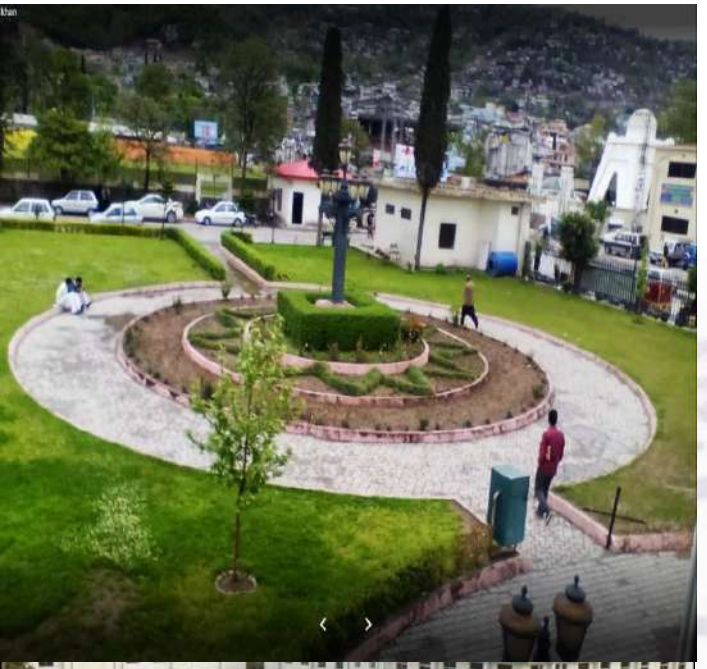

The University of Azad Jammu & Kashmir

Associate Degree Program

A Policy for Affiliated Colleges

PREFACE

Apropos of the decision of the higher education commission (HEC) to phase out B.A/B.Sc Program after the year 2018, the university of Azad Jammu and Kashmir has been offering AD (Associate Degree) program in affiliated colleges under Annual system. Fresh students are admitted either directly into the 4-year BS programme, or in the 2-year Associate Degree Programmes, being offered through recognized campuses, constituent and affiliated colleges in place of the old B.A./BSc. programmes. AD is equivalent to 14 years schooling and entitles graduates to get admission in the 5th semester of their respective BS programs after fulfilling the university's requirement for admission. Keeping in view the requirement of AD Program, resources available in affiliated colleges and after consultation with the faculty members and relevant stakeholders, it was decided to offer the AD program under semester system in affiliated colleges.

A committee under the headship of Dean Faculty of Sciences was constituted to to develop a policies for the AD program under the semester system. The committee after convening several meetings came to the conclusion that the AD structure should enable students to gain in-depth knowledge and understanding of the area of specialization. However, the purpose is not to force them prematurely into particular occupations or to foreclose their options. So, focus on the specialization will start later in their educational streams. Secondly, it should be designed in such a way, if a student wants to continue further and join 5th semester, he/she should joined with minimum deficiency courses.

This two-year AD programs require a minimum of 69 hours of credit. These credits will normally be earned in four semesters. The minimum requirement ranges from five to six courses per semester, split between Compulsory requirements (7 courses), Foundation (4 courses) and Disciplinary requirements (12 elective courses). Foundation and Disciplinary courses will provide a breath of knowledge to students with the broad variety of fields of inquiry and approaches to knowledge in the 21st century.

This document provides a practical layout for the Two-Year Associate Degree (AD) program offered in affiliated colleges of the university of Azad Jammu & Kashmir, Muzaffarabad. Our goal is to raise the quality of undergraduate education to international standards so that our graduates can succeed in life.

Prof. Dr. Ayaz Arif Khan
Director Quality
Enhancement Cell (QEC)

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Associate degree program

Introduction

The associate degree (AD) is a two-year (4 semester) program that will be offered after the intermediate stage (12.Years of schooling) or equivalent studies, at affiliated colleges of the University of Azad Jammu & Kashmir, as directed by the Higher Education commission of Pakistan. This program will provide an alternate option to the students of BA/BSc and shall be an integrated program between the relevant departments/ institutes/ under one faculty or a number of faculties. The AD program provides high quality education with technical skills for producing highly competent and employable graduates and has been successfully implemented in developed countries. The AD program also prepares students for a future-oriented career or to go on to a BS degree program offered at the university level. In this regard, students admitted in the 5th semester of BS his previous credit of AD will be transferred and will be awarded BS (4 year) degree.

1. Eligibility Criteria and Duration

The University of Azad Jammu & Kashmir offers a degree program in compliance with Higher Education Commission (HEC). An applicant seeking admission to the AD program requires a minimum of 45% of the Marks in FA/F. Sc. Or equivalent. AD is a two-year, four-semester, full-time study program. Every semester has a period of 16 to 18 weeks of teaching and assessment. The two-year AD program is equivalent to the old Bachelor Degree (BA/ B.Sc.), i.e. 14 years of education.

2. Admission in Associate degree program

2.1. General conditions

i. Applicant must be a citizen of Pakistan/AJ&K.
ii. Must be between the age of 18-22 years for Undergraduate programs.
iii. The applicant must have completed HSSC/Intermediate or equivalent for application in Bachelor's (Undergraduate Program) with at least securing 45 % in HSCC
iv. Certificates/Transcript/Degrees to be attached must be attested by the gazetted officer in case from Foreign Equivalence of O & A level from IBCC is mandatory.
v. All applicants must submit a medical certificate of satisfactory health condition (issued not earlier than six months, a written certificate from a physician to prove that the applicant does not have the following illnesses: AIDS, Hepatitis A, B, C or any other epidemic conditions)

2.2. <u>Required Documents:</u>

Attested photocopies of the following documents are required for applying admission to the BS Program:

i. Matriculation Certificate

ii. F.A./F.Sc. Mark Sheet Part-I
iii. F.A./F.Sc. Mark Sheet Part-II
iv. SSC or equivalent Mark Sheet
v. ID Card/Form B
vi. Domicile
vii. Three 1x1 inches photographs
viii. Character Certificate (from the last institution attended)
ix. Original affidavit on a stamp paper of Rs. 50/-

3. Framework and Structure

Two-year programs require a minimum of 69 hours of credit. These credits will normally be earned in four semesters. the minimum requirement ranges from five to six courses per semester, split between Compulsory requirements, Foundational and Disciplinary requirements. Foundation and disciplinary courses will provide a breath of knowledge to students with the broad variety of fields of inquiry and approaches to knowledge in the 21st century. A model layout of Associate degree shall be as under

i.	Compulsory Requirement (No Choice)	21 credits	7 courses
ii.	Discipline-Specific Foundation Courses	12 credit	4 courses
iii.	Major/ Distributed Courses	36 credits	12 courses
iv.	Grand Viva	Satisfactory/Unsatisfactory basis	
v.	**Total**	**69 credits**	**23 courses**

The detail of the compulsory courses for Associate degree program is as under:

i.	English-I	3(3, 0)
ii.	English-II	3 (3, 0)
iii.	English-III	3 (3, 0)
iv.	Islamiyat/Ethics	3 (3, 0)
v.	Pak. Studies	3(3, 0)
vi.	Arabic	3 (3, 0)
vii.	Introduction to computers	3 (2,1)

Courses Distribution

1. The Associate Degree will include 7 courses i.e. 21 Credit Hours from Compulsory Requirement Category, distributed across the first two/three semesters, to be offered according to the availability of subject teachers at the college;
2. There will be 4 discipline-Specific Foundation Courses courses i.e. 12 Credit Hours distributed across the last first 2 semesters (1^{st}, 2^{nd}), to be offered according to the availability of the subject teachers at the college.
3. Students shall select the specific Major/distributed courses (36 credit hours) from any combination, offered at a particular college in one subject or combination of subjects in

relevant domains, according to the availability of subject teachers at the college. These courses may distributed across the 2nd , 3rd and 4th semester.

3.1 Semester Progression

Following is a standardized template for semester break up to two year associate degree program that will offer in affiliated colleges of university of Azad Jammu & Kashmir

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
		Foundation Course-I	3(3, 0)
		Foundation Course-I	3(3, 0)
		Foundation Course-I	
		Total	15
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to computers**	**3(2, 1)**
		Foundation Course-IV	3(3, 0)
		Major/Distributed	3(3, 0)
		Major/Distributed	3(3, 0)
		Major/Distributed	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pak studies	3(2, 1)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
	-------	Major/Distributed	3(3, 0)
		Total	18

There will be 12 major/distributed courses, i.e. 36 Credit Hours distributed across the last 2 semesters (3rd and 4th), to be offered according to the availability of the subject teachers at the college. Student shall select the subject-specific courses from a list of courses, offered at a particular college in one subject or combination of subjects in relevant domains, according to the availability of subject teachers at the college.

Major/distributed courses and possible combinations

A student of AD program may choose any a combination of courses that are offered in a particular college subject to the availability of teaching staff and teaching lab and which have been approved by the university. Following is the list of approved combinatins:

1. ECONOMICS,PSYCHOLOGY, HEALTH AND PHYSICAL EDUCATION	2. GEOGRAPHY,STATISTICS,PSYCHOLOGY
3. STATISTICS,SOCIOLOGY, PSYCHOLOGY	2.ECONOMICS,MATHEMATICS GENERAL,GEOGRAPHY
4. PHYSICS,MATHEMATICS, GEOGRAPHY	5. GEOGRAPHY,SOCIOLOGY ,COMPUTER
6. ECONOMICS,MATHEMATICS, STATISTICS	7. BOTANY,ZOOLOGY, GEOGRAPHY
8. PHYSICS,MATHEMATICS, STATISTICS	9. PHYSICS,CHEMISTRY, MATHEMATICS
10.PHYSICS,CHEMISTRY, STATISTICS	11. CHEMISTRY,BOTANY, ZOOLOGY
12.CHEMISTRY,ZOOLOGY, STATISTICS	13. CHEMISTRY,ZOOLOGY, GEOGRAPHY
14.ECONOMICS,STATISTICS, APPLIED PSYCHOLOGY	15. CHEMISTRY,BOTANY, STATISTICS
16.GEOGRAPHY,SOCIOLOGY, HEALTH AND PHYSICAL EDUCATION	17. CHEMISTRY,BOTANY, GEOGRAPHY
18.STATISTICS,APPLIED PSYCHOLOGY,COMPUTER	19. BOTANY,ZOOLOGY, COMPUTER
20.ECONOMICS,A-COURSE OF MATHEMATICS,B-COURSE OF MATHEMATICS	21. SOCIOLOGY,APPLIED PSYCHOLOGY,COMPUTER

22. A-COURSE OF MATHEMATICS,B-COURSE OF MATHEMATICS, COMPUTER	23. ECONOMICS,MATHEMATICS GENERAL,COMPUTER
24. MATHEMATICS GENERAL,STATISTICS,COMPUTER	25. ECONOMICS,STATISTICS, COMPUTER
26. ECONOMICS,APPLIED PSYCHOLOGY,COMPUTER	27. PHYSICS,CHEMISTRY, MATHEMATICS GENERAL
28. MATHEMATICS GENERAL,GEOGRAPHY, STATISTICS	29. ECONOMICS,APPLIED PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION
30. ECONOMICS,MATHEMATICS GENERAL,HEALTH AND PHYSICAL EDUCATION	31. ,ECONOMICS,MATHEMATICS GENERAL,STATISTICS
32. SOCIOLOGY,HEALTH AND PHYSICAL EDUCATION,COMPUTER	33. ECONOMICS,GEOGRAPHY, SOCIOLOGY
34. APPLIED PSYCHOLOGY,PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION	35. PHYSICS,MATHEMATICS GENERAL,STATISTICS
36. ECONOMICS,SOCIOLOGY, COMPUTER	37. GEOGRAPHY,APPLIED PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION
38. CHEMISTRY,BOTANY, ZOOLOGY OLD	39. SOCIOLOGY,PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION
40. ECONOMICS,GEOGRAPHY, STATISTICS	41. GEOGRAPHY,A-COURSE OF MATHEMATICS,B- COURSE OF MATHEMATICS
42. PHYSICS,MATHEMATICS GENERAL,COMPUTER	43. ECONOMICS,STATISTICS, COMPUTER
44. ECONOMICS,GEOGRAPHY, COMPUTER	45. BOTANY,ZOOLOGY, PSYCHOLOGY
46. GEOGRAPHY,STATISTICS, COMPUTER	47. SOCIOLOGY,APPLIED PSYCHOLOGY,COMPUTER

48. SOCIOLOGY,HEALTH AND; PHYSICAL EDUCATION	49. PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION,COMPUTER
50. ECONOMICS,SOCIOLOGY, HEALTH AND; PHYSICAL EDUCATION	51. MATHEMATICS GENERAL,STATISTICS, COMPUTER
52. BOTANY,STATISTICS, COMPUTER	53. 54. ECONOMICS,GEOGRAPHY,HEALTH AND; PHYSICAL EDUCATION
55. SOCIOLOGY,APPLIED PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION	56. ECONOMICS,PHYSICS,MATHEMATICS GENERAL
57. GEOGRAPHY,SOCIOLOGY, HEALTH AND PHYSICAL EDUCATION	58. PHYSICS,A-COURSE OF MATHEMATICS,B-COURSE OF MATHEMATICS
59. ECONOMICS,HEALTH AND PHYSICAL EDUCATION,COMPUTER	60. STATISTICS,A-COURSE OF MATHEMATICS,B-COURSE OF MATHEMATICS
61. ECONOMICS,STATISTICS, PSYCHOLOGY	62. ECONOMICS,STATISTICS, HEALTH AND PHYSICAL EDUCATION
63. PHYSICS,MATHEMATICS GENERAL,GEOGRAPHY	64. ECONOMICS,GEOGRAPHY,HEALTH AND PHYSICAL EDUCATION
65. GEOGRAPHY,SOCIOLOGY, APPLIED PSYCHOLOGY	66. SOCIOLOGY,HEALTH AND PHYSICAL EDUCATION,COMPUTER
67. ECONOMICS,SOCIOLOGY, COMPUTER	68. ECONOMICS,GEOGRAPHY,APPLIED PSYCHOLOGY
69. PHYSICS,CHEMISTRY, COMPUTER	70. SOCIOLOGY,PSYCHOLOGY, HEALTH AND PHYSICAL EDUCATION
71. SOCIOLOGY,APPLIED PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION	72. ECONOMICS,GEOGRAPHY,PSYCHOLOGY
73. APPLIED PSYCHOLOGY,HEALTH AND PHYSICAL EDUCATION,COMPUTER	74. STATISTICS,SOCIOLOGY, COMPUTER

75. ECONOMICS,SOCIOLOGY, PSYCHOLOGY	76. GEOGRAPHY,SOCIOLOGY ,PSYCHOLOGY
77. ECONOMICS,MATHEMATICS GENERAL,SOCIOLOGY	
78. SOCIOLOGY,PSYCHOLOGY, COMPUTER	79. ENGLISH LANGUAGE ,ECONOMICS,POLITICAL SCIENCE
80. GEOGRAPHY,PSYCHOLOGY ,HEALTH AND PHYSICAL EDUCATION	81. ENGLISH LANGUAGE ,ECONOMICS,GEOGRAPHY
82. ENGLISH LANGUAGE ,ECONOMICS,POLITICAL SCIENCE	83. ENGLISH LANGUAGE,POLITICAL SCIENCE,PSYCHOLOGY
84. ENGLISH LANGUAGE ,ECONOMICS,GEOGRAPHY	85. ENGLISH LANGUAGE, ISLAMIC STUDIES ELECTIVE,PSYCHOLOGY
86. ENGLISH LANGUAGE (BA),POLITICAL SCIENCE,PSYCHOLOGY	87. ENGLISH LANGUAGE ,ECONOMICS,SOCIOLOGY
88. ENGLISH LANGUAGE ,ISLAMIC STUDIES ELECTIVE,PSYCHOLOGY	89. ENGLISH LANGUAGE ,ECONOMICS
90. HISTORY,PSYCHOLOGY, ENGLISH LANGUAGE	91. ENGLISH LANGUAGE ,ECONOMICS,STATISTICS
92. ENGLISH LANGUAGE ,POLITICAL SCIENCE,URDU	93. ENGLISH LANGUAGE ,POLITICALSCIENCE, SOCIOLOGY
94. POLITICAL SCIENCE,ARABIC ELECTIVE,ENGLISH LANGUAGE	95. PERSIAN,ENGLISH LANGUAGE ,ISLAMIC STUDIES ELECTIVE
96. ENGLISH LANGUAGE, ISLAMIC STUDIES ELECTIVE, URDU	97. HISTORY,ENGLISH LANGUAGE ,HEALTH AND PHYSICAL EDUCATION
98. ENGLISH LANGUAGE ,ENGLISH LITERATURE ,ISLAMIC STUDIES ELECTIVE	99. ENGLISH LANGUAGE ,ECONOMICS,ISLAMIC STUDIES ELECTIVE

100. HISTORY,PSYCHOLOGY,ENGLISH LANGUAGE	101. ENGLISH LANGUAGE ,ISLAMIC STUDIES ELECTIVE,POLITICAL SCIENCE
102. PHILOSOPHY,PSYCHOLOGY,ENGLISH LANGUAGE	103. STATISTICS,SOCIOLOGY, COMPUTER
104. HISTORY,ARABIC ELECTIVE,ENGLISH LANGUAGE	105. GEOGRAPHY,SOCIOLOGY,PSYCHOLOGY
106. ECONOMICS,ENGLISH LANGUAGE,HEALTH AND PHYSICAL EDUCATION	107. ECONOMICS,SOCIOLOGY ,PSYCHOLOGY
108. ENGLISH LITERATURE,POLITICAL SCIENCE,ENGLISH LANGUAGE	109. ECONOMICS, MATHEMATICS GENERAL, SOCIOLOGY
110. ENGLISH LANGUAGE ,HEALTH AND PHYSICAL EDUCATION,URDU	111. ENGLISH LANGUAGE ,GEOGRAPHY,POLITICAL SCIENCE
112. ENGLISH LANGUAGE ,ECONOMICS,URDU	

4. Semester Rules and Regulations

This section describes the semester rules and regulations for the two-year Associate degree programs at the colleges, which have been Affiliated with the University of the Azad Jammu & Kashmir, Muzaffarabad. It also clarifies the rules of engagement between the University of Azad Jammu & Kashmir and the Affiliated Colleges.

4.1.Duration of Degree Program

The normal duration of an AD program is two years. Each academic year is composed of two semesters. If there are valid reasons or excuses, the education period may be extended by one year (i.e. two semesters). The students who do not complete studies within the stated period will have their names struck off from the rolls of the college. Students who have been granted the right to continue their studies for an additional year must enroll and pay tuition fees for those years.

4.2.Schedule of Semesters

There will be two semesters in an academic year, referred to as the fall semester and spring semester. Each semester will be of 17 working weeks, 16 weeks for teaching and one week for

Mid Semester Examinations. The final examination will be conducted by the University of Azad Jammu & Kashmir at the end of each semester. Schedule (date sheet) of final examinations will be issued by the Controller of Examinations, University of the AJK.

4.3.Admission

Admission regulations will be notified from time to time by the University of Azad Jammu & Kashmir for the AD program and this will be mandatory for colleges. The number of seats in AD programs will be determined by the university. Admissions will only be granted in morning classes unless otherwise stated. For admission into the AD program, affiliated colleges will follow the minimum eligibility criteria as set out in the university's admission policy for the AD program.

4.4.Registration

Affiliated colleges will send lists of students (registration returns) admitted in the AD program to the Registration Branch (Registrar's office) of University of Azad Jammu & Kashmir, Muzaffarabd within one month after the admissions have been finalized as per the procedure prescribed by University of Azad Jammu & Kashmir.The UAJK shall register the students of affiliated colleges into the AD program provided that:

i. The registration fee as prescribed by the university must be paid in full and the proof of payment (i.e. Original bank Challan etc.) must be attached with the registration return(s).
ii. The registration returns will not be accepted without registration fee
iii. Incas the affiliated colleges do not submit the registration returns within due time, the late fee will be imposed on the college as per following details:
    a) Late up to 15 days =Rs. 500/- per student
    b) From 15 days to one month = Rs. 1000/- per student
    c) More than one month till final examination of 1st semester = double of the registration fee
iv. Only students who have been enrolled by UAJK will be permitted to appear in exams at the end of the first semester.

4.5.Attendance

4.5.1. Requirements

i. Students are expected to regularly attend all lectures, laboratory hours, semester sessions and fieldwork, which may be specifically required for each course.
ii. A maximum of 25 % absence is permitted for each course in AD programs.

iii. Deficiency, i.e. inability to pass a course on the basis of shortage of attendance shall be treated as a failure in that course unless withdrawal is allowed by the Principal of the college and duly communicated to the Controller of Examinations of AJK University, Muzaffarabad 15 days before the start of the final examination of the current semester. Such a failure on the record of a student will have all the implications of deficiency for the purpose of determining "Good Standing" of a student

4.5.2. Attendance & Stuck-off Regulations:

i. Each teacher/course instructor is required to maintain the attendance record for every student enrolled in the course.
ii. The attendance List of each course will be displayed on the notice board, at least two weeks before the commencement of the final examination.
iii. in case of any deficiency in attendance, properly notified through the notice board, the student will not be allowed to sit in the final examination otherwise concerned teacher will be responsible in case of any issue.
iv. Students having less than required class attendance in a particular course will be required to repeat the course in any regular semester, summer semester or special semester as the case may be. The names of such students will be reported by the college to Controller of Examinations of the AJK University and these students shall not be allowed to appear in the final examinations.
v. The principal of the college can give further relaxation up to 5% deficiency in the attendance of the student.
vi. A leave will always be counted as absent.
vii. in case the student remains absent from the class for seven consecutive days without intimation and proper justification, his/her name will be removed from the rolls. However, intimation of absence will not be considered as leave.

4.6.Curricula and course file

The courses to be offered in AD program will be announced by the university at the time of admission with a course description of each course and these course outlined will also be available on the university website. A print copy can be obtained from the Office of the Registrar (General Section). Maintenance, of course file is compulsory for teachers. It should contain the complete record of activities during the semester to be preserved for one year after completion of concern session and declaration of final semester result. A Course File is a folder or box for holding loose papers that are typically arranged in a particular order for easy

reference. It is usually for an individual subject. A Course Files contains the following documents.

i. Academic Calendar
ii. Time Table
iii. Course Title and Short Course Description along with Recommended Books and Teacher's Office Hours for Students
iv. Weekly Module-wise Course Detail
v. Course Specification
vi. Daily Class Activities
vii. Quiz / Assignments / Mid exam Copies and Their Solutions
viii. Results of Quiz / Assignment / Mid exam.
ix. Attendance Record
x. Any Other Material Distributed in the Class / Course Material
xi. Copies of Answer Mid Exam sheets (Best, Good, Poor)
xii. Sample Question Papers

4.7. Examination and grading system

Under the semester system, performance of a student shall be evaluated on the basis of two examinations, called Mid Semester Examination and Final Examination, homework, quizzes, assignments, presentations, etc. These evaluation instruments and their percentage weight of a grade are given below:

Evaluation Instrument	**% weight**
Sessional (Quizzes, classroom participation/general behavior/group work, assignments, presentations, etc.)	10%
Mid Semester Examination	10%
Terminal Examination	80%

General assessment, of course shall be comprised of theory and practical. The detail evaluation of each component is as under

4.7.1. Theoretical component

There will be a following instrument used for evaluation of each theoretical course during each semester

Sessional Marks		
	Quiz/surprise test	5%
	Assignment	2%
	Presentation/Seminor	3%
Mid Semester Examination		10%
Terminal Examination		80%

4.7.2. Criteria for sessional Marks

A. Quiz/surprise test

Surprise written quizzes/tests will be carried out to assess students' learning. these may range from 2 to 5 marks, however the final weightage of this component will carry an overall of 3% of the total

B. Assignment

The student will receive an assignment for each course. The teacher may give more than one assignment if necessary, but the total score remains the same, that is, 2% of the total. The assignment will be assessed on the basis of logical reasoning and organization of materials

C.Presentation/Seminor

The student will individually or in group give a comphrensive presentation of their assignments. Presentations should be limited to a maximum of 20 minutes. These presentations will contribute a maximum of 3% towards the total marks

4.7.3. Mid Semester Examination (10 %)

The examination will take place after an 8-week teaching period. This will be a internal examination conducted by concerned college in all manners, i.e. staff and stationary, etc. The teacher who taught the course will prepare the question paper, conduct the exam, marks the answer book and submit the award to the concerned incharge examination for onward transmission to examination department of UAJK within two weeks after exam. There will be no choice in the questions on the midterm examination. The minimum duration of this exam shall be 1 hour.

4.7.4. Terminal Examination (80%)

The University of the Azad Jammu & Kashmir will be responsible for conducting the Final Examination at the end of each semester and assigning marks for this evaluation instrument through the office of Controller of Examinations. The standard operating procedure for conducting of the semester terminal exam is as under

i. For each theoretical course, all affiliated colleges will forward the list of internal examiner (Internal examiner will be a teacher who is teaching the course during the semester for which the examination is being held) to the examination department and controller of examination will take approval of an internal examiner among the panel from the competent authority. The office of controller of examination will prepare a panel (by taking his/her consent) of external examiner for each course and shall appoint an external examiner for each course after approval from the competent authority. An external examiner will be an expert who is the teacher in the same field working in UAJK or any government colleges/HEC recognized institutes.

ii. The internal examiner shall set the specimen question paper and send same to the office of controller of examination. The external examiner shall set the final paper in duplicate on the basis of standard and approved course contents, including not more than 20% question from specimen paper and may include up to 40 % from mid exam syllabus. The UAJK departments shall also provide a model question on each course through their respective BOS.

iii. The date sheet of final exam shall be issued by the controller of examination and final examination shall be arranged accordingly by appointing dedicated staff for examination designated centers. Examinations will be held on consecutive days excluding holidays.

iv. The script of the final exam shall be marked by the external examiner and he/she shall also prepare the award list/ counterfoil. He/she shall send the award along with marked scripts to the office of controller of examination UAJK.

v. Passing marks in each course shall be 50%

vi. The duration for various examinations shall be as follows:

   a. Midterm Examination: at least 90 minutes

   b. Final/Terminal Examination: at least 120 minutes

   c. Practical (where applicable) 180 minutes

vii. For the purpose of evaluation, each course shall carry 100 marks. These marks shall be divided in accordance with the credit assigned to theory/practical for the each course and is given in the table below

Credit Hours	Sessional Exams Marks			Terminal Exam	Practical Exam	Total
	Mid-Exam	Quiz	Assignment			
4(3,1)	09	3	3	60	25	100
3(2,1)	07	3	3	54	33	100
3(3,0)	10	5	5	80	---	100
2(2,0)	10	5	5	80	---	100
2(1,1)	05	2.5	2.5	40	50	100
3(0,3)	---	---	---	---	100	100
4(0,4)	---	---	---	---	100	100

The University of the Azad Jammu & Kashmir will be responsible for conducting the Final Lab Examination at the end of each semester through the office of Controller of Examinations. The standard procedure for lab examination is given below:

i. The office of the controller of examination will take an approval of a panel of internal and external examiner for each lab course. Internal examiner will be normally one who has been teaching the lab course and supervising the practical during the semester. External examiner will be the expert in the same field from UAJK or a retired professor or a teacher from government college and has suitable qualifications in the relevant discipline.

ii. The script of the final exam shall be marked by the external examiner and he/she shall also prepare the award list/ counterfoil. He/she shall send the award along with marked scripts to the office of controller of examination UAJK

4.8.Standard duration of credit hour

Theory:	1 credit hour	1 contact hour per week in a semester
Lab:	1 credit hour	3 contact hour per week in a semester

4.9.Examination Fee

The approved examination fees for exams will be paid by the students to the university account as per schedule given by the Controller of Examinations of UAJK through respective college.

4.10. Grading system

In rating of the students, three passing grades shall be used A, B, and C and one failing grade F. In terms of their numerical equivalence, the letter grades and grade points (GP) are given in the following Ready Recknocer Table:

GP	%age	Letter grade
2.00	50.00	C
2.10	51.50	C
2.20	53.00	C
2.30	54.50	C
2.40	56.00	C
2.50	57.50	C
2.60	59.00	C

GP	%age	Letter grade
3.10	66.50	B
3.20	68.00	B
3.30	69.50	B
3.40	71.00	B
3.50	72.50	B
3.60	74.00	B
3.70	75.50	B

4.10.1. Maximum possible Grade Point Average for AD program shall be 4.00

4.10.2. Minimum Cumulative Grade Point Average for obtaining a AD degree is 2.5

4.10.3. A fraction of a mark in a course is to be counted as '1' mark, e.g. 64.1 or 64.9 is to be shown as 65.

4.10.4. Letter Grade and Grade Point for a course will be calculated according to the above table.

Example

Examination	Weightage	Marks Obtained
Mid Semester	10%	8.0
Assignment	10%	8.4
Final Examination	80%	55.0
Total:	100%	71.4

- In this case the score will be rounded to 72
- Letter grade in this case will be "B"
- Grade point in this case will be "3.5"

4.10.5. Calculation of Grade Point Average (GPA) for a Semester

In order to calculate the GPA, multiply Grade Point with the Credit Hours in each Course to obtain total grade points, add up to cumulative Grade Points and divide by the total number of Credit Hours to get the GPA for the Semester.

Example No.1: Courses with equal credit hours

Course code	Credit Hour	Marks Obtained in %age	Grade point	Total grade point
ENG-5201	3	65	3.0	$3 \times 3 = 9$
ENG-5202	3	80	4.0	$3 \times 4 = 12$
ENG-5203	3	72	3.5	$3 \times 3.5 = 10.5$
ENG-5204	3	50	2.0	$3 \times 2 = 6$
ENG-5205	3	45	0	$3 \times 0 = 0$
		Cumulative Grade Points		$9 + 12 + 10.5 + 6 + 0 = 37.5$
		Total No. of credits hours		15
		GPA		37.5/15=2.5

Example No.2: Courses with unequal credit hours

Course code	Credit Hour	Marks Obtained in %age	Grade point	Total grade point
ENG-5201	4	65	3.0	$3 \times 4 = 12$
ENG-5202	3	80	4.0	$3 \times 4 = 12$
ENG-5203	3	72	3.5	$3 \times 3.5 = 10.5$
ENG-5204	3	50	2.0	$3 \times 2 = 6$
ENG-5205	3	85	4.0	$3 \times 4 = 12$
		Cumulative Grade Points		$12 + 12 + 10.5 + 6 + 12 = 46.5$
		Total No. of credits hours		16
		GPA		46.5/16=2.90

Course with 'F' (i.e. less than 50 % Marks) grade will be counted as 'Zero' Grade Point for calculation of semester Grade Point Average. Calculation of cumulative grade point average will only be made when a candidate has passed all the courses required for the award of the degree.

4.11. Promotion Rules

i. Minimum CGPA requirements for AD students to remain on University rolls is as below

Semester	CGPA
1st	GPA=1.5
2nd	1.75
3rd	2.50
4th	2.50

ii. If the student does not achieve the desired CGPA of semester once will be promoted on probation in the next semester and the candidate, who fails to secure required CGPA in any subsequent semester, will stand automatically dropped from the' rolls of the University. However,

iii.

a. If a student fails to comply above mentioned CGPA conditions in 3rd and subsequent semesters in AD program, he / she will be detained in that semester and he / she will repeat the semester as and when offered by the concerned department within the stipulated time of the degree.

b. He / she will be promoted to the next semester on attaining a required CGPA

c. The students will have to complete their courses within the stipulated time for completion of degree as discussed in Regulation (Time Period of the Degree).

iv. At the end of the last semester of the program a student must obtain a CGPA not less than 2.50 otherwise he/she shall be removed from the rolls of the university.

4.12. Makeup Examinations

Makeup examination for only final/terminal examination will be allowed as per University policy provided that

i. He / She fulfills the conditions of having attended the prescribed number of lectures as laid down in the regulations.

ii. The makeup final-term examination is only allowed under following circumstances:

   a. Illness: He / She is laid down as an indoor patient of a recognized Hospital, or if he / she is not hospitalized as defined above, the candidate shall be examined by the Medical Superintendent of government Hospital (not below the Tehsil Headquarter Hospital) who may certify the inability of the student to appear in the examination in written.
   b. Death of blood relation
   c. Hajj

iii. Application of the student for a makeup examination must reach the office of the Controller of Examination of UAJK duly forwarded by the concerned principal of the college within 10 days of that particular exam.

iv. Such a student shall be given incomplete grade (I-Grade). He / She shall be required to appear in the Special Final-term Examination of semester to be held within four weeks from the commencement of the next semester

v. The schedule of the special / make-up final examination will be given by the Controller of examinations of the University of Azad Jammu & Kashmir.

vi. The student shall have to pay makeup examination fee as per university policy / fee schedule.

4.13. Calculation of Final Result

1. Minimum requirements for the award of a degree.

i. A candidate must have qualified in accordance with the existing Rules and Regulations in each one of the semesters from 1-4 separately, subject to fulfill the requirements laid down in (ii to iv) below:

ii. He/She must have earned the prescribed number of credits required for the degree, i.e. 69 credits

iii. He/She must have obtained a minimum Cumulative Grade Point Average of 2.5

iv. He/she must have complete the internship and practical learning lab requirement

2. Method for Calculation of the Final CGPA

i. Add up Cumulative Grade Points of all Semesters to obtain grand total and then divide the grand total by total number of credits of the courses studied. The resulting figure will represent the Cumulative Grade Point average secured by a candidate. The CGPA will be reported up to two decimals but for the determination of merit position CGPA will be calculated up to any decimal.

ii. For the award of Gold Medal or some other award(s), the 1st position will be calculated on CGPA basis of the whole course.

iii. For the award of the Gold Medal of University of Azad Jammu & Kashmir a student must have passed all the examinations at least in B grade, in the first attempt.

4.14. Extra Ordinary Grade / CGPA Improvement

The student will be allowed to improve the grade and CGPA only if his / her CGPA at the end of the final semester falls between 2.95 and 2.99 subject to the following condition:

i. Any such student who wishes to improve the grade or CGPA can repeat 2 courses of his / her choice, provided the courses are being offered by the college.

ii. The student has to complete the repeat courses within the stipulated time of the degree.

iii. In case the student is not able to improve the grade or CGPA the original grade and CGPA will be maintained.

iv. The student can take this offer only once and within the maximum time allowed for the degree.

v. The students who wish to take this opportunity has to apply to the principal of the college who may approve the application and forward this application to the Controller of examinations for intimation.

vi. The course / examination fee will be charged as per university policy / rules.

4.15. Semester Break / Semester Freeze

i. In case a student (other than first semester student) due to some unavoidable circumstances (prolonged illness or such other genuine reason) is unable to continue his /her studies, he/she may apply for a semester break/freeze.

ii. The case will be put up to the College Examination Committee for consideration. In case, the Committee recommends it, semester break will be allowed. The principal will then intimate the Controller of Examinations accordingly.

iii. The student has to apply for the semester break before the midterm examinations.

iv. The Semester Break will be allowed for a maximum period of one year. The total time

period for completion of the program will, however, remain the same as already provided in the rules.

4.16. Result / Transcript / Degree

i. As soon as possible after the termination of final term examination, the Controller of Examination University of Azad Jammu & Kashmir shall publish a list of successful candidates, showing the grades obtained by them.

ii. The transcript / detailed marks certificate / result card will be issued by the Controller of Examination. The transcript / result card will bear the name of the candidate along with father's name, registration number, GPA of individual courses and semester, CGPA, name of the institution and any other relevant information.

iii. Each successful candidate shall be granted, by University of Azad Jammu & Kashmir, Muzaffarabad, the Degree stating the grade in which he/she has passed.

4.17. Unfair Means Cases

The teacher-in-charge will report unfair means cases in quizzes and mid semester examinations to the Principal who will forward, these cases to the College Examination Committee within one week for necessary action as under:

Any candidate detected in giving or receiving assistance, or found guilty of copying from any paper, book or note, or allowing any other candidate to copy his answer book, or using, or attempting to use these or any other unfair means, the committee depending upon the severity of the charge may.

i. Expel the student from the college for maximum of one year. During the time of punishment, the said student will not be allowed to take any course and appear in the examination. The time of punishment will also be counted towards the maximum prescribed time for the completion of the degree.

ii. Cancel the examination and ask the student to repeat that particular case.

The student may appeal against the decision of the college examination committee to the Controller of Examinations the University of Azad Jammu & Kashmir, Muzaffarabad who will place the appeal before the committee constituted for the decision of UMC cases in the university.

UMCs in the final examinations will be handled by the office of the Controller of Examinations, University of the Azad Jammu & Kashmir Muzaffarabad, as per university rules.

4.18. Maintenance of Examination Record

It will be the duty of the Principal and the in-charge examination of the affiliated college to properly maintain the record of the examinations. The marked answer books of midterm examinations will be kept in safe custody by the concerned college for the minimum period of two years beyond the degree completion time. In case of loss of record of answer books / answer sheets the following options will be given to the students: -

I. He / She will re-appear in the Examination in the said course.

II. He / She will be given average marks on the basis of other courses.

Re-counting of any paper will be made within 15 days of declaration of results as per University rules on the request of the student after paying / depositing the prescribed fee. However, re-checking / re-evaluation of answer books will not be allowed in any case.

4.19. Teacher Evaluation

The evaluation of teacher is mandatory. The Principal of the College will have every course Tutor evaluated by the students on what they have taught by him/her. The evaluation will be done in the last week, of the semester without the presence of the teacher so as to maintain impartiality. The evaluation will be shared with the concerned teacher for his/her improvement/knowledge. Evaluation done by the students will completely be anonymous, i.e., the students will not be, required to indicate their names, roll numbers, registration numbers and/or any other student identities whatsoever.

The principal of the college will submit the report on the evaluation of the teachers to the Quality Enhancement Cell of University of Azad Jammu & Kashmir, Muzaffarabad as per format prescribed by the Quality Enhancement Cell of university within one month of the start of the final term examination

4.20. College Semester Implementation Committee

The college must have a Semester Implementation Committee, to be constituted by the college Principal. The committee will perform the following functions:

i. Provide consultation to all the teacher/staff on converting to semester system from the annual system.
ii. Provide support in the implementation of semester system by arranging short courses for the faculty on its various aspects.
iii. Monitor the implementations of semester system.
iv. Address various issues arising in relation to the implementation of a semester system.

4.21. College examination Committee

The college must have a examination Committee, to be constituted by the college Principal. The committee will perform the following functions

i. properly maintain the record of the sessional examinations
ii. Keep marked answer book of mid-term exam for minimum period of two years in safe custody
iii. Monitor sessional examination in the college
iv. Assist the principle in submitting the sessional awards to the controller of examination university of Azad Jammu & Kashmir.

5. Switching Between AD to BS Program:

Associate Degree holders may apply for admission to a BS program. If admitted (based on the University's admissions policies), the university may accord them advanced standing by allowing them to transfer all of the credits from the AD in the BS program. Further, students may receive partial or full credit, as the case might be, for internships and PLL activities completed during AD. Under this case candidate must quiet from Associate degree and he/she shall submit the original AD Transcript to the controller's office before the announcement of result of 8th semester. M.

