Section A*  
Tuesday, Thursday 11:00-12:15  
E-222  
W. Azeem

**ENGL 210: History of English Language**  
(3 credits)  
Built around the notion of “all languages change over time”, this course surveys the development of English Language from its Germanic origins in the Anglo-Saxon period till today. The main emphasis will be on tracking some of the linguistic changes English has undergone from its origin, including changes in words, spellings, sentence structure, meaning, and the sound system. The course will also look at the major periods in the history of English Language from Old English to Middle English, and Early Modern Standard English. Keeping to the central nation of language variation and change, the present English accents and dialects, “World Englishes” will also be briefly considered and their implications discussed for Future English.

*Section A*  
Tuesday, Thursday 12:30-01:45  
E-204  
A. Waseem

**ENGL 250: Creative Writing**  
(3 credits)  
Prerequisite: ENGL 101, 103  
In addition to these prerequisites, all students who wish to register for this course will have to present their writing portfolios (five pages fiction, poetry, non-fiction) to the instructor (naveedalam@fccollege.edu.pk) via email before the end of Summer (2013) semester. The final list of students whose work is approved by the instructor will be sent to academic office for registration by the HOD.  
This course will be taught in a workshop format. Students will bring original works of poetry and fiction to receive critiques by the workshop facilitator and fellow peers. The works will be produced and revised based on the critical analysis of relevant poetry and fiction texts, discussions, and lectures by guest speakers on literary craft. As part of the course requirements the students will attend a certain number of literary events and activities. They will be assessed for attendance and participation in these events.

*Section A*  
Monday, Wednesday, Friday 03:00-03:50  
E-332  
N.Alam
ENGL 304: Short Stories  (3 credits)
Introduces major short story writers in English to emphasize familiarity with the compositions, technique, style and thought process of a short story by understanding the elements that make it different among other forms of fictional and non-fictional pros.

Section A  Tuesday, Thursday 12:30-01:45  E-222  F. Syeda

ENGL 307: Drama I  (3 credits)
Prerequisite: ENGL 201
Introduces critical awareness of drama as a genre and a tradition with focus on its mutation from the Classical to Elizabethan age onwards. Readings include classical models that are followed to comprehend a play as a ‘Well Written’ play

Section A  Monday, Wednesday, Friday 12:00-12:50  E-332  TBD

ENGL 315: English Poetry I  (3 credits)
Prerequisite: ENGL 201
Critical study and analysis of poetry from the Elizabethan to the Pre-romantic age.

Section A  Tuesday, Thursday 02:00-03:15  E-332  Dr. N. Langah

ENGL 320: American Poetry  (3 credits)
Critical study and analysis of American poetry starting from 1500 till 20th century post-modern poetry

Section A  Monday, Wednesday, Friday 08:00-08:50  E-332  Dr. K. Ud Din

ENGL 331: Research Methods for English Literature & Language  (3 credits)
Prepares students for formal thesis writing. Focuses on the techniques of writing professional abstracts, developing a thesis statement and contention, finding appropriate topics for research papers, preparation and annotation of bibliographies, writing reviews from critical and analytical perspectives. A major objective is to help students prepare a proposal for their final thesis course (ENGL 499) which is a requirement for all literature majors.

Section A  Tuesday, Thursday 12:00-01:45  S-416  TBD

ENGL 332: Literary Adaptations  (3 credits)
Prerequisite: ENGL 207
‘Adaptation’ depicts the intersecting histories of literature and films and correlates the verbal and visual expression. Taking into account adaptation theory, this course focuses on the critical analysis of the adaptations of novel, short stories, plays, non-fiction and animation. Topics will include the issues of fidelity to the original text, and how visual specifications takeover the imagination of the viewers. The classes will be based on a selection of adaptations ranging from Shakespearean plays to contemporary short stories adapted into film/play.

Section A  Tuesday, Thursday 02:00-03:15  E-205  J. J. Austin
**ENGL 401: Modern Drama**  (3 credits)
Prerequisite: ENGL 201 or ENGL 307
Familiarizes students with the works of major modern dramatists; the emotional, social, cultural, economic and political context of their important works; and diversity in style, form and thought. Reviews the literary movements introduced by and influencing thesis dramatists. Plays taught are by G B Shaw, Henrik Ibsen, Anton Chekov, Edward Bond, Bertolt Brecht, Samuel Beckett, Pinter, August Strindberg, Garcia Marquez, Lorca.

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**ENGL 403: Contemporary Literary Criticism**  (3 credits)
With classical literary critical approaches serving as a backdrop, this course offers the latest trends in literary criticism and theory to trace influence and interaction of contemporary Literary criticism within the diverse range of literary genres.

*Section A*  
Tuesday, Thursday 12:30-01:45  
E-332  
Dr. W. Anwar

**ENGL 404: English Poetry II**  (3 credits)
Prerequisite: ENGL 309 or ENGL 315
Focuses on post-World War II poetry from various poetic traditions and emphasizes texts by contemporary world poets.

*Section A*  
Monday, Wednesday, Friday 03:00-03:50  
E-231  
Dr. N. Langah

**ENGL 430: Postcolonial Literature and Theories**  (3 credits)
Prerequisite: ENGL 407
This course focuses on the analysis of literature produced in the former colonies of the European empire, including Africa, South Asia, Australia, Canada. The literature produced in these countries reflects on theorizing issues related to power and domination, native settler tussle, identity issues, conceptualizing Diaspora, mimicry, ambivalence and Hybridity. The course basis the literary analysis of fiction and poetry from postcolonial nations within the broader theoretical framework offered by postcolonial theorists such a Edward Said Frantz fanon, Jamica Kincaid, Gyatri Spivak Homi Bhabha, Mahmood Mamdani, Ngugi Wa Thiongo and Ashish Nandi. The writers discussed in this course will include, Chinua Achebe, Hanif Kureishi, V.S. Naipal, Ben Okri, Micheal Ondaatjee, Derek Walcott, Nurrudin Farah etc.

*Section A*  
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E-332  
Dr. W. Anwar

**ENGL 440: Literature and Philosophy**  (3 credits)
Prerequisite: ENGL 201
This course traces connections between two disciplines, Literature and Philosophy. The students will survey how writers make use of philosophical ideas, themes, vocabulary and language. They will study how literary texts can focus on important philosophical issues. The emphasis will be on both, Philosophy in literature and Philosophy as literature. Some suggested readings for this course are French existentialist philosopher, Jean Paul Sartre’s Novel, Nausea (1938) Russian author, Fyodor Dostoyevsky Crime and Punishment (1917)

*Section A*  
Tuesday, Thursday 08:00-09:15  
E-332  
Dr. K. Ud Din
GEOGRAPHY

GEOG 101: Fundamentals of Geography (3 credits)
Geography as a discipline, its thematic domains and fundamental concepts.

Reserved for freshmen (B Section)
Section A  Monday, Wednesday, Friday 09:00-09:50  E-227  Z. Jameel
Section B  Monday, Wednesday, Friday 10:00-10:50  A-002  K. Shafique
Section C  Monday, Wednesday, Friday 08:00-08:50  E-227  Z. Jameel
Section D  Monday, Wednesday, Friday 12:00-12:50  E-227  K. Shakrullah

GEOG 133: Geographical Profile of Pakistan (3 credits)
Features of physical environment, resources, culture, communications and trade of Pakistan, problems confronted by Pakistan relating to cross cultural relationships, socio-economic viability, environmental conservation, resources sustainability and development.

Section A  Monday, Wednesday, Friday 09:00-09:50  A-002  S. A. Umar

GEOG 210: Earth’s Physical Realms (3 credits)
Spatial and functional dynamics of major physical phenomena relating to the planet Earth—its evolution, interior state, atmosphere, lithosphere, hydrosphere and ecosphere, physical phenomena and related cycles and man-environment interactions.

Section A  Tuesday, Thursday 09:30-10:45  A-002  K. Shafique

GEOG 220: Human Domains of Geography (3 credits)
Spatial and systematic organization of economic, cultural, political, demographic and occupancy milieu, arising out of human use of the earth’s environment, importance of human attitudes and values in resource use and shaping of the patterns.

Section A  Monday, Wednesday, Friday 10:00-10:50  E-227  K. Shakrullah

GEOG 240: Global Environmental Issues (3 credits)
Earth’s ecosystems, major issues relating to the human use and misuse of environmental resources and possible course of action for their conservation.

Section A  Tuesday, Thursday 02:00-03:15  A-002  K. Shafique

GEOG 274: Fundamentals of Cartography and field surveying (3 credits) (2+2)
Map making, their use and contemplation techniques, collection and processing of field data, training in field surveying for map making.

Section A  Tuesday, Thursday 11:00-12:40  A-002  Z. Jamil
GEOG 301: Workshop on Geographical Thought and Concepts  
Current philosophical themes in Geography, as well as the systematic doctrines and concepts that overwhelm the main streams of the discipline, implications of the current strides on the cognitive domains and their impact on the future course of geographical avenues.

Section A  Monday, Wednesday 11:00-11:50  A-002  S. A. Umar

GEOG 324: Settlement Patterns and Processes  (3 credits)  
Human settlement patterns: location, evolution, size spacing, shapes and functional systems produced by interactive multivariate processes, forms and structures, problems relating to growth, congestion and evolution of ghettos.

Section A  Tuesday, Thursday 09:30-10:45  E-227  S. A. Umar

GEOG 325: Political Geography  (3 credits)  
Comparative study of global political regions and related systems, varied approaches are explored such as power analysis, genetic analysis, functional analysis, thematic analysis and ethnic analysis of political units.

Section A  Monday, Wednesday, Friday 02:00-02:50  E-227  S. A. Umar

GEOG 374: Aerial and Satellite Imaging  (3 credits) (2+2)  
Prerequisite: Knowledge of computer software applications: GEOG 274 or Instructor permission
Elements and interpretation processes pertaining to aerial photographs, remote sensing of earth resources and occupancy patterns, global positioning system (GPS), geographic information science and systems (GIS), digital image processing (DIP).

Section A  Monday, Wednesday 12:00-12:50  A-002  Z. Jamil  
Lab:  Thursday 02:00-03:40  S-120

GEOG 471: Qualitative and Quantitative Techniques in Geography  (4 credits)  
Prerequisite: basic knowledge of computer software applications or Instructor permission
Qualitative methodologies and quantitative techniques used by geographers in analysis and synthesis of systematic spatial phenomena, application of statistical methods and thematic models for geographical analysis including the use of computer software and hands-on experience.

Section A  Tuesday, Thursday 02:00-03:40  E-227  K. Shukrullah

GEOG 499A: Directed Project  (3 credits)  
Prerequisite: (For Only Senior Students) Knowledge of computer software applications or instructor permission.
A session on orientation/hands-on training in techniques of project planning, Designing, Operational management, Report preparation and Presentation after Junior Year followed by independent/participative research in field, Laboratory, or Library under the direction of a member of Geography faculty appointed by the chair) and preparation and presentation of research report/thesis.

Section A  Monday, Wednesday, Friday 02:00-02:50  A-002  K. Shukrullah
HEALTH AND PHYSICAL EDUCATION

**HPED 101: Cricket (Only for Boys)** (1 credit)
The course of cricket is both an art and science. It involves techniques of batting, bowling, fielding, and running. All these activities have often to be performed at speed agility and endurance. These individual skills are very important but it should not be forgotten that is team game and the players have to work together in offence or defense. The course of cricket contains physical challenges.

*Section A*  
*Tuesday Thursday 03:00-03:50  Lucas Centre  S. Nazir*

**HPED 103: Hockey (Only for Boys)** (1 credit)
The course of Hockey is knowledge about the basic rules and regulations. It involves the techniques of passing, dribbling, dodging and pushing with agility, speed and endurance. The course aims to equip them with necessary knowledge of the game.

*Section A*  
*Monday, Wednesday 10:00-10:50  Lucas Centre  B. Kamil*

**HPED 107: Athletics Shot Put (Only for Girls)** (1 credit)
Athletics is a combination of track & field events. Techniques for discus throw and relay races, physical fitness. This activity has to perform with strength, agility, speed & power. The all players have performed.

*Section A*  
*Tuesday Thursday 03:00-03:50  Athletics Track  H. Atta*

**HPED 109: Badminton (Only for Girls)** (1 credit)
The game of Badminton is combination of smashing, receiving and body movements at different angles with racket. It involves the techniques of serve, footwork, pick & drop shots. It is an individual and team game.

*Section A*  
*Monday, Wednesday 03:00-03:50  Lucas Centre  H. Atta*
### HISTORY AND PAKISTAN STUDIES

**PKST 101: Pakistan Studies (Compulsory)**  
(3 credits)  
The idea of Pakistan: history, geography, economy, politics and society of Pakistan through an identification of major themes, personalities, and events which have affected and continue to have an impact on the development of the country.

**Reserved for freshmen (C, G, H, J, K, L Sections)**

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**HIST 101: Survey of South Asia**  
(3 credits)  
History of South Asia from the Indus Valley Civilization to the modern day, with a focus on historical periods and themes.

| Section A | Tuesday, Thursday | 08:00-09:15 | S-213 | K. Jawad         |

**HIST 102: Survey of Western Civilization**  
(3 credits)  
Western Civilization from Ancient Greece and Rome of the French Revolution in 1789, themes which have shaped Western Civilization, including an understanding of the scholarly debate on the issues.

| Section A | Monday, Wednesday, Friday | 09:00-09:50 | S-213 | S. Sumbal        |

**HIST 201: Research methodology**  
(3 credits)  
Dynamics of writing history, survey of the debate on historiography, conceptualization, design and execution of research in history.

| Section A | Tuesday, Thursday | 09:30-10:45 | S-213 | S. Hayat         |

**HIST 255: The Indus Valley Civilization**  
(3 credits)  
Inception of the Indus Valley Civilization, its life and eventual decline by utilizing current and early research and debate on the subject as well as visits to relevant sites.

| Section A | Tuesday, Thursday | 11:00-12:15 | S-213 | A. S. Zehra      |
HIST 305: Ancient History of the Subcontinent (3 credits)
Prerequisite: HIST 101
Ancient history of South Asia, advent of the Aryans, conquests, society and religion of the Indus Valley Civilization, the Epic Age, Caste System, the rise of Buddhism, Alexander's invasion, the Mauryans, the Guptas, and the development of Indian art and culture during the period.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-212  A. S. Zehra

HIST 306: Islamic History: The Umayyad and Abbasid Period (3 credits)
Umayyad and Abbasid periods, their central and provincial administration, expansion and conquests, religious policy, fiscal policy, foreign relations, the development of art and culture, and the causes of their downfall.

Section A  Monday, Wednesday Friday 02:00-02:50  S-213  M. A. Abbasi

HIST 308: History of Lahore (3 credits)
Prerequisite: HIST 101
History of Lahore from its origin to the present day, its importance in different ages, its contribution to the development of art, architecture and culture, and its urban and rural dimensions.

Section A  Tuesday, Thursday 11:00-12:15  S-212  Y. K. Bangash

HIST 403: British Rule in India (1757-1947) (3 credits)
Prerequisite: HIST 101
The role and impact of the British in India, political rise of the East India Company in 1757. The expansion of British influence through treaties and conquests, the Revolt of 1857 and the coming of the Raj, its policies, and its effect on the society, politics, economy and religious life of India.

Section A  Monday, Wednesday Friday 02:00-02:50  S-212  S. Sumbal

HIST 490: Senior Seminar in History: Political Leadership in Pakistan (3 credits)
Prerequisites: Junior or Senior Status
The seminar course comprises of extensive readings on a selected topics under the leadership of a faculty member who will facilitate in-depth analysis and discussion. The course will prepare students for independent research through a series of short paper and a final term paper on the course topics.

Section A  Tuesday, Thursday 12:30-01:45  S-213  S. Hayat
MASS COMMUNICATION

MCOM 100: Fundamentals of Speech (3 credits)
Basic principles and practices of good vocal production and oral communication. Texts, verse and prose in terms of vocal delivery. Basic components of communication through analysis and practice in a variety of oral presentations. English speaking skills.

Reserved for freshmen (A, C, K, L, M, N Sections)

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MCOM 101: Introduction to Journalism (3 credits)
Introduction to print electronic and online journalism, types of journalism, news organization, basics of reporting and editing, contents of newspaper, television and radio.

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<td>F. Jabeen</td>
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<td>F. Jabeen</td>
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<td>E-333</td>
<td>Dr. S. Abbas</td>
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<td>E-333</td>
<td>Dr. S. Abbas</td>
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MCOM 103: Introduction of PR & Advertising (3 credits)
Advertising and its role in the society, consumer culture, advertising and mass media marketing, public relations Selling and sales management. Process and tools of PR.

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<th>Section</th>
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<td>E-230</td>
<td>A. Mubeen</td>
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MCOM 201: News Reporting (3 credits)
Prerequisite: MCOM 101
Mechanics, elements, value and structure of stories for print and electronic media; news sources for print and electronic media; Qualifications and functions of a reporter; Basics of camera and microphone reporting; Interpretative and investigative reporting, Reporting beats and interview techniques.

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<td>M. Ali</td>
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<td>C</td>
<td>Tuesday, Thursday</td>
<td>12:30-01:45</td>
<td>E-229</td>
<td>M Ali</td>
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</table>
MCOM 202: Sub-Editing  
**Prerequisite:** MCOM 101  
Introduction, importance and process of sub-editing, functions and qualifications of a sub-editor, source of news, techniques, types and new trends in headlines, technique, types and new trends in make-up, monitoring importance and techniques of radio and television, importance and techniques of picture editing and caption writing for pictorial display, journalistic terminologies.

*Section A*  
*Tuesday, Thursday 02:00-03:15*  
*M Ali*

MCOM 203: Media and Peace Building  
**Prerequisite:** MCOM 101  

*Section A*  
*Monday, Wednesday, Friday 11:00-11:50*  
*E-230*  
*F. Jabeen*

*Section B*  
*Tuesday, Thursday 11:00-12:15*  
*E-230*  
*F. Jabeen*

MCOM 301: Press Laws and Ethics  
**Prerequisite:** MCOM 201  
Evolution of press laws with special reference to the Sub-continent and Pakistan. A critical analysis of the current press and publication regulations; PEMRA laws pertaining to the electronic media in Pakistan; Freedom of expression; Defamation laws; Contempt of Courts; Contemporary trends in copyright law and the concept of intellectual property rights; Code of ethics for journalists from Western and Islamic Perspectives.