NOTE: Semester system procedure/ rules/regulation other than these or any issue for which these rules have no explanation or interpretation of these rules will be referred to "Registrar the University of Azad Jammu & Kashmir, Muzaffarabd" whose decision will be final

SCHEME OF STUDIES FOR AD 2-YEARS PROGRAM IN SCIENCES

Associate degree in Sciences (Botany, Chemistry, Zoology)
(With this combination student can enroll in BS Botany, Biotechnology, Chemistry, Zoology)

First Semester

S #	Course Code	Course Title	Credit Hours
1.	ENG-5101	English-I	3(3+0)
2.	ISL-5102	Islamiyat / Ethics	3(3+0)
3.	CHM-5103	Physical Chemistry	3(2+1)
4.	BOT-5104	Diversity of Plants	3(2+1)
5.	ZOO-5105	Principles of Animal Life	3(2+1)
6.	BOT-5106	Environmental Biology	3(2+1)
		Total Credits	**18(14+4)**

Second Semester

S #	Course No.	Course Title	Credit Hours
1.	ENG-5201	English-II	3(3+0)
2.	COM-5202	Introduction to Computer	3(2+1)
3.	CHM-5203	Inorganic Chemistry	3(2+1)
4.	BOT-5204	Plants Systematics, Anatomy and Development	3(2+1)
5.	ZOO-5205	Animal Diversity-I (Invertebrates)	3(2+1)
6.	CHM-5206	Environmental Chemistry	3(3+0)
		Total Credits	**18(14+4)**

Third Semester

S #	Course No.	Course Title	Credit Hours
1.	ENG-5301	English-III	3(3+0)
2.	PKS-5302	Pakistan Studies	3(3+0)
3.	CHM-5303	Chemistry-III: Organic Chemistry	3(2+1)
4.	BOT-5304	Cell Biology, Genetics and Evolution	3(2+1)
5.	ZOO-5304	Animal Diversity-II (Vertebrates)	3(2+1)
6.	ZOO-5305	Animal Form & Function-I	3(2+1)
		Total Credits	**18(14+4)**

Fourth Semester

S #	Course No.	Course Title	Credit Hours
1.	ARB-5401	Arabic	3(3+0)
2.	CHM-5402	Applied Chemistry	3(2+1)
3.	BOT-5403	Plant Physiology and Ecology	3(2+1)
4.	ZOO-5405	Animal Form & Function-II	3(2+1)
5.	CHM-5406	Analytical Chemistry	3(3+0)
		Total Credits	**15(12+3)**

Associate degree in Science (Math. & Physics)

(With this combination student can enroll in BS Physics or Mathematics)

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	MAT-5103	Calculus- I	3(3, 0)
	MAT-5104	Introduction to Vectors	3(3, 0)
	PHY-5105	Mechanics and Theory of Relativity	3(3, 0)
	PHY-5106	Physics Lab-I	2(2, 0)
		Total	17
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to computers**	**3(2, 1)**
	MAT-5203	Calculus- II	3(3, 0)
	MAT-5204	Introduction to metric space and Group Theory	3(3, 0)
	PHY-5205	Wave Oscillations and Thermodynamics	3(3, 0)
	PHY-5206	Physics Lab-II	2(2, 0)
		Total	17
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PS-5302	Pak studies	3(3, 0)
	MAT-5303	Calculus- III	3(3, 0)
	MAT-5304	Elementary Number Theory and Complex Variable	3(3, 0)
	PHY-5305	Electricity and Magnetism	3(3, 0)
	PHY-5306	Physics Lab-III	2(2, 0)
		Total	17
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	MAT-5402	Introduction to Des	3(3, 0)
	MAT-5403	Introduction to Linear Algebra	3(3, 0)
	MAT-5404	Introduction to Numerical Analysis and Linear Programing	3(3, 0)
	PHY-5405	Classical Mechanics	3(3, 0)
	PHY-5406	Modern Physics	3(3, 0)
		Total	18

Associate degree in Science (Mathematics, Chemistry, Physics)

(With this combination student can enroll in BS Physics and for Mathematics student have to cover the deficiency courses (MAT-5104, MAT-5204, MAT-5304, MAT-5404)

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	MAT-5203	Calculus- I	3(3, 0)
	CHM-5103	Physical chemistry	3(3+ 0)
	PHY-5105	Mechanics and Theory of Relativity	3(3, 0)
	PHY-5106	Physics Lab-I	2(2, 0)
		Total	17
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to computers**	**3(2, 1)**
	MAT-5203	Calculus- II	3(3, 0)
	CHM-5203	**inorganic chemistry**	3(3+0)
	PHY-5205	Wave Oscillations and Thermodynamics	3(3, 0)
	PHY-5206	Physics Lab-II	2(2, 0)
		Total	17
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PS-5302	Pak studies	3(3, 0)
	MAT-5303	Calculus- III	3(3, 0)
	CHM-5303	Organic chemistry	3(2+ 1)
	PHY-5303	Electricity and Magnetism	3(3, 0)
	PHY-5306	Physics Lab-III	2(2, 0)
		Total	17
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	MAT-5402	Introduction to differential equations	3(3, 0)
	MAT-5403	Introduction to Linear Algebra	3(3, 0)
	CHM-5406	Analytical chemistry	3(2+1)
	PHY-5405	Classical Mechanics	3(3, 0)
	P PHY-5406	Modern Physics	3(3, 0)
		Total	18

Associate degree in Science (Math., Statistics, Physics)

(With this combination student can enroll in BS Physics and for Mathematics student have to cover the deficiency courses (MAT-5104, MAT-5204, MAT-5304, MAT-5404)

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	MAT-5203	Calculus- I	3(3, 0)
	STA-5103	Introductory Statistics	3(3+ 0)
	PHY-5105	Mechanics and Theory of Relativity	3(3, 0)
	PHY-5106	Physics Lab-I	2(2, 0)
		Total	17
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to computers**	**3(2, 1)**
	MAT-5203	Calculus- II	3(3, 0)
	STA-5203	Introduction to Probability and Probability Distributions	3(3+0)
	PHY-5205	Wave Oscillations and Thermodynamics	3(3, 0)
	PHY-5206	Physics Lab-II	2(2, 0)
		Total	17
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PS-5302	Pak studies	3(3, 0)
	MAT-5403	Calculus- III	3(3, 0)
	STA-5303	Applied Statistics	3(2+ 1)
	PHY-5303	Electricity and Magnetism	3(3, 0)
	PHY-5306	Physics Lab-III	2(2, 0)
		Total	17
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	MAT-5402	Introduction to differential equations	3(3, 0)
	MAT-5203	Introduction to Linear Algebra	3(3, 0)
	STA-5406	Basic statistics inference/	3(2+1)
	PHY-5405	Classical Mechanics	3(3, 0)
	PHY-5406	Modern Physics	3(3, 0)
		Total	18

Associate Degree in Arts (General Template)

* Using this tempelate affiliated college can design the structure of AD program according to the available resourses / teching staff

Semester	Course Code	Course Title	Cr. Hours
Semester-I	ENG-5101	English-I	3(3, 0)
	ISL-5102	Islamiyat /Ethics	3(3, 0)
	ECO-5103	Fundamentals of Economics	3(3, 0)
	------	Elective-I (Paper 1)	3(3, 0)
	-------	Elective-II (Paper 1)	3(3, 0)
	------	Elective-III (Paper 1)	3(3, 0)
		Total	18
Semester-II	ENG-5201	English-II	3(3, 0)
	CS-5202	Introduction to computers	3(2, 1)
	URD-5203	اردو زبان و ادب	3(3, 0)
	------	Elective-I (Paper 1I)	3(3, 0)
	-------	Elective-II (Paper I1)	3(3, 0)
	------	Elective-III (Paper 1I)	3(3, 0)
		Total	18
Semester-III	ENG-5301	English-III	3(3, 0)
	PST-5302	Pak studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	------	Elective-I (Paper 1II)	3(3, 0)
	-------	Elective-II (Paper 1II)	3(3, 0)
	------	Elective-III (Paper 1II)	3(3, 0)
		Total	18
Semester-IV	AR-5401	Arabic	3 (3,0)
	KAS-5402	Kashmir Studies	3(3, 0)
	------	Elective-I (Paper 1V)	3(3, 0)
	-------	Elective-II (Paper 1V)	3(3, 0)
	------	Elective-III (Paper 1V)	3(3, 0)
		Total	15

Associate Degree (Sociology+Economics+ Geography)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	PSY-5105	Introduction to Psychology	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	GEO-5106	Fundamentals of Geography	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	PSY-5205	History and School of Psychology	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	GEO-5206	Physical Geography	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	PSY-5305	Personality Theories-I	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	GEO-5306	Map Work	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	PSY-5404	Personality Theories-II	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	GEO- 5405	Geography of Pakistan	3(3, 0)
		Total	15

Associate Degree (Economics+ Psychology+ Geography)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	SOC-5106	Sociology-I	3(3, 0)
	GEO-5106	Fundamentals of Geography	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
	GEO-5206	Physical Geography	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
	GEO-5306	Map Work	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
	GEO- 5405	Geography of Pakistan	3(3, 0)
		Total	15

Associate Degree in Arts (Sociology + Economics+ Political Sciense)			
Semester	**Course Codes**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
	P0L-5106	Political Science-I	3(3, 0)
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turky).	3(3, 0)
		Total	15

Associate Degree in Arts
(History +Political Science+ Islamic Studies)

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	
	HST-5104	Introduction to History	
	ISD-5106	Introduction to Uloom-ul-Quran	
	POL-5106	Political Science-I	
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HST-5204	Islamic Histroy (Pre-Prophet to Pious Caliphs	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HST-5304	History of Ummyas And Abbasids	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HST-5403	Muslim Rulers in South Asia(712-1526)	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turky).	3(3, 0)
		Total	15

Associate Degree in Arts
(English + Urdu + Histroy)

Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	HST-5104	Introduction to History	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	HST-5204	Islamic Histroy (Pre-Prophet to Pious Caliphs	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	HST-5304	History of Ummyas And Abbasids	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	HST-5403	Muslim Rulers in South Asia(712-1526)	3(3, 0)
		Total	15

Associate Degree in Arts
(English Language+ Economics+ Islamic Studies Elective)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	**اردو زبان و ادب**	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
		Total	15

Associate Degree in Arts
(English Language+ Urdu+ Economics)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
		Total	15

Associate Degree in Arts (English Language+ Economics+ Geography)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	GEO-5106	Fundamentals of Geography	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	GEO-5206	Human Geography	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	GEO-5306	Physical Geography	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	GEO- 5405	Geography of Pakistan	3(3, 0)
		Total	15

Associate Degree in Arts (Sociology+Economics+ Health & Physical Education			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	HPE -5104	Philosophical Basis of Physical Education	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	SOC-5106	Sociology-I	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HPE -5204	Rules and Techniques of Games	3(2, 1)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HPE -5304	Track and Field	3(2, 1)
	ECO-5305	Mathematical Economics	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HPE -5403	Scientific Sports Coaching	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
		Total	15

Associate Degree in Arts
(Political Science+ English +Economics)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	POL-5106	Political Science-I	
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degree in Arts (Political Science+ English +Urdu)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	
	ENG-5104	Introduction to Phonetics & Phonology	
	URD-5105	اردو کی شعری اصناف	
	POL-5106	Political Science-I	
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	URD-5305	Urdu Zuban Agaz-o- Irtaka	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	URD-5404	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degree in Arts (Psychology+ Islamic Studies+ Health and Physical Edu.)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	HPE-5104	Philosophical Basis of Physical Education	3(3, 0)
	PSY-5105	Introduction to Psychology	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HPE-5204	Rules and Techniques of Games	(2, 2)
	PSY-5205	History and School of Psychology	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HPE-5304	Track and Field	3(2, 1)
	PSY-5305	Personality Theories-I	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HPE-5303	Scientific Sports Coaching	3(3, 0)
	PSY-5404	Personality Theories-II	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
		Total	15

Associate Degree in Arts
(Sociology +Islamic Studies + Health & Physical Ed.)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	HPE -5104	Philosophical Basis of Physical Education	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
	SOC-5106	Sociology-I	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HPE -5204	Rules and Techniques of Games	(2, 2)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
			18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HPE -5304	Track and Field	3(2, 1)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HPE -5403	Scientific Sports Coaching	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
		Total	15

Associate Degree in Arts
(Sociology+ English +Economics)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ECO-5105	Principles of Micro-Economics	3(3, 0)
	SOC-5106	Sociology-I	
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	ECO-5205	Principles of Macro-Economics	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	ECO-5305	Mathematical Economics	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	ECO-5404	Statistical Economics	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
		Total	15

Associate Degree in Arts
(English +Political Science+ Sociology)

Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	HPE-5104	Philosophical Basis of Physical Education	3(3, 0)
	PSY-5105	Introduction to Psychology	3(3, 0)
	SOC-5106	Sociology-I	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HPE-5204	Rules and Techniques of Games	4(2, 2)
	PSY-5205	History and School of Psychology	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HPE-5304	Track and Field	3(2, 1)
	PSY-5305	Personality Theories-I	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HPE-5303	Scientific Sports Coaching	3(3, 0)
	PSY-5404	Personality Theories-II	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
		Total	15

Associate Degree in Arts (Sociology + Psychology+ Health and Physical Edu.)			
Semester	**Course Codes**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	
	ENG-5104	Introduction to Phonetics & Phonology	
	SOC-5106	Sociology-I	
	POL-5106	Political Science-I	
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	SOC- 5405	Social Research Methods	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degree in Arts (Sociology + Psychology+ Geography)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	PSY-5105	Introduction to Psychology	3(3, 0)
	SOC-5106	Sociology-I	3(3, 0)
	GEO-5106	Fundamentals of Geography	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	PSY-5205	History and School of Psychology	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
	GEO-5206	Physical Geography	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	PSY-5305	Personality Theories-I	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
	GEO-5306	Map Work	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	PSY-5404	Personality Theories-II	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
	GEO- 5405	Geography of Pakistan	3(3, 0)
		Total	15

Associate Degree in Arts (Sociology+ English +Islamic Studies)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
	ENG-5101	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat /Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
Semester-I	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
	SOC-5106	Sociology-I	
		Total	18
	ENG-5201	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
Semester-II	ENG-5204	English Grammar	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
	SOC-5206	Classical Sociology	3(3, 0)
		Total	18
	ENG-5301	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
Semester-III	ENG-5304	Introduction to Literature	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
	SOC-5306	Development of Social Thoughts	3(3, 0)
		Total	18
	AR-5401	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
Semester-IV	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
	SOC-5405	Social Research Methods	3(3, 0)
		Total	15

Associate Degree in Arts (English Language, Urdu, Politcal Science)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	POL-5106	Political Science-I	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degree in Arts (Urdu+ History+ Islamic Studies)			
Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	HST-5104	Introduction to History	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HST-5204	Islamic History (Pre-Prophet to Pious Caliphs)	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HST-5304	History of Ummyas And Abbasids	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HST-5403	Muslim Rulers in South Asia(712-1526)	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
		Total	15

Associate Degree in Arts (English Language+ Urdu+ Islamic Studies)			
Semester	**Course Code**	**Course Title**	**Cr. Hours**
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	**3(3, 0)**
	ENG-5104	Introduction to Phonetics & Phonology	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
		Total	18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	ENG-5204	English Grammar	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	ENG-5304	Introduction to Literature	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	ENG-5403	Introduction to Morphology	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
		Total	15

Associate Degree in Arts (Urdu+ Political Science+ History)			
Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	HST-5104	Introduction to History	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	P0L-5106	Political Science-I	3(3, 0)
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	HST-5204	Islamic Histroy (Pre-Prophet to Pious Caliphs	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	HST-5304	History of Ummyas And Abbasids	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	HST-5403	Muslim Rulers in South Asia(712-1526)	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degree in Arts (Urdu+ Political Science+ Islamic Studies)			
Semester	Course Code	Course Title	Cr. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamental of Economics	3(3, 0)
	URD-5105	اردو کی شعری اصناف	3(3, 0)
	ISD-5106	Introduction to Uloom-ul-Quran	3(3, 0)
	POL-5106	Political Science-I	3(3, 0)
			18
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to Computers**	**3(2, 1)**
	URD-5203	اردو زبان و ادب	3(3, 0)
	URD-5205	اردو کی نثری آصناف	3(3, 0)
	ISD-5206	Introduction to Hadith and its Principles	3(3, 0)
	POL-5206	Political Science-II	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pakistan Studies	3(2, 1)
	NSC-5303	Everyday Science	3(3, 0)
	URD-5305	اردو زبان کا آغاز و ارتقاء	3(3, 0)
	ISD-5306	Study of Seerah of Holy Prophet (PBUH)	3(3, 0)
	POL-5306	Political System of Developed Countries(UK, USA)	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	URD-5404	اردو قواعد و عروض	3(3, 0)
	ISD- 5405	Introduction to Fiqah and its Principles	3(3, 0)
	POL-5405	Political System of Developing Countries (China, India and Turkey).	3(3, 0)
		Total	15

Associate Degreee in commerce (ADC)			
Semester	Course Code	Course Title	Cerd. Hours
Semester-I	**ENG-5101**	**English-I**	**3(3, 0)**
	ISL-5102	**Islamiyat/Ethics**	**3(3, 0)**
	ECO-5103	Fundamentals of Economics	3(3, 0)
	ADC-5103	Principle of Accounting	3(3, 0)
	ADC-5104	Introduction to Business	3(3, 0)
		Total	15
Semester-II	**ENG-5201**	**English-II**	**3(3, 0)**
	CS-5202	**Introduction to computers**	**3(2, 1)**
	ADC-5203	Money, banking and Finance	3(3, 0)
	ADC-5204	Cost Accounting	3(3, 0)
	PSY-5205	Introduction to Psycology	3(3, 0)
	STA-5206	Introductory Statistics	3(3, 0)
		Total	18
Semester-III	**ENG-5301**	**English-III**	**3(3, 0)**
	PST-5302	Pak studies	3(3, 0)
	NSC-5303	Everyday Science	3(3, 0)
	EVS-5304	Environmental Science	3(3, 0)
	ADC-5305	Advanced Accounting	3(3, 0)
	ADC-5306	Principle of Auditing	3(3, 0)
		Total	18
Semester-IV	**AR-5401**	**Arabic**	**3 (3,0)**
	KAS-5402	**Kashmir Studies**	3(3, 0)
	MAT-5403	Introduction to Mathematics	3(3, 0)
	ADC-5404	Business Taxation	3(3, 0)
	ADC-5405	Business Law	3(3, 0)
	ADC-5406	Economics of Pakistan	3(3, 0)
		Total	18

Course Contents forAD in Sciences

Course Contents Chemistery

i. Physical Chemistry
Code: (CHM-5103)
Credit Hours 3(2+1)

Course Objectives:

Students will be able to understand and acquire knowledge about the basic concepts of physical state of matter, concepts quantum theory and structure of atom, chemical thermodynamics, chemical kinetics, solution chemistry, surface chemistry and basics of electrochemistry.

Course Contents:

1. **Physical States of Matter**
   1. **Gases**

      General characteristics of gases, Gay Lussac's law, ideal gas equation, kinetic molecular theory of gases, molecular velocities (average velocity, mean square velocity, root mean square velocity, most probable velocity), ideal and real gases, deviation of gas from ideality, derivation of kinetic gas equation, molecular collisions, collision diameter, critical phenomenon of gases, liquefaction of gases, mean free path, Vander Waal's equation for real gases.
   2. **Liquid**

      General characteristics of liquids, physical properties like surface tension, viscosity, parachor value, rheochor value and their applications, refractive index, specific and molar refraction and their applications, optical activity, specific rotation, dipole moment and molecular structure.
   3. **Solids**

      General characteristics of solids, types of solids, isotropy and anisotropy, habit of a crystal, crystal lattice and unit cell, crystal systems, Bragg's equation and X-ray crystallography of sodium chloride crystal and Bravis lattices.
2. **Quantum theory and structure of atom**

   Bohr's atomic model, defects of Bohr's atomic model, classical and quantum mechanics, failure of classical mechanics, the concept of quantization, dual nature of matter, de-Broglie's equation, Heisenberg's uncertainty principle, limitation of Heisenberg's uncertainty principle, wave function and derivation of time independent Schrodinger wave equation, concept of atomic orbitals, quantum numbers, electronic distribution.
3. **Chemical Thermodynamics**

   Introduction, thermodynamic terms like system, surrounding, boundary of system, states and state function, internal energy, extensive and intensive properties, first law of thermodynamics, enthalpy of a system, relationship between free energy change and enthalpy change, heat capacity of gases at constant volume and at constant pressure, , heat capacities relationship, 2^{nd} law of thermodynamics, 2nd law of thermodynamics, concept of entropy, entropy change in phase transition, concept of Gibb's and Helmholtz's free energy, change in free energy and equilibrium constant.
4. **Chemical Kinetics**

Introduction, concept of rate of chemical reaction, rate law, velocity constant, elementary and complex reaction, order and molecularity of reaction, zero, first and second order reactions, derivation of kinetic equation for first order and 2nd order reaction when initial concentration of both reactants is same, various methods for determining rate of chemical reaction, Arrhenius equation, Lindemann' s theory for unimolecular reaction, introduction to transition state theory, transition state theory for bimolecular reaction.

5. **Electrochemistry**

Introduction, conductors and insulators, electrolytic and electronic conduction, specific conductance, measurement of specific conductance, cell constant and its determination, molar & equivalent conductance and their determination, Ostwald's dilution law (dependence of degree of dissociation constant on dilution), electrochemical cells, types of cells, Faraday's laws of electrolysis and their significance.

6. **Surface Chemistry**

Absoption and adsorption, types of adsorption, characteristics and factors which affect adsorption, applications of adsorption, physical adsorption and chemisorptions, catalysis, types of catalysis, enzyme catalysis, characteristics of catalysis, Freundlich adsorption isotherm and Langmuir adsorption isotherm and their applications.

7. **Solutions**

Introduction, types of solution, concentration units (%age, normal, molar, molal, ppm, ppb, et.), Raoult's law, ideal and non-ideal solutions, concept of zeotropic and azeotropic mixture, molecular interactions in solution, colligative properties (lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure and their determination).

Course Outcomes:

On successful completion of the course students will be able to explain and apply concepts of physical chemistry, solve problems in physical chemistry using appropriate methodologies, demonstrate procedures and methods applied in analytical and practical tasks of physical chemistry, scientific process in design, conduct, evaluation and reporting of experimental investigations, independently integrate qualitative and quantitative concepts of physical chemistry.

Recommended Books:

1. Haq Nawaz Bhatti, A Textbook of Physical Chemistry, Caravan Book House, Lahore.
2. Bhatti H.N. and K. Hussain, "Principles of Physical Chemistry", Carvan Book House, Lahore.
3. Chaudhary G.R, "A Text Book of Physical Chemistry", Abdi Umair Printing Press, Imtiaz Book Depot, Lahore.

Reference Books

1- Akhtar M.N. & Ghulam Nabi, "A Text Book of Physical Chemistry".
2- Maron S.H. & B. Jerome, "Fundamentals of Physical Chemistry", macruthan Publishing Co. Inc. New York.
3- Atkins P.W., "Principles of Physical Chemistry" Pitman Publishing Company (1990).
4- Moore W.J. "Physical Chemistry", 5th Ed. Longmans publishers.
5- Jones M., "Elements of Physical Chemistry", Addisson-Sesky publishing Company.
6- Adamson A.W., "Understanding Physical Chemistry" 3rd Ed. Benjamin Cummings Publishing Company Inc.
7- Heald C. & A.C.K. Smith, Applied Physical Chemistry Macmillan press Ltd.
8- Hirst, D.M. "mathematics for Chemists" MacMillan Press Ltd.

9- Alberty R. "Physcial Chemistry" 17th ed., John Wiley and Sons (1987).
10- Atkins, P.W. "Physical Chemistry" 6th ed., W.H. Freeman and Co. New York (1998).
11- Laidler k.J. "The World of Physical Chemistry" 1st ed., Oxford University Press (1993).
12- Laidler K.J., John H.M. and Bryan C.S. "Physical Chemistry" 4th ed., Houghton Mifflin Publishing Company Inc. (2003).
13- Barrow G.W. "Physical Chemistry" 5th ed., McGraw Hill (1992)

Physical Chemistry Practicals

1. Determination of surface tension and parachor value by stalagmometer.
2. Determination of percent composition of liquid solutions from surface tension measurements.
3. Determination of viscosity and Rhechor value of Liquids from viscosity measurements.
4. Determination of percent composition of liquid solutions viscometrically.
5. Determination of refractive index and specific refractivity by refractometer.
6. Determination of percent composition of liquid solutions by refractive index measurements.
7. Determination of heat of neutralization of an acid with a base.
8. Determination of heat of solution of salts by calorimetric method.
9. Determination of angle of rotation of an optically active substance.
10. Determination of percent composition of an optically active substance in solution.
11. Determination of equilibrium constant of $KI + I_2 \dashrightarrow KI$.
12. Conductometric titration of strong acid and strong base.

Recommended Book:

1. Muhammad Abid Khawaja, Practical Chemistry Note Book, Physical Chemistry, Ilmi Kitab Khana, Urdu Bazar, Lahore.

Reference Books:

1- Levitt B.P., "Findlay's Practical physical Chemistry", 9th Ed., Longman Group Limited.
2- Das R.C. and B. Behera, "Experimental Physical Chemistry", Tata McGraw Hill Publishing Company Limited.
3- Crocleford H.D., H.W. Biard, F.W. Getzen & JW. Nowell, "Laboratory Manual of physical Chemistry", 2nd Ed., John Wiley & Sons London.
4- Helpern Arthur M., "Experimental Physical Chemistry. A Laboratory Textbook" 2nd ed. Prentice Hall (1997).
5- Bassette J., Denney C., Jeffery G. H. and Mendham J. "Vogel's Textbook of Quantitative Inorganic Analysis Including Elementary Instrumental Analysis". English Language Book Society. 4th ed. (1978).
6- Daniel, F., Experimental Physical Chemistry" McGraw Hill (1962).
7- Shoemaker, D., "Experimental Physical Chemistry" McGraw Hill (1989)

2. Inorganic Chemistry
Code: (CHM-5203)
Credit Hours 3(2+1)

Course Objectives:

Students will not only be able to understand and acquire knowledge about basic concept of inorganic chemistry but this course will also help in developing their knowledge about the modern periodic table and basic theories of chemical bonding. This course will provide a rigorous description of chemical equilibrium phenomena and its application during chemical reactions or analysis. They will be able to understand the acid base concepts and relative strength of acids and bases. They can understand the abnormal behavior of the p-block elements, general properties and important uses of these elements and their compounds. Students will also be able to know about basic laboratory ethics and necessary precautionary measures required to carry out chemical reactions in laboratory and will be able to prepare some important compounds in the laboratory. They will also be able to analyze different radical present in the salts.

Course Contents:

1. **Periodicity**

Modern periodic table, similarities and differences among first row elements, their diagonal and vertical relationship with other elements, group trends and periodic properties in s, p, d and f block elements i.e., atomic radii, ionic radii, ionization potentials, electron affinities, electronegativities and redox potential.

2. **Theories of Chemical Bonding**

Nature and types of chemical bonding. Modern concept of valence bond theory (VBT) and molecular orbital theory (MOT) and their applications to homo and hetero di-and polyatomic inorganic molecules. Valence shell electron pair repulsion (VSEPR) theory explaining the shapes of inorganic molecules (i.e. AB_2, AB_3, AB_2E, AB_4, AB_3E, AB_2E_2, AB_5 and AB_6). Directed valence bond theory (hybridization), metallic bonds.

3. **Acid-Base Concept**

Theories of acids and bases, applications of soft and hard acid-base (SHAB) concept. pH, pKa, pKb and their significance. Relative strength of acids and bases based on pka values. Leveling effect. Buffers, indicators and theory of indicators.

4. **Essentials of Chemical Analysis**

Law of mass action and its applications, precipitation and solubility product, common ion effect and its application, co-precipitation, fractional precipitation.

5. **Chemistry of p-Block Elements**

(a) Boron and Aluminum

General characteristics, group anomalies, structure, bonding and properties of boron and aluminium hydrides.

(b) Carbon and Silicon

General characteristics, comparison of carbon and silicon, allotropic forms of carbon. Structure and industrial applications of carbides, silicates and silicones.

(c) Nitrogen and Phosphorus

General characteristics, group anomalies. Role of oxides of nitrogen in the environment, preparation of nitric acid and ortho phosphoric acid.

(d) Oxygen and Sulphur

General characteristics, group anomalies, role of oxides of sulphur in air pollution. Preparation of sulphuric acid. Preparation of hypo and its use in photography.

(e) Halogens

General characteristics, anomalous behaviour of fluorine, industrial preparation and uses of fluorine. Structure and properties of Interhalogens and pseudohalogens.

(f) Noble Gases

Discovery of noble gases, structure and properties of xenon fluorides, Industrial uses of noble gases and their compounds.

6. Chemistry of d-Block Elements

Electronic configuration and oxidation states of transition elements. Nomenclature of coordination compounds. Theories of coordination compounds; valence bond theory (VBT), molecular orbital theory (MOT) and crystal field theory (CFT) for tetrahedral and octahedral complexes. Applications of coordination compounds.

Course Outcomes:

After completing the course, students will be able to understand and explain basic concept of inorganic chemistry, modern periodic table and periodic properties, basic theories of bonding, chemical equilibrium and its application, acid base concepts and relative strength of acid base, abnormal behavior of the p-block elements, general properties and important uses of these elements and their compounds, basic properties of d-block elements, laboratory safety symbols and ethics, analysis of radical of salts, preparation of some important inorganic compounds

Recommended Books

1. Bhatti, H. N. and Rahman, R. 2013. "Text Book of Inorganic Chemistry". Caravan Book House Pakistan.
2. Muhammad Zafar Iqbal, Text Book of Inorganic Chemistry, Markazi Kutub Khana, Urdu Bazar, Lahore.

Reference Books

1. Iqbal, M. Z. 2013. "Textbook of Inorganic Chemistry". Ilmi Kitab Khana
2. Lee, J. D. 1996. "Modern Inorganic Chemistry". Chapmann Hall (5th Ed) England.
3. Shriver, D. F.; Atkins, P. W and Langford, C. H. 1996. Inorganic Chemistry, Oxford (2nd Ed) England.
4. G. D. Tuli, R. D. Madan, S. K. Basu and S. Prakash, "Advanced Inorganic Chemistry, Volume 1" S. Chand & Company Ltd, 2014.

Inorganic Chemistry Practical

1. Laboratory Ethics and Safety Measures

Awareness about the toxic nature of chemicals and their handling, cleaning of glassware, safe laboratory operations

2. Qualitative Analysis

Analysis of four ions (two cations and two anions) from mixture of salts.

3. Quantitative Analysis

1. Determine the %age purity of NaCl (rock salt) by Mohr's method.
2. Determination of number of water molecules (x) in $CuSO_4.XH_2O$ iodometrically.
3. Determination of amount/dm^3 of $FeSO_4.7H_2O$ with $K_2Cr_2O_7$ by both internal and external indicators.
4. Determination of %age of iron in Ferric alum $(NH_4)_2SO_4$ $Fe_2(SO_4)_3.24H_2O$ using $K_2Cr_2O_7$ by both internal and external indicators.

5. Standardization of EDTA solution by Magnesium Sulfate/Zinc Sulfate solution by complexometry.
6. Find out the amount of Ca^{2+} in the given sample of marble (lime stone) by complexometry.

4. Inorganic Preparations

1. Preparation of ferrous sulphate
2. Preparation of ferric alum
3. Preparation of barium sulphate

Recommended Book:

1. Muhammad Abid Khawaja, Practical Chemistry Note Book, Inorganic Chemistry, Ilmi Kitab Khana, Urdu Bazar, Lahore.

Reference Books:

1. Jefferey, G. H.; Bassett, Menclham, J. and Denney, R. C. 1989. Vogel's Text Book of Quantitative Chemical Analysis. Benjamin Cummings (5th Ed) UK.
2. Vogel, A. I. A. 1995. Text Book of Macro and Semi micro Qualitative Inorganic Analysis, Longamn Green & Co England.
3. Skoog, D. A.; West, D. M. and. Holler, F. J. 1994. Analytical Chemistry. Saunders College Publications (6th Ed).

3. Organic Chemistry

Code: (CHM-5303)

Credit Hours 3(2+1)

Course Objetives:

The course aims is not only the continuation study of basic principles of organic chemistry, but it will also provide the important topics in Organic chemistry functional groups including (aromatic compounds, phenols, carboxylic acids and its derivatives, aldehydes & ketones, amines, and malonic ester synthesis). This helps students to gain experience to predict the functional group transformations, simple reaction mechanisms, and the synthesis of organic molecules by multi-step synthesis strategies. In addition of that, the course will also help students to understand the reaction mechanism subjects in later stages of their study. Different experiments includes the practical work of extraction, purification and separation techniques with some simple organic preparations which are required for experimental chemistry.

Course Contents:

1. **Basic Concepts in Organic Chemistry**

   Hybridization of orbitals of carbon atoms in alkanes, alkenes, alkynes and arenes. Hybridization of orbitals of nitrogen, oxygen and sulphur atoms in various functional groups. Localized and delocalized chemical bonding. Conjugation and hyper conjugation. Resonance, rules of resonance, resonance energy, resonance hybrid, factor effecting the resonance; inductive effect, Applications of inductive effect and resonance on various properties of organic compounds; Steric effect and its applications, Hydrogen bonding and its effect on various properties of organic compounds, Tautomerism.

2. **Nomenclature of Organic Compounds**

   Nomenclature of alkanes, alkenes, alkynes, cycloalkanes, bicycloalkanes, spiroalkanes, monofunctional and polyfunctional derivatives of open chain and cyclic compounds,

polysubstituted benzenes, polycyclic hydrocarbons such as naphthalene, anthracene, phenanthrene and their derivatives and heterocyclic compounds.

3. **Aromatic Hydrocarbons**

Structure of benzene, Resonance energy of benzene, Aromaticity, Criteria for aromaticity, Evidences of aromaticity, Natural sources of aromatic hydrocarbons; Preparation of aromatic hydrocarbons by different methods.

Reactions of aromatic hydrocarbons: electrophilic aromatic substitution reactions i.e. nitration, halogenation, Friedal-Crafts reaction and its limitations, sulfonation; Orientation and reactivity of substituted benzenes;

Nucleophilic aromatic substitution reactions; reaction such as addition, hydrogenation, Birch reduction, and oxidation reactions of side chain.

Polycyclic aromatic hydrocarbons like naphthalene, anthracence and phenantharene, their resonance structures and realtive stablities. Synthesis of naphthalene, Electrophilic substitution reactons of naphthalene, Oxidation and reduction reactions, Brief description of orientation and reactivity of naphthalenes.

4. **Isomerism**

Conformational Isomerism: conformational analysis of ethane, *n*-butane, cyclohexane, mono- and di-substituted cyclohexanes.

Optical isomerism: optical activity, chirality and optical activity; enantiomers, diastreomers; recemates and their resolution; D, L and R, S conventions; Optical isomerism in cyclohexanes, biphenyls and allenes.

Geometrical isomerism: cis and trans isomers; E-Z convention; determination of configuration of the isomers; inter-conversion of geometrical isomers; geometrical isomerism in cyclic compounds.

5. **Alkyl halides**

Preparation of alkyl halides from alcohols, carboxylic acids;

Chemical reactions: Aliphatic nucleophilic substitution reactions, SN_1 and SN_2 mechanism, effects of the nature of substrates, attacking nucleophile, leaving group and the nature of solvent. Elimination reactions, E_1 and E_2 mechanisms, orientation of elimination (Hoffmann and Sytzeff rules).

Grignard Reagents; synthesis, structure, and reactions with active hydrogen compounds carbonyl compounds such as aldehydes, ketones, esters, acid halides and CO_2; reaction with nitriles, ethylene oxides, sulphur and oxygen.

6. **Chemistry of Phenols and Ethers**

Phenols: Physical properties; Synthesis of phenols, reactions of phenols such as acylation, Friedal-Crafts reaction, Nitartion, Sulphonation, Carbonation, Formylation and Diazo coupling.

Ethers: Physical properties, Preparation of ether from alcohols, alkyl halides and alkenes; Reactions of ether, brief introduction of crown ethers and polyethers.

7. **Chemistry of Carbonyl Compounds**

Preparation of aldehydes and ketones, by pyrolysis of calcium salts of acids, acylation of alkenes and arenes, reduction of acid halides and nitriles.

Physical properties of aldehydes and ketones; Structure and reactivity of carbonyl group; Comparisionof the reactivity of aldehydes and ketones; Nucleophilic addition of water, alcohols, ammonia and its derivatives, hydrogen cyanide, bisulfite, reduction and oxidation reactions; Aldol condensation and related reactions, Cannizaro's reaction, Witting reaction, oxidation reactions, chaemical tests of aldehydes and ketones.

8. **Chemistry of Carboxylic Acids and their Derivatives**

   Physical propertis of carboxylic acids; Effects of different parametters on the acid strengths of aliphatic and aromatic carboxylic acids. Chemical properties like salt formation nucleophilic acyl substitution, reduction of carboxylic acids, decaronylation, Hunsdicker reaction, Kochi reaction, substitution at α-carbon. Preparations, properties and reactions of acids chlorides, acids anhydrides, amides, cyanides and esters; Maolnic and acetoacetic esters synthesis.

9. **Heterocyclic Compounds**

   Methods of preparation of pyrol and pyridine, their aromatic character and comparison with benzene. Important reactions of pyrrol and pyridine.

Course Outcomes:

This will help students to gain experience of different electronic effects, to predict the functional group transformations, simple reaction mechanisms, and the synthesis of organic molecules by multi-step synthesis strategies. In addition of that, the course will also help students to understand the reaction mechanism subjects in later stages of their study. In addition, students will familiarize with the laboratory equipment, various chemicals, and set up chemical reactions to ensure safe and diligent laboratory practice

Recommended Books:

1. M. Yousan, A Textbook of Organic Chemistry, Ilmi kitab Khana, Urdu Bazar, Lahore.
2. Khairat M. Ibe Rasa, M.A. Rehman and Abdul Rehman, Organic Chemistry, Caravvan Book House, Lahore.

Reference Books:

1. Younas, M., Text Book of Chemistry, Ilmi Kutab Khana, Lahore.
2. Rehman, A., Text Book of organic Chemistry, Karwan Book House, Lahore.
3. Bhatti, H. N. and Rahman, R. 2013. Text Book of Organic Chemistry. Caravan Book House Pakistan.
4. Bahl, A., and B. S. Bhat. "A Text Book of Organic Chemistry, 17th Edn, S."*Chand and Company, New Delhi ISBN*: 81-219.
5. March, J., Advance Organic chemistry, John Wiley & Sons, New York.
6. I. L. Finar, "Organic chemistry" , Vol. I, Pearson Education, L.P.E.
7. I. L. Finar, , "Organic chemistry" , Vol. II, 5th Edition, L.P.E.
8. Jerry March, "Advanced Organic chemistry, Reaction, Mechanism and Structure" , 5th Edition, Wiley Inter Science.
9. Morison and Boyd, "Organic chemistry" , 6th Edition, Prentice Hall.
10. Seyhan N. Ege, "Organic chemistry Structure and Reactivity", 3rd Edition, The University of Michijan, A.I.T.D.S. Publishers & Distributors (Redg).