*Section A*  
*Monday, Wednesday, Friday 10:00-10:50*  
*E-230*  
*S. Mushtaq*

*Section B*  
*Monday, Wednesday, Friday 12:00-12:50*  
*E-229*  
*S. Mushtaq*

MCOM 302: Opinion Writing  
**Prerequisite:** MCOM 201  
Contents and importance of editorial page, definitions and functions of editorial writing, qualification of editorial writers, topic selection, sources of material, types and structure of editorials, importance and selection of letters to the editor, definitions, structure types and importance of column and feature.

*Section A*  
*Monday, Wednesday, Friday 02:00-02:50*  
*E-333*  
*S. Mushtaq*
MCOM 303: Public Relations  (3 credits)
Prerequisite: MCOM 103
Definition and purpose, tools of public relations in Pakistan, duties of a PR organization, definition and basic ingredients of a press release, press note, handout, press communiqué and press conferences, structure and functions of DGPR.

Section A   Tuesday, Thursday 08:00-09:15   E-230   A. Muzamill
Section B   Tuesday, Thursday 09:30-10:45   E-230   A. Muzamill

MCOM 304: Principles of Advertising  (3 credits)
Prerequisite: MCOM 103
Definition, scope, function, essentials and economic aspects of advertising, advertising in Pakistan, advertising as a tool of marketing, advertising research, introduction to prominent advertising agencies of the world, advertising campaigns and their evaluation.

Section A   Tuesday, Thursday 12:30-01:45   E-230   F. Mahmood
Section B   Tuesday, Thursday 02:00-03:15   E-230   F. Mahmood

MCOM 305: Magazine Journalism  (3 credits)
Prerequisite: MCOM 201
Introduction, scope and types of magazine; prospects and challenges of magazine journalism in Pakistan; writing for magazines; personality sketches, interviews and social round-ups; make-up and layout of magazines.

Section A   Monday, Wednesday, Friday 08:00-08:50   E-228   A. Mubeen
Section B   Tuesday, Thursday 08:00-09:15   E-333   A. Mubeen

MCOM 306: Research Methodology  (3 credits)
Prerequisite: MCOM 301, Only for junior students majoring in Mass Communications
Understanding of research methodology, concepts of research, kinds of research, elements of research design, technique to prepare a research proposal.

Section A   Tuesday, Thursday 09:30-10:45   E-333   A. Soomro
Section B   Tuesday, Thursday 12:30-01:45   E-228   Dr. H. Mian

MCOM 310: Mass Communication Studies  (3 credits)
Prerequisite: MCOM 301
Definitions, types, elements and models of communication and mass communication, features and functions of mass communication, media literacy, public opinion and propaganda, two-step flow of communication, barriers in communication, essentials of effective communication, gate-keeping and information control, the role of the opinion leader, current media trends, mass media and culture, mass media and society, mass media effects debates.

Section A   Tuesday, Thursday 11:00-12:15   E-333   A. Soomro
Section B   Tuesday, Thursday 12:30-01:45   E-333   A. Soomro
MCOM 402: Television: A Theoretical Introduction  (3 credits)
Prerequisite: MCOM 301
Set-up and working of news, duties of a news producer, sources of TV news, TV news film, basics of news film shooting and editing, drafting of TV news, compilation of bulletins, preparation of network bulletins, students will submit 5 news reports and two interviews of ten minutes duration each on CDs / DVDs.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-333  Dr. S. Abbas
Section B  Monday, Wednesday, Friday 12:00-12:50  E-333  Dr. S. Abbas

MCOM 404: Community Journalism  (3 credits)
Prerequisite: MCOM 201
Status and issues regarding women, children, minorities and human rights in the local community with special emphasis on Pakistan, media coverage, NOGs and mass awareness campaigns in Pakistan, role of mass media in reporting human rights events.

Section A  Monday, Wednesday, Friday 08:00-08:50  E-230  S. Mushtaq

MCOM 407: Internship  (3 credits)
Only for MCOM Students (Seniors and Juniors Year
Prerequisite for internship CGPA 2.75
An internship will allow students to experience first-hand functioning of media organizations; sub-editing techniques, reporting techniques of different beats such as parliament, sports, commerce, social services and courts, etc.

Section A  Monday, Wednesday, Friday 03:00-03:50  E-230  Dr. H. Mian

MCOM 409: Theories of Mass Communications  (3 credits)
Prerequisite: MCOM 310
Theories and models of Mass Communications.

Section A  Tuesday, Thursday 02:00-03:15  E-333  A. Muzamill

MCOM 499: Research Thesis / Project  (3 credits)
Only for students of Majoring in Mass Communication
Prerequisite: MCOM 306
Students are required to submit one research thesis / project on any assigned topic at the end of the 8th semester.

Section A  Tuesday, Thursday 02:00-03:15  E-228  Dr. M. Hanan
# MATHEMATICS

## MATH 100: Quantitative Skills  
**Credit:** 3 credits

Basic algebra and number theory, rounding, estimating and scientific notation, algebraic expressions, fractions, factoring, solving equation, two equations with two unknowns and their applications to daily life problems, quadratic equations and their applications, percentage problems (profit, loss, commission, zakat deduction, markup, margin, stock exchange index) ratio and proportion, work problems, distance problems (time, distance, speed, velocity) number sequence, basic geometry, mean, median, and mode, introduction to probability.

**Reserved for freshmen (B, C, D, E, F, G Sections)**

<table>
<thead>
<tr>
<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Location</th>
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<tr>
<td>A</td>
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<td>Dr. R. McCartney</td>
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<tr>
<td>B</td>
<td>Tuesday, Thursday</td>
<td>09:30-10:45</td>
<td>S-412</td>
<td>K. Azhar</td>
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<tr>
<td>C</td>
<td>Tuesday, Thursday</td>
<td>12:30-01:45</td>
<td>S-413</td>
<td>F. Jamil</td>
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<td>Dr. N. Shahid</td>
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<tr>
<td>J</td>
<td>Monday, Wednesday, Friday</td>
<td>02:00-02:50</td>
<td>S-412</td>
<td>Dr. R. Ashraf</td>
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## MATH 101: Pre-Calculus & Trigonometry  
**Credit:** 3 credits

Fundamentals, solution of equations and inequalities, lines, functions, linear and quadratic functions, polynomial and rational functions, operations on functions, inverse functions, synthetic division, remainder and factor theorem, partial fractions, exponential, logarithmic and trigonometric functions trigonometric identities, solution of right and oblique triangles.

**Reserved for freshmen (A, B Sections)**

<table>
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<tr>
<th>Section</th>
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<td>Dr. N. Shahid</td>
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<td>Dr. N. Shahid</td>
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<td>M. Asghar</td>
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<td>09:00-10:30</td>
<td>S-313</td>
<td>Dr. R. Ashraf</td>
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Section F is only for M.Phil Biotechnology

## MATH 102: Calculus-I  
**Credit:** 3 credits

Prerequisite: MATH-101 or A-Level Mathematics or Intermediate Mathematics

Functions, graphs of functions, Translation, Stretching and compressing graphs, limit, continuity and differentiability, differentiation and its basic rules, indeterminate forms, L'Hopital's rule, integration and its techniques, introduction to definite integral.

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<td>Monday, Wednesday, Friday</td>
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<td>S-413</td>
<td>Dr. S. Malik</td>
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</table>
MATH 103: Introductory Linear Algebra  (3 credits)
Prerequisite: MATH-101 or A-Level Mathematics or Intermediate Mathematics
Introduction to system of linear equations, matrices and matrix operations, elementary
matrices, Gaussian elimination, Gauss Jordan Methods for solving a system of linear
equation, determinants and their properties, vector spaces, subspaces, linear
independence, basis and dimensions.
Reserved for freshmen (B Section)
Section A  Monday, Wednesday, Friday 12:00-12:50  S-412  K. Azhar
Section B  Tuesday, Thursday 09:30-10:45  E-105  TBD

MATH 201: Calculus II  (3 credits)
Prerequisite MATH 102
Application of derivatives, extreme and mean value theorem, maxima, minima and inflection
point of single variable functions, Taylor’s theorem and approximation, application of
integration, area and arc length, introduction to improper integrals, volume and surface of
revolution, infinite series, power series, introduction to Conic section.
Section A  Monday, Wednesday, Friday 10:00-10:50  S-413  Dr. R. Ashraf

MATH 202: Ordinary Differential Equations  (3 credits)
Prerequisite MATH 102
Definition and examples, formation of differential equations. First order differential equation.
Higher order differential equations. System of differential equations. Applications of first and
second order differential equations. Laplace transforms method, series solution of
differential equations.
Section A  Tuesday, Thursday 02:00-03:15  S-413  Dr. A. M. Qureshi

MATH 203: Vector Analysis  (3 credits)
Prerequisite MATH 102
Scalar and vector, product of two vectors, scalar and vector triple product, victor
differentiation and its use in differential geometry and mechanics, gradient of a scalar field,
divergence and curl of a vector field, vector integration (line integral, surface integral and
volume integral), divergence and stokes theorem.
Section A  Tuesday, Thursday 09:30-10:45  S-413  Dr. S. Malik

MATH 209: Linear Algebra  (3 credits)
Prerequisite MATH 102, MATH 103
Review of vector spaces, subspaces and basis, row space, column space, rank, mullity,
inner product spaces, orthogonal basis, Gram Schmidt process, orthogonal matrices,
Eigenvalues and Eigenvectors, diagonalization, orthogonal diagonalization, positive definite
and negative definite matrices, linear and inverse linear transformation, matrix of linear
transformation and quadratic forms.
Section A  Tuesday, Thursday 12:30-01:45  S-412  Dr. W. Hussain
MATH 210: Set Theory (3 credits)
Prerequisite: MATH 101 or A. Level Mathematics or Intermediate with Mathematics.
Sets and basic operations on sets, relations, functions, cardinal and ordinal numbers, axioms of choice, Zorn's lemma, well-ordering theorem.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-413  Dr. S. Malik

MATH 212: Elementary Number Theory (3 credits)
Prerequisite: MATH 101 or A. Level Mathematics or Intermediate with Mathematics.
Divisibility: Properties, Division algorithm, Euclidean algorithm, Properties related to greatest common divisor and least common multiple;
Prime Numbers: Fundamental theorem of arithmetic, prime numbers and divisibility, infinity of primes, Arbitrary gaps between two consecutive primes.
Diophantine Equations: the solution of linear equations ax+by=c, the solution of equation of the form $x^2+y^2=z^2$.

Section A  Tuesday, Thursday 11:00-12:15  S-413  Dr. A. M. Qureshi

MATH 308: Differential Geometry (3 credits)
Prerequisite: MATH 201
Moving trihedron (tangent, normal, binormal), osculating, normal and rectifying planes, curvature and torsion, Serret-Frenet equations, natural equations, evolute and involute, first and second fundamental forms of surfaces, tangent planes.

Section A  Tuesday, Thursday 12:30-01:45  S-417  Dr. N. Shahid

MATH 309: Real Analysis (3 credits)
Prerequisite: MATH 201
Sets and functions, the completeness property of R, intervals, sequences and their limits, convergent and divergent sequences, convergence of monotone sequences, limits of functions, continuous functions, uniformly continuous functions and differentiability.

Section A  Monday, Wednesday Friday 08:00-08:50  S-413  Dr. R. McCartney

MATH 311: Topology and Metric Spaces (3 credits)
Prerequisite: MATH 103
Metric spaces, discrete and pseudo metric spaces, open and closed sets, closure and interior sets, convergence and Cauchy sequences, complete metric space, topological spaces, basis and sub-basis, open and closed function, continuity and homeomorphism, sparation axioms, connectedness, compactness.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-413  Dr. R. McCartney
MATH 402: Ring Theory (4 credits)
Prerequisite: MATH 313
Definition and examples of rings, subrings, special classes of rings, ideals, quotient rings, ring homomorphism, factorization in integral domain, fields.

Section A  Monday, Wednesday 12:00-01:15  S-413  Dr. R. Ashraf
            Friday 12:00-12:50  S-413
PHILOSOPHY

PHIL 101: Introduction to Philosophy (3 credits)
This course brings to the student a selection of the problems historically identified as philosophical along with the methods philosophers have used to solve these problems. Examples would be justice and moral order, evaluation and justification of belief human value and dignity. The emphasis is on identifying the problems that have bothered critical thinkers, followed by selective philosophical solutions and their authors.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-121  Dr. M. Boone
Section B  Tuesday, Thursday 11:00-12:15  E-121  Dr. G. Irfan
Section C  Tuesday, Thursday 12:30-01:45  E-121  Dr. G. Irfan

PHIL 201: Philosophy: Ancient through Medieval (3 credits)
A study of the rise of critical thought in the pre-Socratic Greek world and its development through the issues related to deriving the morally right and individual significance by understanding the universe’s structure end function. The classic Platonic and Aristotelian worldviews are examined and evaluated b their Eastern and Western historical critics through the end of the medieval period.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-121  Dr. G. Irfan

PHIL 221: Logic: How to Think Clearly (3 credits)
An examination of logic, including both stoic contributions as well as the systematic organization of the rules of right thinking developed by Aristotle and examined by Medieval and latter thinkers, make up the content of the course, with an added concern about the issues raised by J. S. Mill and others who systematized inductive topic.

Section A  Monday, Wednesday, Friday 10:00-10:50  E-121  Dr. M. Boone

PHIL 342: Philosophy of Science (3 credits)
Prerequisite: Any Philosophy course or permission from instructor.
Rise of the scientific method from the perspective of the logic of scientific explanation, relevance of theory to experimental information, dependence of scientific explanation on a paradigm of how the world functions etc.

Section A  Tuesday, Thursday 09:30-10:45  E-121  Dr. M. Boone

PHIL 402: Philosophical Investigations: The Ancient Period Plato (3 credits)
Prerequisite: Any Philosophy course or permission from instructor.
The courses are rotated over a three year sequence and allow the student to concentrate on careful study in the thought., context and impact of a specific ancient philosopher.

Section A  Tuesday, Thursday 02:00-03:15  E-121  Dr. M. Boone
## PHYSICS

### PHYS 100: Introduction to Physics  
(4 credits)

Does not fulfill requirements of General Education for students who have studied physics at FSc, A-levels or equivalent

Scope of Physics, Kinematics and bodies in motion; communication, basic electricity, medical physics and elements of astrophysics; laboratory: familiarization with measuring instruments and related experimentation.

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<th>Section</th>
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<td>A</td>
<td>Monday, Wednesday, Friday 08:00-08:50</td>
<td>S-007</td>
<td>Dr. Henderson</td>
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<td>Lab:</td>
<td>Tuesday 02:00-03:50</td>
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<td>B</td>
<td>Monday, Wednesday, Friday 10:00-10:50</td>
<td>S-007</td>
<td>Dr. S. Aslam</td>
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<tr>
<td>Lab:</td>
<td>Monday 02:00-03:50</td>
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<td>C</td>
<td>Tuesday, Thursday 08:00-09:15</td>
<td>S-007</td>
<td>Dr. Henderson</td>
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<td>Lab:</td>
<td>Friday 10:00-11:50</td>
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<td>Monday, Wednesday, Friday 12:00-12:50</td>
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<td>Dr. Henderson</td>
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<td>Lab:</td>
<td>Thursday 02:00-03:50</td>
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**Reserved for freshmen (E, F Sections)**

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<tr>
<td>E</td>
<td>Tuesday, Thursday 02:00-03:15</td>
<td>S-016</td>
<td>Dr. S. Zaheer</td>
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<tr>
<td>Lab:</td>
<td>Wednesday 08:00-09:50</td>
<td>S-029</td>
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<td>F</td>
<td>Monday, Wednesday, Friday 08:00-08:50</td>
<td>S-109</td>
<td>Dr. R. A. Rehman</td>
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<tr>
<td>Lab:</td>
<td>Thursday 08:00-09:50</td>
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### PHYS 102: General Physics II  
(4 credits)

Prerequisite: PHYS 100 or F.Sc. or A. Level Physics or equivalent

Electricity, magnetism, DC and AC currents, and modern physics, Laboratory.

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<th>Section</th>
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<tr>
<td>A</td>
<td>Tuesday, Thursday 02:00-03:15</td>
<td>S-027</td>
<td>Dr. S. Aslam</td>
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<td>Lab:</td>
<td>Wednesday 02:00-03:50</td>
<td>S-029</td>
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### PHYS 103: Mechanics  
(4 credits)

Prerequisite: PHYS 100 or F.Sc. or A. Level Physics or equivalent

Study of physical phenomena in mathematical terms; Statics and dynamics of particles and rigid bodies; oscillatory and rotary motion; gravitation and fluid mechanics, Laboratory.

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<tr>
<th>Section</th>
<th>Days and Times</th>
<th>Location</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>A</td>
<td>Monday, Wednesday, Friday 12:00-12:50</td>
<td>S-109</td>
<td>Dr. S. A. Shah</td>
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<tr>
<td>Lab:</td>
<td>Tuesday 08:00-09:50</td>
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<tr>
<td>B</td>
<td>Tuesday, Thursday 11:00-12:15</td>
<td>S-016</td>
<td>Dr. H. Latif</td>
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<td>Lab:</td>
<td>Monday 08:00-09:50</td>
<td>S-016</td>
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<td>C</td>
<td>Monday, Wednesday, Friday 02:00-02:50</td>
<td>S-027</td>
<td>Dr. M. Shehzad</td>
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<td>Lab:</td>
<td>Thursday 08:00-09:50</td>
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**Reserved for freshmen (D, E, F Sections)**

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<tr>
<th>Section</th>
<th>Days and Times</th>
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<th>Instructor</th>
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<tbody>
<tr>
<td>D</td>
<td>Tuesday, Thursday 03:30-04:45</td>
<td>S-016</td>
<td>Dr. S. A. Shah</td>
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<tr>
<td>Lab:</td>
<td>Thursday 08:00-09:50</td>
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<td>E</td>
<td>Monday, Wednesday, Friday 11:00-11:50</td>
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<td>Dr. S. A. Shah</td>
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<td>Lab:</td>
<td>Friday 08:00-09:50</td>
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<tr>
<td>F</td>
<td>Monday, Wednesday, Friday 11:00-11:50</td>
<td>S-007</td>
<td>Dr. M. Shehzad</td>
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<tr>
<td>Lab:</td>
<td>Wednesday 08:00-09:50</td>
<td>S-039</td>
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</table>
PHYS 221: Electricity and Magnetism  (4 credits)
Prerequisite: PHYS 103
Electrostatics, magnetostatics, electric, current, laws of magnetism, Maxwell’s Equations, electromagnetic energy and electromagnetic wave equations, laboratory.