Organic Chemistry Practical

1. **Compound Analysis**

   Identification of organic compounds containing only one functional group with special emphasis
   on compounds containing following functional groups.
   -COOH, -OH, C=O, -NH_2 and –$CONH_2$

2. **Preparation of organic compounds**

   Preparation and techniques of purification of tribromophenol, nitrobenzene, aspirin, ethyl benzoate and benzoic acid from toluene, butyl chloride, acetanilide.

3. **Basic Experimental techniques used in organic chemistry**

1. Simple distillation
2. Solvent extraction
3. Sublimation
4. Re-Crystallization

4. **Estimation (Volumetric)**
   1. Determination of molecular weight of carboxylic acid.
   2. Estimation of amide group and glucose.

Recommended Book:

1. Muhammad Abid Khawaja, Practical Chemistry Note Book, Organic Chemistry, Ilmi Kitab Khana, Urdu Bazar, Lahore.

Applied Chemistry
Course Code (CHM-5402)
Credit Hours 3(2+1)

Course Objectives:

Students will be able to understand and acquire knowledge about the basic concepts and applications of chromatography, spectroscopy, nuclear chemistry, modern materials, industrial chemistry and biochemistry. The course contents are wide ranging with limited detailed theory and include some factual information that simply will need to be memorized. A key skill emphasized is problem solving, both quantitative and qualitative.

1. **Chromatography**
   Introduction to chromatography, types of chromatography. Basic concepts, methodology and applications of paper and thin layer chromatography.
2. **Spectroscopy**
   Introduction of U.V. and visible spectroscopy, Beer-Lambert law. Instrumentation, methodology and applications of U.V. and visible spectroscopy. Introduction of infra-red spectroscopy, Instrumentation, methodology and applications of infra-red spectroscopy.
3. **Nuclear Chemistry**
   Types of nuclear radiations. Detection and measurement of radioactivity. Stable and unstable isotopes. Artificial nuclear transformations. Application of radioactive isotopes. Nuclear hazards and safety measures, G M counter and cloud chamber. Brief description of nuclear reactors.
4. **Introduction to Modern Materials**
   Introduction to polymers, classification of polymers, polymerization mechanism (chain growth, step growth etc.), organic polymers (nylon, polyethylene), applications of polymers. Introduction to composites, ceramics, fibre glass and liquid crystals.
5. **Industries**
   Industries of glass, sugar and fertilizers (urea, calcium ammonium phosphate). Introduction to unit process in various chemical industries. Metallurgy of iron and copper.
6. **Biochemistry and Biotechnology**
   Brief introduction to carbohydrates, proteins and lipids. Discuss biotechnology as science of many disciplines.

Course Outcomes:

After completing this course, students will be able to provide graduates with the skills, knowledge and learning tools required to carry out professional research, development and production activities in the field of chemistry.

Recommended Books

1. Marson S. H. & B. Jerome. "Fundamentals of Physical Chemistry". Macruthan Publishing co. Inc. New York
2. Heald C. & A. C. K. smith. Applied Physical Chemistry English Language.
3. Shriver, D. F., P.W. Atkins and C.H. Langord," Inorganic Chemistry". Oxford, 2nd Edition (1984).
4. Sharpe, A. G., "Inorganic Chemistry" Longman, 3rd Edition(1992)
5. Younas, M. Organic Spectroscopy, A. H. Publisher, Lahore.
6. Roger's Industrial Chemistry, Von Norstand Co. N. Y.
7. Introduction to biotechnology by W. J. Thieman and M.A. Palladino, published by Pearson Limited.
8. Essentials of Medical Biochemistry by Mushtaque Ahmed, Merit publishers Faisalabad.

Practicals Applied Chemistry

1. Identification of cations by paper chromatography.
   (Cu^{+2} + Ni^{+2}), (Al^{+3} + Fe^{+3}), (Cd^{+2} + Pb^{+2})
2. Preparation and standardization of molar and normal solutions (at least 6)
3. Wet tests for carbohydrates
4. Separation of plastid pigments by TLC
5. Separation of mixture of Phenol and natural products by chromatography.

Recommended Book:

1. Muhammad Abid Khawaja and Muhammad Usman Afzal, Practical Applied Chemistry Note Book, , Ilmi Kitab Khana, Urdu Bazar, Lahore.

Reference Books:

1. Riegel's Handbook of Industrial Chemistry. Von Norstand Reeinhold Co. N. Y.
2. Vogel A. I. "A Text Book of Organic Analysis Edward Arnold, London.
3. Mann, F. G. and B.C. Saunders. Practical Organic Chemistry Longman London.
4. Amin, I. J. 2002. Theory and Practice of Chromatography, Higher Education Commission Pakistan

3. Analytical Chemistry

CHM-5406 3(3, 0)

Course Objectives:

Students will be able to understand and acquire knowledge about basic concept of analytical chemistry, basic analytical techniques and practical aspects of classical chemical analysis, measuring apparatus used in laboratory, accuracy, precision, detection limit and signal to noise ratio, preparation of different concentration of solutions and relative strength of acid base, different tests to identify the carbohydrates and proteins. Students will learn basic knowledge and understanding of essential chemicals and physical principles for analytical chemistry. Students will solve the problems related to chemical analysis and interpret the analytical data.

Course Contents:

Chemeomtrics:

Introduction and scope of Analytical Chemistry: Analytical problems and their solutions; The nature of analytical methods; trends in analytical methods; Different units of concentration and their conversion; Definition and basic concepts: nature and origin of errors, Classification of errors; Accuracy and Precision; Limits of detection, Confidence limits; Deviation, Standard deviation, Application of statistical tests; Rounding off analytical data; Computation of analytical data. Significance of sampling, weighing and measuring in Analytical chemistry.

Classical Analytical Methods:

Acid-base, complexometric and redox titrations, gravimetric analysis.

Modern Analytical Methods:

Classifications of Chromatographic Techniques, Paper and Thin Layer Chromatographic Techniques; their instrumentation, applications and limitations, Column Adsorption Chromatography, Introduction to Molecular spectroscopy, absorption in UV and Visible range; Basic principle of Spectrophotometry; Beer-Lambert's law; Deviations; Instrumentation and application.

Course Outcomes:

After completing this course, students will be able to explain basic knowledge and understanding of essential chemicals and physical principles for analytical chemistry, basic analytical techniques and practical aspects of classical chemical analysis. Students will be capable to solve the problems related to chemical analysis and interpret the analytical data.

Reference Books

1. Daniel C. Harris, "Quantitative Chemical Analysis", 5th Edition, Freeman and Company, N.Y, 1999.
2. Christian, G.D., "Analytical Chemistry", John Wiley and Sons.
3. Skoog, D. A., West, P. M., Holler, F. J., Crouch, S. R., Fundamentals of Analytical Chemistry, 9th ed., Brooks Cole Publishing Company, (2013).
4. Christian, G. D., Analytical Chemistry. 6th ed., John-Wiley & Sons, NewYork, (2006).
5. Harris, D. C., Quantitative Chemical Analysis, 8th ed., W. H. Freeman andCompany, New York,USA, (2011).
6. Kealey, D. and Haines, P. J, Instant Notes., Analytical Chemistry, Bios Scientific Publishers Limited, Oxford, UK, (2002).
7. Matthios, Otto, CHEMOMETRICS-Statistics and Computed applications in Analytical Chemistry, 2nd ed., Wiley-VCH, Germany, (2007).
8. Mitra A., Fundamentals of Quality Control and Improvement, 3rd ed., JohnWiley & Sons, (2008).
9. Miller, J. and Miller, J., Statistics and Chemometrics for Analytical Chemistry, 5th ed., Prentice Hall, (2005).

4. Environmental Chemistry
(CHM-5206) Cr.Hr 3(3, 0)

Course Objectives:

Students will be able to acquire knowledge and develop understanding about the fundamental principles of environmental chemistry, skills necessary to address the environmental issues and different types of pollutions. Such information will be useful in studying and solving pollution related issues and experiments in the laboratory.

Course Contents:

Atmospheric Pollution:

The atmosphere, composition, temperature and pressure profile, role of free radicals in the atmosphere, temperature inversion and photochemical smog, particulate matter in the atmosphere, Industrial pollutants, atmospheric aerosols, acid-rain major sources, mechanism, control measures and effects on buildings and vegetation, global warming, major greenhouse gases and greenhouse effect, mechanism, control measures and global impact, the stratospheric ozone–the ozone hole, CFCs, ozone protection, biological consequences of ozone depletion.

Water Pollution:

Water pollution and waste water treatment, municipal, industrial and agricultural sources of pollution, heavy metals contamination of water, eutrophication, detergents and phosphates in water, water quality criteria, water purification: primary, secondary and advanced treatment, removal of nitrogen and phosphorous compounds from polluted water, organic matter in water and its decomposition, COD, BOD and other tests relevant to industrial emissions.

Land pollution:

Soil and mineral resources, general principles of metal extraction, heavy metals contamination of soil, toxicity of heavy metals, bio-accumulation of heavy metals, organic matter in soil, macro and micro-nutrients in soil, ion- exchange in soil, soil pH and nutrients availability.

Green Chemistry:

Atom economy, integrated pests management control (IPMC), ionic liquids, super critical extraction technology, green synthesis, recycling, carbon dioxide sequestering, water based paints.

Course Outcome:

Students will be able to explain knowledge and understanding about the fundamental principles of environmental chemistry, skills necessary to address the environmental issues and different types of pollutions. Such information will be useful in studying and solving pollution related issues and experiments in the laboratory.

Recommended Books:

1. Baird, C. and Cann, M., Environmental Chemistry, 5th ed., W. H. Freeman& Company, (2012).
2. Dara, S. S. and Mihsra, D. D., A Text Book of Environmental Chemistry and Pollution Control, 9th ed., S. Chand & Co. Ltd., (2004).
3. Singhi, R. and Singh, V., Green Chemistry for Environmental Remediation, John-Willey & Sons, Inc., (2011).

Reference Books

1. Bockris R., McMillan, “Environmental Chemistry”, USA, 1995.
2. Manahan S. E. and Milled Grant Press, “Environmental Chemistry”, 8th Ed., CRC Press, New York,
3. 2005.
4. Bokrin, “Environmental Chemistry”, Ploniusm Press,
5. De A.K., Willey Eastern, “Environmental Chemistry”, New Dehli, 1990.
6. Analysis, Mass and Everser, “Environmental Chemistry”, International Text Book Co., Glasgow.
7. Gilbert M., “Introduction to Environmental Science and Technology”, John Wiley and Sons.

Course Contents Zoology

1. PRINCIPLES OF ANIMAL LIFE
Code (ZOO- 5105)
Cr: 3(2+1)

Course Objectives

The course aims to impart knowledge and understanding of:

1. The concept and status of Zoology in life sciences.
2. The common processes of life through its chemistry, biochemical and molecular processes.
3. The structure and function of cell organelles and how common animal cell diversified in various tissues, organs and organ systems.
4. Biochemical mechanisms eventually generating energy for animal work.
5. Animals and their relationship with their environment. Cell division and its significance in cell cycle.
6. Concepts and mechanisms of inheritance pattern, chromosome and gene linkage and molecular basis of genetics.
7. Animal behavior and communication.
8. Theories of evolution, gene flow and mechanism of evolution with reference to animals and diversity.

Course Learning Outcomes

By the end of the course, students should be able to:

1. Understand basic approaches to testing scientific hypotheses
2. Understand the fundamentals of genetics and evolution
3. Learn the diversity of animal anatomy and physiology
4. Learn traits, distribution and diversity of animals.

Course Contents

1. Scope of Zoology:

Introduction; significance and applications of zoology, environment and world resources.

2. The Chemical Basis of Animal Life:

Brief introduction to biomolecules; carbohydrates, lipids, proteins, and nucleic acids.

3. Cellular Organization:

Structure of animal cells, cell membrane, cytoplasm and its organelles: ribosomes, endoplasmic reticulum, Golgi apparatus, lysosomes, mitochondria, cytoskeleton, cilia and flagella, centrioles and microtubules, and vacuoles, the nucleus: nuclear envelope, chromosomes and nucleolus.

4. Animal tissues:

Types: epithelial, connective, muscle and nervous tissue; organs and organ systems.

5. Enzymes:

Structure, types; function and factors affecting their activity; cofactors and coenzymes.

6. Energy Harvesting:

Aerobic and anaerobic respiration: glycolysis, citric acid cycle and electron transport chain,

fermentation.

7. Cell Division:

Cell cycles: Mitosis and meiosis; control of the cell cycle.

8. Inheritance Patterns:

Mendelian genetics; inheritance patterns; gene, structure, chemical composition and types.

9. Chromosomes and Gene Linkage:

Eukaryotic chromosomes; linkage and crossing over; chromosomal aberrations.

10. Molecular Genetics:

Cellular Control: DNA: the genetic material; DNA replication in prokaryotes and eukaryotes; control of gene expression in eukaryotes; gene mutation; recombinant DNA and applications of genetic technologies.

11. Ecological Concepts:

Animals and their abiotic environment, limiting factors, Biotic Factors: Population, Interspecific interactions, Communities and ecosystems, Trophic structure of ecosystem: food chain, food web, energy flow and thermodynamics, Biogeochemical cycles, Ecological problems: human population growth, pollution, resource depletion and biodiversity.

12. Animal Behaviour:

Behaviour and its types, development of behavior, learning, factors controlling animal behavior, communication, social behavior.

13. Evolution:

A Historical Perspective: Theories of evolution: Lamarckism and natural selection, neo larmarckism, Darwinism, and neo-Darwinian. Evolution and Gene Frequencies: Hardy-Weinberg principle, Evolutionary mechanisms: population size, genetic drift, gene flow, de Vries mutation theory and rates of evolution, polymorphism, species and speciation, molecular evolution, mosaic evolution.

Practicals

1. Tests for different carbohydrates, proteins and lipids.
2. Study of the prepared slides of epithelial tissue (squamous, cuboidal, columnar), connective tissue (adipose, cartilage, bone, blood), nervous tissue and muscle tissue (skeletal, smooth and cardiac). **(Note:** Prepared microscopic and/or projection slides and/or CD ROM computer projections must be used**)**.
3. Plasmolysis and deplasmolysis in blood.
4. Ecological notes on animals of a few model habitats.
5. Study of meiosis in grasshopper testis (students should prepare the slide).
6. Problem based study of Mendelian ratio in animals.
7. Multiple alleles study in blood groups.
8. Study of karyotypes of Drosophila, mosquito.
9. Study to demonstrate social behaviour (documentary film be shown, honeybee, monkey group in a zoo).

Textbook

1. Miller, S.A. and Harley, J.B. 2016. Zoology. 10th Edition (International). Singapore: McGraw

Hill.

Recommended Books

2. Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Anson, H. and Eisenhour, D.J. 2008. Integrated Principles of Zoology. 14th Edition (International). Singapore: McGraw Hill.
3. Campbell, N.A. 2014. Biology. 10th Edition. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.
4. Molles, M.C. 2005. Ecology: Concepts and Applications. 6th Edition. McGraw Hill, New York, USA.
5. Odum, E.P. 1994. Fundamentals of Ecology. 3rd Edition. W.B. Saunders. Philadelphia.

Books for Practicals

6. Miller, S.A. General Zoology Laboratory Manual. (Latest Edition; International). Singapore: McGraw Hill.
7. Hickman, C.P. and Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw Hill.

2. ANIMAL DIVERSITY-I (INVERTEBRATES) Code (ZOO-5205) Cr: 3(2+1)

Objectives

1. To provide the knowledge of evolutionary/phylogenetic relationship (from simple to the complex organisms).
2. To impart the basic taxonomic characteristics and classification of all the invertebrate phyla.
3. To provide understanding of body organization, feeding and digestive system, other organ system.
4. To provide the description of mode of Reproduction and Development.
5. To provide the information of their economic and ecological importance.

Course Learning Outcomes

This course will be based on following outcomes:

1. Acquire the basic concepts of invertebrates with explanation of evolutionary origin and diversification.
2. Understand invertebrate organismal concepts in laboratory and field.
3. Demonstrate major evolutionary innovations for invertebrates with functional importance.
4. Understand how reproduction and development occurred and able to breed animal in the laboratory/field.
5. Analyze economic and ecological importance of invertebrates.

Course Contents

1. Introduction:

Classification of Organisms. Evolutionary Relationships and Tree Diagrams: Patterns of organization.

2. Animal-Like Protists: The Protozoa:

Life within a single plasma Membrane, Symbiotic Lifestyles, Protozoon Taxonomy (up to Phyla,

subphyla and super Classes, wherever applicable), Pseudopodia and Amoeboid Locomotion; Cilia and other pellicular structure; Nutrition, Genetic Control and Reproduction, Symbiotic ciliates.

3. Multicellular and Tissue Levels of Organization:

Origins of Multicellularity, Animal Origins.

4. Phylum Porifera:

Characteristics and classification. Cell Types, Body Wall, and Skeletons, Water Current and Body Forms, Maintenance Functions, Reproduction.

5. Phylum Cnidaria (Coelenterate):

Characteristics and classification. The body Wall and Nematocysts: Alteration of Generations, Maintenance Functions; Reproduction and Classification up to Class. **Phylum Ctenophore:** Characteristics, body organization.

6. Platyzoa: Phylum Platyhelminthes:

Classification up to class, The Free-Living Flatworms and the Tapeworms, adaptive modification for parasitic lifestyle. *Platyzoa: Smaller Phyla:* **Phylum Rotifera:** Characteristics, body organization. **Some Lesser-Known Invertebrates:** *Smaller Lophotrochozoan:* **Phylum Nemertea:** Characteristics, body organization, Cycliophora, Ectoprocta, Brachiopoda.

7. Phylum Mollusca:

Relationship to other animals; Molluscan Characteristics, Classification up to class. The Characteristics of Shell and Associated Structures. Feeding, Digestion, Gas Exchange, Locomotion. Reproduction and Development, Other maintenance Functions and Diversity in Gastropods, Bivalves and Cephalopods.

8. Phylum Annelida:

The Metameric Body Form: Characteristics, Relationship to other animals, Metamerism and Tag-matization, Classification up to Class. External Structure and Locomotion, Feeding and the Digestive system, Gas Exchange and Circulation, Nervous and Sensory Functions, Excretion, Regeneration, Reproduction and Development, in Polychaeta, Oligochaeta and Hirudinea.

9. The Smaller Ecdysozoan Phyla:

Phylum Nematoda: General Characteristics; Structure and Function, Reproduction and Development, Some important Nematode Parasites of Human. **Phylum Nematophora** and **Phylum Kinorhyncha**.

10. Phylum Arthropoda (Blueprint for Success):

Classification up to class, Relationship to other Animals, Metamerism and Tagmatization, The Exoskeleton, Hemocoel, Metamorphosis. **The Pancrustacea: *Crustacea and Hexapoda.*** Subphylum Crustacea: Classification up to order. Subphylum Hexapoda: External Structure and Locomotion, Nutrition and the Digestive system, Gas Exchange, Circulation and Temperature Regulation, Nervous and Sensory Functions, Excretion, Chemical Regulation, Reproduction and Development, Insects Behavior, Insect and Human.

11. Phylum Echinoderms:

Relationship to other Animals; Echinoderm Characteristics; Classification up to class. Maintenance Functions, Regeneration, Reproduction, and Development in Asteroida, Ophiuroidea, Echinoidea, Holothuridea and Crinoidea. **Some Lesser-Known Invertebrates:** Cheatognaths.

Practicals

Note: Classification of each member of each phylum up to order with adaptions in relation to habitat of the specimen. Preserved Specimen and or colored projection slide and or CD ROM projection of computer must be used.

1. Study of Euglena, Amoeba, Endameba, Plasmodium, Trypanosome, Paramecium as representative of animal like Protists, Leucosolenia, Obelia, Hydra, Proglottid of Tapeworm, Parapodia of Nereis and Daphnia. Drawing and labeling.
2. Study of prepared slides of sponges, spicules of sponges, and their various body forms. Study of representatives of classes of Phylum Porifera.
3. Study of principal representatives of classes of Phylum Coelenterate.
4. Study of principal representatives of classes of Phylum Platyhelminthes.
5. Study of representatives of phylum Rotifer, Phylum Nematode.
6. Study of principal representatives of classes of Phylum Mollusca.
7. Study of principal representatives of classes of Phylum Annelida.
8. Study of principal representatives of classes of groups of Phylum Arthropoda
9. Study of representatives of classes of Phylum Echinodermata.
10. Preparation of permanent slide of mouthpart of insects (after dissection). Drawing and labeling.
11. How to make grade-wise series for preparation of temporary and permanent slides.

Textbook

1. Miller, S.A. and Harley, J.B. 2016. Zoology. 10th Edition (International). Singapore: McGraw Hill.

Recommended Books

2. Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Anson, H. and Eisenhour, D.J. 2018. Integrated Principles of Zoology. 15th Edition (International). Singapore: McGraw Hill.
3. Campbell, N.A. 2014. Biology. 10th Edition. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.
4. Pechenik, J.A. 2015. Biology of Invertebrates. 7th Edition. (International), Singapore: McGraw Hill.
5. Kent, G.C. and Miller, S. 2001. Comparative Anatomy of Vertebrates. New York: McGraw Hill.

Books for Practicals

6. Miller, S.A. General Zoology Laboratory Manual. (Latest Edition; International). Singapore: McGraw Hill.
7. Hickman, C.P. and Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw Hill.

4. ANIMAL DIVERSITY-II (VERTEBRATES)

Code (ZOO- 5304)

Cr: 3(2+1)

Objectives

The objectives of the course are:

1. To enable them to understand the Taxonomic characteristics of protochordates and chordates.
2. To impart knowledge about the phylogenetic relationships of protochordates and various classes of chordates.
3. To develop critical thinking about phylogeny of chordates with respect to their physiological adaptations, behavior and ecology.

Course Learning Outcomes

Upon successful completion of the course, the student will be able to:

1. Acquire the basic knowledge of Taxonomic characteristics of chordates.
2. Understand the phylogenetic relations and diversity of Pisces, amphibians, reptiles and mammals.
3. Analyze the process of micro evolution within chordates.
4. Demonstrate individually Phylogenetic relationships of chordates and their diversity.

Course Contents

1. Hemichordata:

Classification, Structure, anatomy and organ systems of Hemichordata (e.g., Acorn worms).

2. Chordata:

Subphylum Urochordates and Cephalochordates: Maintenance Functions, Reproduction and development.

3. Fishes:

Vertebrate Success in Water. Survey of Fishes (infraphyla), Classification of Chondrichthyes, Osteichthyes, Dipnoi and Holocephali. Locomotory adaptations, nutrition and the digestive system, circulation, gas exchange, nervous and sensory functions, excretion and osmoregulation, reproduction and development of Chondrichthyes and Osteichthyes.

4. Amphibians:

The first terrestrial vertebrates: Characteristics of amphibians. Classification of amphibians and characteristics of order Caudata, Gymnophiona, and Anura. Structure and locomotory adaptations, nutrition and the digestive system, circulation, gas exchange, temperature regulation, nervous and sensory functions, excretion and osmoregulation, Reproduction, development and metamorphosis of caudate, anura and Gymnophiona.

5. Reptiles: Diapsid Amniotes:

The First Amniotes and cladistic interpretation of the amniotic lineage. General characteristics of reptiles. Characteristics of Order Testudines or Chelonia, Rhynchocephalia, Squamata, and Crocodilia. Adaptations in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange, and temperature regulation, nervous and sensory functions, excretion and osmoregulation, reproduction and development of Chelonia, Squamata, Rhynchocephalia and Crocodilian.

6. Birds:

Classification, Ancient birds and the evolution of flight, Diversity of modern birds, Adaptation in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange and temperature regulation, nervous and sensory systems, excretion and osmoregulation, reproduction and

development. Migration and navigation.

7. Mammals: Synapsid Amniotes:

Classification, Diversity of mammals, Adaptations in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange, and temperature regulation, nervous and sensory functions, excretion and osmoregulation, behavior, reproduction and development.

Practicals

1. Classification and study of lab specimens of hemichordates, fishes, amphibians, reptiles, birds and mammals.
2. Visit to Pakistan Museum of Natural History (PMNH) for the study of diversity of chordates**.**

Textbook

1. Miller, S.A. and Harley, J.B. 2016. Zoology. 10th Edition (International). Singapore: McGraw Hill.

Recommended Books

2. Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Anson, H. and Eisenhour, D.J. 2018. Integrated Principles of Zoology. 15th Edition (International). Singapore: McGraw Hill.
3. Campbell, N.A. 2014. Biology. 10th Edition. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.
4. Pechenik, J.A. 2015. Biology of Invertebrates. 7th Edition. (International), Singapore: McGraw Hill.
5. Kent, G.C. and Miller, S. 2001. Comparative Anatomy of Vertebrates. New York: McGraw Hill.

Books for Practicals

6. Miller, S.A. General Zoology Laboratory Manual. (Latest Edition; International). Singapore: McGraw Hill.
7. Hickman, C.P. and Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw Hill.

4. ANIMAL FORM AND FUNCTION-I
(A COMPARATIVE PERSPECTIVE)
Code (ZOO- 5305)
Cr: 3(2+1)

Objectives

The Objectives of the courses are:

1. To teach about animals' diversity adapted in different strategies for performance of their similar functions through modifications in body parts in past and present times.
2. To impart understanding of diverse strategic structural adaptations in each of the functions of integumentary, skeletal, muscular, nervous and sensory, endocrine, circulatory and respiratory systems for effective survival in their specific conditions.
3. To understand the organ systems, their specialization and coordination with each other and constantly changing internal and external environment, inside and outside the animal's body.
4. To embrace the phenomena in basic structure of each system that determines its particular function.

Course Learning Outcomes

1. Acquire the concept that for the performance of a function for example exchange of respiratory gases the different forms are adapted in t environments e.g. gills in aquatic and lungs in terrestrial environment.
2. Understand that diverse forms adapted to perform the same functions are because of the different past and present conditions.
3. Solve of emergence of diversity of forms for the performance of similar function.
4. Analyze the requirements of diverse forms for the performance of similar function in their past and present needs.
5. Evaluate the adaptations in forms for its efficiency in managing the function in differing situations in the past and present times.
6. Demonstrate that a form is successfully adapted to perform a function adequately and successfully.

Course Contents

1. Protection, Support, and Movement:

Protection: the integumentary system of invertebrates and vertebrates; Movement and support: the skeletal system of invertebrates and vertebrates; Movement: non-muscular movement; an introduction to animal muscles; the muscular system of invertebrates and vertebrates.

2. Communication I:

Nerves: Neurons: structure and function. Senses: Sensory reception: baroreceptors, chemoreceptors, georeceptors, hygroreceptors, phonoreceptors, photoreceptors, proprioceptors, tactile receptors, and thermoreceptors of invertebrates. Lateral line system and electrical sensing, lateral-line system and mechanoreception, hearing and equilibrium in air and water, skin sensors of mechanical stimuli, sonar, smell, taste and vision in vertebrates.

3. Communication II:

The Endocrine System and Chemical Messengers: Chemical messengers: hormones chemistry; and their feedback systems; mechanisms of hormone action. Hormones with principal function each of porifera, cnidarians, platyhelminthes, nemerteans, nematodes, molluscs, annelids, arthropods, and echinoderms invertebrates; an overview of the vertebrate endocrine system; endocrine systems of vertebrates, endocrine systems of birds and mammals.

4. Circulation and Gas Exchange:

Internal transport and circulatory systems in invertebrates. Characteristics of invertebrate coelomic fluid, hemolymph, and blood cells. Transport systems in vertebrates; characteristics of vertebrate blood, blood cells and vessels; the hearts and circulatory systems of bony fishes, amphibians, reptiles, birds and mammals; the human heart: blood pressure and the lymphatic system; immunity: nonspecific defenses, the immune response. Gas Exchange: Invertebrates and vertebrates' respiratory systems.

Practicals

1. Study of insect chitin, fish scale, amphibian skin, reptilian scales, feathers and mammalian skin.
2. Study and notes of skeleton of Labeo (*Labeo rohita),* Frog (*Hoplobatrachus tigerinus*), Varanus (*Varanus bengalensis),* fowl *(Gallus gallus domesticus)* and rabbit (*Oryctolagus cuniculus).*
3. Earthworm or leech; cockroach, freshwater mussel, Channa or Catlacatla or Labeo or any other local fish, frog, pigeon and rat or mouse and rabbit dissections as per availability.
4. Study of heart, principal arteries and veins in a representative vertebrate (dissection of representative fish/mammals).

Note: Prepared slides and preserved specimen and/or projection slides and/or CD ROM computer projections may be used.

Textbook

1. Miller, S.A. and Harley, J.B. 2016. Zoology. 10th Edition (International). Singapore: McGraw Hill.

Recommended Books

2. Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Anson, H. and Eisenhour, D.J. 2008. Integrated Principles of Zoology. 14th Edition (Int). Singapore: McGraw Hill.
3. Campbell, N.A. 2014. Biology. 10th Edition. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.
4. Pechenik, J.A. 2013. Biology of Invertebrates. 4th Edition. (International), Singapore: McGraw Hill.
5. Kent, G.C., Miller, S. 2001. Comparative Anatomy of Vertebrates. McGraw Hill. NY.

Books for Practicals

6. Miller, S.A. General Zoology Laboratory Manual. (Latest Edition; International). Singapore: McGraw Hill.
7. Hickman, C.P. and Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw Hill.

ANIMAL FORM AND FUNCTION–II

(A COMPARATIVE PERSPECTIVE)

Code (ZOO- 5405) Cr: 3(2+1)

Objectives

The Objectives of the courses are:

i. To teach about animals' diversity adapted in different strategies for performance of their similar functions through modifications in body parts in past and present times.
ii. To impart understanding of diverse strategic structural adaptations in each of the functional systems of nutrition, excretion, osmoregulation and reproduction and development for effective survival in their specific conditions.
iii. To understand the organ systems, their specialization and coordination with each other and constantly changing internal and external environment, inside and outside the animal's body.
iv. To embrace the phenomena in basic structure of each system that determines its particular function.

Course Learning Outcomes

i. Acquire the concept that for the performance of a function for example exchange of respiratory gases the different forms are adapted in t environments e.g. gills in aquatic and lungs in terrestrial environment.
ii. Understand that diverse forms adapted to perform the same functions are because of the different past and present conditions.

iii. Solve of emergence of diversity of forms for the performance of similar function.

iv. Analyze the requirements of diverse forms for the performance of similar function in their past and present needs.

v. Evaluate the adaptations in forms for its efficiency in managing the function in differing situations in the past and present times.

vi. Demonstrate that a form is successfully adapted to perform a function adequately and successfully.

Course Contents

1. Nutrition and Digestion:

Evolution of nutrition; the metabolic fates of nutrients in heterotrophs; digestion. Animal strategies for getting and using food, diversity in digestive structures of invertebrates. The mammalian digestive system: gastrointestinal motility and its control. Oral cavity, pharynx and esophagus, stomach, small intestine: main site of digestion; large intestine; role of the pancreas in digestion; and role of the liver and gallbladder in digestion.

2. Temperature and Body Fluid Regulation:

Homeostasis and Temperature Regulation; The Impact of Temperature on Animal Life; Heat Gains and Losses; Some Solutions to Temperature Fluctuations; Temperature Regulation in Invertebrates, Fishes, Amphibians, Reptiles, Birds and Mammals; Heat Production in Birds and Mammals. Control of Water and Solutes (Osmoregulation and Excretion); Invertebrate and Vertebrate. Excretory Systems, How Vertebrates Achieve Osmoregulation; Vertebrate Kidney Variations; Mechanism in Metanephric Kidney Functions.

3. Reproduction and Development:

Asexual reproduction in invertebrates; advantages and disadvantages of asexual reproduction. Sexual reproduction in invertebrates; advantages and disadvantages of sexual reproduction; sexual reproduction in vertebrates; reproductive strategies; examples of reproduction among various vertebrate classes. The human male reproductive system: spermatogenesis, transport and hormonal control, reproductive function. The human female reproductive system: folliculogenesis, transport and hormonal control, reproductive function; hormonal regulation in gestation; prenatal development and birth: the placenta; milk production and lactation.

Practicals

1. Study of excretory system in an invertebrate and a vertebrate representative (Model).
2. Study of digestive system in invertebrate and a vertebrate representative (Dissection).
3. Dissection and study of male and female reproductive system in vertebrates and invertebrates.

Note: Prepared slides and preserved specimen and/or projection slides and/or CD ROM computer projections may be used.

Textbook

1. Miller, S.A. and Harley, J.B. 2016. Zoology. 10th Edition (International). Singapore: McGraw Hill.

Recommended Books

2. Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., Anson, H. and Eisenhour, D.J. 2008. Integrated Principles of Zoology. 14th Edition (Int). Singapore: McGraw Hill.

3. Campbell, N.A. 2014. Biology. 10th Edition. Menlo Park, California: Benjamin/Cummings

Publishing Company, Inc.

4. Pechenik, J.A. 2013. Biology of Invertebrates. 4th Edition. (International), Singapore: McGraw Hill.
5. Kent, G.C., Miller, S. 2001. Comparative Anatomy of Vertebrates. McGraw Hill. NY.

Books for Practicals

6. Miller, S.A. General Zoology Laboratory Manual. (Latest Edition; International). Singapore: McGraw Hill.
7. Hickman, C.P. and Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw Hill.

COURSE CONTENTS BOTANY

1. Diversity of Plants

Code (BOT-5104) Credit Hours: 3(2+1)

Specific Objectives:

To introduce the students to the diversity of plants and their structures and significance.

Learning Outcomes:

To enable the students, understand the basic concepts of pro and eukaryotic life forms, kingdoms and evolutionary trends. To enable the students, understand and appreciate the biology and evolution of plant architecture.

Course Outline:

Comparative study of life form, structure, reproduction and economic significance of:

a. Viruses: Introduction, history and impact of viruses on humankind. (Basic structure and Types of RNA and DNA viuses) with special reference to TMV;
b. Bacteria: Introduction, history, general structure and life cycles of bacteria. pathogenicity and industrial importance of bacteria.
c. Algae: Introduction and classification. (Structurre and life cycles of Chlamydomonas, Chara, Ectocarpus, Polysiphonia)
d. Fungi: Introduction and classification. (Penicillium, Ustilago, Puccinia). Role of fungi in agriculture and industry.
f. Bryophytes:
    i. Riccia
    ii. Anthoceros
    iii. Funaria

g. Pteridophytes: Origin and evolution of Vascular Plants, origin of vasculature, origin of leaves.
    i. Fossils and fossilization
    ii. Psilopsida (Psilotum)
    iii. Lycopsida (Selaginella)
    iv. Sphenopsida (Equisetum)
    v. Pteropsida (Marsilea)

h) Spermatophytes: origin and evolution of seed habit. Gymnosperms (Life cycle of Pinus), life cycle of a flowering plant

Lab Outline: Culturing, maintenance, preservation and staining of microorganisms. Study of morphology and reproductive structures of the types mentioned in theory. Identification of various types mentioned from prepared slides and fresh collections.

Recommended Books:

1. Lee, R.E. 1999. Phycology. Cambridge University Press, UK
2. Prescott, L.M., Harley, J.P. and Klein, A.D. 2004. Microbiology, 3rd ed. WM. C. Brown Publishers.
3. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology. 4th ed. John Wiley and Sons Publishers.
4. Agrios, G.N. 2004. Plant pathology. 8th ed. Academic press London.
5. Vashishta, B.R. 1991. Botany for degree students (all volumes). S. Chand and Company. Ltd. New Delhi.
6. Andrew, H. N. 1961. Studies in Paleobotany. John Willey and Sons.

7. Ingrouille , M. 1992. Diversity and Evolution of Land Plants. Chapman & Hall .
8. Mauseth, J.D. 2003. Botany: An Introduction to Plant Biology 3rd ed., Jones and Bartlett Pub. UK
9. Marti.J.Ingrouille & Plant: Diversity and Evolution. 2006 CUP
10. Taylor, T.N. & Taylor, E.D. 2000. Biology and Evolution of Fossil Plants. Prentice Hall. N.Y.
11. Mauseth, J.D. 2003. Botany: An Introduction to Plant Biology 3rd ed., Jones and Bartlett Pub. UK
12. Marti.J.Ingrouille & Plant: Diversity and Evolution. 2006 CUP

2. Plant Systematics, Anatomy and development

BOT-5204 Credit Hours: 3(2+1)

Specific Objectives and Learning Outcomes

To understand

Various systems of classification, identification and nomenclature of higher plants,

1. Structures and functions of tissues and organs at embryonic level

Learning Outcomes:

The students may be able to assign the name and classify the plants at regional and global scale. Students can integrate the external and internal characteristics of plants which help to determine the interrelationship among various plants groups.

Course outline:

a. **Plant systematics**

1. Introduction to Plant Systematics: aims, objectives and importance.
2. Classification: brief history of various systems of classification with emphasis on Artificial, Natural and modern systems of Classification.
    a. Linnaeus system of classification
    b. Bentham and Hooker system of classification
    c. Engler and Prantl system of classification
3. Brief introduction to nomenclature,
    a. Brief history of Plant Nomenclature
    b. Binomial nomenclature
    c. An introduction to International Code of Botanical Nomenclature
4. Basic principles of systematics, including identification, nomenclature, classification, description, and the inference of evolutionary relationships
5. Description, Identification and nomenclature of following families:
    I. Ranunculaceae
    II. Amaranthaceae
    III. Berberidaceae
    IV. Geraniaceae
    V. Brassicaceae
    VI. Euphorbiaceae
    VII. Cucurbitaceae
    VIII. Solanaceae
    IX. Liliaceae
    X. Amaryllidaceae

b. **Anatomy**

1. Cell wall: structure and chemical composition
2. Concept, structure and function of various tissues like:
    i. Parenchyma
    ii. Collenchyma

iii. Sclerenchyma
iv. Epidermis (including stomata and trichomes)
v. Xylem
vi. Phloem

3. Meristem: types, stem and root apices
4. Vascular cambium
5. Structure and development of root, stem and leaf. Primary growth of dicot stem, periderm

c. **Development / Embryology**

Early development of plant body:

1. Structure and development of Anther Microsporogenesis, Microgametophyte
2. Structure of Ovule Megasporogenesis Megagametophyte
3. Endosperm formation
4. Parthenocarpy
5. Polyembryony

Lab Outline:

Plant Systematics

1. Plant Collection Protocol: Plant sample collection, field data collection and tagging
2. Demonstrate the ability to work and use basic equipment effectively in the field, laboratory and herbarium
3. Demonstrate the ability to handle and analyze plant materials in the field, laboratory and herbarium
4. Demonstrate comprehension of basic concepts and the ability to use scientific terminology accurately through effective oral and written communication and the use of dichotomous keys in a regional floristic manual
5. Leaf lab
6. Flower Lab
7. Fruit lab
8. Seed Lab

Anatomy

1. Study of stomata, epidermis,
2. Tissues of primary body of plant
3. Study of xylem 3-dimensional plane of wood.
4. T.S of angiosperm stem and leaf.