Section A  Monday, Wednesday, Friday 10:00-10:50 S-109  Dr. M. Shehzad
Lab:  Tuesday 08:00-09:50  S-027

PHYS 255: Introduction to Meteorology  (3 credits)
Prerequisites: PHYS 102 or PHYS 103 or PHYS 151
Study of the Physical processes of condensation, precipitation, radiation, and Radiative transfer; solar radiation, atmospheric motion measuring properties of the atmosphere and magnetosphere; Earth’s magnetic field and charge density movement in the atmospheres.

Section A  Monday, Wednesday, Friday 02:00-02:50 S-109  Dr. H. Latif

PHYS 301: Classical Mechanics  (4 Credits)
Prerequisite: PHYS 103
Study of the motion of particles and system of particles. Direct application of Newtonian Mechanics: Langranian formulation: Hamiltonian formulation. Motion under an inverse force field; two body problems; planetary orbital motion; Legendre transformation; canonical transformations and their properties; Poisson’s brackets, theorems and invariance; Laboratory.

Section A  Monday, Wednesday, Friday 12:00-12:50 S-007  Dr. S. Aslam
Lab:  Thursday 10:00-11:50  S-039

PHYS 321: Electrodynamics  (4 Credits)
Prerequisite: PHYS 221
Emphasis on the unity of electric and magnetic phenomena. Introduction of electrostatics and magnetostatics; solution of boundary – value problems; time-varying fields; gauge transformations; Maxwell’s Equations and wave equations; electromagnetic wave propagation in lossless, lossy and metallic media; wave propagation through coaxial transmission lines; rectangular wave guides and radiation from oscillating dipoles; Laboratory

Section A  Tuesday, Thursday 09:30-10:45  S-007  Dr. M. Y. Zaheer
Lab:  Wednesday 10:00-11:50  S-039

PHYS 331: Electronic I  (3 Credits)
Prerequisite: PHYS 221
Study of the elementary physics of semiconductors, two-terminal devices, LEDs, leasers, Schottky diodes, three terminal devices and selected topics on metal contacts and devices fabrication.

Section A  Monday, Wednesday, Friday 11:00-11:50 S-027  Dr. R. A. Rehman
PHYS 451: Sources of Energy  
(3 Credits)
Prerequisite: PHYS 301
Study of the different sources of energy, including thermal, hydroelectric, solar, nuclear and thermo unclear.

Section A  Tuesday, Thursday 09:30-10:45  S-109  Dr. F. Hameed

PHYS 452: Atmospheric Physics  
(3 Credits)
Prerequisite: PHYS 222 or PHYS 255
General description of the atmosphere, atmospheric thermodynamics, solar and terrestrial radiation, atmospheric aerosol and cloud microphysical processes, atmospheric electricity, and dynamics.

Section A  Monday, Wednesday, Friday 10:00-10:50  S-027  Dr. H. Latif

PHYS 461: Quantum Mechanics I  
(3 Credits)
Prerequisite: PHYS 301
Historical origination of the quantum theory, foundation of wave mechanics, schrodinger wave equation and its solution for free particles, the hydrogen atom and the harmonic oscillator.

Section A  Tuesday, Thursday 11:00-12:15  S-027  Dr. S. Zaheer

PHYS 481: Solid State Physics  
(3 Credits)
Prerequisite: PHYS 221
Study of solids, crystal structure, direct and reciprocal lattices, types of bonding, lattice vibrations, the thermal, electrical and magnetic properties of solids and the effects of crystals.

Section A  Tuesday, Thursday 02:00-03:15  S-007  Dr. F. Hameed

PHYS 483: Material Science  
(3 Credits)
Prerequisites: PHYS 321
Study of the properties of materials; the internal structure of materials; the performance of materials during manufacture, production and processing; the performance of materials during service, crystal structure crystal geometry, solidification, crystalline imperfections, diffusion in solids, thermodynamics and phase diagrams, and electrical materials.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-027  Dr. M. Y. Zaheer
PHYS 498: Internship  (6 Credits)
Prerequisite: Physics majors with 90 completed credit hours with CGPA 2.50 or above
Students will have to work in a well known industry/ organization or University/Institute for 6 to 8 weeks during summer semester, and will observe the timings as prescribed by the host organization. Director Career Planning will act as a liaison officer between the department and the industry/ organization University/Institute. The student will have a supervisor from the department as well as from the host organization. At the end of the completion of the training students will submit a written report to both the supervisors and will be evaluated by a departmental committee.

PHYS 499: Senior Thesis Project  (6 credits –spread over two semesters)
Prerequisite: Physics majors with 90 completed credit hours with CGPA 2.50 or above
Each student works on an independent project under the supervision of a faculty member, with the expectations that the student will prepare a senior thesis and will present a seminar on his / her work.

Note: Students not taking PHYS 498 or PHYS 499 due to eligibility or otherwise have to take two additional physics courses in lieu of to make up the required credits for majoring/graduating.
POLITICAL SCIENCE

PLSC 101: Introduction to Political Science (3 credits)
Areas covered in political science including the nature of political science, the nature and forms of the state, structure of government, political dynamics, and the development of an appropriate political science vocabulary.

Reserved for freshmen (A, G Sections)

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<tr>
<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Location</th>
<th>Instructor</th>
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<tr>
<td>A</td>
<td>Monday, Wednesday, Friday</td>
<td>08:00-08:50</td>
<td>S-111</td>
<td>A. Khan</td>
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<tr>
<td>B</td>
<td>Monday, Wednesday, Friday</td>
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<td>S. Sindh</td>
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<td>C</td>
<td>Tuesday, Thursday</td>
<td>09:30-10:45</td>
<td>S-111</td>
<td>M. Mirza</td>
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<tr>
<td>D</td>
<td>Tuesday, Thursday</td>
<td>11:00-12:15</td>
<td>S-112</td>
<td>Dr. E. Hussain</td>
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<td>E</td>
<td>Monday, Wednesday, Friday</td>
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<td>S. Sindh</td>
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<td>F</td>
<td>Tuesday, Thursday</td>
<td>11:00-12:15</td>
<td>S-410</td>
<td>M. Mirza</td>
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<td>G</td>
<td>Tuesday, Thursday</td>
<td>12:30-01:45</td>
<td>S-410</td>
<td>M. Mirza</td>
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<td>J</td>
<td>Tuesday, Thursday</td>
<td>12:30-01:45</td>
<td>S-111</td>
<td>Dr. F. Hasnat</td>
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PLSC 102: Pakistan Government-National (3 credits)
A history of the freedom movement and study of the main institution of the national government and what makes the Pakistan government unique.

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<td>Dr. M. Younis</td>
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<td>Tuesday, Thursday</td>
<td>09:30-10:45</td>
<td>S-112</td>
<td>Dr. M. Younis</td>
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PLSC 103: Pakistan Government-Provincial / Local (3 credits)
Government at the provincial and local level with an examination of the basic institutional arrangements of the provincial government, provincial elections, political party organization, state public policy matters and a detailed exploration of the operation of government at these levels.

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<td>Dr. F. Hasnat</td>
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<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>02:00-02:50</td>
<td>S-111</td>
<td>Dr. F. Hasnat</td>
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PLSC 201: Government of Western Europe and the United States (3 credits)
Prerequisite: PLSC 101
Parliamentary, presidential, unitary and federal systems of major western nations.

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<td>08:00-09:15</td>
<td>S-111</td>
<td>A. Khan</td>
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<tr>
<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>12:00-12:50</td>
<td>E-228</td>
<td>M. Mirza</td>
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PLSC 203: International Relations (3 credits)
Prerequisite: PLSC 101
Theory and practice of International Relations using the distinction between realism and idealism as the basis for study. Attention will be given to power relationships, theories of war and conflict, international morality, collective security and terrorism.

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<td>A</td>
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<td>10:00-10:50</td>
<td>S-111</td>
<td>A. Khan</td>
</tr>
<tr>
<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>11:00-11:50</td>
<td>S-111</td>
<td>Dr. I. Bokhari</td>
</tr>
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</table>
PLSC 301: Ancient, Medieval and Early Modern Political Theory (3 credits)
Prerequisite: PLSC 101
Political thought from early Greece through the 17th Century using original sources from philosophers including Aristotle, Plato, Hobbes, Machiavelli, Locke, Rousseau and Hegel.

Section A  Tuesday, Thursday 08:00-09:15  S.425  Z. Awan

PLSC 302: Modern Political Theory (3 credits)
Prerequisite: PLSC 101
Modern ideologies since the French Revolution, including liberalism, conservatism, capitalism, nationalism, fascism and anarchism.

Section A  Tuesday, Thursday 08:00-09:15  S-112  Dr. E. Hussain
Section B  Monday, Wednesday, Friday 02:00-02:50  S-112  Dr. Q. Memon

PLSC 304: Research Methodology (3 credits)
Prerequisite: STAT 100 or STAT 101
Techniques and tools for significant research in the field of political science.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-111  Q. Memon

PLSC 305: Islamic Political Thought (3 credits)
Prerequisite: PLSC 101
Development of Islamic political thought from ancient times to the present, Muslim thinkers Al-Farabi, Al-Mawardi, Al-Ghazzali, Ibn Khaldun, Shah Waliullah and Allama Muhammad Iqbal.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-112  Z. Awan

PLSC 321: Pakistan Foreign Policy (3 credits)
Prerequisite: PLSC 101
status and relationships between Pakistan and the rest of the world with special emphasis upon relations with the Islamic World and the United States.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-112  Dr. Bokhari

PLSC 322: International Law (3 credits)
Prerequisite: PLSC 101 & 203
Historical evolution of international law, coverage of classifications of states, rights and duties of jurisdiction, theories of nationalism, diplomatic relations, operation and enforcement of treaties, redress of differences by war and other methods and neutrality.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-112  Dr. M. Younis

PLSC 335: Public Opinion (3 credits)
Prerequisite: PLSC 101
General nature of public opinion and its development and application to Pakistan, modern techniques of measurement.