Recommended Books:

1. Mauseth, J.D. 1998. An Introduction to Plant Biology: Multimedia Enhanced. Jones and Bartlett Pub. UK
2. Moore, R.C., W.D. Clarke and Vodopich, D.S. 1998. Botany. McGraw Hill Company, U.S.A.
3. Raven, P.H., Evert, R.E. and Eichhorn, S.E. 1999. Biology of Plants. W.H. Freeman and Company Worth Publishers.
4. Stuessy, T.F. 1990. Plant Taxonomy. Columbia University Press, USA.
5. Lawrence, G.H.M. 1951 Taxonomy of Vascular Plants. MacMillan & Co. New York.
6. Panday, B.P. 2004. A textbook of Botany (Angiosperms). S. Chand and Co. New Delhi.
7. Raymond E, S. E. Eichhorn. 2005. Esau's Plant Anatomy. Meristems cells and tissues of the plant body, 3rd ed. John Wiley & Sons. Inc.
8. Fahn, A. 1990. Plant Anatomy. Pergamon Press, Oxford.
9. Esau, K. 1960. Anatomy of Seed Plants. John Wiley, New York.
10. Maheshwari, P.1971. Embryology of Angiosperms, McGraw Hill.New York.

11. Eames A.J. and L.H Mac Daniels. 2002. An Introduction to Plant Anatomy. Tata-Mac Graw-Hill Publishing Company, Limited New Delhi.
12. Pullaiah, T. 2007. Taxonomy of Angiosperms. 3rd Edition Regency Publications, New Delhi.
13. Naik, V.N. 2005 Taxonomy of Angiosperms. 20th Reprint. Tata-Mac Graw-Hill Publishing Company, Limited New Delhi.

3.Cell Biology, Genetics and Evolution

(BOT-5304)
Credit hours: 3(2+1)

Specific Objectives and Learning Outcomes:
To understand

1. Structure and functions of cell,
2. Nature of genetic material and hereditary process
3. Familiarization with evolutionary processes.

Learning outcomes:
After completing this course, the student will able to know comprehensively the organelles inside the smallest unit of life, their structure and function. They can understand the appearance of genetic rules and guess the appearance of various phenotypic defects based on genetics pattern. Moreover, the students can also able to interfere the various evolutionary processes looking arounf in plant animal or rocks, sediments etc.

Course outline:

a) Cell biology

1. Structures and Functions of Bio-molecules
   Carbohydrates, Lipids, Proteins, Nucleic Acids
2. Physico-chemical nature of plasma membrane and cytoplasm.
3. General structure of plant cell with a brief description and functions of organelles
4. Cell wall, Endoplasmic reticulum, Plastids, Mitochondria, Ribosomes, Dictyosomes, Vacuole, Microbodies (Glyoxysomes and Peroxisomes), Nucleus (Nuclear membrane, nucleolus) ultrastructure and morphology of chromosomes
4. Cell cycle (karyokinesis; mitosis and meiosis; cytokinesis)
5. Chromosomal aberrations; Aneuploidy and euploidy. Changes in the number and structure of chromosomes, inversion and translocation.

b) Genetics

1. Brief history of genetics, Mendelian inheritance; Laws of segregation and independent assortment, back cross, test cross, dominance and incomplete dominance.
2. Sex linked inheritance, sex linkage in Drosophila and man (colour blindness), XO, XY, WZ mechanisms, sex limited and sex linked characters, sex determination.
3. Linkage and crossing over, molecular genetics with an overview of DNA replication, nature of gene, transcription, translation, regulation of gene expression (e.g. *lac* operon).
4. Transmission of genetic material in Bacteria: Conjugation, transduction and gene recombination in *E. coli*.
5. Induction of genetic variability, mutagens, selection, hybridization

c) Evolution

The concept of evolution, theories, the nature of evolutionary forces, first plant cell, origin of organized structures, early aquatic and terrestrial ecosystem, first vascular plant.

Lab Outline:

Cell Biology

1. Study of cell structure using compound microscope and elucidation of ultrastructure from electron microphotographs
2. Measurement of cell size.
3. Study of mitosis and meiosis by smear/squash method and from prepared slides.
4. Study of chromosome morphology and variation in chromosome number.
5. Extraction and estimation of carbohydrate, protein, RNA and DNA from plant sources

Genetics

1. Genetical problems related to transmission and distribution of genetic material.
2. Identification of DNA in plant material. Carmine/orcein staining.
3. Study of salivary gland chromosomes of Drosophila.

Recommended Books:

1. Hoelzel, A. R. 2001. Conservation Genetics. Kluwer Academic Publishers.
2. Dyonsager, V.R. (1986). Cytology and Genetics. Tata and McGraw Hill Publication Co. Ltd,, New Delhi.
3. Lodish. H. 2001. Molecular Cell Biology. W. H. Freeman and Co.
4. Sinha, U. and Sinha, S. (1988). Cytogenesis Plant Breeding and Evolution, Vini Educational Books, New Delhi.
5. Strickberger, M.V. (1988), Genetics, MacMillan Press Ltd., London.
6. Carroll, S.B., Grenier,J.K. and Welnerbee, S.d. 2001. From DNA to Diversity - Molecular Genetics and the Evolution of Animal Design. Blackwell Science.
7. Lewin, R, 1997. Principles of Human Evolution. Blackwell Science.
8. Strickberger, M. W. 2000 Evolution. Jones & Bartlet Publishers Canada
9. Ingrouille M. J. & B. Eddie. 2006. Plant Diversity and Evolution. Cambridge University Press.

Plant Physiology and Ecology

(BOT-5403)

Credit hours: 3(2+1)

Specific Objectives:

1. To provide comprehensive knowledge of functioning of organs, organelles and biomolecules,
2. To enable the students to assess the effects of various environmental factors on plant growth and development.

Learning Outcomes:

The students may be able to understand the life processes of plants, functioning of organs, organelles and biomolecules. Students can understand the effects of various environmental factors on plant growth and development.

Course outline:

a. Plant Physiology

1. Water relations (water potential, osmotic potential, pressure potential, matric potential). Absorption and translocation of water. Stomatal regulation.
2. Mineral nutrition: Soil as a source of minerals. Passive and active transport of nutrients. Essential mineral elements, role and deficiency symptoms of macronutrients.
3. Photosynthesis: Introduction, Oxygenic and non-oxygenic photosynthesis Mechanism: light reactions (electron transport and photophosphorylation) and dark reactions(Calvin cycle). Differences between C_3 and C_4 plants. Factors affecting this process, Products of photosynthesis.

4. Respiration: Definition and respiratory substrates. chanism-Glycolysis, Krebs cycle. Electron transport and oxidative phosphorylation. Anaerobic respiration. Energy balance in aerobic and anaerobic respiration, Respiratory quotients.

b. Ecology

1. Introduction, aims and applications of ecology.
2. Soil: Physical and Chemical properties of soil (soil formation, texture. pH, EC, organism and organic matter etc) and their relationships to plants.
3. Light and Temperature. Quality of light, diurnal and seasonal variations. Ecophysiological responses.
4. Water: Field capacity and soil water holding capacity. Characteristics of xerophytes and hydrophytes. Effect of precipitation on distribution of plants.
5. Wind: Wind as an ecological factor and its importance.
6. Population Ecology: Introduction. A brief description of seed dispersal, seed bank, demography, density effects and reproductive strategy.
7. Community Ecology
   i. Ecological characteristics of plant community
   ii. Methods of sampling vegetation (Quadrat and line intercept)
   iii. Succession.
   iv. Major vegetation types of the local area.

8. Ecosystem Ecology

i. Definition, types and components of ecosystem.
ii. Food chain and Food web.
iii. Biogeochemical cycles, definition, types with emphasis on Nitrogen & Hydrological cycles.

9. Applied Ecology

i. Causes, effects and control of water logging and salinity with respect to Pakistan
ii. Soil erosion: types, causes and effects (wind and water)
iii. Brief concept of pollution types and effects (air, sediments and water pollution)
iv. Brief introduction to biodiversity and conservation with emphasis on Pakistan.

Lab Outline:

a. Plant Physiology

1. Preparation of solutions of specific normality of acids/bases, salts, sugars, molal and molar solutions and their standardization.
2. Determination of uptake of water by swelling seeds when placed in sodium chloride solution of different concentrations.
3. Measurement of leaf water potential by the dye method.
4. Determination of the temperature at which beet root cells lose their permeability.
5. Extraction of chlorophyll from the leaves and separation of component pigments on a paper chromatogram. Study of absorption spectra using spectrophotometer.
6. Estimation of oxygen utilized by a respiring plant by Winkler's method.

b. Ecology

1. Determination of physical and Chemical characteristics of soil.
2. Measurements of various population variables
3. Measurement of vegetation by Quadrat and line intercept methods.
4. Field trips to ecologically diverse habitats.
5. Measurements of wind velocity.

Recommended Books:

1. Ihsan Illahi 1995. Plant Physiology, Biochemical Processes in Plants, UGC Press.
2. Witham and Devlin. 1986 Exercises in Plant Physiology, AWS Publishers, Boston.
3. Taiz, L. and Zeiger, E. 2006. Plant Physiology. 4th. Ed. Sinauers Publ. Co. Inc. Calif.

4. Salisbury F.B. and Ross C.B. 1992. Plant Physiology. 5th Edition. Wadsworth Publishing Co. Belmont CA.
5. Hopkins, W.B. 1999. Introduction to Plant Physiology. 2nd Ed. John Wiley and Sons. New York
6. Schultz, J.C. 2005. Plant Ecology. Springer-Verlag, Berlin.
7. Ricklefs, R.E. 2000. Ecology. W.H. Freeman and Co., UK.
8. Ricklefs, R.E. 2001. The Economy of Nature. W.H. Freeman and Co., UK.
9. Barbour, M. G., J. H. Burke and W.D. Pitts. 1999. Terrestrial Plant Ecology, The Benjamin, Cumming Publishing Co. Palo Alto, California, USA.
10. Chapman, J.L. and Reiss, M.J. 1995. Ecology: Principles and Applications. Cambridge University Press.
11. Hussain F. 1989. Field and Laboratory Manual of Plan Ecology. National Academy of Higher Education, Islamabad.
12. Hussain, S.S. 1989. Pakistan Manual of Plant Ecology; National Book Foundation, Islamabad.
13. Larcher, W. 2003 Physiological Plant Ecology: Ecophysicology and Stress Physiology of Functions Groups – Springer Verlag.
14. Krebs, C. J. 1997. Ecology. Harper and Row Publishers.
15. Smith, R. L. 1996. Ecology and Field Biology. Addison Wesley Longman, Inc., New York.
16. Smith, R. L. 1998. Elements of Ecology. Harper and Row Publishers, New York.
17. Smith, R. L. 2004.Ecology and field biology. Addison Wesley Longman, Inc., New York.
18. Subrahmanyam, N.S. and Sambamurthy, A.V.S.S. 2000. Ecology. Narosa Publishing House, New Delhi.
19. Townsend, C.R., Harper, J.L. and Begon, M.E. 2002. Essentials of Ecology. Blackwell Scientific Publications, UK.
20. Odum, E.P. 1985. Basic Ecology. W.B. Saunders.

Environmental Biology

Code (BOT-5106)

3 (3+0)

Course Description:

Environmental biology is the dynamic, interdisciplinary study of the interaction of living and nonliving parts of the environment, with special focus on the impact of humans on the environment. The intention of the course is to introduce areas of environmental biology to the student. In carrying out thise task, students may develop an ability to gain and evaluate information, dissect simple to complex ideas, gain an understanding of the present state of knowledge, develop a viewpoint, assemble a persuasive argument and draw valid conclusions.

Course objectives:

1. Enable students to learn how to analyze and assess environmental problems.
2. To introduce students to the various Environmental issues and solutions
3. To explain applied aspects of environmental biology.
4. Equip student with the knowledge and skill necessary for pollution abatement, environmental conservation, management of natural resources and making path to sustainable development

Course outlines

1. **Matter and Energy**: Energy Conversions, Thermodynamics, Nonrenewable Mineral and Energy Resources, Energy Efficiency and Renewable Energy.
2. **Ecosystems**: Components and Energy Flow. Weather, Climate, Biomes & Biodiversity. Population explosion, Natural resource management and conservation.
3. **Global Problems**; Forests, Deforestation, Loss of Biodiversity, Greenhouse Effect, Global Warming, Ozone Depletion, Solutions of Problems.
4. **Environmental Pollution**: Air, water, soil, radiation and noise pollution, impacts on human health. Toxicity, dose response risk and hazards. Types of waste and waste management, Modern pollution control technologies.
5. **Food Production**: World Problems, Food security and Sustainability Uses and risks of Pesticides and Pest Control. Sustaining Biodiversity.
6. **Environmental profile of Pakistan**; history; features; geography, population structure, culture, health, education; major ecosystems, agriculture, industry, water resources, urbanization and pollution.

Books Recommended

1. Richard, T. W., & Dorothy, B. F. (2016) Environmental Science; Toward a Sustainable Future. 13th Ed. Boston Columbus Indianapolis Pearson publishers.
2. Botkin, D.B & Keller, E.A. (2013). Environmental Science: Earth as a Living Planet, 9 th Ed. John Wiley & Sons.
3. McKinney, M.L., Schoch, R.M. & Yonavjak, L. (2013). Environmental Science: systems and solutions, 5th Ed. Jones & Bartlett Publishers.
4. Ghafoor, A., G. Murtaza, M.Z. Rehman, M. Sabir, H.R. Ahmad and Saifullah. (2012). Environment Pollution: Types, Sources & Management. Allied Book Centre, Lahore, Pakistan.
5. GoP. (2005). State of the Environment-Pakistan, Government of Pakistan.
6. Qadar, S. (2000). Environmental Laws and their implementation in Pakistan Law Books House.

Course Contents Statastics

Introductory Statistics

Code (STA-5103) Credit Hours: 3(3+0)

Learning Objectives:

- To have introduction of statistics as a field of knowledge and its scope and relevance to other disciplines of natural and social sciences.
- To equip and prepare students for advance courses in the field of statistics.
- To achieve the capability of critical thinking about data and its sources; have idea about variables and their types and scale measures.
- Be able to calculate and interpret descriptive statistics.

Learning Outcomes:

- Acquire the basic knowledge of the discipline of Statistics.
- Understand and differentiate between the types of data and variables.
- Evaluate and Interpret basic descriptive statistics. Display and Interpret data graphs.

Course Contents:

Introduction to Statistics, Descriptive Statistics, Statistics in decision making, Graphical representation of Data Stem-and Leaf plot, Box-Cox plots, Histograms and Ogive, measures of central tendencies, dispersion for grouped and ungrouped Data, Moments of frequency distribution; examples with real life, use of Elementary statistical packages for explanatory Data analysis. Counting techniques, definition of probability with classical and relative frequency and subjective approaches, sample space, events, laws of probability. Conditional probability and Bayes theorem. Binomial and Normal distributions and their special cases.

Text Book:

- Mann, P. S. (2010). Introductory Statistics. Wiley.
- Chaudhry, S. M. and Kamal, S. (2008), "*Introduction to Statistical Theory*" Parts I & II, 8th ed, Ilmi Kitab Khana, Lahore, Pakistan.

Recommended Books:

- Clarke, G. M., and Cooke, D. (1978). *A basic course in Statistics (*No. 519.5 C53).
- Spiegel, M.R., Schiller, J.L. and Sirinivasan, R.L. (2000). "*Probability and Statistics*", 2nd ed. Schaums Outlines Series. McGraw Hill. New York.
- Walpole, R.E., Myers, R.H and Myers, S.L. (1998). "*Probability and Statistics for Engineers and Scientist*" 6th edition, Prentice Hall, New York.
- Zaman, A. (2016). "Introduction to Statistics" Online access for book and related data sets. https://sites.google.com/site/introSTAs4muslims/textbook https://sites.google.com/site/introSTAs4muslims/excel.

Introduction to Probability and Probability Distributions

Code: (STA-5203)
Credit Hours: 3(3+0)

Learning Objectives:

- Understand basic concepts of probability, conditional probability, independence etc.
- Be familiar with some of the more commonly encountered random variables, particularly the Binomial and Normal random variable.
- Be able to calculate first two moments of common random variables i.e. means and variances.
- Be able to apply the concepts of random variables to scientific applications. Computation of uncertainty using probability techniques.

Learning Outcomes:

- Acquire the basic knowledge of probability and probability distribution.
- Understand the concepts of basic techniques of measuring the uncertainty problem.
- Analyze the problem of genetics finance and telecommunications by using probability techniques.

Course Contents:

Set theory and its operations, Probability Concepts, Addition and Multiplication Rules, Bivariate Frequency Tables, Joint and Marginal Probabilities, Conditional Probability and Independence, Bayes' Rule. Random Variables, Discrete Probability Distribution, Mean and Variance of a Discrete Random Variable, Bernoulli Trials, Properties, Applications and Fitting of Binomial, Poisson, Hypergeometric, Negative Binomial and Geometric Distributions. Continuous Random Variable, Probability Density Function and its Properties, Normal Distribution and its Properties, Standard Normal Curve.

Text Book:

- Walpole, R.E., Myers, R.H and Myers, S.L. (2007). *Probability and Statistics for Engineers and Scientist*. 7th edition, Prentice Hall, New York.

Recommended Books:

- Cacoullos, T. (2012). *Exercises in probability*. Springer Science and Business Media.
- Mclave, J.T., Benson, P.G. and Snitch, T. (2005) "*Statistics for Business & Economics*" 9th Edition. Prentice Hall, New Jersey.
- Santos, David (David A.) (2011). *Probability: an introduction*. Jones and Bartlett Publishers, Sudbury, Mass.

Basic Statistical Inference
(STA-5406)
Credit Hours: 3(2+1)

Learning Objectives:

- To understand the inferences about population parameters using parametric tests
- To acquire basic knowledge about non-parametric tests
- To know the difference between parametric and non-parametric tests.

Learning Outcomes:

- To be able to carry out the hypothesis testing for different parameters using parametric tests.
- Ability to use non-parametric testing procedure
- Capability to discriminate the applications of parametric and non-parametric tests.

Course Contents:

Point and interval estimate properties of good point estimator; Testing of hypothesis for population mean, difference between population means and population proportion and difference between two population proportions, difference between means for paired data; Single population variance, ratio of two variances; Testing the significance of regression and correlation coefficient.

Text Book:

- Ross, S. (2017). *A first course in Probability.* 9th edition. Pearson Education Limited.
- Chaudhry, S. M. and Kamal, S. (2008), "*Introduction to Statistical Theory*" Parts I & II, 8th ed, Ilmi Kitab Khana, Lahore, Pakistan.

Recommended Books:

- Srivastava, M.K., Khan, A.H. and Srivastava, N. (2014). *Statistical Inference: Theory of Estimation.* Prentice-Hall of India Pvt. Ltd
- Clark, G.M. and Cooke, D. (1998). *A Basic Course in Statistics.* 4th ed, Arnold, London.
- Mclave, J.T., Benson P.G. and Sincich, T. (2014). *Statistics for Business and Economics.* 12th Edition. Pearson Education Ltd, U.K.
- Spiegel, M.R., Schiller, J.L. and Sirinivasan, R.L. (2015). *Probability and Statistics*. 3rd edition. Schaums Outlines Series. McGraw-Hill. NY.

Applied Statistics
(STA-5403)
Credit Hours: 3(2+1)

Learning Objectives:

- To understand the concepts and applications of index numbers.
- To be able to analyze and interpret the time series data.
- To be able to analyze and interpret the demographic data.

Learning Outcomes:

- Be able to analyze data using index numbers, time series and vital statistics.
- Be able to interpret the results obtained using index numbers, time series and vital statistics
- Demonstrate the ability to apply index numbers, time series and vital statistics in different fields.

Course Contents:

Index Number: Construction and application of index number. Simple and composite index number. Fixed based and chain base method. Unweighted and weighted index number. Theoretical tests for index number (Time Reversal Tests, Factor Reversal Test, Circular Test). Consumer price index number and sensitive price index number. Determination of purchasing power of money, real wages and inflation rate on the basis of index number. Limitations of index number.

Time Series Analysis: Time series data, components of time series, measurements of systematic components of time series (measurement of secular trend, seasonal variation, cyclical fluctuation). Detrending, deseasonalization of data, forecasting and prediction.

Vital statistics: Meaning of vital statistics, registration of births and deaths in Pakistan. Uses of vital statistics, short comings of vital statistics, rates and ratio (sex ratio, child ratio, birth and death ratio, population growth rate, classification of natal rates, death rates or mortality rates, crude death rate, infant mortality rate, specific death rate, case fatality rate, fertility rate, crude birth rate, specific birth rate, standardized death rate, reproduction rate, gross reproduction rate. Net reproduction rate, morbidity or sickness rate, marriage rate, divorce rate, etc. General fertility rate, total fertility rate.)

Regression and Correlation: Simple regression and correlation, rank correlation coefficient, multiple regression and correlation, partial correlation coefficient.

Text Book

- ❖ Walpole, P.E. Myers, R.H., Myers S.L. (1998). *Probability and Statistics for Engineers and Scientists,* Prentice Hall.
- ❖ Chaudhry, S. M. and Kamal, S. (2008), "*Introduction to Statistical Theory*" Parts I & II, 8th ed, Ilmi Kitab Khana, Lahore, Pakistan.

Recommended Books:

- Clark, G.M. and Cooke, D. (1998). *A Basic Course in Statistics,* 4th ed, Arnold, London.
- Mclave, J.T. Benson, P.G. and Snitch, T. (2005). *Statistics for Business & Economics,* 9th

Prentice Hall New Jersey.
- Pollard, A.H. Yousuf, F. and Pollard G.M. (1982). *Demographic Techniques,* Pergamon Press, Sydney.
- Dielman, T. E. (2001). Applied regression analysis for business and economics. Pacific Grove, CA: Duxbury/Thomson Learning.

Course Contents Physics

1. Mechanics and Theory of Relativity

(PHY-5105)

Credit. Hours: 3(3,0)

COURSE OBJECTIVES:

The main objective of this course is to understand the different motions of solids on a macroscopic scale and to develop simple mathematical formalisms to analyze such motions. This is a calculus-based introductory course with maximum emphasis on applying the acquired knowledge to solving problems.

OUTLINES:

Particle Dynamics: Dynamics of Uniform, circular motion the banked curve. Equations of motion, Deriving kinematic equations x(v), V(t) using integrations, Constant and variable forces and special examples, Time dependent forces, Obtaining x(t), v(t) for this case using integration method, Effect of drag force son motion, Applying Newton's Laws to obtain V(t) for the case of motion with time dependent(integration approach) drag (viscous) forces, Terminal velocity, Projectile motion with and without air resistance, Non inertial frames and Pseudo forces, Qualitative discussion to develop understanding, Calculation of pseudo forces for simple cases (linearly accelerated reference frame), Centrifugal force as an example of pseudo force, Coriolis force.

Work, Power and Energy: Work done by constant force and by variable force (1-2 dimension). (Essentially a review of grade-XII concepts use of integration technique to calculate work done, Obtaining general expression force (2-dimensional case) and applying to simple cases e.g. pulling a mass at the end of a fixed string against gravity, Qualitative Review of work energy theorem, Derivation using integral calculus, Basic formula; and applications. Power, Energy changes with respect to observers in different inertial frames, Conservation of Energy in 1,2 and 3 dimensional Conservative systems, Conservative and non-Conservative forces, Conservation of energy in a system of particles, Law of conservation of total energy of an isolated system.

Systems of Particles: Two particle systems and generalization too many particle systems, Centre of mass, its position velocity and equation of motion. Center of mass of solid objects, Calculation of centre of mass of solid objects using integral calculus, Calculating C.M. of, Uniform Road, Cylinder and Sphere, Momentum Changes in system of variable mass, Derivation of basic equation, Application to motion of a rocket (determination of its mass as a function of time).

Collisions*:* Elastic Collisions, Conservation of momentum during Collision, One dimensions. (Concept), Two dimensions (Oblique Collisions), (Mathematical treatment), Inelastic collision, Collisions in centre of mass reference frame, One and two dimensions, Simple applications, obtaining, Velocities in c.m. frame.

Rotational Dynamics: Relationships between linear & angular variables, scalar and vector form, Kinetic energy of rotation, Moment of Inertia, Parallel axis theorem, a perpendicular axis theorem, moment of inertia of various shapes i.e. disc, bar and solid sphere, Rotational dynamics of rigid bodies, Equations of rotational motion and applications of torques, Combined translation and translational motion, Rolling without slipping.

Angular Momentum: Angular velocity, Conservation of angular momentum, Effects of torques and its relation with angular momentum, Stability of spinning objects, Discussion with examples, The spinning Top, Effects of torque on the angular momentum, processional motion.

Gravitation: Gravitational effect of spherical mass distribution, Gravitational Potential Energy, Calculation escape velocity, Gravitational field & Potential, Universal Gravitational Law, Radial and transversal velocity and acceleration, Motion of Planets and Keplers' Laws. Motion of Satellites,

planetary and satellite motion,

Special Theory of Relativity: Inertial and non-Inertial frame, Postulates of Relativity, The Lorenz Transformation, Derivation, Assumptions on which inverse transformation derived, Consequences of Lorentz transformation, Relativity of time, Relativity of length, Relativity of mass, Transfer mission of velocity, variation of mass with velocity, mass energy relation and its importance, relativistic momentum and Relativistic energy, (Lorentz invariants) $E^2 = c^2p^2 + m^2 c^4$

2. Wave Oscillations and Thermodynamics

(PHY-5205)

Credit. Hours: 3(3,0)

COURSE OBJECTIVE:

i	To understand the basics of waves, mechanism of wave production, propagation and interaction with other waves
ii	use of basic concept of waves in their application in daily life

OUTLINES:

Harmonic Oscillations: Simple Harmonic Oscillation (SHM), Obtaining and solving the basic equations of motion x(t), v(t), a(t), Longitudinal and transverse Oscillations, Energy considerations in S.H.M. Application of SHM. Tensional Oscillator, Phy6sical pendulum, simple pendulum, SHM and uniform circular motion, combinations of Harmonic motions, Lissaajous patterns, Damped Harmonic Motion, Equation of damped harmonic motion, Quality factor, discussion of its solution, Forced Oscillations and resonances, Equation of forced oscillation, discussion of its solution, Examples of resonance.

Waves in Physical Media: Mechanical waves, Traveling waves, Phase velocity of traveling waves, Sinusoidal waves, Group speed and dispersion, Waves speed, Mechanical analysis, Transfer wave equation, Discussion of solution. Power and intensity in wave motion, Derivation & discussion, Principle of superposition (basic ideas), Interference of wave, standing waves, Phase changes on reflection, Natural frequency, resonance,

Sound: Beats Phenomenon, Analytical treatment,

Light: Nature of light visible light (physical characteristics), Light as and Electro-magnetic wave, Speed of light in matter, Physical aspects, Path difference, Phase difference etc.

Interference: Coherence of sources, double slit interference, Analytical treatment, Adding of Electromagnetic waves using pharos, Interference from thin films, Newton's rings (analytical treatment). Febry-perot, Interferometer, Working and analytical treatment, Fresnels Biprism and its use.

Diffraction: Diffraction at single slit, Intensity in single slit diffraction using phasor treatment and analytical treatment using addition of waves, Double slit interference & diffraction combined, Diffraction at circular aperture, Diffraction from multiple slits, Discussion to include width of the maxima, Diffraction grating, Discussion, Use in spectrographs, Dispersion and resolving power of gratings, Introduction to Holography.

Polarization: Basic definition, Production of polarization by polarizing sheets, by reflection, by double refraction and double scattering, Description of polarization states, Linear, Circular, Elliptic polarization, Specific rotation of plane of Polarization, Use of Polarimeter.

Heat and Temperature: Temperature, Kinetic Theory of the ideal gas, Work done an and ideal gas, Review of pervious concepts, Internal energy of an ideal gas, To include the Equipartition of energy, Intermolecular forces, Qualitative discussion, Van der Waals equation of state.

Thermodynamics: Review of previous concepts, First law of Thermodynamics, and its applications to adiabatic, Isothermal, Cyclic and free expansion, Reversible and irreversible processes, Second Law of thermodynamics, Carnot theorem, Carnot engines, Heat engine, Refrigerators, Calculation of efficiency of heat engines, Thermodynamic temperature scale, Absolute zero, Entropy, Entropy in reversible process Entropy in irreversible process, Entropy & Second Law, Entropy & probability , Thermodynamic functions, Thermodynamic functions(Internal energy, Enthalpy, Gibb's functions, Entropy, Helmholtz functions), Maxwell's relations, Tds equations, Energy equations and their applications. Low Temperature Physics,

Liquidation of gases, Joule-Thomson effect and its equations. Thermoelectricity, Thermocouple, Seabeck's effect, Peltier's effect, Thomson effect.

3.Electricity and Magnetism
PHY-5305
Credit. Hours: 3(3,0)

COURSE OBJECTIVES:

The objectives of this course are as follows:

i To give the concept of electric field, electrical potential and dielectric
ii To know the effect of magnetic field and basic magnetic properties of materials

OUTLINES:

Electric Field: Field due to a point charge; due to several point charges, Electric dipole. Electric field of continuous charge distribution e.g. Ring of charge; disc of charge; infinite line of charge. Point charge in an electric field. Dipole in an electric field; Torque on, and energy of, a dipole in uniform field. Electric flux; Gauss's law; (integral and differential forms) and its application. (Integral forms). Charged isolated conductors; conductor with a cavity, field near a charged conducting sheet. Field of infinite line of charge; Field of infinite sheet of charge. Field of spherical shell. Field of spherical shell. Field of spherical charge distribution.

Electric Potential: Potential due to point charge. Potential due to collection of point charges. Potential due to dipole, electric potential of continuous charge distribution. Poisson's and Laplace equation without solution. Field as the gradient or derivative of potential, Potential and field inside and outside an isolated conductor.

Capacitors and dielectrics: Capacitance; calculating the electric field in a capacitor. Capacitors of various shapes, cylindrical, spherical etc. and calculation of their capacitance. Energy stored in and electric field. Energy per unit volume, capacitor with dielectric; Electric field of dielectric; An atomic view, Application of Gauss' Law to capacitor with dielectric.

D C Circuits: Electric Current, current density J, resistance, receptivity, and conductivity, Ohm's Law, energy transfer in and electric circuit. Equation of continuity. Calculating the current in a single loop, multiple loops, Voltages at various elements of a loop. Use of Kirchoff's 1st & 2nd Law. Thevenin theorem, Norton theorem and Superposition theorem, Growth and Decay of current in and RC circuit, Analytical treatment.

Magnetic Field Effects and Magnetic Properties of Matter: Magnetic force on a charged particle, Magnetic force on a current, recall the previous results. Do not derive, Torque on a current loop, Magnetic dipole, Energy of magnetic dipole in field, Discuss quantitatively, Lorentz Force with its

applications i.e. CRO. Biot-Savart Law, Analytical treatment and applications to a current loop, Force on two parallel current changing conductors, Ampere's Law, Integral and differential forms, Application to solenoids and toroids. (Integral form), Gauses' Law for Magnetism, Discussing and developing concepts of conservation of magnetic flux, Differential form of Gauses Law, Origin of Atomic and Nuclear magnetism, Basic ideas, Bohr Magneton, Magnetization, Defining M, B, H. Magnetic Materials, Paramagnetism, Diamagnetism, Ferromagnetism Discussion, Hysteresis in Ferromagnetic materials.

Inductance: Faraday's Law of Electromagnetic induction, Review of emf, Faraday Law and Lenz's Law, induced electric fields, Calculation and application using dirrerential and integral form, Inductance, "Basic definition". Inductance of a Solenoid, Toroid, LR Circuits, Growth and Decay of current, Analytical treatment, Energy stored in a magnetic field, Derive, Energy Density and the magnetic field, Electromagnetic Oscillation, Qualitative discussion, Quantitative analysis using dirrerential equations, Forced electromagnetic oscillations and resonance.

Alternating Current Circuits: Alternating current AC current in resistive, Inductive and capacitative elements, Single loop RLC circuit, Series and parallel circuits i.e. acceptor and rejector, Analytical expression for time dependent solution, Graphical analysis, Phase angles, Power in A.C circuits, Phase angles, RMS values power factor.

Electromagnetic Waves (Maxwell's Equations): Summarizing the electromagnetic equations (Gauss's Law for electromagnetism, Faradays Law, Ampere's Law), Induced magnetic fields & displacement current, Development of concepts, applications. Maxwell's equations: (Integral & Differential forms) Discussion and implications. Generating and electromagnetic wave, traveling waves and Maxwell's equations; obtaining the velocity of light from Maxwell's equations. Energy transport and the Poynting Vector. Analytical treatment and discussion of physical concepts.

4. Modern Physics
PHY-5406:
Credit. Hours: 3(3,0)

OBJECTIVES:

The objectives of this course are:

i To make student familiar with the experimental developments in physics in late nineteenth century and failure of classical physics
ii To understand the special theory of relativity and the dawn of quantum physics.
iii Very brief introduction to wave particle duality and the quantum physics.

This course will give conceptual basis and ultimately enable the student to prepare for more advanced courses such as Quantum mechanics with more rigorous mathematical treatment of the subject.

OUTLINES:

Origin of Quantum Theory: Black body radiation, Stefan Boltzmann, wien and Planck's law consequences, The quantization of energy, quantum numbers, correspondence principle, Einstein's photon theory the Compton effect, Line spectra Explanation using quantum theory.

Wave Nature of Matter: Wave behavior of particle, Wave function (its definition and relation t probability of particle), De. Broglie hypothesis and its testing. Davison Germer Experiment and
J.P Thomson exp. Wave packets and particles, Localizing a wave in space and time.

Quantum Mechanics: Postulates of Quantum Mechanics, Quantum operators, Linear operators & their properties i.e. Momentum operator, Energy operator, Eigen value equation, Eigen operators and eigen function, Schrödinger equation (time dependent and time independent without derivation) and its application to step potential, Free particle, Barrier tunneling(basic idea) particles in a well, probability density using wave function of states.

Atomic Physics: Bohr's theory (review) Frank Hertz experiment , Energy level of electrons, Atomic spectrum, Angular momentum of electrons, Vector atom model, Orbital angular momentum, Spin quantization, Bohr's Magnetron, X-Ray spectrum, ()Continuous and discrete) Moseley's Law pauli exclusion principle table and its use in developing the periodic table.

Nuclear Physics: Basic properties of a nucleus, Mass No Atomic No. Isotopes Nuclear force (Basic idea) Nuclear Radii, Nuclear Masses, Binding energies, Mass defect. Nuclear Spin and Magnetism.

Natural Radioactivity: Laws of radioactive dacay, Half life, Mean life, Chain disintegration, Alpha, Beta decay (basic idea) Measuring ionizing radiation (units i.e. curies, Rad etc.)

Nuclear Reactions: Basic Nuclear reactions, Q-value, Exothermic, Endothermic Nuclear fission, Liquid drop model, Nuclear Reactors (Basic). Thermonuclear Fission T.N.F. in Stars.

Introduction to Quantum Optics (Laser) and Plasma Physics: Basic concept of plasma and its applications, controlled thermonuclear fusion, and its requirements for T.N. reactor, Basic concepts and characteristic of LASER, different types of laser, Working of He-Ne Laser.

CLASSICAL MECHANICS
(PHY-5405)
Credit. Hours: 3(3,0)

COURSE OBJECTIVES:

The aim of this courses is to introduce the fundamental principles and concepts of classical mechanics. The analytical techniques learnt in this course will be helpful in advanced courses. The course objectives are:

i. To develop the understanding of Vector calculus from Physics point of view
ii. To give understanding of more rigorous mathematical treatment (vector calculus based) of motion of objects, using Newton's laws and showing the Limitations of Newtonian formulism
iii. Development of Lagrange and Hamiltonian equation and use of canonical transformation in classical physics
iv. Study of linear, non-linear Oscillations and introduction to chaos theory

OUTLINES:

Matrices, Vectors, and Vector Calculus: Concept of a Scalar, Coordinate Transformations, Properties of Rotation Matrices, Matrix Operations, Further Definitions, Geometrical Significance of Transformation Matrices, Definitions of a Scalar and a Vector in Terms of Transformation Properties, Elementary Scalar and Vector Operations, Scalar Product of Two Vectors, Unit Vectors, Vector Product of Two Vectors, Differentiation of a Vector with Respect to a Scalar, Examples of

Derivatives-Velocity and Acceleration, Angular Velocity, Gradient Operator, Integration of Vectors. Divergence and curl of a vector, Physical significance of each type, Divergence of a vector, flux, curl and line integral (mutual relation). Vector identities, Divergence Theorem, Stoke's Theorem, their derivation, physical importance and applications to specific cases.

Newtonian Mechanics-Single Particle: Newton's Laws, Frames of Reference, The Equation of Motion for a Particle, Conservation Theorems, Energy, Limitations of Newtonian Mechanics.

Gravitation: Gravitational Potential, Lines of Force and Equipotential Surfaces, When Is the Potential Concept Useful? Ocean Tides.

Hamilton's Principle-Lagrangian and Hamiltonian Dynamics: Calculus of variations**,** Euler's Equation, the "Second Form" of the Euler Equation, Functions with Several Dependent Variables, The δ Notation, Hamilton's Principle, Generalized Coordinates, Lagrange's Equations of Motion in Generalized Coordinates, Lagrange's Equations with Undetermined Multipliers, Equivalence of Lagrange's and Newton's Equations, Essence of Lagrangian Dynamics, A Theorem Concerning the Kinetic Energy, Conservation Theorems Revisited, Canonical Equations of Motion— Hamiltonian Dynamics, Poisson's Brackets, Dynamical Variables and Variational Calculations in Physics, Phase Space and Liouville's Theorem, Virial Theorem.

Oscillations: Simple Harmonic Oscillator, Harmonic Oscillations in Two Dimensions, Phase Diagrams, Damped Oscillations, Sinusoidal Driving Forces, Physical Systems, Principle of Superposition— Fourier Series, The Response of Linear Oscillators to Impulsive Forcing Functions.

TEXTBOOK FOR AD

i Halliday, D. Resnick, Krane, Physics, Vol. I & II, John Wiley, 5th ed. 1999.

ii D. Halliday, R. Resnick and J. Walker, "Fundamentals of Physics", John Wiley & Sons, 9th ed. 2010.

iii Marion, J. B., & Thornton, S. T.. Classical Dynamics of Particles and Systems–5 th Ed. (2004)

BOOKS RECOMMENDED

i College Physics by Sears, Zemansky and Young. ii Physics (5th Edition) by Giancoli.

iii Physics by Serway.

iv Vector Analysis by Spiegel, Schaum Publishing Co.

v Concepts of Modern Physics by A. Beiser.

vi Modern Physics by H.C. Ohanian. vii Basic electronic by Grobe.

viii Electronic Device by Floyd.

ix Introduction to electromagnetic field and Wave by Corson and Loran.

x Introduction to electromagnetic field and Wave by Reitz and Milford.

xi Mechanics by Dr. M. Rafique Available at standard Book House Urdu Bazar, Lahore xii Essential of Modern Physics by Acosta, Cown and Graham.

xiii Goldstein, H., Poole, C., & Safko, J. Classical mechanics: AAPT. (2002).

xiv Hand, L., & Finch, J. Analytical mechanics: AAPT. (2000).

xv Arnol'd, V. I.. Mathematical methods of classical mechanics (Vol. 60). Springer Science & Business Media. (2013)

xvi Matzner, R. A., & Shepley, L. C. Classical mechanics. Prentice-Hall. (1991).

PRACTICAL FOR AD in PHYSICS

The following practical are recommended for AD in Physics. There will be three lab courses having weightage of 2 Cr. Hrs. Teachers are requested to emphasize on graphical analysis, error calculation and on system of S.I. units in the beginning of session. Keeping in view the existing conditions of the laboratories of the degree colleges, it is recommended that maximum number of candidates in a group shouldn't exceed five.

PHY-5106 Physics Lab-I credit Hours 2(0.2)

i Modulus of Rigidity by Static & Dynamic method (Maxwell's meedle, Barton's Apparatus)
ii To study the damping features of an Oscillating, system using simple pendulum of variable mass.
iii Measurement of viscosity of liquid by Stoke's / Poiseulli's method.
iv Ssurface tension of water by capillary tube method.
v To determine the value of "g" by compound pendulum/Kater's Pendulum.
vi To study the dependence of Centripetal force on mass, radius, nd angular velocity of a body in circular motion.
vii Investigation of phase change with position in traveling wave and measure he velocity of sound by C.R.O.
viii Determination of moment of inertia of a solid/ hollow cylinder and a sphere etc ix Measurement of low resistance coil by a Carey Foster Bridge.
x The measurement of Specific rotation of sugar by Polarimeter and determination of sugar concentration in a given solution.
xi Characteristics of a semiconductor Diode (compare with (Si & Ge diode)
xii Setting up of half & full wave rectifier & study of Smoothing effect of a capacitor, Ripple factor and its variation with load also study of regulation of output voltage with load.
xiii Characteristics of a Transistor.

PHY-5206 Physics Lab-II credit Hours 2(0.2)

i To determine internal emf and plot temperature diagram.
ii Determination of temperature coefficient of resistance of a given wire.
iii iii. Determination of "J" by Callender Barnis method.
iv The determination of Sefan's constant.
iv Calibration of thermocouple by potentiometer.
v vi. To determine frequency of AC supply.
vi To determine Horizontal/ Vertical distance by Sextant.
vii The determination of wave length of Sodium – D lines by Newton's Ring.
viii The determination of wave length of light / laser by Diffraction grating.
ix Determination of Wave length of sodium light by Fresnel's bi-prism.
x The determination of Resolving power of a diffraction grating.

xii Determination of his radius of lycopodium particles.

PHY-5306 Physics Lab-III credit Hours 2(0.2)

i Measurement of the resistance using a Neon flash bulb and condenser.

ii Conversion of galvanometer into Voltmeter and Ammeter.

iii Calibration of an Ammeter and a Voltmeter by potentiometer.

iv Charge sensitivity of a ballistic galvanometer. Comparison of capacities by ballistic galvanometer.

V. To study the B.H. curve & measuring the magnetic parameters.

vii Resonance frequency of an acceptor circuit.

viii Resonance frequency of a Rejecter Circuit.

ix Study of the parameter of wave i.e. Amplitude, phase and time period of a complex signal by CRO. x Measurement of self/mutual inductance.

xi Study of electric circuits by black box.

Course Contents Mathematics

MAT-5103	Calculus-I	Credit Hours: 3(3-0)

Course Description:

This is a two course sequence in the differential and integral calculus of functions of one independent variable. Topics include the basic analytic geometry of graphs of functions, and their limits, integrals and derivatives, including the Fundamental Theorem of Calculus. Also, some applications of the integral, like arc length and volumes of solids with rotational symmetry, are discussed. Applications to the physical sciences and engineering will be a focus of this course, as this sequence of courses is designed to meet the needs of students in these disciplines.

Course Objectives:

- Use graphical and numerical evidence to estimate limits, and to identify situations where limits fail to exist.
- Apply rules of limits to calculate limits.
- Use the limit concept to determine where a function is continuous.
- Use the Intermediate Value Theorem to identify an interval where a continuous function has a root.

Learning Outcomes:

There are four major learning outcomes for the course: Students will be able to productively discuss mathematics in a group setting. Students will be able to write detailed solutions using appropriate mathematical language. Students will be able to identify areas in mathematics and other fields where Calculus is useful.

Course Contents:

Functions, New Functions, Families of Functions, Inverse Functions. Limits, Computing limits, Limits at infinity, Limits (Discussed more rigorously), Continuity, Continuity of trigonometric functions., DerrivativesTangent line and rate of change, The derivative functions, Introduction to techniques of differentiation, The product and quotient rule, Derivatives of trigonometric functions, The chain rule, Implicit differentiation, Related rates, Local linear approximation, Applications of derivatives, Analysis of functions, Increase, Decrease and Cavity, Relative extrema, Graphing polynomials, Rational fuctions, Cusps, and Vertical Tangents, Absolute maxima and minima, Applied maximum and minimum problems, Rectilinear motion, Newton's method, Rolle's theorem, Mean-Value theorem. An overview of the area problem, The indefinite problem, Integration by substitution, The definition of area as a limit; Sigma notation, The definite integral, The fundamental theorem of calculus, Rectilinear motion revisited using integration, Average value of a function and its applications, Evaluating definite integrals by substitution. Area between two curves, Volume by slicing; Disks and Washes, Volume by cylindrical shells, Length of a plane curve, Area of surface of revolution, Work, Momentums, Centre of gravity and centroids, Fluid pressure and force.

An overview of integration method, Integration by parts, Integrating trigonometric functions, Trignometric substitutions, Integrating rational functions by partial functions, Using computer algebra systems and tables of integration, Improper integrals. Exponential and logarithmic

functions, Derivatives and integrals involving logarithmic functions, Derivatives of inverse functions, derivatives and integrals involving exponential functions, Graphs and applications involving logarithmic and exponential functions, L' Hospital rule, Indeterminate forms, Logarithmic and other functions defined by Integrals, Derivatives and Integrals involving inverse trignometric functions, Hyperbolic functions and hanging cables.

Recommended Books

1. Anton, H., Bivens, I., Davis, S., &Polaski, T. (2010). *Calculus: early transcendentals*. Wiley.
2. Thomas, (2018).*Calculus*, 13th Edition. Pearson India Education Services Pvt. Ltd.,
3. Hughes-Hallett, Gleason, McCallum, et al, (2002).*Calculus Single and Multivariable*, 3rd Edition. John Wiley and Sons, Inc.
4. Frank A. Jr, Elliott Mendelson, (1999).*Calculus*, Schaum's outlines series, 4thEdition,
5. C.H. Edward and E.D Penney, (1988).*Calculus and Analytics Geometry*, Prentice Hall, Inc.

2. Introduction to Vector Analysis	MAT-5104	Credit Hours: 3(3-0)

Course Description:

I*ntroduction to Vector Analysis*, in its seventh edition, has always enjoyed a reputation for expository excellence. The text is both a learning manual as well as a reference manual. It is based on a dual geometric-analytic approach to each topic of discussion. The concepts and theorems are first visualized and understood heuristically, and then are reduced to an algebra-calculus framework for computation or mathematical scrutiny. The text is unique in its presentation of the Laplacian and the vector potential and can be used at several levels.

Course Objective:

(a) To present the fundamental concepts of vectors and application to geometry
(b) Vectors calculus to develop student understanding and skills in the topic necessary for its applications to science and engineering.

Learning outcomes:

(a) Define concepts of vector and scalars and their properties and applications
(b) Memorize limits, differentiations ad integrations in vectors.
(c) Memorize directional derivative, gradient, divergence and curl of vector field.

Course Contents:

Introduction, Scalars and Vectors, Dot or Scalar Product, Dot Product and its Direction Cosines of a VectorComponent and Projection of a Vector, Geometric Interpretation of Dot Product, Properties of Cross Product, Application of Cross Product, Scalar Triple Product, Scalar Triple Product in Terms of Components, Scalar Triple Products of Unit Vectors, Geometrical Interpretation of Magnitude of A.BxC, Condition for Coplanarity, Properties of Scalar Triple Product, Vector Triple Product, Fundamental Identities for the Vector Triple Product, Scalar and Vector Products of Four Vectors, Linear Dependence and Independence of Vectors, Linear Combination of Vectors, Collinear Vectors, Coplanar Vectors, Reciprocal Vectors. Introduction, Scalar and Vector Functions of One Variable, Domain and Range, Limit and Continuity of a Vector Function, Ordinary Derivative of a Vector

Function, Geometrical Interpretation of Vector Derivative, Velocity and Acceleration, Differentiation Formulas, Space Curves, Vector Functions of more than One Variable, Partial Derivatives of a Vector Function. Surfaces in Space, Vector Integration, Introduction, Scalar and Vector Fields, The Operator Del, Gradient of a Scalar Point Function, Directional Derivative, Normal Derivative , Level Surfaces, Geometrical Interpretation of Gradient, Divergence of a Vector Point Function, Laplacian, Physical Interpretation of the Divergence, Curl of a Vector Point Function, Physical Interpretation of the Curl, Operations With ∇, Vector Identities...

Recommended Books:

1. Nawazish Ali Shah, *Vector and Tensor Analysis*, A-ONE PUBLISHERS, Lahore.
2. Homer E. Newell, Jr., *Vector Analysis*, Dover Publication Inc. New York.
3. Murray R Spiegel, *Theory and Problem of Vector Analysis and an Introduction to Tensor Analysis*, SI(METRIC) Edition, McGRAW-HILL Books Company.
4. Harry F. Davis and Arthur David Snider.(2000).*Introduction to Vector Analysis,*Charleston, S.C. Hawkes Pub.
5. C. J. Eliezer.*Concise Vector Analysis,*Reprint of the Pergamon Press Ltd., Oxford and New York, 1963 edition.

3.Calculus-II	MAT-5203	Credit Hours: 3(3-0)

Course Description:

This *course* covers differential, integral and vector *calculus* for functions of more than one *variable*. These mathematical tools and methods are used extensively in the physical sciences, engineering, economics and computer graphics.

Course Objectives:

To introduce the concept of multiple integral, study various techniques of integration and illustrate some applications of integration in two variables. To introduce sequences, infinite series and investigate the analysis, use of sequences and infinite series.

Learning Outcomes:

- Use the concept of the limit at infinity to determine whether a sequence of real numbers is bounded and whether it converges or diverges.
- Distinguish between absolte and conditional convergence of series and be aware of the consequences of reordering terms in conditionally converging series.
- Interpret a converging power series as a function.
- Determine the Taylor series of the nth order and determine an upper bound on its remainder.

Course Contents:

Sequences, Monotonic sequences, Infinite series, Convergence tests, The comparison, Ratio and Root tests, Alternating series, Absolute and Conditional Convergence, Maclaurin and Taylor series, Power series, Convergence of Taylor series, Differentiating and Integrating Power series. Functions of two or more variables, Limit and Continuity in higher dimensions, Partial derivatives, Differentiability, Differentials and local linearity, The chain rule, Directional derivatives and Gradients, Tangent planes and Normal vectors, Maxima and minima of functions of two variables, Langrange multipliers.

Double integrals, Double integrals over nonrectangular regions, Double integrals in polar coordinates,

surface area, Parametric surfaces, Triple integrals, Triple integrals in cylindrical and spherical coordinates, Change of variables in multiple integrals, Jacobians, Centre of gravity using multiple integrals.

Recommended Books

1. Anton, H., Bivens, I., Davis, S., &Polaski, T. (2010). *Calculus: early transcendentals*. Wiley.
2. Thomas, (2018).*Calculus*, 13th Edition. Pearson India Education Services Pvt. Ltd.,
3. Hughes-Hallett, Gleason, McCallum, et al, (2002).*Calculus Single and Multivariable*, 3rd Edition. John Wiley and Sons, Inc.
4. Frank A. Jr, Elliott Mendelson, (1999).*Calculus*, Schaum's outlines series, 4thEdition,
5. C.H. Edward and E.D Penney, (1988).*Calculus and Analytics Geometry*, Prentice Hall, Inc.

4. Introduction to Linear Algebra	MAT-5403	Credit Hours: 3(3-0)

Course Description:

Linear algebra is the study of linear equations, vector spaces and linear transformations. Topics spanned basic methods for the solutions of linear systems, eigen values and diagonalization.

Course Objectives:

- To give the concept of linear systems.
- To learn the tools and methods essential for studying the solution spaces of problems in mathematics and sciences.
- To develop mathematical skills needed to apply linear algebraic methods to the problems arising within diverse fields of study.

Learning Outcomes:

Students will be able to explain

- linear systems and the techniques for their solution.
- required conditions for transformation in order to be a linear transformation and matrix representation of a linear transformation.
- concepts of eigenvalues and eigenvectors of a matrix.

Course Contents:

Matrix, Algebra of matrices, Determinants, Laplace expansion of determinants. Elementary matrices, Inverses of matrix. Rank of a matrix, Introduction to systems of linear equations, Cramer's rule, Elimination methods, Solution of homogenous and non-homogenous linear equations.Real vector spaces, subspaces. Linear combination and spanning set. Linear independence and linear dependence. Basis, row space, Column space and Null space, Introduction to linear transformation. Matrices of linear transformations.Sums and products of linear operators, Reflections, Projections Change of basis. Eigen values and Eigen vectors. Theorem of Hamilton-Cayley. Diagonalization. Similar matrices. Orthogonal and orthonormal basis. Gram Schmidt Process.

Recommended Books

1. Anton, H., &Rorres, C. (2013). *Elementary Linear Algebra: Applications Version*: Wiley.
2. Friedberg, S.H., Insel, A.J., Spence, L.E. (2003).*Linear Algebra*, 4th edition, Prentice Hall,
3. Grossman,S. I. (2004).*Elementary Linear Algebra*, 5th Edition, Cengage Learning.

5.Calculus-III	MAT-5303	Credit Hours: 3(3-0)

Course Description:

This course is the concluding course in the three-semester sequence. Course topics include analytic geometry of three dimensions, determinants and linear equations, vector analysis, particle differentiation, cylindrical and spherical coordinates, and applications. The use of a graphing calculator is required for this course to further the exploration of these topics and their applications.

Course Objectives:

To study parametric and polar curves and the concept of three dimensional space to extend the concepts from one variable calculus to functions of several variables and vector valued functions. These objectives include:

- Conic section
- Three-dimensional space
- Normal and binormal vectors
- Curvature
- Surface integrals
- Involute and evolute.

Learning Outcomes:

- Communicate mathematical results through the proper use of mathematical notation and words.
- Describe the geometry of R^3 and use vector analysis to characterize motion along curves.
- Find partial derivatives, directional derivatives and gradient vectors
- Solve optimization problems on a closed, bounded domain and on a constraint curve (Lagrange Multipliers).
- Set up and evaluate line integrals, and double and triple integrals (in rectangular, polar, cylindrical and spherical coordinates).
- Set up and evaluate integrals involving the main theorems of vector calculus.
-

Course Contents:

Conic section and quadratic equations, Classifying conic section by eccentricity, Translation and rotation of axis, Properties of circle, parabola, ellipse, hyperbola, Polar coordinates, conic sections in polar coordinates, Graphing in polar coordinates, Tangents and normal, pedal equations, parametric representations of curves. Asymptotes, Relative extrema, points of inflection and concavity, Singular, points, tangents at the origin, Graphing of Cartesian and polar curves, Area under the curve, area between two curves, Arc length and intrinsic equations, Curvature, radius and centre of curvature, Involute and evolute, envelope, Rectangular coordinates system in a space, Cylindrical and spherical

coordinate system, Direction ratios and direction cosines of a line, Equation of straight lines and planes in three dimensions, Shortest distance between skew lines, Equation of sphere, cylinder, cone, ellipsoids, paraboloids, hyperboloids, Quadric and ruled surfaces, Spherical trigonometry. Direction of Qibla.

Recommended Books

1. Anton, H., Bivens, I., Davis, S., &Polaski, T. (2010). *Calculus: early transcendentals*. Wiley.
2. Thomas, (2018).*Calculus*, 13th Edition. Pearson India Education Services Pvt. Ltd.,
3. Hughes-Hallett, Gleason, McCallum, et al, (2002).*Calculus Single and Multivariable*, 3rd Edition. John Wiley and Sons, Inc.
4. Frank A. Jr, Elliott Mendelson, (1999).*Calculus*, Schaum's outlines series, 4thEdition,
5. C.H. Edward and E.D Penney, (1988).*Calculus and Analytics Geometry*, Prentice Hall, Inc.

MAT-5402	Introduction to Ordinary Differential Equations	Credit Hours: 3(3-0)

Course Description:

In this introductory course on Ordinary Differential Equations, we first provide basic terminologies on the theory of differential equations and then proceed to methods of solving various types of ordinary differential equations. We handle first order differential equations and then second order linear differential equations.

Course Objective:

This course is a rigorous treatment of the basics of ordinary differential equations, at the beginning undergraduate level. Designed as a flexible one-semester course which covers core topics such as initial value problems, linear differential equations and second- and higher order topics including series solutions and system of differential.

Learning Outcomes:

- To be able to solve real life problems.
- To determine mathematical equation validity from real data

Course Contents:

First Order Differential Equations:Differences between linear and nonlinear equations, Separable equations, Exact equations and integrating factor, Bernoulli Differential Equations, Substitutions, Intervals of Validity,Equilibrium Solutions, Euler's Method

Second and HigherOrder Differential Equations:Basic Concepts , Real Roots , Complex Roots , Repeated Roots , Reduction of Order, Homogenous equations, Fundamental Sets of Solutions , Linear independence and the wronskian, Nonhomogeneous Differential Equations , Method of undetermined coefficients, Variation of parameters.

Series Solution of Linear Differential Equations :Power Series solution about an ordinary point, Solution about singular points: Frobenius Method, Bessels Equations and Bessel functions

System of Linear FirstOrder Differtential Equations: Preliminary Theory, Homogeneous Linear Systems with constant coefficients, Variation of Parameters, Matrix exponential.

Recommended Books

1. Boyce,W.E. &Diprima, (2005) *Elementary Differential Equations*, 8th Edition, John Wiley and Sons,
2. Ross, S.L, (2004) *Differential Equations*, John Wiley and Sons
3. DennisG.Zill& Michael R. Cullen, (2001). *Differential Equation With Boundary ProblemsValue*PWSPublihing Company
4. Richard Bronson, (1994) *Differential Equations*, 2nd Edition, Schaum's Outline Series, Mc-Graw Hill Company, New York.

6.Introduction to Metric Space and Group Theory MAT-5204	Credit Hours: 3(3-0)

Course Description:

Metric Spaces

This course contains an introduction to metric spaces and continuity. The key idea is to use three particular properties of the Euclidean distance as the basis for defining what is meant by a general distance function, a metric. It introduces the idea of a metric space and shows how this concept allows us to generalise the notion of continuity. It develops the idea of sequences and convergence in metric spaces. It buildsthe ideas to formulate a definition of continuity for functions between metric spaces.

Course Objectives:

- To provide the students an introduction to theory of **metric space**
- To understand the Euclidean distance function on R^n and appreciate its properties, and state and use the Triangle and Reverse Triangle Inequalities for the Euclidean distance function on R^n
- To explain the definition of continuity for functions from R^n to R^m and determine whether a given function from R^n to R^m is continuous.
- To explain the geometric meaning of each of the metric space properties (M1) – (M3) and be able to verify whether a given distance function is a metric.

Learning outcomes:

- Students will distinguish between open and closed balls in a metric space and be able to determine them for given metric spaces
- Students will be able to define convergence for sequences in a metric space and determine whether a given sequence in a metric space converges
- Students will learn the basic concepts of limit and continuity in metric space

Course Contents:

Definition and various examples of metric spaces, Holder's inequality, Cauchy-Schwarz and Minkowski'sinequality, Open and Closed balls, Neighborhoods, Open and Closed sets, Interior, Exterior and Boundary points, Limit points, Closure of a set, Convergence in metric spaces, Cauchy sequences, Continuity in metric spaces, Inner product and Norm space,Orthonormal Sets and Basis, The Gram-Schmidt process.

Recommended Books:

1. Kreyszig, E. (1978). Introductory functional analysis with applications (Vol. 1). New York: wiley
2. Sutherland, W. A. (2009). Introduction to metric and topological spaces. Oxford University Press.,
3. Simmons, G. F. (1963). Introduction to topology and modern analysis. Tokyo.

- **Group Theory**

Description: This course introduces basic concepts of groups and their homomorphisms. It is focused mainly on groups, with some exploration of rings and fields. Group theoretic topics include subgroups, and normal subgroups and some counting principles.

Course Objectives:

- To give the concept of operations and groups.
- to prepare students for courses which require a good back ground in group theory like Rings and Modules.
- To develop logical problem-solving approach for problems arising within diverse fields of study.

Learning Outcomes:

Students will be able to

- use concepts and techniques of group theory in known contexts.
- correctly apply concepts and techniques of group theory to new contexts.
- effectively communicate mathematical ideas, processes and results.

Course Contents:

Binary operations, Groups and Subgroups, Cyclic groups, Cosets, Partition of a set, Lagrange's theorem, Equivalence classes, Group homomorphisms and Isomorphisms, Permutation, Cayley's theorem, Normal subgroups and related theorems, Introduction to rings and fields,Ideals and quotient rings, maximal ideals, finite fields

Recommended Books

1. Gallian, J. A. (2016). *Contemporary Abstract Algebra*: Cengage Learning.
2. Herstein, I. N. (2006). *Topics in Algebra,* 2nd Edition: Wiley Pvt. Limited.
3. Fraleigh, J. B. (2013). *First Course in Abstract Algebra, A: Pearson New International Edition*: Pearson Education Limited.
4. Rose, J. S. (2013). *A Course on Group Theory*: Dover Publications.
5. Rotman, J. J. (2012). *An Introduction to the Theory of Groups*: Springer New York.

7.Introduction to Numerical Analysis and linear Programming	**(MAT-5404)**	**Credit Hours: 3(3-0)**

Course Description

A numerical method is a complete and unambiguous set of procedures for the solution of a problem, together with computable error estimates. The study and implementation of such methods is the province of numerical analysis. This course analyzed the basic techniques for the efficient numerical solution of problems in science and engineering. Topics spanned root finding of algebraic and

transcendental equations, interpolation and integration.

Course Objectives:

- To give the concept of numerical analysis why and when a numerical method is used.
- To introduced the basic numerical methods.
- To handle the real world problem through numerical methods.
- To provide the gateway to more advanced courses of computational Mathematics.

Learning Outcomes:

- Acquire the basic knowledge of numerical analysis.
- Students will able to solve the non-linear equations in one variable using numerical methods.
- Students will be able to interpret the given data.

Course Contents:

Numerical Computations and Error Analysis:Number and their accuracy, Error in numbers. Computational methods for error estimation. General error formulae and floating point arithmetic.Numerical solution of algebraic and transcendental equations:Graphical method, Bisection method, Iteration method, Newton-Raphson Method, Secant method, Method of false position.Order of convergence of Newton-Raphson and secant methods.Interpolation and Numerical differentiation: Linear operatorsoperator identities, interpolation formulae for equally space data, Newton's forward and backward difference formulae, Central differences, Gauss formulae, Stirling's formula,Numerical differentiation based on interpolation formulae.Numerical integration: Rectangular rule, Trapezoidaland Simpson's rules.

Recommended Books:

1. Burden, R. L., &Faires, J. D. (1989). *Numerical analysis*. PWS. Kent Publishing Co. Boston.
2. Sastry, S. S. (2012). *Introductory methods of numerical analysis*. PHI Learning Pvt. Ltd..
3. Rao, K. S. (2017). *Numerical methods for Scientists and Engineers*. PHI Learning Pvt. Ltd..
4. Faiz, A. &Rana, M. A. (2013). *Elements of Numerical Analysis, National Book Foundation.*

2. Linear Programming

Course Description:

The second part of the course aims at introducing students into linear optimization theory and its applications. The field of linear programming provides the appropriate methods for the efficient computation of optimal solutions of a problem which is modeled by a linear objective function and a set of linear constraints.

Course Objectives:

- Learn how to solve two variable linear programming models by the graphical solutionprocedure.
- Understand the importance of extreme points in obtaining the optimal solution.
- Know the use and interpretation of slack and surplus variables.
- Be able to interpret the computer solution of a linear programming problem

Learning Outcomes:

After studying this course, students should be able to:

- Formulate a given simplified description of a suitable real-world problem as a linear programming model in general, standard and canonical forms
- Sketch a graphical representation of a two-dimensional linear programming model given in general, standard or canonical form
- Classify a two-dimensional linear programming model by the type of its solution
- Solve a two-dimensional linear programming problem graphically
- Use the simplex method to solve small linear programming models by hand, given a basic feasible point.

Course Contents:

Linear programming in two dimensional space, general linear programming problems, System of linear inequalities, Solutions space in linear programming, simplex method and its applications, the transportation problems.

Recommended Books:

1. Sultan, A. (2014). *Linear programming: An introduction with applications*. Elsevier.
2. Gass, S. I. (2003). *Linear programming: methods and applications*. Courier Corporation.
3. Winston, W. L., Venkataramanan, M., & Goldberg, J. B. (2003). *Introduction to mathematical programming* (Vol. 1). Duxbury; Pacific Grove, CA: Thomson/Brooks/Cole.

Course Contents Computer Science for Associate Degree Program

1- CS-5103 Introduction to programing 3(2+1)
2- CS-5203 Database Systems 3(2+1)
3- CS-5303 Data Structures & Algorithms 3(2+1)
4- CS-5406 Software Engineering 3(3+0)

Introduction to Computers
Course Code: CS-5202
Credit Hours 3

Category: Compulsory Course

Course Objectives

This course is designed in view of the application of computers in wide range of areas. This course would familiarize students with basics of computer. The course will cover introduction to computer software related to psychology.

Course Contents

1. **Introduction to Computers**

History of Computer Development Uses and Limitations
Basic Units of Personal Computers

2. ***Introduction to Windows***

Why Windows?
Basic features of Windows Starting up
Using Applications Managing Files and Folders
Managing the Desktop Change Settings

3. Introduction to MS Word Basic features of MS Word Typing, editing, formatting text Saving and printing, Making Tables in Word
4. Introduction to MS Excel
Basic features
Everyday Worksheet Tasks Creating and Formatting Charts Printing Worksheet
5. ***Introduction to Power Point***
Basic Features
Preparing presentations using Power Point

Course Outcome

After having completed this course students would be able to use window software such as MS office including MS Excel, MS Word and Power point.

Recommended Books

1. Maran, R. (1995).*Windows 95 simplified*. Foster City, C.A: IDG Books World Wide, Inc.
2. Maran, R., & Wing, K. (1997).*Teach yourself word 97*, Foster City, C.A: IDG Books world wide, Inc.
3. Nelson, K.Y. (1996). *Windows 95 is driving me crazy*. Berkeley, CA: Peach Pit Press.
4. Person, R. (1993).*Using Excel Version 5 for windows*. Indianapolis: Que Corporation

1- Introduction to programing 3(2+1)
(CS-5103)

Semester-I

CLO No.	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Understand basic problem solving steps and logic constructs	C2 (Understand)
CLO-2	Apply basic programing concepts	C3 (Apply)
CLO-3	Design and implement algorithms to solve real world problems	C3 (Solve)

Course Outline:

Introduction to problem solving, a brief review of Von-Neumann architecture, Introduction to programming, role of compiler and linker, introduction to algorithms, basic data types and variables, input/output constructs, arithmetic, comparison and logical operators, conditional statements and execution flow for conditional statements, repetitive statements and execution flow for repetitive statements, lists and their memory organization, multi-dimensional lists, introduction to modular programming, function definition and calling, stack rolling and unrolling, string and string operations, pointers/references, static and dynamic memory allocation, File I/O operations

Reference Materials:

1. Starting out with Python, 4th Edition, Tony Gaddis.
2. Starting out with Programming Logic & Degins, 4th Edition, Tony Gaddis,
3. The C Programming Language, 2nd Edition by Brian W. Kernighan, Dennis M. Ritchie
4. Object Oriented Programming in C++ by Robert Lafore
5. Introduction to Computation and Programming Using Python: With Application to Understanding Data, 2nd Edition by Guttag, John
6. Practice of Computing Using Python, 3rd Edition by William Punch & Richard Enbody
7. C How to Program, 7th Edition by Paul Deitel & Harvey Deitel
8. Problem Solving and Program Design in C++, 7th Edition by Jeri R. Hanly & Elliot B. Koffman

Database System
(CS-5303) Cr.Hrs 3(2+1)
Semester-II

CLO No.	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Explain fundamental database concepts.	C2 (Explain)
CLO-2	Design conceptual, logical and physical database schemas using different data models.	C5 (Design)
CLO-3	Identify functional dependencies and resolve database anomalies by normalizing database tables.	C2 (Identify)
CLO-4	Use Structured Query Language (SQL) for database definition and manipulation in any DBMS	C4 (Use)

Course Outline:

Basic database concepts, Database approach vs. file based system, database architecture, three level schema architecture, data independence, relational data model, attributes, schemas, tuples, domains, relation instances, keys of relations, integrity constraints, relational algebra, selection, projection, Cartesian product, types of joins, normalization, functional dependencies, normal forms, entity relationship model, entity sets, attributes, relationship, entity-relationship diagrams, Structured Query Language (SQL), Joins and sub-queries in SQL, Grouping and aggregation in SQL, concurrency control, database backup and recovery, indexes, NoSQL systems.

Reference Materials:

1. Database Systems: A Practical Approach to Design, Implementation, and Management, 6th Edition by Thomas Connolly and Carolyn Begg
2. Database Systems: The Complete Book, 2nd Edition by Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom
3. Database System Concepts, 6th Edition by Avi Silberschatz, Henry F. Korth and S. Sudarshan.
4. Database Management Systems, 3rd Edition by Raghu Ramakrishnan, Johannes Gehrke

Data Structures & Algorithms
(CS-5303) Cr. Hrs 3(2+1)
Semester-III

CLO No.	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Implement various data structures and their algorithms and apply them in implementing simple applications	C3 (Apply)
CLO-2	Analyze simple algorithms and determine their complexities.	C5 (Analyze)
CLO-3	Apply the knowledge of data structure to other application domains.	C3 (Apply)
CLO-4	Design new data structures and algorithms to solve problems.	C6 (Design)

Course Outline:

Abstract data types, complexity analysis, Big Oh notation, Stacks (linked lists and array implementations), Recursion and analyzing recursive algorithms, divide and conquer algorithms, Sorting algorithms (selection, insertion, merge, quick, bubble, heap, shell, radix, bucket), queue, dequeuer, priority queues (linked and array implementations of queues), linked list & its various types, sorted linked list, searching an unsorted array, binary search for sorted arrays, hashing and indexing, open addressing and chaining, trees and tree traversals, binary search trees, heaps, M-way tress, balanced trees, graphs, breadth-first and depth-first traversal, topological order, shortest path, adjacency matrix and adjacency list implementations, memory management and garbage collection.

Reference Materials:

1. Data Structures and Algorithms in C++ by Adam Drozdek
2. Data Structures and Algorithm Analysis in Java by Mark A. Weiss
3. Data Structures and Abstractions with Java by Frank M. Carrano & Timothy M. Henry
4. Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss
   Java Software Structures: Designing and Using Data Structures by John Lewis and Joseph Chase

Software Engineering

(CS-5406)

Cr.Hrs 3(3+0)

CLO No.	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Describe various software engineering processes and activates	C1 (Describe)
CLO-2	Apply the system modeling techniques to model a medium size software systems	C3 (Apply)
CLO-3	Apply software quality assurance and testing principles to medium size software systems	C4 (Apply)
CLO-4	Discuss key principles and common methods for software project management such as scheduling, size estimation, cost estimation and risk analysis	C2 (Discuss)

Course Outline:

Nature of Software, Overview of Software Engineering, Professional software development, Software engineering practice, Software process structure, Software process models, Agile software Development, Agile process models, Agile development techniques, Requirements engineering process, Functional and non-functional requirements, Context models, Interaction models, Structural models, behavioral models, model driven engineering, Architectural design, Design and implementation, UML diagrams, Design patterns, Software testing and quality assurance, Software evolution, Project management and project planning, configuration management, Software Process improvement

Reference Materials:

1. Software Engineering, Sommerville I., 10th Edition, Pearson Inc., 2014
2. Software Engineering, A Practitioner's Approach, Pressman R. S.& Maxim B. R., 8th Edition, McGraw-Hill, 2015.

Course Contents for AD in Arts

English (Compulsory Courses)

1. Course Title: English-I (Functional English)
Course Code: ENG-5101

Course Description

The course aims at enhancing students' skill and competence in communicating their ideas in writing and speaking in English language.

Course Objectives:

The course aims:

- To help the students achieve proficiency in language use and to develop skills in listening comprehension, improve reading efficiency
- To use the conventions of standard written English with skill and assertion
- To build-up vocabulary, and clearly and accurately reproduce specific data

Course Learning Outcomes:

Upon successful completion of this course, the students will be able to:

- use English language proficiently in spoken and written discourse
- use diverse English vocabulary in communication
- use modern writing techniques

Course Contents:

- Parts of Speech
  - Noun, Pronoun, Adjective
  - Verb, Adverb
  - Article, Preposition, Conjunction
- Direct/Indirect Narration
- Punctuation
- Functions of Language
  - Greeting
  - Requesting
  - Apologizing
- Reading Comprehension
- Listening Comprehension
- Common Writing Errors
- Writing Techniques
  - Paragraph Writing
  - Essay Writing
  - Letter Writing
  - Story-Telling
  - Autobiography

Recommended Books:

1. Edith Schwager, Better Vocabulary, (Latest Edition)
2. Henry Thomas, Better English Made Easy, (Latest Edition)

3. John Langan, College Writing Skills, 7th Edition
4. Devioto, J., The Essential Elements of Public Speaking. Boston: Allyn and Bacon, 2003

2. Course Title: English-II (Communication Skills)
Course Code: ENG-5201

Course Description

The course aims at enhancing students' skill and competence in communicating their ideas in writing and speaking in English language.

Course Objectives:

The course aims:

- To enable the students achieve clear, appropriate and impactful interpersonal communication by improving their verbal and nonverbal communication
- To help the students overcome the jitters and barriers in the communication processes
- To cater the students with clear understanding of formal and informal communication undertakings

Course Learning Outcomes:

Upon successful completion of this course, the students will be able to:

- identify the components and elements of communication
- recognize the functions of multiple components of different types of communication
- demonstrate familiarity with multiple scenarios under the context of formal and informal communication
- communicate and Implement the knowledge to practically demonstrate when exposed to relevant formal or informal context

Course Contents:

- Introduction to communication skills
- Nature and types of communication
- Processes of communication
- Types of communication skills
- Interpersonal and Intrapersonal communication skills
    - Communication networks
    - Barriers and manipulations
    - Communication as a transactional process
- Interview skills
    - Handling introduction
    - Most asked questions
    - Non verbal strategies
    - Different scenarios
- Presentation skills
    - Skills and techniques
    - Prepared and un prepared presentation
    - Jitters and misconception

- Incorporation of nonverbal modes
- Written communication
  - Types of written communication
  - Format and styles
  - Composition
- Formal and informal communication
  - Types of formal compositions
  - Types of informal discourse
  - Communicating in multicultural world
- 7 Cs of communication

Recommended Books:

1. Hargie, O. (ed). Hand book of Communication skills
2. Mandal, S. 2000. Effective Presentation Skills: A Practical guide Better Speaking
3. Sen, L. 2007. Communication skills

3. Course Title: English-III (Academic Reading & Writing)
Course Code: ENG-5301

Course Objectives:

The course aims:

- To help the students read academic texts critically
- To help the students write well organized academic texts

Course Learning Outcomes:

Upon successful completion of this course, the students will be able to:

- read the academic texts critically
- write well-organized academic texts

Course Contents:

- Introduction Language Skills:
  - Written & Oral
  - Productive & Receptive
  - Primary & Secondary
- Reading and its purposes
- Reading Comprehension Factors
- Reading Strategies
- Critical Reading
- Steps to become a critical reader
- Models of Reading
- Reading process
  - Pre-reading activities
  - While reading activities
  - Post reading activities
- Types of writing and their characteristics

- Formal and Informal Writing
- General v/s Academic Writing
- Characteristics of Academic writing
- Process of Writing

- Writing summaries of different articles
- Precis Writing
- Interpreting and analyzing charts, tables and graphs
- Making appropriate notes using strategies such as mind maps, tables, lists and graphs

Recommended Books:

1. Razı, Salim. (2011). Advanced reading and writing skills in ELT: APA style handbook.
2. Barnet, S. and Bedau, H. 2004. Critical Thinking, Reading and Writing: A Brief Guide to Writing. 6th Ed.
3. Gardner, P. S. 2005. New Directions: Reading, Writing and Critical Thinking.
4. Grellet, F., Writing for Advanced Learners of English. CUP.

Elective Courses English

1. Course Title: Introduction to Phonetics and Phonology
Course Code: ENG-5104

Aims & Objectives:

The course aims to build on the background knowledge of phonological description & theory in order to explain the theories & the principles regulating the use of sounds in spoken language; train students in the skill of transcribing spoken languages – particularly English; & examine cross-linguistic similarities & variation in sounds – particularly English & Urdu.

Contents:

- Language and its characteristics
- Linguistics and its scientific nature
- Introduction to Phonetics and Phonology
- Difference between Phonetics and Phonology
- The Production of Speech Sounds Speech Articulators
- Phonemes and English Phones, Phonemes and Allophones
- Vowels and Consonants Diphthongs & Triphthongs
- The Place and Manner of The Production of English Consonants
- Syllable and Syllabic Structure Strong and Weak Syllable Consonant Clusters
- Stress, the Importance of Stress
- Levels of Stress & Placement of Stress
- Complex Word Stress
- Aspects of Connected Speech Assimilation, Rhythm, Elision and Liaison
- Sentence Stress and Intonation
- Contrastive Phonology: English and Urdu Phonology Problematic areas for Pakistani Learners

Text Book

Roach, P. (1991). *English phonetics and phonology: A practical course*. Cambridge: Cambridge UP.

Reference Books

1. Burquest, D. A. (2001). *Phonological analysis: A functional approach.* Dallas: SIL.

1. Cruttenden, Alan. 1994. *Gimson's Pronunciation of English*. Oxford: Arnold.
2. Giegerich, Heinz. 1992. *English Phonology*. Cambridge: Cambridge University Press.
3. Gimson, A. C. (1984). *An introduction to the pronunciation of English*. London: Arnold.
4. Jones, Charles. 1994. *A History of English Phonology*. London: Longman.
5. Kenworthy, J. (1987). *Teaching English pronunciation*. London: Longman.
6. Knowles, G. (1987). *Patterns of spoken English*. London: Longman.
7. Kreidler, C. W. (1989). *The pronunciation of English*. Oxford: Basil Blackwell.