Section A  Tuesday, Thursday 11:00-12:15  S-111  S. Sindhu
PLSC 400: Current Political Problems (3 credits)
Prerequisite: PLSC 101, Junior Status
Topical issues and themes of justices, equality and liberty women’s right, race relations, child labor, birth control and other topics as chosen by the professor and members of the class.

Section A  Tuesday, Thursday 02:00-03:15  S-111  S. Sindhu

PLSC 403: Seminar and Major Political Science Research Paper (3 credits)
Prerequisite: PLSC 304
Major Paper (20 pages minimum) written under the direction of a political science professor.

Section A  Tuesday, Thursday 02:00-03:15  S-112  Dr. I. Bokhari
Section B  Tuesday, Thursday 02:00-03:15  S-417  Q. Memon

PLSC 415: Thesis (6 credits)
Prerequisite: PLSC 304
Open to seniors majoring in Political Science who has maintained a CGPA of 3.50 or above
A detailed research project approved by the department Chairperson and directed by a faculty member in the department.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-112  Dr. I. Bokhari
PSYCHOLOGY

PSYC 100: Introduction to Psychology  (3 credits)
Historical background and subfields of Psychology, research methods, biological basis of behavior and psychological processes such as sensation, attention, perception, learning, memory, motivation, emotions, intelligence, thinking and personality.

Reserved for freshmen (B Section)
Section A  Monday, Wednesday, Friday 08:00-08:50  S-115  A. Saleem
Section B  Monday, Wednesday, Friday 09:00-09:50  S-115  TBD
Section C  Monday, Wednesday, Friday 03:00-03:50  S-115  TBD
Section D  Tuesday, Thursday 09:30-10:45  S-115  F. Rahman
Section E  Monday, Wednesday, Friday 02:00-02:50  S-115  A. Saleem

PSYC 150: Developmental Psychology-1  (3 credits)
Prerequisite: PSYC 100
Human development from conception to adolescence focusing on physical, intellectual and personality development, special emphasis on development in adolescence and the quest of identity, research activities integrated into the coursework,

Section A  Monday, Wednesday, Friday 10:00-10:50  S-115  A. Hameed

PSYC 220: Statistics for Psychology  (4 credits)
Prerequisite: PSYC 100
Statistical concepts and skills necessary for conducting research and providing an adequate quantitative foundation for understanding psychological literature and SPSS. Covers (a) descriptive statistical techniques including frequency distributions, graphing, and measures of central tendency and variability and (b) inferential statistical techniques including t-tests, analysis of variance, correlation and chi-square. Emphasizes applications of statistics and these techniques to research and the interpretation of results.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-115  F. Rahman

PSYC 280: Social Psychology  (3 credits)
Prerequisite: PSYC 100
Nature, scope, historical perspective and research methods, social perception, cognition and identity, interpersonal relationships, attribution, conformity, pro-social behavior, groups, leadership, attitudes, prejudice and aggression. Theories and findings will be related to everyday social issues and concerns.

Section A  Tuesday, Thursday 12:30-01:45  S-115  A. Hameed

PSYC 300: Positive Psychology  (3 credits)
Prerequisite: PSYC 100
Positive aspects of human behavior, practical wisdom through a series of exercises in sensitivity and growth, Neuro-Linguistic Programming (NLP), optimism, self-confidence, listening and communication skills, time management, handling criticism, happiness, self-esteem, emotional quotient (EQ), morality, empathy, friendship, love, achievement, creativity, music and humor.

Section A  Tuesday, Thursday 11:00-12:15  S-115  A. Saleem
**PSYC 340: Abnormal Psychology** (3 credits)
Prerequisite: PSYC 240
Nature and concepts of abnormality, historical perspective with special emphasis on Pakistan, Psychoanalytical, medical, behavioristic; humanistic, and cognitive behavioral models of abnormal behavior; psychological disorders; anti-psychiatry movement; overview of major psychotherapeutic techniques; prevention of mental skiness.

*Section A*  
**Tuesday, Thursday 11:00-12:15**  
E-331  
TBD

**PSYC 350: Biopsychology** (3 credits)
Prerequisites: PSYC 340
Behavior and mental processes from the biological perspective with particular emphasis on the role of neurochemical and endocrine factors in the function of the central nervous system, chemical and neural basis of sensory processes, motivation, emotion, learning, memory, language, sleep, reproduction, gender and psychopathology.

*Section A*  
**Tuesday, Thursday 08:00-09:15**  
S-115  
S. Samuel

**PSYC 360: Psychological Testing and Measurement** (3 credits)
Prerequisite: PSYC 305
Functions, origins and basic concepts of psychological testing, test construction, ability / intelligence and personality testing, application of psychological tests in educational, occupational and clinical contexts and ethical issues.

*Section A*  
**Tuesday, Thursday 02:00-03:15**  
S-115  
A. Saleem

**PSYC 450: History and Systems of Psychology** (3 credits)
Prerequisites: For Psychology majors, to be taken during the Senior year or after permission from the instructor.
For non-psychology majors: PSYC 100 and permission from the instructor.
Historical origin of modern psychology with a focus on Greek contribution, Muslim contribution, European philosophy, and physiology, development of various schools of thought in Psychology including structuralism, functionalism, associationism, behaviorism, gestalt psychology, psychoanalysis, cognitive psychology, humanistic psychology, evolutionary psychology, and some current trends.

*Section A*  
**Monday, Wednesday, Friday 12:00-12:50**  
S-115  
A. Hameed

**PSYC 480A: Senior Thesis** (3 Credits)
Prerequisites: PSYC 305 and permission from the department; open to Seniors majoring in Psychology, PSYC 480 consists of two parts, PSYC 480 A and PSYC 480 B. Students studying PSYC 480 in the Fall semester need to study PSYC 480 B in the spring semester.
An independent research study on a topic chosen by the student. The research study will be supervised by a faculty member of Department of Psychology.

*Section A*  
**Monday, Wednesday, Friday 03:00-03:50**  
N-16  
A. Ateeq
*Section B*  
**Monday, Wednesday, Friday 03:00-03:50**  
E-331  
F. Rahman
RELIGIOUS STUDIES

ISLM 101: Islamic Education (3 credits)
This course is intended to provide an introductory understanding of Islam. Students learn much about the Islamic way of life in this subject as they study about logical and rational vindication of their fundamental beliefs. The course is quite helpful in improving character traits, personality strengths and social manners in the light of Islamic teachings. By taking this course, students improve their inner conviction about their faith and are likely to become better Muslims. Basic emphasis is on ethical development and character building of the students.

Reserved for freshmen (D, E, F, K, L Sections)

Section A  Monday, Wednesday, Friday 08:00-08:50  E-122  A. Ur Rehman
Section B  Monday, Wednesday, Friday 09:00-09:50  E-122  A. Ur Rehman
Section C  Monday, Wednesday Friday 10:00-10:50  E-221  A. Ur Rehman
Section D  Monday, Wednesday, Friday 12:00-12:50  E-126  Dr. F. Aziz
Section E  Monday, Wednesday, Friday 02:00-02:50  E-126  Dr. F. Aziz
Section F  Monday, Wednesday, Friday 03:00-03:50  E-126  Dr. F. Aziz
Section G  Monday, Wednesday, Friday 11:00-11:50  E-122  U. Ur Rehman
Section H  Monday, Wednesday, Friday 10:00-10:50  E-122  U. Ur Rehman
Section J  Tuesday, Thursday 11:00-12:15  E-122  U. Ur rehman
Section K  Tuesday, Thursday 12:30-01:45  E-126  Dr. A. Ghani
Section L  Tuesday, Thursday 02:00-03:15  E-126  Dr. A. Ghani

ISLM 202: The Quran-Contents, Style and Interpretation (3 credits)
Prerequisite: ISLM101
This course is offered to assist student in understanding the Holy Quran with its meaning and commentary. The course includes compilation of the Holy Quran, content types, general style, along with selected readings from the Holy Quran, Ulum-al-Quran (collection, exegesis and Ijaz al-Quran) inimitability of the Quran, qualities of Mufassir and different types of interpretations.

Section A  Tuesday, Thursday 02:00-03:15  E-122  Dr. F. Aziz

CHRISTIAN STUDIES

CRST 151: Basic Christian Doctrine (3 credits)
This course serves as an introduction to the foundational Christian beliefs such as the nature of God, the person and work of Christ, the purpose of the church, the meaning of Christian life and growth, and the nature of God’s Word as revealed in the Old and New Testaments.

Section A  Monday, Wednesday, Friday 08:00-08:50  E-126  Dr. H. McCarney
CRST 152: Christian Ethics (3 credits)
This course presents the biblical and theological foundations of Christian ethics with a special emphasis on developing the skills necessary to formulate ethical questions and find their solutions in the Bible.

Reserved for freshmen (B Section)
Section A  Monday, Wednesday, Friday 09:00-09:50  E-126  Dr. B. Wetmore
Section B  Monday, Wednesday, Friday 10:00-10:50  E-126  K. Pervaiz

CRST 251: Old Testament (3 credits)
Prerequisite: CRST 152
This course presents a survey of the literature of the Old Testament with a view to distinguishing its unifying message; understanding the Old Testament historical books within their original cultural, political and historical context; gaining skills in identifying and faithfully interpreting various literary genres; gaining skills in applying the original messages of the various books to contemporary life.

Section A  Tuesday, Thursday 08:00-09:15  E-126  Dr. B. Wetmore

CRST 252: Christian History (3 credits)
Prerequisite: CRST 152
A survey of the rise of Christianity from the period immediately following the ministry of Jesus Christ to the contemporary worldwide Christian movement. This course will highlight Christian who have made significant impact upon the Church, as well as investigating movements within the Church’s history which have molded the various expressions of Christianity known around the world. This course will include a special emphasis on Christianity in South Asia from the missionary work of the Apostle Thomas to the present day. The course seeks to set within its larger historical and global context the current Christian situation for the Church in Pakistan.

Section A  Tuesday, Thursday 11:00-12:15  E-126  C. Ramsey

CRST 451: Paul’s Life, Theology and Impact (3 credits)
Prerequisite: CRST 152
An overview of Paul’s life and impact on Christianity within its cultural and historical setting; a survey of Paul’s thirteen letters in the New Testaments, and an in depth examination of key letters.

Section A  Tuesday, Thursday 09:30-10:45  E-126  Dr. B. Wetmore
SOCL 100: Introduction to Sociology (3 credits)
Presents fundamental concepts of sociology. Helps students to observe and understand the actions, beliefs, and interactions of people in their own and other societies and to think critically about themselves in relation to social structures in their own and other societies at the individual, group and societal levels. Analyzes current social issues in Pakistan and other countries in terms of sociological concepts. Assignments focus on analyzing and interpreting social issues in societies around the world in sociological terms with practical assignments that reinforce classroom learning.

Reserved for freshmen (A, C, H Sections)
Section A  Monday, Wednesday, Friday 10:00-10:50  E-324  A. Jaffer
Section B  Monday, Wednesday, Friday 11:00-11:50  E-105  A. Azeem
Section C  Monday, Wednesday, Friday 12:00-12:50  E-105  S. Rashid
Section D  Monday, Wednesday, Friday 02:00-02:50  E-105  A. Jaffer
Section E  Tuesday, Thursday 08:00-09:15  E-324  A. Azeem
Section F  Tuesday, Thursday 09:30-10:45  E-324  S. Rashid
Section G  Tuesday, Thursday 02:00-03:15  E-324  S. Jabeen
Section H  Tuesday, Thursday 02:00-03:15  E-227  S. Rashid
Section J  Tuesday, Thursday 03:30-04:45  E-324  S. Jabeen

SOCL 201: Sociology Research (3 credits)
Prerequisite: SOCL 100 and an introductory course in the statistics of the Social Science, such as STAT 103 or PSYC 220
Presents methodological approaches in social science research, the ethics of social research, and the comparative advantages and limitations of a variety of research orientations, strategies and techniques including experiments, field observations, interviewing, unobtrusive research and surveys. Students will conduct a simple social research project.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-324  A. Jaffer

SOCL 220: Introduction to Criminology (3 credits)
Prerequisite: SOCL 100
Presents a sociological basis to understand deviancy and criminal behavior, the causes and consequences of crime, responses to crime and the historical transition of ideas about crime, and tools for the scientific investigation of criminal behavior.

Section A  Monday, Wednesday, Friday 02:00-02:50  E-324  A. Azeem

SOCL 223: Social and Cultural Anthropology (3 credits)
Explores cultures of our world with a special look at non-western cultures, tools for more effective inter-cultural communications, mirror in which to see our own cultural group more clearly, cultural concepts, and ethnographic description.

Section A  Tuesday, Thursday 11:00-12:15  E-324  TBD
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>SOCL 290</td>
<td>Political Sociology</td>
<td>3</td>
<td>SOCL 100</td>
<td>Social factors underlying political systems such as democracy and totalitarianism, social movements and revolutions, conflict and conflict resolution, voting behavior, and political socialization and the influence of ethnicity, religion, race gender and caste on politics.</td>
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<tr>
<td>SOCL 301</td>
<td>Theoretical Perspectives in Sociology</td>
<td>3</td>
<td>SOCL 100</td>
<td>Examines the structure and thought of the theoretical process, including using information and developing reason. Explores the theories, methods, objects and implications of some of the masters of Sociological thought. Provides the link between Sociological theory and social research.</td>
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<tr>
<td>SOCL 325</td>
<td>Sociology of Gender</td>
<td>3</td>
<td>SOCL 100</td>
<td>Cultural values, social institution and theories in the construction of gender, analysis of gender inequality in contemporary societies and exploration of the social experience of gender across different cultures and roles; statutes and social placements of gender as an outcome of socioeconomic and cultural environment.</td>
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<tr>
<td>SOCL 465</td>
<td>Sociology of Sports and Leisure</td>
<td>3</td>
<td>SOCL 100, SOCL 201, SOCL 301</td>
<td>Cultural and economic relations in sport and leisure including outdoor recreation, spectator sport, informal play, tourism and other entertainment activities from contemporary and historical perspectives with emphasis on the dynamics of power and identity.</td>
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<tr>
<td>SOCL 499A</td>
<td>Final Year Independent Research Project (First Semester)</td>
<td>3</td>
<td>Only available to sociology majors who have taken SOCL 100, 201 and 301</td>
<td>Students select an independent research topic, conduct a literature review, and develop a plan for a proposed research project that includes its methodology, special issue to consider, permissions as needed, and a budget. Work will be done under the supervision of a faculty member in Sociology.</td>
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<tr>
<td>SOCL 499B</td>
<td>Final Year Independent Research Project (Second Semester)</td>
<td>3</td>
<td>Only available to sociology majors who have taken SOCL 100, 201, 301 and 499A</td>
<td>Based on the Research plan completed in the first semester, the student will carry out his / her research project collecting data, analyzing the data, writing it up and making a formal presentation of the results to faculty and other students.</td>
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STATISTICS

STAT 100: Basic Statistics (3 credits)
Sample and population, variables, collection and presentation of data, measures of central tendency and dispersion for ungrouped data, Index numbers, correlation and free hand line of trend.

Reserved for freshmen (A, G, K Sections)
Section: A Monday, Wednesday, Friday 02:00-02:50 S-421 TBD
Section: B Tuesday, Thursday 11:00-12:15 S-420 S. Ayub
Section: C Monday, Wednesday, Friday 12:00-12:50 S-420 N. Mushtaq
Section: D Monday, Wednesday, Friday 10:00-10:50 S-420 Dr. M. Aslam
Section: E Tuesday, Thursday 09:30-10:45 S-421 Dr. M. Azam
Section: F Tuesday, Thursday 08:00-09:15 S-421 N. Mushtaq
Section: G Monday, Wednesday, Friday 12:00-12:50 S-421 TBD
Section: H Monday, Wednesday, Friday 08:00-08:50 S-420 S. Ayub
Section: J Monday, Wednesday, Friday 03:00-03:50 S-421 Dr. M. Aslam
Section: K Tuesday, Thursday 08:00-09:15 S-420 TBD

STAT 101: Statistical methods (3 credits)
Nature and scope of statistics, scales of measurements, measure of central tendency and dispersion for grouped data, moments, skewness and kurtosis, fundamental rules of counting, Basic probability, moments in probability context.

Reserved for freshmen (C Section)
Section: A Tuesday, Thursday 09:30-10:45 S-420 S. Ayub
Section: B Tuesday, Thursday 11:00-12:15 S-421 Dr. H. McCartney
Section: C Tuesday, Thursday 02:00-03:15 S-421 TBD

STAT 102 / MATH 105: Probability and Probability Distributions (3 credits)
Basic set theory. Different approaches and laws of probability. Conditional probability Bayes’ rule. Random variables, some standard discrete and continuous probability distributions

Section: A Monday, Wednesday, Friday 10:00-10:50 S-421 Dr. H. McCartney
Section: B Monday, Wednesday, Friday 11:00-11:50 S-421 Dr. M. Rasul

STAT 103: Quantitative methods in social science (3 credits)
Application of Statistical methods in Social Sciences. Data analysis using SPSS.

Section: A Tuesday, Thursday 12:30-01:45 S-319 M. A. Mughal
Section: B Tuesday, Thursday 02:00-03:15 S-319 N. Mushtaq

STAT 201: Statistical Inference I (3 credits)
Pre-requisite: Stat 101 or 102
Population and sample; Introduction to sampling distributions and their properties; point and interval estimation; testing of hypotheses about means, proportions and variances.

Section: A Tuesday, Thursday 12:30-01:45 S-420 Dr. M. Azam
STAT 202: Statistical Inference II (3 credits)
Prerequisite: STAT 201
Tests based on Chi-squared distribution. ANOVA and analysis of basic designs. Non-parametric tests.

Section: A  Monday, Wednesday, Friday 03:00-03:50  S-420  N. Mushtaq

STAT 301: Sampling Techniques I (3 credits)
Prerequisite: STAT 201
Basic sampling designs with applications, Estimation of means, proportions and variances. Ratio and Regression estimates.