2. **Course Title: English Grammar**
Course Code: ENG-5204

Aims & objectives:

- To familiarize and enable students to learn basic concepts of Grammar of modern English and acquaint them with functional English.

Course Contents:

- Nouns and Noun Phrases.
- Verb and Verb phrases. (Tense, Aspect, Modality and their Uses)
- Adverb and adverbial phrases
- Adjective and adjectival phrases.
- Sentence Analysis at Clause / Discourse Level
- Direct / indirect Speech at Sentence / Discourse Level
- Voice (Active and Passive) Reasons for Passivization
- Pakistani English Usage and Identification of Errors
- Coordination, Subordination, Conjunctions.
- Grammatical Functions of Subjects, Objects, Complements, etc.
- Cohesion (Cohesive Devices; Signposting) and Coherence
- Semantic Roles; Agent, Patient, Theme, Instruments, Locatives
    - Simple and Complex Clauses
    - Parts of Speech
    - Verbal (Infinitives and Gerunds) and their Functions
    - Punctuation
    - Conditional Sentences; Structure and Meaning

Recommended Books

1. Borjars, K. &Burridge, K. (2010). *Introducing English Grammar*. Hodder Education. UK.
2. Celce-Murcia, & Larsen-Freeman, D. (1999).*The Grammar Book*: An ESL/EFL Teacher's Course. (Second edition). Boston, MA: Heinle and Heinle.
3. Harmer, J. (1993).*Teaching and Learning Grammar*. London: Longman.
4. Huddleston, R. &Pullum, G. (2005). *A Students' Introduction to English Grammar*. Cambridge: Cambridge University Press.
5. Huddleston, R. (2002). *The Cambridge Grammar of the English Language*. Cambridge:

Cambridge University Press.
6. Leech, G. (1988). *Meaning and the English Verb*. London: Longman.
7. Leech, G. & Svartvik, J. (2003).*A Communicative Grammar of English* (Third edition). London: Longman.
8. McKay, S. (1990).*Teaching Grammar: Form, Function and Technique*. New York: Prentice Hall.
9. Odlin, T. (Ed.), (1994).*Perspectives on Pedagogical Grammar*.Cambridge: Cambridge University Press.

3. Course Title: Introduction to Morphology
Course Code: ENG-5403

Course Description

The key aim of the course is to introduce the students to the basic word structure in Pakistani languages. It engages them to have an understanding of words and parts of words. It will help them to understand word structure in Pakistani languages.

Aims & Objectives

The course will help students familiarize with the structure of a word and then a sentence in a language, specifically focusing on Pakistani languages and then any language in the world, e.g. English.

Course Contents

- Ferdinand Desassure's Contribution to Linguistics
- Introduction to morphology
  - Morpheme, Morph and Allomorph,
  - free morphemes: roots and stems
  - bound morphemes: affixes: prefixes, suffixes, infixes,
  - morphological productivity: productivity of affixes, prefixes,suffixes
- Neutral & Non-neutral morphemes,
- Type-I & Type-II morphemes
- Word classes
  - Open and closed classes of words
  - The Function of open and closed classes of words in English sentences
  - Word vs. Lexeme
- Basics of Phonetic Transcription of Words
- Inflectional Morphology
  - Pluralization, Degree Marking, Verb Forms
- Derivational Morphology
  - Formation of Nouns, Adjectives, Verbs and Adverbs
  - Word formation processes
  - Derivation by compounding: endocentric, exocentric andcopulative compounds
  - derivation by modification of base
- Morpho-Semantics- semantic change in word formation processes
- Morphology Interface with Phonology and Syntax
- Morphology-Syntax Interface

Text Book

George Yule (2010) The Study of Language. Cambridge University Press. Fourth Edition

Recommended Readings

1. Booij, G. (2005) The Grammar of Words--An Introduction to Linguistic Morphology
2. Aronoff, M. (1994). Morphology by itself. MIT Press, Cambridge.
3. Bauer, L. (2003). Introducing Linguistic Morphology--Edinburgh University Press
4. McCarthy, A. C (2002). An Introduction to English Morphology- Words and their Structure, Edinburgh University Press.Edinburgh
5. Plag, I. (2002). Word Formation in English -Cambridge University Press. Cambridge
6. Zwicky, A. (1985b). 'How to Describe Inflection.' Proceedings of the Berkeley Linguistics Society 11: 372-386. Berkeley, California.
7. Zwicky, A and Pullum, G. (1992). A misconceived approach to morphology. In Proceedings of WCCFL 91, ed. D. Bates. CSLI, Palo Alto, 387-398.Course Title: Poetry-I (14th To 18th Century)

4. Course Title: Introduction to Literature
Course Code: ENG- 5304

Aims and Objectives:

This course will enable the students to examine the reading of literature explore literary works (poems, stories, essays, and drama etc.) recognize and distinguish different genres and their characteristics understand how Literature evolved through history.

Course Learning Outcomes:

After the successful completion of this course, the learners will be able to

- Understand and distinguish the basic, introductory concepts / ideas about literature and its various forms, genres etc.
- To know a brief History of English Literature

Course Contents

PART-A

(a) What is literature
- Aim and scope of Literature
- Literature and Society
- Literature and Belief, Art for Art's sake
- Art for Life's Sake; Apollonian and Dionysian views
- Literature and the writer's personality
- Romanticism and Classicism etc.

(b) Poetry-its nature and function different forms of Poetry e.g., Epic, Sonnet, Allegory. Ballad, Ode, Lyric etc; developments

(c) Drama-its nature and function, Different forms of Drama e.g., Tragedy, comedy, verse drama, One-Act play etc; origins/developments.

(d) Fiction its nature and function types/ forms of Fiction e.g., short story, novel;" different types of novels - Epistolary, Picaresque, Stream of Consciousness etc.

(e) Other types/genres of literature e.g., prose essays, journals, travelogues etc.

(f) Criticism its nature and functions. Different schools of criticism: Classical, Romantic, Modern, Postmodern etc - introduction.

PART-B

Brief /Short History of English Literature (From Chaucer to Modernist Period)

(a) Old English (Anglo-Saxon Period) 450–1066
(b) The Renaissance 1500-1600
(c) The Romantic Period 1785-1832
(d) The Victorian Age 1832-1901
(e) The Modern PeriodEarly 20th century

Recommended Books:

1. Welleck, R. and Austin, W. Theory of Literature (1968).

2 Mullick, B.R. Literary Criticism and its Principles in History (1969)

3 Daiches, David. A Critical History of English Literature (4 vols. 1978).

4. Brooks, Cleanth. Modern Poetry and the Tradition (1979).

5. Bowra, C.M, The Romantic Imagination.

6. J.A. Cuddin Penguin Dictionary of Literary Criticism and Theory

Islamiyat (ISL-5102)

Cr. Hrs. 03
Semester-I

Course Objectives:
The course aims:

- enlightmemt of comands amd topics of quran to students.
- to study the specific topics of hadith, serat and fiqa.
- to review the services of muslims in different departments of science.
- to understand islam as a system of life.

Course Learning Outcomes:

Upon successful completion of this course, the students will be able to:

- Learning outcome 1Students will understand the important basic sources of Islam that are Quran, Ahdees,Seerat and Fiqa.
- Learning outcome 2Student will get important knowledge about the teaching of Islam about the social life.
- Learning outcome 3Student will acquire the knowledge about ethics by obeying them they can become good citizen and good human being.

Course Contents:

Week	Weeks topic	Class sub-topic 1	Class sub-topic 2	Class sub-topic 3
1	**حصّہ علومِ قرآن**	تعارف قرآن	جمع وتدوین قرآن(I)	جمع وتدوین قرآن(2)
2	**حصّہ علومِ قرآن**	علوم قرآن	سورہ بقرہ:آیات(86-110)	سورہ بقرہ:آیات(110-140)
3	**حصّہ نصوص قرآن**،سورہ بقرہ آیات(284 -86)	سورہ بقرہ:آیات (180 -141)	سورہ بقرہ:آیات (220 - 181)	سورہ بقرہ:آیات(221-255)
4	**حصّہ نصوص قرآن**،سورہ البقرہ	سورہ بقرہ:آیات (284 -256)	سورہ الفرقان:آیات (63 -77)	سورہ المومنون:آیات(1 -11)
5	**حصّہ نصوص قرآن،** سورہ البقرہ	سورہ الحجرات:آیات (1 -9)	سورہ الحجرات آیات(10 -18)	**مشق**
6	**حصّہ علوم حدیث**	حدیث کی تعریف، اہمیّت و ضرورت، حجیّت	جمع وتدوینِ حدیث	صحاح ستّہ کا تعارف
7	**اصطلحات و اقسام حدیث**	سند،متن ،خبر، متواتر،خبر واحد، مشہور، عزیز غریب	قبول اور عدم قبول کے اعتبار سے حدیث کی اقسام	مرفوع،مقطوع،موقوف ،حدیث قدسی
8	**منتخب احادیث کا مطالعہ**	منتخب احادیث کا مطالعہ	منتخب احادیث کا مطالعہ	منتخب احادیث کا مطالعہ
9	**مطالعہ سیرت طیبہ،مکی زندگی**	رسول اللہ ﷺ کی ابتدئی زندگی ۔	مکی زندگی،ہجرت حبشہ اولی،ثانیہ۔	بیعت عقبہ اولیٰ،ثانیہ۔
10	**مطالعہ سیرت طیبہ،ہجرت اور میثاق مدینہ**	ہجرت مدینہ اسباب و نتائج۔	میثاق مدینہ، نتائج و اثرات۔	غزوہ بدر اسباب و نتائج۔

11	**مطالعہ سیرت طیبہ،ریاست مدینہ**	فتح مکہ ، نتائج و اثرات	خطبہ حجۃ الوداع، عالمی انسانی منشور۔	ریاست مدینہ اور اس کی خصوصیات
12	**مطالعہ سیرت طیبہ،خلافت راشدہ**	خلافت راشدہ کا نظام حکومت۔	عقیدہ ختم نبوّت قرآن و سنت کی روشنی میں	مشق
13	**اخلاقی تعلیمات کا مطالعہ**	دیانت داری،ایفاء عہد،سچائی،عدل و انصاف	مساوات ،ایثار،عفو و درگزر،کسب حلال	قانون کا احترام ،خدمت خلق
14	**اسلامی تہذیب و تمدن**	اسلامی تہذیب اور اس کے عوامل و عناصر	اسلامی تہذیب کی خصوصیات	بنیادی انسانی حقوق اور اسلام
15	**اسلام بحثیّت قانون و نظام**	اسلامی قانون کے ماخوذ،قرآن ،سنت ، اجماع ،قیاس، اجتہاد اہمیّت و ضرورت	اسلام میں معاشی نظام کے اصول۔	اسلام میں سیاسی نظام کے اصول۔
16	**طبعی،حیاتیاتی اور معاشرتی علوم میں مسلمانوں کا کردار**	طبعی علوم میں مسلمانوں کا کردار	حیاتیاتی علوم میں مسلمانوں کا کردار	معاشرتی علوم میں مسلمانوں کا کردار

Recommended Books:

1. پروفیسرڈاکٹر محمد شہباز منج ،تعلیمات اسلام، (اسلامیات لازمی) القمر پبلی کیشر لاہور، 2017
2. اسلام کا معاشرتی نظام، ڈاکٹرخالد علوی ،
3. اصطلاحات حدیث ،ڈاکٹر محمود طحان،
4. سید قطب ،اسلام اور جدید ذہن کے شبہات،
5. ڈاکٹر ساجد محمود ،اسلامیات لازمی،

Arabic
(ARB -5401)
Cr. Hrs. 03

Course Objectives:

The course aims:

- to aware the students about the importance of arabic language in islamic studies.
- to aware the students about the basic rules of arabic grammer so they can get benefit from islamic knowledge.
- to produce the ability of understanding of Quran in students through arabic language .
- enable the students so that they can exact pronounce the Quranic words.

Course Learning Outcomes:

Upon successful completion of this course, the students will be able to:

- Learning outcome 1Students will learn the basic laws of Arabic language.
- Learning outcome 2Students will enable to understand the Holy Quran by understanding Arabic language.
- Through Arabic language students will recite the Holy Quran with exact pronunciation.
- Learning outcome 3

Course Contents:

week	Weeks topic	Class sub-topic 1	Class sub-topic 2	Class sub-topic 3
1	**عربی زبان وادب،تعارف اور اسلامی علوم میں اس کی اہمیت**	عربی زبان وادب،تعارف	اسلامی علوم میں اس کی اہمیت	قرآن مجید اور عربی زبان
2	**کلمہ اور اس کی اقسام، جملہ اسمیہ جملہ فعلیہ ، اسم فاعل ،ضمائر متصلہ اور ضمائر متفصلہ،مرکب اضافی ،مرکب توصیفی ،حروف جر** (ان قواعد سے متعلقہ تمام مشقیں قرآن مجید کی آخری 10 سورتوں سے کروائی جائیں)۔	کلمہ اور اس کی اقسام، جملہ اسمیہ جملہ فعلیہ ، اسم فاعل	ضمائر متصلہ اور ضمائر متفصلہ	مرکب اضافی ،مرکب توصیفی حروف جر
3	**مزکوہ بالا عربی قواعد کی نصوص قرآن سے عملی مشقیں، جملے اور ان کا ترجمہ۔**	**سورۃ اخلاص**	**سورۃ فلق**	**سورۃ الناس**
4	//	**سورۃ الکافرون**	**سورۃ النصر**	**سورۃ الکوثر**
5	//	**سورۃ لہب**	**سورۃ القریش**	**سورۃ الفیل**
6	//	**سورۃ التکاثر**	**سورۃ الھمزہ**	**سورۃ الزلزال**
7	**جمع اور اس کی اقسام ،فعل ماضی،فعل مضارح ،فعل امر،فعل نہی ،مذکر مونث ،اسماء خمسہ**	**جمع اور اس کی اقسام**	فعل ماضی، فعل مضارع، فعل امر،فعل نہی	**مذکر مونث ،اسماء خمسہ،تثنیہ**
8	**نصوص قرانی کا ترجمہ ،عربی قواعد کی نصوص قرآن سے عملی مشقیں۔**	**سورۃ البقرہ** (10 -1)	**سورۃ البقرہ** (22 -11)	**سورۃ البقرہ** (35 -23)
9	//	**سورۃ البقرہ**(48 -36)	**سورۃ البقرہ**(62 -49)	**سورۃ البقرہ** (75 -63)

10	//	**سورۃ البقرہ** (76- 86)	**سورۃ البقرہ**(87- 96)	**سورۃ البقرہ** (97- 110)
11	افعال،مجہول،معروف،افعال ناقصہ،مقاربہ، ابواب ثلاثی مجرد،ثلاثی مزیدفیہ	افعال،مجہول،معروف	فعال ناقصہ،مقاربہ	ابواب ثلاثی مجرد،ثلاثی مزیدفیہ
12	حرف شمسیہ ،قمریہ، اعداد،عربی میں گنتی	حرف شمیہ قمریہ	اعداد،عربی میں گنتی	مشق
13	**نصوص قرانی کا ترجمہ ،عربی قواعد کی نصوص قرآن سے عملی مشقیں۔**	**سورۃ البقرہ** (122 - 110)	**سورۃ البقرہ** (134 - 123)	**سورۃ البقرہ**(145 - 135)
14	**نصوص قرانی کا ترجمہ ،عربی قواعد کی نصوص قرآن سے عملی مشقیں۔**	**سورۃ البقرہ** (157 - 146)	**سورۃ البقرہ** (170 - 158)	**سورۃ البقرہ** (171- 183)
15	**نصوص قرانی کا ترجمہ ،عربی قواعد کی نصوص قرآن سے عملی مشقیں۔**	**سورۃ البقرہ** (196 - 184)	**سورۃ البقرہ**(208 -19 6)	**سورۃ البقرہ** (209- 223)
16	**نصوص قرانی کا ترجمہ ،عربی قواعد کی نصوص قرآن سے عملی مشقیں۔**	**سورۃ البقرہ** (36- 48)	**سورۃ البقرہ**(224- 235)	**سورۃ البقرہ** (236- 250)

Recommended Books:

1 Arabic for understanding the Qur'an ,CEF,Islamabad, 2021

2 Dr. HabiburRehmanAsim, Lisanul Quran, IIUI Lisanul Quran (Vo.1) –Maktaba al-Bushra, Karachi, (2012)

3 اللغة العربية لغير الناطقين بها, جامعة الملک السعود، رياض

4 لسان العربی،علامہ اقبال اپن یونیورسٹی،اسلام آباد(نصابی کتاب)

5 عربی زبان و ادب، ڈاکٹر بغدادی،علامہ اقبال اپن یونیورسٹی،(نصابی کتاب)

Introduction to Quran & and Usool e Tafseer
تعارفِ قرآن اصول تفسیر
Course code
ISD-5106

Objectives of the Course	۱۔ طلباء کو علوم القرآن سے اس طرح روشناس کروانا تاکہ وہ قرآن فہمی کی منازل کو آسانی سے طے کر سکیں ۲۔ طلباء کی مفاہیم قرآن کی سمجھ میں مدد کرنا ۳۔ طلباء میں ایسی مہارت ، سلیقہ اور صلاحیت پیدا کرنا جس کی مدد سے وہ دور جدید کے مسائل، قرآنی تناظر میں سمجھ سکیں

Course Description

Topic	Description
تعارف قرآن مجید	۱۔ قرآن مجید کا لغوی اور اصطلاحی مفہوم۲۔ قرآن مجید کی خصوصیات و امتیازات
وحی الٰہی	۱۔ وحی کا مفہوم و اہمیت۲۔ وحی کی اقسام اورکیفیات
تاریخ نزول قرآن	۱۔ نزول قرآن کا مفہوم ۲۔ نزول قرآن مجید: تدریج و حکمتیں۳۔ قرآن مجیدکے خصائص
کتابت وحی	۱۔ کتابت وحی کا تعارف۲۔کاتبین وحی۳۔ کتابت وحی کے اسالیب
حفاظت قرآن مجید	۱۔ حفاظت قرآن کا مفہوم۲۔ حفاظت قرآن کے لیے اقدامات الف۔ حفظ ب۔ کتابت ج۔ عمل تواتر
حضرت ابوبکرؓ کے دور میں تدوین قرآن	۱۔ تدوین قرآن کی ضرورت۲۔ تدوین قرآن کی ذمہ داری۳۔ حفاظت قرآن کے لیے مدنی دور کے اقدامات
عہدِ عثمانیؓ میں تدوین قرآن	۱۔ عہدِ عثمانی میں تدوین قرآن کے اسباب۲۔ عہدِ عثمانی میں تدوین قرآن کے اسالیب ۳۔ عہدِ عثمانی میں تدوین قرآن کے اثرات
قرآن پاک کی مکی سورتیں	۱۔ مکی سورتوں کا تعارف و اہمیت۲۔ مکی سورتوں کی شان نزول۳۔ مکی سورتوں کے اہم مضامین
قرآن پاک کی مدنی سورتیں	۱۔ مدنی سورتوں کا تعارف و اہمیت۲۔ مدنی سورتوں کی شان نزول۳۔ مدنی سورتوں کے اہم مضامین
اسباب نزول	۱۔ اسبابِ نزول کا تعارف و اہمیت۲۔ قرآن فہمی اور اسبابِ نزول ۳۔ تشریحِ قرآن میں اسبابِ نزول کی حیثیت
ناسخ و منسوخ	۱۔ ناسخ و منسوخ کا تعارف۲۔ ناسخ و منسوخ کے اسباب۳۔ ناسخ و منسوخ کا قرآن فہمی اور قرآن پاک کی تشریحی حیثیت پر اثرات
تفسیر القرآن کے اہم ماخذ	۱۔تفسیر قرآن بالقرآن۲۔تفسیر قرآن بالحدیث۳۔تفسیر قرآن باقوال صحابہؓ و تابعین ۴۔قدیم صحف سماوی۵۔ جاہلی ادب۶۔ آثار و اثریات
اسلوب القرآن	۱۔ اسلوب القرآن کا مفہوم۲۔ اسلوب القرآن کی اقسام۳۔ قرآن فہمی میں اسلوب القرآن کی اہمیت
اعجاز القرآن	۱۔ اعجاز القرآن کا مفہوم و تعارف۲۔ اعجاز القرآن کی مختلف جہتیں۳۔ اعجاز القرآن کے اثرات

۱۔قرآنی مجید اور انفرادی انسانی زندگی۲۔ قرآن مجید اور اجتماعی انسانی زندگی ۳۔ قرآن مجید کے انسانی زندگی پر اثرات	قرآن مجید اور انسانی زندگی
۱۔ عصری مسائل اور ان کی نوعیت۲ عصری مسائل کے حوالے سے قرآن مجید کا منہج	قرآن مجید اور عصری مسائل

نصابی کتب

نمبر شمار	نام کتاب	نام مصنف
1	علوم القرآن	جسٹس تقی عثمانی
2	اصول فقہ	علامہ اقبال اپن یونیورسٹی
3	تاریخ فقہ	علامہ اقبال اپن یونیورسٹی

تعارف و اصول حدیثIntroduction of Hadith & Its Principles

Course code ISD-5206

C.Hrs. 03

Objectives of the Course	۱۔ طلباء کو علوم الحدیث سے متعارف کروانا ۲۔ اصول حدیث کے مفہوم ، اقسام اور اہمیت سے آگاہ کرنا ۳۔ کتب حدیث کی اقسام سے متعارف کروانا ۴۔ علم حدیث کے دوسرے علوم پر اثرات سے آگاہ کرنا

Course Description

Title	Description
تاریخ حدیث	۱۔تاریخ تدوین حدیث۲۔حجیت حدیث
علوم الحدیث کا تعارف	۱۔ علوم الحدیث کا مفہوم ۲۔علوم الحدیث پر بنیادی کتب
حدیث کی اقسام	۱۔قولی۲۔فعلی۳۔تقریری
اصول حدیث (۲)	۱۔ سند کے اعتبار سے حدیث کی اقسام۲۔ متن کے اعتبار سے حدیث کی اقسام ۳۔صحت کے اعتبار سے حدیث کی اقسام
درایت حدیث	۱۔ درایت حدیث کا مفہوم و معانی۲۔درایت حدیث کے اصول۳۔ امثلۃ الحدیث
طبقات رواۃ حدیث	۱۔ صحابہ کرامؓ۲۔ تابعین۳۔ تبع تابعین۴۔ آخرین
علوم الحدیث کی انواع(۱)	۱۔ علم جرح و تعدیل۲۔ علم مختلف الحدیث۳۔ علم اسماء الرجال
علوم حدیث کی انواع(۲)	۱۔ علل الحدیث۲۔ غریب الحدیث۳۔ ناسخ و منسوخ
علوم حدیث کی انواع(۳)	۱۔ تعارض الحدیث اسباب ورود حدیث
کتب حدیث کی اقسام (۱)	۱۔ الجوامع ۲۔السنن۳۔ المسانید۴۔ المعاجم۵۔مصنفات ۶۔اربعین ۷۔ جز۸۔صحائف
کتب حدیث کی اقسام (۲)	۱۔ کتب الجمع۲۔ المستدرک۳۔ کتب التخریج 4- کتب الفہارس5- کتب الضعفاء6- کتب العلل 7- کتب الثقات
	فتنہ انکار حدیث ، آغاز و ارتقاء ، تفصیلی جائزہ

نمبر شمار	نام کتاب	نام مؤلف
1	شرح نخبة الفكر	علامہ ابن حجر عسقلانی
2	اصول الحدیث۔ مصطلحات وعلوم(دونوں جلدیں)	ڈاکٹر خالد علوی
3	علوم الحدیث	ڈاکٹر صبحی صالح
4	معجم اصطلاحات حدیث	ڈاکٹر سہیل حسن
5	تیسیر المصطلح الحدیث	ڈاکٹر محمود الطحان
	تاریخ و اصول حدیث	علامہ اقبال اپن یونیورسٹی

مطالعہ سیرت النبی صلی اللہ علیہ وسلم Study of Seerah of Holy Prophet
Course code ISD-5306
C.Hrs. 03

Objectives of the Course	۱۔طلباء کو مطالعہ سیرۃ طیبہ کی ضرورت و اہمیت سے آگاہ کرنا ۲۔ تعمیر شخصیت میں مطالعہ سیرۃ طیبہ کے کردار کو واضح کرنا ۳۔بعثت نبوی کے موقع پر اقوام عالم کی عمومی صورت حال سے آگاہ کرنا ۴۔رسول اکرم صلی اللہ علیہ وسلم کی مکی اور مدنی زندگی کا اس طرح مطالعہ کروانا کہ طلباء ان واقعات سے نتائج کا استنباط کر سکیں ۵۔ طلباء کوعہد نبوی کی معاشرت ، سیاست ، معیشت سے آگاہ کرنا

Course Description

Title	Description
سیرۃ النبی صلی اللہ علیہ وسلم: تعارف و اہمیت	۱۔ سیرۃ کا لغوی اور اصطلاحی مفہوم۲۔ سیرۃ النبی کی ضرورت و اہمیت ۳۔ تعمیر شخصیت اور معاشرتی استحکام میں مطالعہ سیرت کی اہمیت
بعثت نبوی کے وقت دنیا کے حالات(۱)	۱۔ بعثت نبوی کے وقت اہم تہذیبیں۲۔ عرب، مصر، حبشہ، بازنطینی، ساسانی ۳۔ بعثت نبوی کے وقت اہم تہذیبوں کی مذہبی ومعاشی حالت ۴۔ بعثت نبوی کی تہذیبوں کی سماجی اور سیاسی حالت
بعثت نبوی کے موقع پر دنیا کے حالات(۲)	۱۔ہندوستان ، چین اور مغرب کی مذہبی و سماجی حالت ۲۔ ہندوستان ، چین اور مغرب کی معاشی حالت ۳۔ ہندوستان ، چین اور مغرب کی سیاسی صورت حال
حضور صلی اللہ علیہ وسلم کے ابتدائی حالاتِ زندگی	۱۔ حضور صلی اللہ علیہ وسلم کا خاندانی حسب و نسب۲۔ پیدائش اور ابتدائی تربیت ۳۔ لڑکپن اور جوانی کے حالات زندگی
حضور صلی اللہ علیہ وسلم کی بطور آخری رسول بعثت	۱۔آخری رسول کے طور پر حضور صلی اللہ علیہ وسلم کے انتخاب کے اسباب
مکی دور میں حضور صلی اللہ علیہ وسلم کی دعوت اسلام	۱۔ دعوت اسلام کا آغاز اور طریق کار۲۔ دعوت اسلام کے اثرات اور ابتدائی مسلمان
مکی دور میں حضور صلی اللہ علیہ وسلم کی عزیمت و استقامت	۱۔قریش مکہ کی مخالفت کے اسباب ۲۔ حضور صلی اللہ علیہ وسلم کی عزیمت ، استقلال اور صبر اور طائف کی طرف سفر
ہجرت مدینہ : اسباب و اثرات	۱۔ ہجرت مدینہ کے اسباب اور پس منظر ۲ہجرت مدینہ کے لیے حضور صلی اللہ علیہ وسلم کا سفر اور اس سے متعلقہ واقعات ۳۔ ہجرت کے اثرات

۱۔مؤاخاۃ۲۔ میثاق مدینہ۳۔ مہاجرین کی بحالی اور اسلامی ریاست کا قیام	حضور صلی اللہ علیہ وسلم کے مدینہ میں ابتدائی اقدامات
۱۔ غزوۂ بدر ،اسباب، واقعات اور نتائج۲۔ غزوۂ احد، اسباب ، واقعات اور نتائج ۳۔ غزوۂ خندق ، اسباب ، واقعات اور نتائج	غزوات نبوی (۱)
۱۔ صلح حدیبیہ۲۔ غزوۂ خیبر۳۔ فتح مکہ	غزوات نبوی (۲)
۱۔ غزوات نبوی کے سیاسی اور دفاعی اثرات۲۔ غزوات نبوی کے معاشی اثرات ۳۔ غزوات نبوی کے سماجی اور دعوتی اثرات	غزوات نبوی کے اثرات
۱۔ یہود سے تعلقات۲۔ مشرکین اور منافقین سے تعلقات۳۔قبائل عرب سے تعلقات	رسول اللہ صلی اللہ علیہ وسلم کے داخلی سیاسی اقدامات
۱۔ غیر ملکی سربراہوں سے حضور صلی اللہ علیہ وسلم کی مراسلات ۲۔ غیر ملکیوں کے ساتھ وفودکا تبادلہ۳۔ فتح مکہ۔دعوت اسلامی کا فروغ ۴۔حضورصلی اللہ علیہ وسلم کی خارجی سیاست کے اثرات	رسول اللہ صلی اللہ علیہ وسلم کے خارجی تعلقات
۱۔ عہد نبوی کا معاشرتی و معاشی نظام۲۔ عہد نبوی کا مذہبی نظام ۳۔ عہد نبوی کا نظام حکومت	عہد نبوی۔ تہذیبی مطالعہ

نصابی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	ابن ہشام	السیرۃ النبویۃ
2	مولاناشبلی نعمانی ، سید سلمان ندوی	سیرۃ النبی صلی اللہ علیہ وسلم
3	قاضی محمد سلیمان منصور پوری	ر حمۃ اللعالمین
4	مولانا سیدابو الحسن علی ندوی	نبی رحمت صلی اللہ علیہ وسلم
5	ڈاکٹر یسین مظہر صدیقی	عہد نبوی کا نظام حکومت
6	ڈاکٹر خالد علوی	انسانِ کاملؐ
7	مولانا صفی الرحمن مبارکپوری	الرحیق المختوم
8	پیر محمد کرم شاہ الازہری	ضیاء النبی صلی اللہ علیہ وسلم
5	سید ابوالاعلیٰ مودودی	سیرت سرور عالم صلی اللہ علیہ وسلم

تعارف و اصولِ فقہ Introduction of Fiqh and Its Principles
Course code ISD- 5405
Cr. Hrs 03

Objectives of the Course	۱۔ اصول فقہ کے بنیادی مضامین و اصطلاحات کا تعارف ۲۔ طلبہ میں اصول استنباط کا تعارف ۳۔مکلف اور اس کے متعلقہ مباحث کا تعارف

Course Description

Title	Description
	۱۔ اصول الفقہ: تعریف ، دائرہ کار
	۱۔ حکم تکلیفی اور حکم وضعی۲۔ حکم تکلیفی کی اقسام: واجب، مندوب، حرام، مکروہ، مباح
	۱۔ سبب ۲۔ شرط ۳۔مانع ۴۔صحۃ ۵۔ فساد ۶۔بطلان ۷۔عزیمۃ ۸۔ رخصۃ
	۱۔ تعریف۲۔ اقسام: اہلیت وجوب، اہلیت اداء : ناقصہ، کاملہ

۱۔ تعریف۲۔ اقسام: سماویہ ، مکتسبہ	
۱۔ قرآن ۲۔ سنّت۳۔ اجماع۴۔قیاس	
۱۔ استحسان۲۔ مصالح مرسلہ۳۔ سد الذرائع	فقہ اسلامی کے ثانوی مآخذ-I
۱۔استصحاب۲۔ عرف۳۔ شرائع مَن قبلنا۴۔ قول صحابی	فقہ اسلامی کے ثانوی مآخذ-II
۱۔ خاص۲۔ عام ۳۔ مطلق ۴۔مقید	اقسام لفظ باعتبار وضع معنی-I
۱۔ مشترک ۲۔ مؤوّل۳۔ امر۴۔ نہی	اقسام لفظ باعتبار وضع معنی-II
۱۔ حقیقۃ۲۔مجاز۳۔ صریح۴۔ کنایہ	اقسام لفظ باعتبار استعمال معنی
۱۔ محکم ۲۔ مفسر ۳۔ نص ۴۔ظاہر ۵۔ متشابہ ۶۔ مجمل ۷۔مشکل ۸۔ خفی	اقسام لفظ باعتبار قوۃ دلالۃ
۱۔ دلالات:عبارۃالنص ، اشارۃ النص، دلالۃالنص، اقتضاء النص۲ ۔ مفہوم موافق و مخالف	دلالۃ لفظ کے اسالیب
۱۔ تطبیق۲۔ نسخ۳۔ ترجیح	تعارض الادلۃ
۱۔ ضرورۃ۲۔تفسیر۳۔ تقریر۴۔ تغییر وغیرہ	اقسام بیان

نصابی کتب

نمبر شمار	نام مصنف	نام کتاب
1	عبدالكريم زيدان	الوجيز في أصول الفقه
2	نظام الدين الشاشی	أصول الشاشي
4	علامہ اقبال اپن یونیورسٹی	اصول فقہ
5	علامہ اقبال اپن یونیورسٹی	تاریخ فقہ
6		

لازمی کورس

اردو زبان و ادب (5203)

قواعد:

اسم، فعل، حرف، امدادی افعال، سابقے ولاحقے، مرکبات، روزمرہ محاورہ، ضرب الامثال، ترکیب نحوی

تشبیہ، استعارہ، مجاز مرسل، کنایہ، تلمیح، تجنیس، تضاد، حسن تعلیل، تکرار، سیاق الاعداد

انشا:

مضمون، خط، درخواست، رسید، تلخیص

ادب:

اردو زبان کا آغاز وارتقا ایک تعارف

فورٹ ولیم کالج، علی گڑھ تحریک، رومانوی تحریک، ترقی پسند تحریک

اصناف نثر کا مختصر تعارف

اصناف نظم کا مختصر تعارف

مجوزہ کتب:

اردو قواعد	شوکت سبزواری	قواعد اردو	مولوی عبدالحق
اردو املا	رشید حسن خان	املانامہ	رشید حسن خان
اردو زبان کا آغاز ارتقا	مرزا خلیل احمد بیگ	اردو میں بیان وبدیع کے مباحث	ڈاکٹر مزمل حسین
اردو ادب کی تحریکیں	ڈاکٹر انور سدید	اردو کی مختصر ترین تاریخ	سلیم اختر
اصناف ادب کی توضیحی لغت	وقار احمد میر	اصناف ادب	رفیع الدین ہاشمی
تاریخ اصناف نظم ونثر	اشرف کمال	اردو ادب میں جدیدیت کی تحریک	سعادت سعید

اختیاری(Elective) کورسز

کل کورسز: ۴

کل کریڈٹ آورز: ۱۲

نمبر شمار	کورس کوڈ	کورس ٹائٹل	نوعیت	کریڈٹ آورز
1	**5105**	شعری اصناف Shari Asnaaf	اختیاری	۳
2	**5205**	نثری اصناف:(Nasri Asnaaf	اختیاری	۳
3	**5305**	اردو زبان: آغاز وارتقاء Urdu Zuban: Aghaz-o-Irtaqa	Foundation(بنیادی)	۳
4	**5404**	قواعد و عروض Qawaid -o-Arooz	Foundation(بنیادی)	۳

(نصاب کی تفصیل)

شعری اصناف

۱۔ حمد: تعارف و تعریف (سراج اورنگ آبادی: کلیات سے انتخاب)

عجب قادر پاک کی ذات ہے۔۔۔ کہ سب ہے نفی اور وہ اثبات ہے

بجز ذات حق نہیں کسی کو بقا۔۔۔۔۔۔ وہی ہے بقاما سوا سب فنا

۲۔ نعت تعارف و تنقید

محسن کاکوروی تعارف و تنقید

کلیات سے انتخاب ۱۔ سخن کو رتبہ ملا ہے میری زباں کے لیے، ۲۔ مولا مرے عقدہ ہائے مشکل وا کر

۳۔ غزل: تعارف و تعریف (عہد غالب تک)

۱۔۳ ولی تعارف و تنقید

تیرا لب دیکھ حیواں یاد آوے

وہ صنم جب سوں بسا دیدۂ حیران میں آ

۳۔۲ میر تعارف و تنقید

کچھ موج ہوا پیچاں، اے میر، نظر آئی
الٹی ہو گئیں سب تدبیریں، کچھ نہ دوا نے کام کیا

۳۔۳ درد تعارف و تنقید

اپنی قسمت کے ہاتھوں داغ ہوں میں
ارض و سماں کہاں تیری وسعت کو پا سکے

۳۔۴ آتش تعارف و تنقید

دہن پر ہیں ان کے گماں کیسے کیسے
مری آنکھو کے آگے آئے گا کیا جوش میں دریا

۳۔۵ غالب تعارف و تنقید

دائم پڑا ہوا ترے در پہ نہیں ہوں میں
ظلمت کدے میں میرے شب غم کا جوش ہے

۳۔۶ حسرت موہانی تعارف و تنقید (روشن جمال یار سے ہے انجمن تمام)

۳۔۷ ناصر کاظمی تعارف و تنقید (پہلے پہر کا سناٹا تھا، تیرگی ختم ہوئی صبح کے آثار ہوئے)

۴۔ مثنوی تعارف و تنقید

۴۔۱ میر حسن تعارف و تنقید (سحر البیان سے اقتباس)

بند نمبر ۱		بند نمبر ۲
شتابی مجھے ساقیا دے شراب		گلوں کی طرح کھل رہے تھے جو دل
کہ یہ حال سن کر ہوا دل کباب		سو وہ سب خزاں سے ہوئے مضمل
نہ ہے وہ پلنگ اور نہ وہ ماہرو		کہا گو جدائی گوارہ نہیں
نہ وہ گل ہے رس جانہ وہ اس کی بو		و لیکن خدائی سے چارہ نہیں

۵۔ قصیدہ تعارف و تنقید

۵۔۱ سودا تعارف و تنقید

قصیدہ سے اقتباس (اٹھ گیا بہمن ودے کا چمنستاں سے عمل)

۶۔ پابند نظم تعارف و تنقید

۱۔۶ نظیر اکبر آبادی تعارف و تنقید (ہنس نامہ)

۲۔۶ فیض تعارف و تنقید (شہر یاراں)

۷۔ آزاد نظم تعارف و تنقید

۱۔۷ ن م راشد تعارف و تنقید (خوابِ آوارہ)

۲۔۷ مجید امجد تعارف و تنقید (شاخ چنار)

۸۔ گیت

۱۔۵۸ حفیظ جالندھری تعارف و تنقید (دو گیت) (پنساری کا گیت، جنگل کا شہزادہ)

۹۔ قطعہ تعارف و تنقید

۱۔۹ اکبر الہ آبادی تعارف و تنقید (تین قطعات)

چھوڑ لٹریچر کو اپنی ہسٹری کو بھول جا
قدیم وضع پہ قائم رہوں اگر اکبر
عشرتی گھر کی محبت کا مزا بھول گئے

۱۰۔ رباعی تعارف و تنقید

۱۔۱۰ جوش ملیح آبادی تعارف و تنقید (تین رباعیاں)

غنچے تیری زندگی پے دل ہلتا ہے
اے مرد خدا نفس کو اپنے پہچان
اے رونق لالہ زار واپس آجا

مجوزہ کتب:

غزل کی روایت اور ترقی پسند غزل	ممتاز الحق	اردو کی شاہکار غزلیں	خالد شریف
اردو غزل میں علامت نگاری	انیس اشفاق	معارف غزل	میر علی محمد معارف
اردو میں جدید شعری روایت	شاہینہ تبسم	اردو غزل کے کچھ اہم ستون	اظہار احمد
اردو غزل: ہندی اثرات	علی احمد جلیلی	مشرقی شعریات اور تنقید کی روایت	ابوالکلام قاسمی
معاصر اردو غزل	قمر رئیس	اردو کا پہلا شاعر پہلا مدون ولی دکنی	اویس احمد ادیب
ولی دکنی	گوپی چند نارنگ	ولی	نور الحسن ہاشمی
دکنی شاعری تحقیق و تنقید	محمد علی اثر	خواجہ میر درد تصوف اور شاعری	وحید اختر
خواجہ میر درد	ظہیر احمد صدیقی	خواجہ میر درد حیات و خدمات	سید رضا حیدر
میر تقی میر ادبی معرکے	محمد یعقوب	میتقی میر کی جمالیات	شکیل الرحمان
تذکرہ میر	میر تقی میر	میر تقی میر تنقیدی و تحقیقی جائزہ	پروفیسر نذیر احمد
مقدمہ کلام آتش	خلیل الرحمان اعظمی	ہندوستانی ادب کا معمار: خواجہ حیدر علی آتش	محمد ذاکر

مرزاغالب کی شاعری	مرزا محمد عسکری	مرزاغالب شخصیت اور شاعری	ابوالکلام قاسمی
یادگار غالب	مولانا الطاف حسین حالی	مرزاغالب قومی وعالمی تناظر میں	ڈاکٹر انعام الحق کوثر
اردو مثنوی شمالی ہند میں	ڈاکٹر گیان چند	جدید اردو مثنوی	ظفر انصاری ظفر
اردو مثنوی	فہمیدہ بیگم	اردو مثنوی کا ارتقا	سید محمد عقیل رضوی
اردو مثنوی کا ارتقا	عبدالقادر سروری	اردو قصیدہ نگاری	ام ہانی اشرف
قصیدہ کا فن اور اردو قصیدہ نگاری	ایم کمال الدین	اردو قصیدہ نگاری کا تنقیدی جائزہ	محمود الہی
اردو میں قسیدہ نگاری	ابو محمد سحر	اردو میں حمد و مناجات	سید یحیٰ نشیط
حسرت موہانی	عبدالشکور	کلیات محسن کاکوروی	محسن کاکوروی
حسرت موہانی	ایم حبیب خان	حسرت موہانی حیات وخدمات	شاہد ماہلی
کلیات حسرت موہانی	حسرت موہانی	فراق شاعری اور شخص	شمیم حنفی
شاعر ہندر گھوپتی سہائے فراق گھورکھپوری	فاروق ارگلی	ناصر کاظمی کی شاعری	حامد کشمیری
کلیات ناصر	ناصر کاظمی	وہ تیرا شاعر وہ تیرا ناصر	ڈاکٹر حسن رضوی
ناصر کاظمی حیات اور ادبی خدمات	ڈاکٹر ناصر پرویز	نظیر اکبر آبادی کے کلام کا تنقیدی مطالعہ	سیدہ طلعت حسین نقوی
کلیات نظیر اکبر آبادی	نظیر اکبر آبادی	آپ بیتی علامہ اقبال	ڈاکٹر خالد ندیم
علامہ اقبال حیات وخدمات	نعیم انیس	جواہر حالی	افتخار احمد صدیقی
مطالعہ حالی	وحید قریشی	تذکرہ حالی	محمد اسماعیل پانی پتی
علامہ اقبال حیات فکر وفن	سلیم اختر	فیض احمد فیض خصوصی مطالعہ	شفیق احمد اشرفی
فیض احمد فیض روایت وانفرادیت	نصرت چودھری	ن م راشد ایک مطالعہ	جمیل جالبی
کلیات مجید امجد	مجید امجد	ستیہ پال آنند کی نظم نگاری	ڈاکٹر اے عبداللہ
ابوالاثر حفیظ جالندھری کی شاعری کا تنقیدی مطالعہ	غلام مصطفیٰ	اشعار اکبر	سید حسن
اکبر الہ آبادی	افصح ظفر	جوش ملیح آبادی: انسان اور شاعر	سید احتشام حسین
جوش ملیح آبادی	فضل امام	جوش ملیح آبادی شخصیت وفن	ظفر محمود
کلیات اکبر	اکبر الہ آبادی	اصناف نظم ونثر	ڈاکٹر رفیع الدین ہاشمی

نثری اصناف

۱۔داستان ۲۔ناول ۳۔افسانہ ۴۔ڈرامہ ۵۔مکتوب نگاری ۶۔مضمون ۷۔آپ بیتی ۸۔خاکہ ۹۔سفر نامہ

۱۔ داستان تعارف و تنقید

۱۔۱ ملا وجہی تعارف و تنقید 'سب رس' سے اقتباس

آغاز دستان زبان ہندوستان۔۔۔۔ نقل ایک شہر تھا۔۔۔۔ تا کوہ رجہ نہ ہوتا

۱۔۲ میر امن تعارف و تنقید 'باغ و بہار' سے اقتباس (شروع قصے میں)

۲۔ ناول

۲۔۱ نذیر احمد تعارف و تنقید ('توبۃ النصوح' سے اقتباس، قلیم کی ٹوپی)

۲۔۲ رسوا تعارف و تنقید ('امراؤ جان ادا' کا آخری حصہ)

۲۔۳ شمس الرحمان فاروقی تعارف و تنقید ('کئی چاند تھے سر آسماں' کا آخری حصہ)

۳۔ افسانہ تعارف و تنقید

۳۔۱ سجاد حیدر تعارف و تنقید (ایک افسانہ) (حضرت دل کی ساونح عمری)

۳۔۲ پریم چند تعارف و تنقید (افسانہ: کفن)

۳۔۳ کرشن چندر تعارف و تنقید (۲ افسانے) (پشاور ایکسپریس)

۳۔۴ رشید امجد تعارف و تنقید (افسانہ:) (ایک نسل کا تماشا)

۴۔ ڈرامہ تعارف و تنقید

۴۔۱ آغا حشر کاشمیری تعارف و تنقید ('رستم و سہراب' کا آخری حصہ)

۵۔ مکتوب نگاری تعارف و تنقید

۵۔۱ غالب تعارف و تنقید دو خطوط بنام (منشی ہر گوپال تفتہ، اور میر سرفراز حسین)

۶۔ مضمون نگاری تعارف و تنقید

۶۔۱ سر سید تعارف و تنقید 'مقالات سر سید' سے انتخاب (سویلزیشن یعنی شائستگی اور تہذیب)

۶۔۲ محمد حسین آزاد تعارف و تنقید 'نیرنگ خیال' سے اقتباس (شہرت عام اور بقا دوام کا دربار)

۶۔۳ حالی تعارف و تنقید 'مقالات حالی' سے اقتباس (جب زمانہ بدلے تم بھی بدل جاؤ)

۶۔۴ شبلی تعارف و تنقید 'مقالات شبلی' سے اقتباس (اعجاز القرآن)

۷۔ آپ بیتی تعارف و تنقید

۷۔۱ قدرت اللہ شہاب 'شہاب نامہ' سے اقتباس (حصہ: رپورٹ پٹواری مفصل ہے)

۸۔ خاکہ تعارف و تنقید

۸۔۱ منٹو تعارف و تنقید 'گنجے فرشتے'

۳۹۔ سفر نامہ تعارف و تنقید

۹۔۱ ابن انشاء تعارف و تنقید 'آوارہ گرد کی ڈائری'

۹۔۲ یعقوب نظامی تعارف و تنقید 'اندلس۔۔۔ منزل بہ منزل'

مجوزہ کتب:

اردو داستان تحقیقی و تنقیدی مطالعہ	ڈاکٹر سہیل بخاری	اردو زبان اور فن داستان گوئی	کلیم الدین احمد
داستان ناول اور افسانہ	درادنہ قاسمی	سب رس	ملا وجہی
باغ و بہار	میر امن	سب رس کا تنقیدی جائزہ	ڈاکٹر منظر اعظمی
باغ و بہار ایک تجزیہ	وحید قریشی	اردو مکتوب نگاری	شاداب تبسم
غالب شاعر و مکتوب نگار	نورالحسن نقوی	مطالعہ خطوط غالب	عبدالقوی دسنوی
خطوط غالب تحقیقی مطالعہ	کاظم علی خاں	خطوط غالب	مالک رام
اردو معلی	مرزا غالب	عود ہندی	مرزا غالب
تعلیم مضمون نگاری اور انشا پردازی	سید امیر حسن	فن مضمون نگاری	فہیم الدین نوری
مضمون نگاری	اخلاق دہلوی	فن مضمون نگاری	آفتاب اظہر صدیقی
سر سید ایک تعارف	پروفیسر خلیق احمد نظامی	سر سید کی کہانی	ضیالدین لاہوری
سر سید کا آئینہ خانہ افکار	مولوی سید ابو لخیر	مقالات سر سید	سری سید احمد خان
مطالعہ آزاد	محمد اکزم چغتائی	جواہر حالی	افتخار احمد صدیقی
مطالعہ حالی	وحید قریشی	تذکرہ حالی	محمد اسماعیل پانی پتی
مولانا شبلی نعمانی	اسلم فرخی	مولانا شبلی نعمانی ایک مطالعہ	مفتون احمد
مولانا شبلی نعمانی پر ایک نظر	سید صباح الدین		
اردو میں آپ بیتی نگاری	انور احمد خان	آپ بیتی نمبر شمارہ ۷	صابر دت
شہاب نامہ	قدرت اللہ شہاب	اردو میں خاکہ نگاری	صابرہ سعید
گنجے فرشتے	سعادت حسن منٹو	آپ کا سعادت حسن منٹو	محمد اسلم پرویز
ابن انشاء	'آوارہ گرد کی ڈائری'	یعقوب نظامی	'اندلس۔۔۔ منزل بہ منزل'
ابن الوقت'	نذیر احمد	زاہد کلیم بہ حیثیت شاعر	ڈاکٹر میر یوسف میر

ڈپٹی نذیر احمد دہلوی کی کہانی	مرزا فرحت اللہ بیگ	مولوی نذیر احمد دہلوی: احوال و آثار	افتخار احمد صدیقی
مرزا ہادی رسوا	عزیز لکھنوی	شمس الرحمن فاروقی حایت نامہ	نجم فصلی
سجاد حیدر یلدرم	سید مبازر الدین رفعت	پریم چند کا تنقیدی مطالعہ	قمر رئیس
راجندر سنگھ بیدی ایک مطالعہ	وارث علوی	آغا حشر کاشمیری کے نمائندہ ڈرامے	انجمن آرا انجم
	اشید امجد		احمد ندیم قاسمی

اردو زبان: آغاز و ارتقاء

تمہیدی نکات:

۱۔ زبان کیا ہے؟ زبان اور بولی کا فرق

۲۔ برعظیم کی زبانوں کے خاندان اور اردو کا خاندان

اساسی نکات:

۳۔ اردو کے مختلف نام اور ان کی وجہ تسمیہ

۴۔ اردو زبان کی تشکیل کے نظریات: ایک تعارف

۵۔ ایہام گوئی

۶۔ فورٹ ولیم کالج

۷۔ تحریک علی گڑھ

۸۔ رومانوی تحریک

مجوزہ کتب:

زبان کیا ہے؟	خلیل صدیقی	آب حیات	محمد حسین آزاد (مرتب: ابرار عبدالسلام)
ادب و لسانیات	ڈاکٹر ابواللیث صدیقی	پنجاب میں اردو	حافظ محمود شیرانی
مقالات شیرانی (جلد چہارم)	حافظ محمود شیرانی (مرتب: مظہر محمود سیرانی)	سندھ میں اردو	مقالات راشدی
تاریخ ادب اردو	ڈاکٹر جمیل جالبی	اردو کا ابتدائی زمانہ	شمس الرحمان فاروقی
دکن میں اردو	نصیر الدین ہاشمی	سندھ میں اردو	شاہدہ بیگم

اردو زبان کا ارتقا	ڈاکٹر شوکت سبزواری	اردو کی ابتدائی نشوونما میں صوفیائے کرام کا حصہ	مولوی عبدالحق

اردو قواعد و عروض

۱۔ کلمہ

۱۔۱ اسم اور اس کی اقسام

۱۔۲ فعل اور اس کی اقسام

۱۔۳ ترکیب نحوی

۲۔ تلفظ:

حروف ہجا کی صحیح آوازیں، صحیح اعراب، حروف شمسی و قمری کا لحاظ، صحیح ہجے

۳۔ لفظ کی ساخت اور استعمال:

الفاظ کی ترکیبی ساخت، مرکبات ناقصہ

(سابقے، لاحقے، اضافی، توصیفی، عددی، عطفی، امتزاجی، ظرفی، اشاری، جاری، حالی، تاکیدی، تمیزی، تابع موضوع، تابع مہمل)

۴۔ مرکبات تام:

بلحاظ ساخت (سادہ جملہ۔ مرکب جملہ)، بلحاظ معنی (خبریہ، انشائیہ)

بلحاظ نوعیت فعل (جملہ اسمیہ، جملہ فعلیہ)

امالہ (مفرد و مرکب الفاظ میں)، فعل و فاعل، فعل و مفعول، فعل و مبتدا کی مطابقت

۵۔ حروف کا استعمال:

حروف ربط، حروف عطف، حروف اختصاص، فجائیہ، استفہامیہ، اردو املا

۷۔ اردو رسم الخط کا تعارف اور اعراب یا علامتوں کا نظام:

حروف علت کی علامتیں۔ مد کی علامت، تشدید کی علامت، ہمزہ کا استعمال، ھ کا استعمال

'ھ' اور 'ہ' میں فرق، غنہ کا استعمال، الف بالکسرہ کا استعمال، انگریزی اور ہندی الفاظ کا املا

۸۔ علم بیان

تشبیہ، استعارہ، مجاز مرسل، کنایہ

۹۔ بدیع

۱۰۔ علم عروض

اصطلاحات عروض (سبب، وتد، ضحافات وغیرہ)

۱۱۔ تقطیع کے اصول

.... چار بحریں (بحر متقارب مثمن سالم، بحر ہزج مثمن سالم، بحر رمل مثمن محذوف و مقصور، بحر رجز مثمن سالم)

مجوزہ کتب:

قواعد اردو	مولوی عبد الحق	اردو قواعد و املا کے بنیادی اصول	ڈاکٹر محمد آفتاب احمد
اردو لسانیات	ڈاکٹر شوکت سبزواری	اردو املا اور رسم الخط	ڈاکٹر فرمان فتحپوری
زبان و بیان	وارث سرہندی	اردو املا	گوپی چند نارنگ
آواز شناسی	خلیل صدیقی	جامع القواعد۔ اول	ڈاکٹر ابو اللیث صدیقی
اردو املا	رشید حسن خاں	اردو قواعد	ڈاکٹر شوکت سبزواری
مصباح القواعد	فتح محمد جالندھری	نئ قواعد	عصمت جاوید
فرہنگ تلفظ	شان الحق حقی	اردو ادب میں بیان و بدیع کے مباحث	ڈاکٹر مزمل حسین
اردو کا نیا عروض	پروفیسر حبیب اللہ غضنفر	اقبال کے صنائع بدائع	پروفیسر نذیر احمد
البدیع	سید عابد علی عابد	البیان	سید عابد علی عابد
بحر الفصاحت	نجم الغنی رام پوری (مرتب: سید قدرت نقوی)	تسہیل البلاغت	مرزا سجاد بیگ
تفہیم العروض	ڈاکٹر جمال الدین جمال	حدائق البلاغت	شمس الدین فقیر (مترجم: امام بخش صہبائی)
درس بلاغت	ترقی اردو بیورو، نئ دہلی (مرتب)	اردو کا اپنا عروض	ڈاکٹر گیان چند
زبان اور قواعد	رشید حسن خاں	قواعد العروض	قدر بلگرامی
لسانی و عروضی مقالات	جابر علی سید	معیار البلاغت	دیبی پرشاد سحر بدایونی

Course Contents History

1. Introduction to History
Course Code: (HST-5104)
Cr. Hrs. 03

Course Description:

The teaching of history as a subject helps students to examine and discuss the various ways in which historians have attempted to understand and analyzed the past. History as a subject enables the students to learn the scientific and artistic values of history.

Objectives:

- To understand various approaches to the study the past;
- Enable the students to develop a good historical question, one that is limited, interpretive, and in some sense original.
- This course enables the students to read, critically analyze, and write about historical documents and record and planning for future.

COURSE CONTENTS

1. What is history?
2. Concept of History
3. Nature and scope of history
4. Benefits of history
5. History – a Science or an Art
6. Arguments against History as a science
7. History is both a Science and an Art
8. History as a corrective force
9. History as a repetitive force
10. Value of teaching history
11. Branches of history (political, cultural, social, economic, intellectual and art history, history of science etc.)
12. Relationship of history with other disciplines
13. Approaches to Study History
14. Kinds of history
15. Narrative history,
16. Scientific history,
17. Philosophy of history,
18. Future of history;
19. Scope of History
20. History as subject for future planning.

Teaching Methodology:

- Student-centered teaching through communicative approach
- Situational learning through lectures, classroom activities, and practice sessions
- Multimedia-based lectures
- Computer-facilitated lessons and strategies

- Classroom dynamics through maximization of interactive learning
- Field visits to incorporate hands-on experience Lecturing
- Written Assignments

Recommended books:

1. Carr, Edward H. "What is History? Harmonds worth." (1987).
2. Collingwood, R. G., the Idea of History, Oxford: Oxford University Press, 1978.
3. Muttahari, Murtaza, Society and History, Tr. (Urdu) Mahliqa Qarae. Tehran, 1985.
4. Gorvranski, History Meaning and Methods, USA, 1969.
5. Muttahari, Murtaza, Society and History, Tr. (Urdu) Mahliqa Qarae. Tehran, 1985.
6. Collingwood, R. G. The Idea of History, Oxford: Oxford University Press, 1978.

2. Islamic History (Pre-Prophet [PBUH] to the Pious Caliphate)

Course Code (HST-5204) Cr. Hrs. 03

Course Description: This course is designed to impart knowledge to the students about peaceful socio-political and religious revolution brought by Islam under the leadership of Prophet Muhammad (PBUH). For the settings of the historical context to study the rise of Islam in Arab, it will discuss the political, social and religious conditions of pre-Islamic Arabia. The life and teachings of the Prophet (PBUH) and the gradual dominance of Islam on the political and religious map of Arabian Peninsula will be discussed. Further, this course unfold the Administrative, financial and judicial systems under the Pious Caliphs, Status of the Dhimmis and the Mawalis, social life of the Muslims, and an overview of the Khalifat-i-Rashida.

Objectives:

- To learn about the political, social and religious conditions of pre-Islamic society in Arab.
- To understand the foundation of Islamic State and rise of Islam
- The students will be acquainted with overall political, religious and social conditions during the early phase of Islam.
- To learn about administrative, financial and judicial system during the time of pious caliphs.
- **Course Contents:**

Pre-Islamic Arabia

Geographical, Socio-Economic and Religious conditions of Pre Islamic Arabia, Arabia before the Birth of Prophet Muhammad (PBUH)

- Social, Economic and Religious Life of Pre-Islamic Arabia
- Life and Achievements of the Holy Prophet (PBUH)
- Life and Services of Abu Bakar (RA)
- Life and Achievements of Umar Bin Khattab (RA)
- Life and Services of Usman Bin Affan (RA)
- Life and Achievements of Ali Bin Abi Talib (RA) and HST Relations with Amir Muawiyyah
- Emergence of the Kharajites

Administration and Structure of Government under the Pious Caliphs

- Concept of Islamic State
- Administrative, financial and judicial systems under the Pious Caliphs, Status of the Dhimmis and the Mawalis,
- Social life of the Muslims, and an overview of the Khalifat-i-Rashida.

Readings:

1. Abdul Hakim, Khalifah, the Prophet and his Message, Lahore: Institute of Islamic Culture, 1972.
2. Ali, Syed Ameer, and History of the Saracens, Lahore: Sang-i- Meel Publishers, 1985.
3. Ali, Syed Ameer, and The Spirit of Islam, Lahore: Sang-i- Meel Publishers, 1985.
4. Haq, Mazhur-ul, a short History of Islam, Lahore: Bookland, 1977.
5. Hamidullah, Muhammad, the Muslim Conduct of State, Lahore: 1977.
6. Hitti, Philip K., History of the Arabs, London, 1974.
7. Ibn-i-Hisham, Sirat-un-Nabi Kamil, tr. Abdul Jalil Siddiqi, Lahore, 1979.
8. Ibn Jarir, Abi Jaffar Muhammad, Tarikh-i-Tibri, tr. Muhammad Ibrahim Nadwi, Karachi, 1982.
9. Ibn-i-Ishaq, Sirat-ul-Nabi,
10. Lings, Martin, and Muhammad: HST Life based on the earliest sources, Lahore, 1983.
11. Lings, Martin. The Caliphate, Its Rise, Decline and fall. Beirut, 1963.
12. Nadwi, Shah Moin-ud-Din Ahmad .Tarikh-i-Islam. Vol. I, Islamabad, 1975.
13. Nu'mani Shibli, Sirat al-Nabi. Lahore, Vol. I, 1975.
14. Shah, Pir Muhammad Karam, Ziaul Nabi, 7 Vols. Lahore: Ziaul Quran Publications. n. d.
15. Siddiqui, Abdul Hameed, The Life of Muhammad (SAW), Lahore, 1981.
16. Siddiqi, Amir Hassan, the Origin and Development of Muslim Institutions, Karachi: 1969.
17. Siddiqui, Mazharuddin, Development of Islamic State and Society, Lahore, 1956. 22
18. Siddiqui, Naeem, Muhsin i Insaniat,
19. Watt, Montgomery, Muhammad at Mecca, Karachi, 1969.
20. Watt, Montgomery. Muhammad at Madina, Karachi,

تاریخ اسلام	محمد خالد اسماعیل
تاریخ اسلام	امتیاز پراچہ
تاریخ اسلام	مولانا معین الدین ندوی
اسلامیات	پروفیسر ڈاکٹر محمد خلیل
خلفائے راشدین	مولانا حسین الدین ندوی
تاریخ اسلام (عہد نبوی تا خلفائے راشدین	مرتب ڈاکٹر محمد سجاد – علامہ اقبال اوپن یونیورسٹی
تاریخ اسلام (دور نبوی ﷺ تا عہد حاضر	مرتب ڈاکٹر محمد سجاد

3. HISTORY OF UMAYYAD'S & ABBASID'S
HST-5304
Course Code Cr. Hrs. 03

Description:

The period of Umayyad's and Abbasid dynasty is the classical period of Islamic History. After the end of Pious Caliphate, they laid the foundations of intellectual and cultural effervescence of Islamic civilization. Besides studying cultural and intellectual currents of the period, this course also deals with the administrative setup and political ideals of the ruling families.

Objectives

- Understand the transformation from Khilafat-e-Rashida to autocratic / monarchical system of government.
- Comprehend the administrative setup and expansionist policies pursued by the Umayyads & Abbasides.
- Appreciate the religious-political trends and cultural and intellectual developments of the period.

Course Contents:

Section A: Umayyad's (661-750 AD):

1. Amir Muawiyah (661-680 AD)

Foundation of Umayyad Rule. Transition in the system of Caliphate, character and achievements.

2. Yazid bin Muawiya (680-683 AD)

Character of Yazid. Conflict with Hazrat Imam Hussain, Tragedy of Karbala: its effects and significance in the History of Islam.

3. Marwan bin Hakam (683-685 AD)

Accession of Marwan, Battle of Marj-e-Rahat, Consolidation of his rule, character and policies.

4. Abdul Malik bin Marwan (685-705 AD)

Abdul Malik as the real founder of Umayyad Dynasty. His administrative policies and reforms, Vocalization of Quran.

5. Waleed bin Abdul Malik (705-715 AD)

His accession and expansion of Umayyad Empire in Asia, Africa and Europe, Administrative policies.

6. Sulaiman bin Abdul Malik (715-717 AD)

His policy towards renowned Muslim Generals, Siege of Constantinople.

7. Umar bin Abdul Aziz (717-720 AD)

Revival of the policies of 'Pious Caliphate', Administrative, Economic and Religious reforms, character and achievements.

8. Yazid-II (720-724 AD) His Life and rule.

9. Hisham (724-749 AD) Important events, and issues, the Alvi and Abbasid Movement

10. Downfall of Umayyad's Causes of the fall of Umayyad's

Section B: The Abbasids (750-1258 AD)

1. Establishment of Abbasid Caliphate, Fall of the Umayyads and establishment of Abbasid Caliphate

2. Abu-al-Abbas Abdullah al-Saffah (749-754 AD) the Khilafat of Abu-al Abbas Abdullah Al-Saffah. As founder of Abbaside Dynasty.

3. Abu Jafar Al-Mansur (754-775 AD) Revolt of Abdullah ibn Ali. Consolidation of Abbasid caliphate, Foundation of Baghdad. Political Turmoil in Khurasan. African Rebellion. Roman inroads. Administration of Abu Jafar Al-Mansur, reforms and character.

4. Al-Mahdi (775-785 AD) Appearance of Muqanna in Khorasan. Byzantinian inroads. The Zindiqiya Movement.

5. Al-Hadi (785-786 AD).

6. Haroon al-Rasheed (786-809 AD) HST accession, the Barmakids, their rise and fall. Affairs in Africa, Nomination of Ameen and Mamoon as successors to the Caliphate, War with the Byzantinians, Role of Queen Zubaydah, Haroon's character and achievements.
7. Mamoon al- Rasheed (813-833 AD) War of succession between Ameen and Mamoon. Disorder in Baghdad.
War with the Byzantines. Religious Policy. Intellectual Activities. Role of the Turks.
8. Al. Muatasim and Almutwakal Rise of Turks, paramount Influence of Muatazilites,
9. Later Abbasids (847-1258 AD) Political development. Social structure under the Abbasids. Intellectual and cultural achievements under the Abbasids. Contribution to Sciences and philosophy.

Suggested Readings:

1. Ibn-i Athir, Tarikh Al-Kamil, Vol. V, part-l, tr. Abul Khair Maududi, Hyderabad (Deccan) 1938.
2. Mir Khwan, Rawzat-us Safa, Lucknow, Nawal Kishore Press, 1938.
3. Moinuddin, Shah, Tarikh-e-lslam, Vols. lll-IV, Azamgarh, Latest Edition.
4. Muir, William, the Caliphate, Its Rise, Decline and fall, Beirut, 1961.
5. Nicholson, R. A., Literary History of the Arabs, Cambridge, 1953.
6. Numani, Shibli, Al-Mamun, Lahore, Latest Edition.
7. Siddiqui, A. H., Caliphate and Kingship in Medieval Persia, Karachi 1962 (Urdu trans. Khilafat wa Saltanat, Karachi 1962.
8. Siddiqui, Mazharuddin, Development of Islamic State and Society, Lahore, 1956. 9. Shustery A. M. A., Outline of Islamic Culture, Latest Edition.
10. Tabari, Tarikh-ul Umam Wal-Muluk, Egypt, 1939 (Urdu Trans.) Vol. III, Parts I, II, III & IV by Muhammad Ibrahim, Hyderabad (Deccan), 1932, 1953, 1940.
11. The Cambridge History of Islam Eds. P. M. Holt, Ann K. S. Lambton and Bernard Lewis, Cambridge: Cambridge University Press, 1970.
12. Umar, Abu Nasr Al-Haroon, tr. Sh. Muhammad Ahmed Panipati, Lahore, 1955.

تاریخ اسلام	محمد خالد اسماعیل
تاریخ اسلام	امتیاز پراچہ
تاریخ اسلام	مولانا معین الدین ندوی
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تاریخ اسلام (دور نبوی ﷺ تا عہد حاضر	مرتب ڈاکٹر محمد سجاد

4. Muslim Rule in South Asia (712-1526)

Course Code (HST-5403) **Cr. Hrs. 03**

Description:

The course deals with the foundation of Muslim rule and the political and administrative developments in the Delhi Sultanate. The course also focuses on the political theories of the Sultan, coupled with their administrative styles and socio-religious ideas.

Objectives:

- To understand the motives of Arab conquest of subcontinent and its impacts on socio-political and cultural life of the people;
- Understand the nature and of politics and administration and state conduct of the Delhi Sultans;
- Know the development of state and society under the kingship of Sultans and its impact on multicultural society of subcontinent.

Course Contents:

Early Muslims and Arab Rule in the Subcontinent

- Early settlement of Muslim in the subcontinent.
- Geographical, political, social, religious and economic conditions of South Asia; its relation with neighboring regions.
- Causes of Arab Invasion of Sindh.
- Muhammad bin Qasim and his conquests in Sindh and Gujrat.
- Arab administration in the conquered territories.
- Impacts of Arab conquest on political, cultural, religious and economic life of societies in the subcontinent.

Ghaznavids and Ghaurid Rule in Indian Subcontinent.

- Sultan Mahmud of Ghaznah (997-1030 AD)
- Causes of his campaign and success in India
- Ghaznavids significance and impact.
- Ghaznavids at Lahore Successors of Sultan Mahmud of Ghaznah,
- Causes of downfall of Ghaznavids.
- Ghaurid Rule, Sultan Shahabuddin Muhammad of Ghur (1175-1206 AD).
- Impacts Ghaurid Rule in Indian Subcontinent.

Establishment and Consolidation Dynasty of Ilbari Turks

- Sultan Qutbuddin Aibak (1206-1210 AD)

•Sultan Shamsuddin Iltutmish (1211-1236 AD), early difficulties and achievements as the real founder of Sultanate, relations with the Caliphate, Administration of the Sultanate.

- Sultan Razia (1236-1239 AD) and her reign and Successors of Sultan Razia)
- Sultan Nasiruddin Mahmud (1246-1266 AD) and his reign
- Sultan Ghiasuddin Balban (1266-1286 AD), theory of kingship, consolidation of Sultanate, Mongol Policy, and his successors. • Slave system as a source of weakness and strength.

Khilji Dynasty (1290-1320 AD)

• Significance of Khilji Revolution • Jalal-ud-Din Feroze (1290-1296 A.D.) • Sultan Feroze Khilji and HST character • Sultan Alauddin Khilji (1296-1316 A.D), his reforms and economic policy, conquests, Deccan Policy, Malik Kafur • Successors of Alauddin (1316-1320 A.D)

Tughluq Dynasty (1320-1412 AD)

• Ghiasuddin Tuglhuq (1320-1325 A.D), HST administration and character • Sultan Muhammad bin Tughluq (1325-1351 A.D), HST character and personality, his plans and their failure, outbreak of rebellions, Deccan policy.

•Sultan Feroze Shah Tughluq, administrative reforms and military expeditions, public works, and religious policy.

• Amir Timur's Invasion (1398 AD) and the end of Tughluq Dynasty

•. Sayyid Dynasty (1414-1451 AD) Sultan Khizar Khan, character and achievements. Successors of Khizar Khan.

Lodhi Dynasty (1451-1526 AD)

Sultan Sikandar Lodhi, HST administration and religious policies. Sultan Ibrahim Lodhi and end of Delhi Sultanate.

• Contemporary Independent Kingdoms Kingdoms in Deccan (Bahmani and Vijianagar Kingdoms), Kingdoms in Sindh and Kashmir

• Causes of the downfall of Sultanate

State, Society, Economy and Culture under Delhi Sultanate.

•Administration of Delhi Sultanate Central and provincial departments, Army, Land revenue system and judiciary. •Social and Cultural Developments under the Sultans of Delhi • Historiography, literature, education, art and culture. Amir Khusru and his contribution. • Architecture, main characteristics of Indo-Muslim architecture, important buildings of the period. • Social and economic conditions. • Religious Trends during the Sultanate Era. • Role of Ulema, Role of Sufis and Sufi orders, Bhagti Movement, its origin and impact.

Historiography in the Sultanate Era

Suggested Readings:

1. Abdur Rasul, Sahibzada, Tarikh-i-Pako-Hind, (Urdu) Lahore, 1962

.2. Ahmad, Muhammad Aziz. Political History and Institutions of the Early Turkish Empire of Delhi (1206-1290). Lahore: Research Society of Pakistan, 1987.

3. Awan, Maj. Rtd. Muhammad Tariq, a History of India and Pakistan, Vol. I. Lahore: Firoz Sons Ltd. 1991.

4. Habibullah, A. B. M. The Foundation of Muslim Rule in India: A History of the Establishment and Progress of the Turkish Sultanate of Delhi: 1206- 1290 A.D. 2. Ed. Allahabad: Central Book Depot, 1961.

5. Ikram, S.M., History of Muslim Civilization in India and Pakistan. 3rd Ed. Lahore: Institute of Islamic Culture, 1982.

6. Ikram, S. M., History of Muslim Rule in South Asia, Latest Edition.

7. Jackson, Peter, the Delhi Sultanate: A Political and Military History. Cambridge: Cambridge University Press, 1999.

8. Prasad, Ishwari, A short History of Muslim Rule in India, Lahore: Aziz Publishers, 1986.

9. Lal, Kishori Saran. History of the Khiljis A.D. 1290-1320. Karachi: Union Book Stall, n.d., rpt., first published 1950.

10. Lane-Poole, Stanley. Mediaeval India under Muhammedan Rule (A.D. 712-1764). Lahore: Sang-e-Meel, Publications, 1997 rpt., first published 1903.

11. Mubarakpuri, Qazi Athar,Hindustan mein Arabon ki Hakomatēin. Delhi: Nadwat al-Musannifin, 1967.

12. Markovitz, Claude, edit, A History of Modern India: (1480-1950), London:Antem Press, 2002.

13. Muslim in India (712-1526), Composed by Khalil Ahmed Rana, Allama Iqbal Open University Press Islamabad, 2013.

Urdu Books.

1. Muhammad Bin Qasim Se Aurangzeb Tak written by Muhammad Sayedul Haque
2. Mubarakpuri, Qazi Athar, 'Arab wa Hind 'Ahd-i Risalat mēn. Delhi: Nadwat al-Musannifin, 1965.

COURSE CONTENTS KASHMIR STUDIES

Introduction to Kashmir Studies
Course Code- (KAS-5402)
Cr. Hrs. 03

Course Description:
This course is designed to enable the students to learn about the geography, history, politics, and socio-cultural heritage of Kashmir. This course also focuses on introducing the economic resources, tourism and cultural development in Kashmir and more importantly, this course will help the students to know about genesis of Kashmir issue and to highlight the potential threats of this issue for durable peace in region.

Objectives:

- To impart the knowledge about the multicultural historical legacy, religious and cultural heritage.
- Enable the students to learn about the socio-political activism, genesis of Kashmir issue, freedom movement and its importance for larger interests of Pakistan and Kashmiris.

Upon successful completion of this course, the students will be able to:

- Learning outcome 1. After studying this course, the students will be able to understand the political and cultural history of Kashmir;
- Learning outcome 2, the students will learn about economic resources and their significance for human resource development;
- Learning outcome 3, this course will enable the students to understand the genesis of Kashmir dispute and significance of liberation movement;

Course Contents:

Geographic and Administrative Profile of divided State of Jammu & Kashmir

a. Content 1a, Geographic and Administrative Profile of Azad Jammu & Kashmir and Gilgit Baltistan.
b. Content 1b, Geographic and Administrative Profile of Indian Occupied Jammu and Kashmir.
c. Geographic and Administrative Profile of Indian Occupied Jammu and Kashmir,
d. Content 1c, Current Political Status of divided regions of disputed state of Jammu and Kashmir,

Sources of Kashmir History:

a. Famous ancient and Medieval historians
b. Famous books on ancient and Medieval history of Kashmir

Ancient Ruling Dynasties in Kashmir

a. Earlier inhabitants and Introduction to ancient ruling dynasties up to 1320 (selective Famous Ancient Rulers)
b. Introduction to ancient Religions of Kashmir,
c. Rise and fall of Buddhism in Kashmir
d. Causes for decline of Hindu Rule in Kashmir

Muslim Rule in Kashmir

a. Advent of Islam in Kashmir
b. First Muslim Rule in Kashmir (1320-23)

Shah Miri Dynasty

a) Rise of Muslims in Kashmir
b) Shahmir and his successors
c) Zainul-ul-Abidin
d) Successors of Zainulabidin

e) Rule and development of Kashmir

Development of Art and Culture during Shahmiri dynasty

a- Development of Art and Culture during Shahmiri dynasty
b- Development of Industries
c- Causes for the decline of Shahmiri dynasty

Role of Sufi Saints for spread of Islam in Kashmir

a. Role of Shah Hamdan for spread of Islam in Kashmir
b. Role of Shah other Saints for spread of Islam in Kashmir
c. Development of Islamic Culture in Kashmir and role of Sufi Saints

Chak Rule in Kashmir

a- Causes for decline of Chak Rule in Kashmir and Mughals' occupation of Kashmir
b- Ruling Era of Mughals and governing methods
c- Condition of Kashmir during Mughal Era
d- Causes for decline of Mughal Rule in Kashmir

Kashmir under Afghans

a) Ruling Era of Afghans and governing methods
b) Condition of Kashmir during Mughal Era
c) Causes for decline of Afghan Rule in Kashmir

Occupation of Kashmir by Sikhs

a. Ruling Era of Sikhs and governing methods
b. Condition of Kashmiris during Sikh Rule
c. Rise of Dogras' Treaty of Lahore and Treaty of Amritsar

Kashmir under Dogra rule in Kashmir

a. Successors of Gulab Singh in Kashmir
b. Condition of Kashmiris during Dogra Rule, Muslim Subjects of Kashmir and Dogra rulers and Resistance movements in Kashmir during Dogra Rule

Jammu and Kashmir in after 1947

a. Indian occupation
b. Kashmir issue: genesis
c. Kashmir issue in the United Nations
d. Human rights violations in Indian Occupied Kashmir

Economic Resources of Jammu and Kashmir

Cultural Heritages of Kashmir,

Languages Spoken in Kashmir

Teaching Methodology:

- Lecturing
- Written Assignments
- Guest Speakers

Recommended Books:

1. Kalhana Pandit.(1991),Rajatarangint, Mirpur Verinag Publishers AJ& K
2. GMD Sufi (1962), Kashir, Lahore: University of Punjab
3. Somnath Dhar. Jammu & Kashmir. India: National Book Trust, 2013.
4. Ram Chandra Kak. Ancient Monuments in Kashmir. London: 1993.
5. Dr. S.C. Ray Early History and Cultural of Kashmir. New Dehli: 1969.
6. Dr. A.N. Rania. Geography & Jammu & Kashmir. New Dehli 1972.
7. Walter Lawrence. The Valley of Kashmir. London 1895.
8. G.M Rabani. Kashmir Social and Cultural History: Srinagar Gulshan Books 2007.
9. Muhammad Yusuf Saraf, Kashmiris Fight for Freedom,

10. Majid Husain, Geography of Jammu and Kashmir, Ali Muhammad Srinagar 2004.
11. Kapoor, M. L., Studies in History and Culture of Kashmir, Jammu, 1976.
12. GMD Sufi, Islamic Culture in Kashmir, Ali Muhammad Sons, Srinagar
13. Faiz-ur-Rehman. The State of Jammu & Kashmir at a Glance, United Printers Islamabad, 2019.
14. Christopher Snedden, the Untold Story of the People of Azad Kashmir, Oxford University Press.
15. Javed Hayat, Azad Kashmir: Polity, Politics and Power Sharing, Oxford University Press.