Section: A  Tuesday, Thursday 02:00-03:15  S-420  Dr. M. Aslam

STAT 304 / MATH 314: Distribution Theory (3 credits)
Prerequisite: STAT 102 or MATH 105
Random Variables and expectations of their functions. Theory and applications of important discrete and continuous distributions.

Section: A  Monday, Wednesday, Friday 09:00-09:50  S-420  Dr. M. Rasul

STAT 305: Statistical quality Control (3 credits)
Prerequisite: STAT 101
Control charts for attributes and variables, Acceptance sampling plan, quality improvement procedures. Taguchi method of online or offline approach to quality improvement; signal-noise ratios using orthogonal arrays.

Section: A  Monday, Wednesday, Friday 08:00-08:50  S-421  M. A. Mughal

STAT 310: Time Series Analysis (3 credits)
Prerequisite: STAT 303
Types of time series data, trends, seasonal and cyclical analysis of data, irregular series, short term forecasting. ARMA and ARIMA models, diagnostic checking, forecasts. Box-Jenkin’s approach, spectral analysis.

Section: A  Tuesday, Thursday 12:30-01:45  S-421  S. Ayub

STAT 315: Statistical Packages and Data Analysis (3 credits)
Prerequisite: STAT 202
Introduction to data analysis using software packages. Applications of parametric and non-parametric tests, model fitting, probability distribution fitting, basic multivariate analysis of survey data.

Section: A  Tuesday, Thursday 09:30-10:45  S-120  M. A. Mughal
STAT 401 / MATH 408: Stochastic Processes  (3 credits)
Prerequisite: STAT 102 or MATH 105
Introduction, random walk and ruin problem, Markov chains and Markov processes, power spectra and linear systems, renewal theory, Brownian motion,

Section: A  Monday, Wednesday, Friday 09:00-09:50  S-421  Dr. H. McCartney

STAT 406: Applied Multivariate Analysis  (3 credits)
Prerequisite: STAT 202
Multivariate data, review of multiple regression analysis, PC analysis and Factor analysis, Canonical correlation, Hotelling T Procedures, MANOVA. Discriminant analysis

Section: A  Monday, Wednesday, Friday 11:00-11:50  S-420  Dr. M. Azam

STAT 408: Biostatistics  (3 credits)
Prerequisite: STAT 102
Introduction, probability distributions of biological variables probit anad logit transformations, ANOVA in biostatistics, Developing G test, R. x C test of independence,

Section: A  Monday, Wednesday, Friday 02:00-02:50  S-420  Dr. M. Aslam
URDU

URDU 101: Communicative Urdu (3 credits)
Communication and its different means, brief introduction to Urdu language, some fundamentals of Urdu grammar, functional Urdu, creative writing and journalistic Urdu.

Reserved for freshmen (A,C,E,G,H,L Sections)

<table>
<thead>
<tr>
<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Location</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>A</td>
<td>Monday, Wednesday, Friday</td>
<td>08:00-08:50</td>
<td>E-330</td>
<td>Dr. A. G. Qasim</td>
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<tr>
<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>08:00-08:50</td>
<td>E-328</td>
<td>Dr. A. M. Khan</td>
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<tr>
<td>C</td>
<td>Monday, Wednesday, Friday</td>
<td>09:00-09:50</td>
<td>E-330</td>
<td>Dr. A. G. Qasim</td>
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<tr>
<td>D</td>
<td>Monday, Wednesday, Friday</td>
<td>10:00-10:50</td>
<td>E-328</td>
<td>Dr. M. Tahir</td>
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<tr>
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<td>Monday, Wednesday, Friday</td>
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<td>E-330</td>
<td>Dr. A. A. Virk</td>
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<td>Dr. M. Tahir</td>
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<td>Monday, Tuesday, Thursday</td>
<td>02:00-02:50</td>
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<td>A. Anwar</td>
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<td>E-122</td>
<td>A. Anwar</td>
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<tr>
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<td>Monday, Wednesday, Friday</td>
<td>02:00-02:50</td>
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<td>N. Khokhar</td>
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<td>Monday, Wednesday, Friday</td>
<td>01:00-01:50</td>
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<td>Monday, Wednesday, Friday</td>
<td>03:00-03:50</td>
<td>S-215</td>
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URDU 103: A Selection of Urdu Verse (3 credits)
Ghazal (Ghalib, Mir and Iqbal), Nazam (Nazeer Akbar Abadi, Akbar Allah Abadi, Majeed Amjad and Syed Zamir Jafri.)

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<tr>
<td>N</td>
<td>Tuesday, Thursday</td>
<td>08:00-09:15</td>
<td>E-330</td>
<td>Dr. A. M. Khan</td>
</tr>
</tbody>
</table>

URDU 201: A brief History of Urdu language and Literature (3 credits)
Introduction to Urdu language and theories regarding its origin; phases and trends in Urdu literature up till the 20th Century: Urdu in Delhi and Lucknow; evolution of Urdu Prose.

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<tr>
<th>Section</th>
<th>Days</th>
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<tbody>
<tr>
<td>A</td>
<td>Monday, Wednesday, Friday</td>
<td>11:00-11:50</td>
<td>E-330</td>
<td>Dr. A. A. Virk</td>
</tr>
</tbody>
</table>

URDU 202: Classical Urdu Poetry 3 credits)
Introduction to classicism, study of classical ghazal (Mir Taki Mir, Khawaja Mir Dard, Haider Ali Atish, Momin, Asadullah Khan Ghalib) Masnawi (Mir Hassan) and marsya (Mir Anees.)

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<th>Section</th>
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<th>Location</th>
<th>Instructor</th>
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<tr>
<td>A</td>
<td>Monday, Wednesday, Friday</td>
<td>12:00-12:50</td>
<td>E-328</td>
<td>Dr. A. Shumar</td>
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</tbody>
</table>

URDU 204: Urdu Grammar and Literary Terms 3 credits)
Ilm-ul-Bayan: Ilm-ul-Badih, Adabi Istalahat

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<td>A</td>
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<td>11:00-12:15</td>
<td>E-330</td>
<td>Dr. A. G. Qasim</td>
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</tbody>
</table>

URDU 205: Pakistani Poetry 3 credits)
Pakistani Poetry (Munir Niazi, Shahzad Ahmad and Ahmad Faraz), Nazam (Munir Niazi, Anwar Masood, Parveen Shakir and Amjad Islam Amjad).

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<tr>
<th>Section</th>
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<th>Time</th>
<th>Location</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>A</td>
<td>Tuesday, Thursday</td>
<td>12:30-01:45</td>
<td>E-105</td>
<td>A. Anwar</td>
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</tbody>
</table>
URDU 208: Script Writing in Urdu  (3 credits)
Documentary writing: Program scripts, Journalistic scripts, Business scripts, Drama and Film scripts.

Section A  Tuesday, Thursday 02:00-03:15  E-330  N. Khokhar

URDU 302: Criticism  (3 credits)
Basic principles and definition of criticism, oriental criticism, western criticism, practical criticism.

Section A  Monday, Wednesday Friday 09:00-09:50  E-328  Dr. A. M. Khan

URDU 303: An Introduction to Selected Genres  (3 credits)
Poetic and prose genres of Urdu literature: ghazal, nazam, rubai, qata, haiku, dastaan, novel, drama and character sketch.

Section A  Tuesday, Thursday 12:30-01:45  E-328  Dr. A. A. Virk

URDU 305: Autobiographical Literature in Urdu  (3 credits)
Evolution of autobiographical literature in Urdu, autobiographers: (Abdul Majeed Salik, Rashid Ahmed Siddiqui, Ihsan Danish and Qudrat Ullah Shahab.)

Section A  Tuesday, Thursday 09:30-10:45  E-330  Dr. A. G. Qasim

URDU 306: Travelogues in Urdu  (3 credits)

Section A  Tuesday, Thursday 11:00-12:15  E-328  Dr. M. Tahir

URDU 401: Study of Iqbal  (3 credits)
Life sketch of Iqbal, Iqbal as a Poet and selected Urdu ghazal and Nazams.

Section A  Tuesday, Thursday 02:00-03:15  E-328  Dr. A. Shumar

URDU 402: A study of Urdu Drama  (3 credits)
Art and evolution of Urdu drama, selected extracts from Anarkali, Mirza Ghalib Bandar Road Per and Man Chalay Ka Soda.

Section A  Tuesday, Thursday 12:30-01:45  E-330  N. Khokhar
**URDU 405: Principles of Literary Research**  
(3 credits)  
Importance of literary research, evolution of Urdu research up till Aab-e-Hayat by M. Hussain Azad, principles and resources of research, terminology and preparation of research paper.

*Section A*  
Monday, Wednesday Friday 01:00-01:50  
E-328  
Dr. A. Shumar

**URDU 406: Practical Research**  
(3 credits)  
A research paper of 50-100 pages on any topic regarding Urdu language and literature.

*Section A*  
A. Anwar
## Cross Listed Courses 2013 Fall

<table>
<thead>
<tr>
<th>Sr. #</th>
<th>Parent Department</th>
<th>Cross Listed Department</th>
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<tbody>
<tr>
<td>1</td>
<td>PHYS 461</td>
<td>MATH 410</td>
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<td>PHYS 301</td>
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<tr>
<td>2</td>
<td>STAT 102 (A &amp; B)</td>
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<td>MATH 314</td>
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<td>STAT 401</td>
<td>MATH 408</td>
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<td>STAT 102</td>
<td>MATH 105</td>
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