COURSE CONTENTS POLITICAL SCIENCE

1. Political Science-I

Course Code	Cr. Hrs.
(POL-5106)	03

Course Description:

The course provides an early conceptual exercise to students in Political Science. The course begins with the elementary discussion of what political science and what is the scope of the subject and its core concepts. The following contents will enable the students to learn about the origin and main objectives of political science as subject, the idea of government and its organization and operations.

Objectives:

- To introduce the students with the fundamentals of political science;
- Prepare the students for advanced studies in the forthcoming semesters;
- Enable the students to understand the basic concepts and terminology commonly used in political science with aims to make this subject as friendly and popular;

Contents:

- Definition, Nature and Scope of Political Science
- Sub-fields of Political Science.
- Relationship of Political Science with other social sciences.
- Approaches to the study of Political Science:
- Traditional approaches
- Modern approaches.
- State: its origin and evolution and organs;
- Western concepts of State,
- Islamic Concept of Welfare State
- Nation and Sovereignty.
- Basic concepts of Political Science: Power, Authority, Legitimacy
- Organs of Government
- Legislature,
  Executive,
- Judiciary.

Teaching Methodology:

- Lecturing
- Written Assignments
- Guest Speakers
- Field Visits/Study Tours

Recommended Readings:

1. Ahmad, Sheikh Bashir. Riyasat Jo Ilm (Sindhi meaning Science of State). Jamshoro Institute of Sindhalogy, University of Sindh, 1985.
2. Mazher ul Haq. Theory and Practice in Political Science. Lahore: Bookland, 1996.
3. Ian Mackenzi (Ed.). Political Concepts: A Reader and Guide. Edinburgh, University Press, 2005.
4. Mohammad Sarwar, Introduction to Political Science, Lahore: Ilmi Kutub Khana, 1996.
5. R. C. Agarwal, Political Theory (Principles of Pol. Science). New Delhi: S. Chand & Co., 2006.
6. Robert Jackson and Dorreen Jackson, A Comparative Introduction to Political Science, New Jersey, Prentice – Hall, 1997.

7. Rodee Anderson etc. Introduction to Political Science. Islamabad: National Book Foundation, Latest Edition.
8. Roskin, Michael G. Political Science: An Introduction. London: Prentice Hall, 1997.
9. Shafi, Choudhry Ahmad. Usul-e-Siyasiat (Urdu). Lahore Standard Book Depot, 1996.
10. V. D. Mahajan. Political Theory- Principles of Political Science. New Delhi: S. Chand & Co., 2006.

معارف سیاسیات	پروفیسر محمد سرور
اصول سیاسیات	پروفیسر آفتاب احمد
اصول سیاسیات	ڈاکٹر محمد ہاشم
سیاسیات	محمد سمیع طاہر

2. Political Science –II

SEMESTER-II

Course Code POL-5206 **Cr. Hrs. 03**

Course Description:

This course is the continuation of Political Science-I. It mainly emphasizes on the functional aspects of the politics in a society. This course enabled the students to understand the various forms of state and government, functioning of the political system and study its various components and actors influencing this functioning.

Objectives

- To equip the knowledge about the structures and various forms of states;
- To enabled the students to understand the various forms of governments
- To impart the knowledge on political ideologies, political parties, elections,

Contents:

1. Definition, Kinds of States, Unitary, Federation, Confederation,
2. Democracy; Kinds, Characteristics, Western Concept of Democracy, Islamic concept of democracy.
3. Authoritarian, definition, kinds, merits and demerits,
4. Presidential System, Merits and demerits, Dictatorship, definition, kinds, merits and demerits.
5. Constitution:
6. Definition, sources, kinds and amendments.
7. Laws, duties and responsibilities of citizens.
8. Political System:
9. Definition, Characteristics and Functions
10. Political Parties:
11. Kinds, Structures, Functions,
12. Interest Groups: Kinds, Functions, Relationship with Political Parties.
13. Public Opinion: Definition, Formulation, Assessment.
14. Electoral Process: Mechanism, Kinds of representation, requirements of impartial elections.
15. Political Ideologies: Liberalism, Fascism, Nazism, Socialism, Marxism, Nationalism.

Teaching Methodology:

- Lecturing
- Written Assignments
- Guest Speakers
- Field Visits/Study Tours

Recommended Books:

1. Choudhry Ahmad Shafi, Usul-e-Siyasiat (Urdu), Lahore Standard Book Depot, 1996.

2. Ian Mackenzi (Ed.), Political Concepts: A Reader and Guide, Edinburgh, University Press, 2005.
3. Mazher ul Haq, Theory and Practice in Political Science, Lahore Bookland, 1996.
4. Michael G. Roskin, Political Science: An Introduction, London: Prentice Hall, 1997.
5. Mohammad Sarwar, Introduction to Political Science, Lahore Ilmi Kutub Khana, 1996.
6. R. C. Agarwal, Political Theory (Principles of Pol. Science), New Delhi, S. Chand & Co., 2006.
7. Robert Jackson and Doreen Jackson, A Comparative Introduction to Political Science (New Jersey, Prentice
8. Rodee Anderson etc. Introduction to Political Science, Islamabad, National Book Foundation, Latest Edition.
9. Sheikh Bashir Ahmad, Riyasat Jo Ilm (Sindhi meaning Science of State), Jamshoro, Institute of Sindhalogy, University of Sindh, 1985.
10. V. D. Mahajan, Political Theory (Principles of Pol. Science), New Delhi, S. Chand & Co., 2006.

معارف سیاسیات	پروفیسر محمد سرور
اصول سیاسیات	پروفیسر آفتاب احمد
اصول سیاسیات	ڈاکٹر محمد ہاشم
سیاسیات	محمد سمیع طاہر

3. **Political Systems of Developed Countries (UK and USA)**

Course Code (POL-5306) **Cr. Hrs. 03**

Course Description:
This course aims to enable the students to understand the political system of two countries UK and USA and the following topics shall be studied to learn about the political system of two countries. Moreover, course is designed to give an understanding to the students about the functioning of the developed political systems and their structure. In this course efforts are made to cover the various aspects of Political Systems of UK and USA.

Objectives:

- To enable the students to understand the nature and functions of developed political systems of the world;
- to help the students to make comparative study and analysis of both the political systems;

Contents:

Political System of UK

- Historical background of political System of UK
- Evaluation of British Constitutional/legal foundations of the system, Traditions and role, important traditions.
- Characteristics of British Constitution
- Political process and political recruitment;
- Political parties, characteristics and role,
- British Queen/King, role and Powers, Prime Minister, role and powers
- British Cabinet role and powers, Speakers power and role
- Functioning of the organs of the government: legislature, executive and judiciary
- Political culture

- Pressure groups
- Political environmental factors influencing the politics such as geographic,
- Socio-economic, international scenario, media etc.

Political System of United States

- Historical background of political System of US
- Constitutional/legal foundations of the system;
- Political process and political recruitment;
- American Federation
- President of US and Powers
- Political culture
- Political parties, elections and pressure groups.
- Functioning of the organs of the government: legislature, executive and judiciary
- Political environmental factors influencing the politics such as geographic,
- Socio-economic, international scenario, media etc.

Teaching Methodology:

- Lecturing
- Written Assignments
- Guest Speakers
- Field Visits/Study Tours

Recommended Readings

1.F. N Forman and N. D. J. Baldwin. British Politics. London: MacMillan, 1991.

2.G. Q. Wilson. American Government: Institutions and Politics. 3rd edition, Heath & Co., n.d.

3.Harold, J. Laski. Parliamentary Government in England. London, Allen & Unwin, 1960.

4.J. M. Colomer. Political Institutions in Europe, London, 1996.

5.M. Carter Gwendolen and John H. Hertz. Major Foreign Powers. New York: Harcourt, Brace & World, Inc., 1967.

6.P. G. Cocker. Contemporary British Politics and Government. Kent, Tudor Business Publishing Ltd., 1993.

7.Pomper McWilliams Baker. American Government. McMillan Publishing Co. London, 1993.

جدید حکومتیں	ڈاکٹر محمد سرور
جدید دساتیر	خرم ملک و فاروق ملک
اصول سیاسیات	پروفیسر احمد شفیع چوہدری
رہبر سیاسیات	پروفیسر صابر حسین، پروفیسر محمد شعیب، پروفیسر فہمیدہ سلیم ، پروفیسر جمیل
ترقی پذیر ممالک کے دساتیر از محمد مجاہد فاروق (لاہور: ایورنیو بک پیلس) 2016	

4. Political Systems of Developing Countries (China, India and Turkey)

SEMESTER-IV

Course Code- (POL-5405) Cr. Hrs. 03

Course Description:
This course is designed to enable the students for a comparative study of the political systems of China, India and Turkey. This study will not only provide the students with basic knowledge about the actual functioning of these political systems, but also enable them to make a meaningful comparison among any of the countries and find out the reasons of malfunctioning of their political systems.

Objectives:

- The objective of this course is to make the students aware about the political system of China, India and Turkey;
- Prepare the students for comparative analysis of various political systems with reference to their political functions, structures, cultures, development, processes etc.;

Course Contents:

Political System of China:

- China: A Century of Revolution
- Historical background and Constitutional Making in China;
- China's Structure of the Political System
- Key Party Structures
- Political parties
- Structure of the Chinese Party
- The Chinese Communist Party
- National People's Congress in Chinese politics
- Functioning of the organs of the government: legislature, executive and judiciary
- Political culture: salient features, public participation and ideological orientations,

Political System of India:

- Historical background of India
- Making of Indian Constitution
- Political parties and pressure groups;
- Functioning of the organs of the government: legislature, executive and judiciary
- Political culture: Salient features, public participation, ideological orientations, nature of civil-military relations.

Political System of Turkey:

- Historical background and constitution making in Turkey
- Political parties and pressure groups;
- Functioning of the organs of the government: legislature, executive and judiciar
- Political culture: Salient features, public participation, ideological orientations, nature of civil-military relations.

Teaching Methodology:

- Lecturing
- Written Assignments
- Guest Speakers
- Field Visits/Study Tours

Recommended Readings:

- China's Changing Political Landscape, Brookings Institution Press, 2008
- Durga Das Basu, Introduction to the Constitution of India, NewvDelhi, Prentice-Hall, 11th edition, 1985.
- June Teufel Dreyer, China's Political System: Modernization and Tradition, Longman, 08-Feb-2011.
- Kerry Dumbaugh, Understanding China's Political System Diane Publishing, 2010.

- M.P Singh & Himanshu Roy Singh, Indian Political System, Manak Publishers, 2005.
- Robert L. Hardgrave, India: Government and Politics in a Developing Nation, New York: Harcourt, Brace & World, 1970.
- William A. Joseph, Politics in China: An Introduction, Oxford University Press, 2010.
- Genckaya, Omer F., and Ergun Ozbudun. Democratization and the Politics of Constitution-making in Turkey. Central European University Press, 2009.
- Ergun Ozbudun, Contemporary Turkish Politics: Challenges to Democratic Consolidation, Lynner: Lienner 2000.
- Rai Shakeel Akhtar, Turkey: In New World Perspective: A cultural-Historical Analysis, Sang-e-Meel Publications Lahore, 1995.
- Davison, Richard H. Reforms in the Ottoman Empire, 1856-1876. New York: Gordian Press, 1973.
- *Robert Devereux*, the First Ottoman Constitutional Period: A Study of the Midhat Constitution and Parliament, Johns Hopkins Press. 1963.
- Brass, Paul (1994), The Politics of India since Independence (Cambridge: Cambridge University Press)
- Subrata K. Mitra (2011), Politics in India. Structure, Process and Policy (London: Routledge)
- Gopal Jayal, Niraja (2008), Democracy in India (Delhi: Oxford University Press).

جدید حکومتیں	ڈاکٹر محمد سرور
جدید دساتیر	خرم ملک و فاروق ملک
اصول سیاسیات	پروفیسر احمد شفیع چوہدری
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Course Content Sociology

1. Sociology−I
Code (SOC− 5106) Cr. Hrs: 03

1. Introduction

1. What is sociology
2. Sociology & other social sciences
3. Sociology & Conmen sense/Stereotypes
4. Key terms – Social Problem/Sociological Issues
5. Origin & Development of Sociology
6. Sociological Perspective

A Structuralism

1.Structural Functionalism

2. Social Conflict

B Social Action

iii. Symbolic Interactionism

C Feminism

2. Culture

1. What is culture?
2. Elements of Culture
3. Cultural Diversity

3. Socialization

1. Socialization & its importance
2. Agents of Socialization
3. Socialization through the life course

4 i) C.H. Cooley

ii) George Herbert Mead

4. Social Interaction

1. Social Structure

i) Status
ii) Status Set
iii) Achieved & Ascribed
iv) Master Status
v) Role
vi) Role Set
vii) Role Conflict
viii) Role Strain
ix) Role Exit

2. Theories of Social Interaction (Brief)

i) Social Construction of Reality.
ii)Ethno methodology
iii) Dramaturgy

5. Groups & Organizations

1. Types of Groups

2. Leadership Styles
3. Studies of Group Behaviour
4. Formal Organization & its types.
5. Bureaucracy & its Characteristics

6. Deviance

i) Deviance, Crime & Social Control
ii) Types of Crime
iii) Criminal Justice System.

Recommended Books:

1. Anderson, Margaret and Howard F. Taylor. (2001) Sociology the Essentials. Australia: Wadsworth.
2. Brown, Ken. (2004). Sociology. UK: Polity Press
3. Gidden, Anthony (2002). Introduction to Sociology. UK: Polity Press.
4. Macionis, John J. (2006). Sociology. 10th ed. New Jersey: Prentice-Hall
5. Tischler, Henry L. (2002). Introduction to Sociology. 7th ed. New York: The Harcourt Press.

2. Developments of Social Thoughts

Code (SOC− 5206)
Cr. Hrs: 03

Objective:

The course will provide familiarity about history of social thought, stages of social development and change. The course will emphasize contributions of Western, Eastern and Muslim Thinkers towards social thought and social development.

1. Introduction

a. Historical Development of Social Philosophy

2. Early Social Thought

a. Folk Thinking
b. Greek
c. Egyptian
d. Babylonian
e. Chinese
f. Indian Social Thought

3. Contribution of Muslim Thinkers in Sociol thought

a. Abuzar Ghafari
    i. Wealth Theory
b. Imam Ghazali
    i. Causes of group life
    ii. Social justice
    iii. Educational reforms
c. Ibn-E-Khuldun
    i. Philosophy of history

ii. Science of culture
iii. Ethnocentrism
iv. Rise & fall of nations
v. Causes of social life

d. Shah Waliullah
i. Evolution of society
ii. Causes of social life
iii. Societal disease
iv. Concept of perfect society

e. Moulana Ubedullah Sindhi
i. Basic Human Ethics

f. Allama Iqbal
i. Concept of self
ii. Theory of religion

Recommended Books

1. Barnes, H.E. (1966). *An Introduction to the History of Sociology.* Chicago: The University of Chicago Press.
2. Bogardus, Emory S. (1960). *The Development of Social Thought.* 4th ed. New York: Longmans, Green & Co.
3. Coser, Lewis A. (1971). *Masters of Sociological Thought: Ideas in Historical and Social Context.* New York: Harcourt Brace Jovanovich Publishers
4. Coser, Lowis A. (1977). *Masters of Sociological Thought*. New York: Harcourt Brace Jovanarich Publisher
5. Kinlock, Graham C. (1987). *Sociological Theory:Its Development and Major Paradigms*. New York: McGraw Hill Inc.
6. Keat, Russel and John Urry. (1982). *Social Theory as Science*. London: Routledge and Kegan Paul Ltd.
7. Ritzer, George. (2000). *Sociological Theory*. 5th ed. York: McGraw Hill Book Co.
8. Turner J.H. (2003). *The Structure of Sociological Theory*. 7th ed. Australia: Thomson Wadsworth
9. Zeitlin, Irving M. (1981). *Ideology and the Development of Sociological Theory*. New Jersey: Prentice-Hall, Inc.
10. Turner, J H. (1987). *The Structure of Sociological Theory* Homewood Illinois: Dorsey Press.
11. Ritzer, George. (1988). *Sociological Theory.* Singapore: McGraw Hill.
12. Coser, L A. (1971). *Master of Sociological Though: Ideas in Historical Social Context*. New York: Harcourt Brace.
13. Dubin Robert. (1978). *Theory Building*. New York: Macmillan.

3. Classical Sociological Theory

Semester-III

Code SOC−5306 Cr. Hrs: 3

Objective:

The course provides a review of classical sociological theorists. It focuses on the content and utility of classical theories in terms of understanding social world. While the course provides a general history of sociological theory, the focus remains on examining how classical theories have provided the basis for a better understanding of the character and dynamics of societies

around the world.

1. **Background**
    a. Social Forces
    b. Intellectual Forces
    c. French Revolution
    d. Enlightenment
2. **Development of Sociological Theory**
    a. Theory and Knowledge
    b. Process of Theorizing
    c. Types of Sociological Theories
    d. Inductive and Deductive
    e. Process of theorizing
    f. Fact, Propositions, and Laws
    g. Sociological Theory between 1600 -1800 AD
3. **August Comte**
    a. Positivism
    b. The law of Human Progress
    c. Hierarchy of the Sciences
    d. Social Static & Dynamic
4. **Emile Durkheim**
    a. Rules of Sociological methods
    b. Division of Labour
    c. Social Solidarity
    d. Theory of Religion
    e. Theory of Suicide
5. **W. G. Sumner**
    a. Folkways and Mores
    b. Ingroup and outgroup
    c. Basic motives
6. **Karl Marx**
    a. Communist Manifesto
    b. Socialism
    c. Stages of Social Evolution
7. **Herbert Spencer**
    a. The law of Social Evolution
    b. Concept of Society
    c. Laissez-faire
8. **Max Weber**
    a. Sociology of Religion
    b. Bureaucracy
    c. Protestant Ethic and the Sprit of Capitalism

Recommended Books:

1. Blalock, Hubert M. (1969). *Theory Construction from Verbal to Mathematical Formulation*. N.J: Prentice Hall Inc.
2. Bronner, Stephen Erick (2004). *Critical Theory and Society: A Reader.* London: Routledge and Kegan Paul.
3. Cooley, C.H. (1962). *Social Organization.* New York: Scrichnes Books.
4. Coser. L A. (1971). Master of Sociological Thought: Ideas In Historical Social

Context. New York: Harcourt Brace.
5. Dubin Robert. (1978). Theory Building. New York: Macmillan.
6. Farganis, James. (2000). Readings in Social Theory: The Classic Tradition to Post-Modernism 3rd Ed. Boston: McGraw Hill.
7. Imasheff, N. and G.A. Theoderson, (1976). *Sociological Theory: Its Nature and Growth.* New York: Random House.
8. John, J. Macionis. (2006.). Sociology. 11th ed. New Jersey: Prentice Hall.
9. Kinloch, Graham C. (1977). Sociological Theory: Its Development and Major Paradigms New York: McGraw Hill.
10. Ritzer, George. (2002). Sociological Theory 10th ed. New York: McGraw Hill.
11. Ross, H. Laurence (1963). *Perspectives on the Social Order*. New York: McGraw-Hill Book Company, Inc.
12. Turner J. H. (1987). The Structure of Sociological Theory. Homewood Illinois: Dorsey Press.
13. Waters. Malcolm. (1994). Modern Sociological Theory. London: Sage Publications.

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4. Social Research Methods
Code: SOC: 5405
Cr.Hrs: 03

The course provides an introduction to research methods in sociology. It introduces students to social research as an enterprise in which theories are developed, tested, and then confirmed, modified, or discarded. Students will master the skills essential to the construction of knowledge, development of sociological theories, and the design of effective social policy interventions. The goal of this course is to provide students with a general understanding of sociological research methods, with the ultimate aim of training students to engage in their own research and to be critical and informed readers of published research.

Course Outline

Introduction

a. Definition, significance of social research
b. Characteristics of scientific social research
c. Pure and applied research
d. Quantitative and qualitative approach in social research

Research Problem

a. Selections and formulation of research problems
b. Determinates of significant problems
c. Components of a problems

Research Design

a. Components of a research design
b. Types of research design
c. Scope and utility of research design
d. Abstraction and generalization – deduction and induction
e. Conceptualization and re – conceptualization

Hypothesis and Operationalization

a. Meaning and definition of operationalization
b. The process of operationalization.
c. Reliability and validity
d. Meaning and forms of hypothesis
e. Function of hypothesis
f. Sources and logic of deriving hypothesis
g. Statistical testing of hypothesis

Sampling

a. Nature and importance
b. Forms: probability and non – probability

Methods, Instruments and Techniques of Data Collection

a. Sources of data
b. Methods of data collection
c. Survey method
d. Experimental method
e. Historical method / documentation
f. Planning, techniques and instruments of data collection
g. Questionnaire
h. Interview schedule / guide
i. Observation – participant, non – participant

Measurement and Scaling

a. Indexes and scores
b. Types of scales
c. Ranking scales
d. Paired comparison
e. Method of equal appearing interval
f. Internal consistency scale Thurston scale
g. Rating scales

Analysis and Interpretation of Data

a. Coding and tabulation
b. Manual and computer operations
c. Analysis of data and hypothesis

Presentation of Data and Report Writing

a. Editing and coding of questionnaires
b. Graphic and pictorial presentations
c. Report writing
d. Format of the report
e. Bibliography, foot notes and references

Recommended Books:

1. Alwin, Duene F. 2007. Margins of Error; A Study of Reliability in Survey Measurements. U.S.A.: John Wiley and Sons, Inc.
2. Babbie, Earl. 2004. The Practice of Social Research. 10th Edition. Belmont: CA Words Worth Publishing.
3. Bridge Semekh and Culhy. 2005. Research Methods in the Social Science. New Delhi: Vistaar Publisher.
4. Christopher Winship, 2003, Sociological Methods and Research. London: Sage Publications.

5. Nachimas, Chava Frankfort and David Nachmias Research Methods in the Social Sciences (5th Edition) New York: St. Martin's Press Inc.
6. Neuman William Lawrence. Social Research Methods 4th ed. Allyn and Eacon., Boston.
7. Somekh and Lewin, 2005, Research methods in Social Sciences, Vistaar, Publication, New Delhi.
8. Neuman, W. Lawrence (2000). "Social Research Methods". New York: Allyn and Bacon.
9. Baker, Therese L. (1989). "Doing Social Research". McGraw-Hill.
10. Babbie, Earl (2005). "The Practice of Social Research". Belmont, California: Wordsworth.

Course Contents Philosophy

1. Title: Introduction to Philosophy
Code: PHIL-5104
Credit Hours: 3

Introduction

This course will help students develop their understanding of the beginning of Philosophy in general. This course will help students understand the Philosophy, its History and its major focuses.

Objectives

This course will help students to know how to discuss philosophical issues and how to use language for this purpose.

CONTENTS

1. **Introduction to Philosophy:**

   (a) Definition of Philosophy (b) Etymology of Philosophy (c) Scope of Philosophy (d) Nature of Philosophy.

2. **Philosophical Questions** *(Note: Learning Method: Question/Answer Method)*
   a. What Is Truth?
   b. What is Justice?
   c. What is Good?
   d. What is Beauty?
   e. What is Love?
   f. What Is the Meaning of Life?
   g. Is Knowledge Possible?
   h. What Does It Mean to Be Free?
   i. Are You Really You?
   j. How Does the Brain Produce the Mind?
   k. Does Happiness Define the Good?
   l. What Makes a Society Fair or Just?

3. ***Branches of Philosophy:***
   (a) Metaphysics (b) Epistemology (c) Logic (d) Ethics (e) Political Philosophy (f) Aesthetics.

4. ***Historical Background of Philosophy:***
   (a) Ancient Greek Philosophy (c) Medieval Western and Muslim Philosophy (c) Modern Western Philosophy.

5. ***Philosophy and Social Sciences:***
   (a) Philosophy and Psychology (b) Philosophy and Sociology (c) Philosophy and Political Science (d) Philosophy and Literature

Outcome

Study of this Course will enable students to critically assess the genuineness of these problems of philosophy and will give them a vision in this concern.

Recommended books

1. Dr. Khalid Almas and KashifFaraz Ahmed "Advanced Philosophy "Advanced A P Publisher, Lahore.
2. W. Russ Payne, "An Introduction to Philosophy" Bellevue College, 2015.
3. Edward Craig, "Philosophy A Very Short Introduction" by Oxford University Press, Inc., New York 2002.
4. Dallas M. Roark, Ph.D. "Introduction to Philosophy"Emporia State University Copyright 1982 edition, 2016.
5. Nigel Warburton "Philosophy: The Basic" published byRoutledge, Fifth edition published 2013.
6. Oswald kulpe "Introduction to philosophy, translated from the German (1895), W. B. Pillsbury and E. B Titchener, London Swan Sonnenschein. & Co., Limited New York:

2. EARLY GREEK PHILOSOPHY

Code: PHIL-5204
Credit Hours: 3

Introduction

This course will help students develop their understanding of the beginning of Philosophy in general and of Greek Philosophy in Particular. This course will help students understand the passage of thought from Cosmological to Epistemological Philosophy.

Objectives

This course will help students to know how to discuss philosophical issues and how to use language for this purpose.

Contents

1. Introduction of Philosophy
2. Greek Mythology
3. The Ionics
4. The Pythagoreans
5. The Eleatic
6. Heraclitus
7. Empedocles
8. The Atomism
9. Anaxagoras
10. The Sophists
11. Socrates

Outcome

The method of teaching will be interactive. All students are encouraged to participate in the discussion of different issue in Greek Philosophy.

Recommended Books

1. Stace. W .T. A Critical History of Greek Philosophy, National Book Foundation, 4th Print,March,2015.
2. Hankinson, R. J. Cause and Explanation in Ancient Greek Thought, University of Texas, Austin
3. Copleston. F. History of Philosophy, Image Books, London, April 1993.

4. Xenophon. The Memorable Thoughts of Socrates, Editor: Henry Morley, Translated by Edward Bysshe , London, Paris, New York & Melbourne,1888.
5. Armistrong. A.H. The Cambridge History of Later Greek And Early Medieval Philosophy, Cambridge University Press, 2008.
6. Ahmad Naeem. Tareekh-e- FalsafaYunan: IllmiKitabKhana, Urdu Bazar, Lahore.
7. Chohan. M. Rafiq. TareekhFikr-e-Yunan: IllmiKitabKhana, Urdu Bazar, Lahore.

1. CLASSICAL MUSLIM SCHOOLS OF THOUGHT

Code: PHIL-5304
Credit Hours: 3

Introduction

This course will examine main questions of Muslim Theology as well as a selective study of the problems discussed by Muslim philosophers of medieval centuries specifically problems relating to metaphysics and epistemology. However, Mystic Doctrine of the Unity of Being (IbnArabi) may also be included in this course.

Objectives

To introduce the studentswith major intellectual movements of the Classical age of Muslim Thought.

Contents

1. Introduction and Origin of Classical Muslim Philosophy
2. Influence of Greek on Muslim Philosophy
3. Qadria School of Thought
4. Jabaria School of Thought
5. Mutazila School of Thought
6. Asharia School of Thought
7. AkhwanulSafa
8. Sufism

Outcome

Students will be able to understand the scenario of the Classical age of Muslim thought. Further they will be able to comprehend the problems of that age. In this way they will be capable to resolve the issues of their age in the perspective of Muslim thought.

Recommended Books

1. H. A. Wolfson, [1996], *The Philosophy of the Kalam*, Cambridge: Harvard University Press.
2. Oliver Leaman, [1995], *An Introduction to Medieval Islamic Philosophy*, Cambridge: Cambridge University Press.
3. William C. Chittick [1991], *Wahdat Al-Wujud in Islamic Thought* in The Bulletin, Jan-March.

LOGIC AND CRITICAL THINKING
Code: PHIL-5404
Credit Hours: 3

Introduction

This course helps students to develop their natural ability to reason; to think more clearly, critically, and competently; and to sharpen reasoning abilities when encountering new and unexpected situations. Students will understand the basic concepts of logic. This course will focus on informal logic. Emphasis is on improving the skills of thinking and reading critically, analyzing and evaluating points of view, and constructing sound arguments based on relevant evidence.

Objectives2

Upon successful completion of the course the student will be able to:

1. Identify and/or describe the aims, methods, issues, and problems associated with good reasoning and the impediments to its mastery.
2. Identify, define, and/or describe the philosophical terminology or nomenclature commonly used to classify deductive and inductive argument forms and the fallacies commonly identified as impediments to good reasoning.
3. Compare and/or explain/contrast basic concepts/principles related to deductive and inductive reasoning processes.
4. Identify and/or describe the criteria for differentiating assumptions, beliefs, truth, validity and inductive strength.
5. Evaluate arguments by applying the canons of inductive and deductive reasoning.
6. Differentiate between non-fallacious and fallacious reasoning.
7. Apply the principles of critical thinking to practical problems/issues arising in the student's everyday life.

Course Contents

1. Introduction and Definitions of Logic
2. Logic and other Branches of Philosophy
3. Logic and Psychology
4. Kind of Logic: Deductive and Inductive Logic
5. Propositions / Statement: Kinds of Propositions
6. Argument and Kind of Argument
7. Validity, Truth, Soundness, Strength, Cogency
8. Laws of Thought:
    a. Law of Identity
    b. Law of Non-Contradiction
    c. Law of Excluded Middle
    d. Law of Sufficient Reason
9. Logic and Language
    a. Term and Their Kinds: Connotation and Denotation Term
    b. Definition, Kinds and their purpose
    c. Predicable: Genus, Species, Differentia, Property and Accident.
    d. Rules of Definition
    e. Definition and Division: Rules of Logical Division
10. Fallacies: Fallacies of Presumption, Hasty Generalization, Sweeping Generalization, False Cause, False Analogy, Begging the Question,

Question Begging Epithet, Complex Question, Special Pleading, Black or White, Gamblers Fallacy, Slippery Slope.

11. Basic Laws of Inductive Logic: law of Uniformity of Nature and Law of Cause.
12. Kinds of Induction: Properly and Improperly so-called induction.
13. Ground of Induction: Material and Formal Ground of Induction.
14. Generalization.
15. Hypothesis
16. Law of Causation: Aristotle, Hume and Mill.
17. Classification

Outcomes

This course will focus on informal logic. Emphasis is on improving the skills of thinking and reading critically, analyzing and evaluating points of view, and constructing sound arguments based on relevant evidence.

Recommended Books

1. Logic and Controversy by Maurice Stanley. Publisher: Wadsworth (2001)
2. A Concise Introduction to Logic by Hurley. Publisher: Wadsworth (2006)
3. Irving M.*Copi. (2010),* Introduction to Logic (13th *Edition*) by

Course Contents Geograpgy

1. Fundamentals of Geography
Code: (GEOG-5106) Credit= (2,1)

Objectives:

To expose students with the founding principles of Geography and geographical knowledge.

Course outline:

- Introduction
  - Definitions, scope and branches of Geography
  - Roots of the discipline and basic geographic concepts
  - Themes and traditions of Geography
  - Tools of Geography
- The Universe
  - Galaxies and solar system
- The Earth as a planet
  - Celestial positions, its shape and size
  - Rotation, revolution and related phenomena
- Spheres of the earth
  - Lithosphere
  - Atmosphere
  - Hydrosphere
  - Biosphere
- Man-environment interaction
  - Population
  - Major Economic activities
  - Settlements
  - Pollution

Lab. work:

Comprehension of atlases, map reading skills, location of places, features and relevant work related to topics of the theoretical section.

Recommended Books:

1. Arbogast, A. F. (2007) Discovering Physical Geography, John Wiley and Sons, London.
2. Christopherson, R. W. (2009) Geo systems: An introduction to Physical Geography, Pearson Prentice Hall, New Jersey.
3. De Blij, H. J and Muller, P. O. (1996) Physical Geography of the Global Environment, USA, John Wiley and sons Inc., New Jersey.
4. Guinness, J. P. & Nagle, G. (2011) Geography, Hodder Education, London. King, C. (1980) Physical Geography, Basil Blackwell, Oxford.
5. Miller, G. T. (2008) Living in the Environment, Principles, connections and Solutions, Wadsworth, USA.
6. Monkhouse, F. J. (1996) Principles of Physical Geography, Hodder & Stoughton, London.
7. Scott, R. C. (1996) Introduction to physical geography, West Publishing Co, New York.
8. Small, R. J. (1989) Geomorphology and Hydrology, Longman, London. Strahler, A. (2013) Introduction to Physical Geography, John Wiley & Sons, New Jersey.
9. Stringer, E. T. (2004) Modern Physical Geography, John Wiley, New York. Taylor, J. (1993) Integral Physical Geography, Longman, London.
10. Thompson, R. D. (1986) Process in Physical Geography, Longman, London.
11. Thornbury, W. D. (2004) Principles of Geomorphology, John Willy & Sons, New York.

12.Thurman, H. V. & Trujillo, A. P. (2013) Essentials of Oceanography, Prentice Hall Inc., USA.

2. Physical Geography

Code: (GEOG-5206) Credit= 03 (2,1)

Objectives:

To create understanding about the physical characteristics of the earth

Course outline:

- Introduction
  - Definition, scope and major branches
  - Realms of the physical environment
- Lithosphere
  - Internal structure of earth
  - Rocks–origin, formation and types: Igneous, Sedimentary and Metamorphic Rocks
  - Plate tectonics, mountain building forces
  - Geomorphic processes – endogenic and exogenic processes and their resultant landforms
  - Earthquakes and volcanic activity, folding and faulting
  - Weathering, mass wasting, cycle of erosion, erosion and deposition
  - Landforms produced by running water, ground water, wind and glaciers
- Atmosphere
  - Composition and structure of atmosphere
  - Atmospheric temperature and pressure, global circulation
  - Atmospheric moisture and precipitation
  - Air masses and fronts
  - Cyclones and other disturbances
- Hydrosphere
  - Hydrological cycle
  - Ocean composition, temperature and salinity of ocean water
  - Movements of the ocean water; waves, currents and tides
- Biosphere
  - Eco-systems
  - Formation and types of soils

Lab. Work:

Identification of rocks and minerals, study and identification of landform using Satellite imageries and Topographic Sheets. Construction and applications of models showing various types of landforms. Observation and recording of weather data from a mini weather station.

Field visits:

Ground truthing and identification of various types of rocks, fluvial, glacial, desert landform, type of soils.

Visit to any suitable area to observe and appreciate the characteristics of physical features (recommended areas: Mountainous, Plains, Plateaus, deserts and coastal areas).

Visit to any national park/biosphere reserves; Soil Survey of Pakistan, Geological survey of Pakistan,

Meteorological station/observatory and National Institute of Oceanography (NIO) and SUPARCO. Observations about the clouds and identification of their types

Recommended Books:

King, C. A. M. (1980) Physical Geography, Basil Blackwell, Oxford. Mcliveen, J. F. R. (1992) Fundamentals of Weather and climate, Prentice Hall, New Jersey.
Monkhouse, F. J. (1996) Principles of Physical Geography, Hodder & Stoughton, London.
Peterson, J. F., Sack, D. & Gabler, R. E. (2011) Physical Geography, Brooks Cole.
Scott, R. C. (1996) Introduction to physical geography, West Publishing Co, New York.
Small, R. J. (1989) Geomorphology and Hydrology, Longman, London. Strahler, A. (2013) Introduction to Physical Geography, John Wiley & Sons, New Jersey.
Strahlar, A. N., Strahlar, A. H. (2004) Physical Environment, John Wiley, New York.
Stringer, E. T. (2004) Modern Physical Geography, John Wiley, New York. Taylor, J. (1993) Integral Physical Geography, Longman, London.
Thornbury, W. D. (2004) Principles of Geomorphology, John Willy & Sons, New York.
Thurman, H. V. & Trujillo, A. P. (2013) Essentials of Oceanography, Prentice-Hall, Inc, New York.

3. Human Geography
Code: (GEOG-5306)

Credit= 3 (2,1)

Objectives:

This course attempts to impart knowledge about the relationship between man and environment including natural resources and related human activities.

Course outline:

- Introduction
  - Definition, scope and branches
- Basic approaches
  - Environmental determinism
  - Possibilism
  - Probabilism
  - Cognitive behaviourism
  - Coupled nature-human systems
- Population and its characteristics
  - Population distribution
  - Population structure and composition
  - Population dynamics (fertility, mortality, migration etc.)
- Economic activities
  - Classification of Economic Activities
  - Agriculture, mining, forestry, animal husbandry and poultry
  - Industries: cottage, light and heavy
  - Trade, transport and services
  - Tourism
- Settlements
  - Theories of human settlement
  - Types of settlements
  - Rural settlements

- dispersed, nucleated and Ribbon settlements
- Urban Settlements
- Urban hierarchy and functions
- Urbanization
    - Process of urbanization
    - Urban structure, morphology and theories
    - Land use and land cover patterns
- Environmental issues, causes and remedies

Field visits:

To explore economic activities in the context of natural environment of relevant area/region. To study rural and urban settlements, industrial areas and national parks.

Recommended Books:

Ahmed, Q. S. (2001) Fundamentals of Human Geography, Royal Book Company, Karachi.

Becker, A. & Secker. (2002) Human Geography: Culture, Society, and Space, John Wiley and Sons, New Jersey.

Becker, A. & Secker. (2002) Human Geography: Culture, Society, and Space, New York; John Wiley and Sons, New Jersey.

Benko, G. & Shorhmay. (2004) Human Geography: A history for the 21st century, Hodder Arnold, London.

Blij, H. J. D. (2002) Human Geography: Culture, Society, and Space, John Wiley and Sons, New Jersey.

Cloke, P. & Crang, P. (2005) Introducing Human Geographies, 2nd edition, Hodder Arnold, London.

Fouberg, E. H. (2012) Human Geography People, Place and Culture, John Wiley & Sons, Inc., Hoboken.

Getis, A. & Getis, J. (2005) Human Geography: Landscape of Human Activities, McGraw-Hill, Higher Education, Boston.

Harper, H. L. (2003) Environment and Society: Human Perspectives on Environmental Issues. Prentice Hall, New York.

Knox, P. L. & Marston, S. A. (2012) Places and Regions in Global Context: Human Geography, Prentice Hall, New York.

Lewis, C. P., Mitchell F. & Dyer, C. (2001) Village, Hamlet and Field: Changing Medieval Settlements in Central England, Windgather Press, London.

Neuwirth, R. (2006) Shadow Cities: A Billion Squatters, A New Urban World, Routledge, London.

Rubenstein, J. M. (2012) Contemporary Human Geography, PHI Learning Private Limited, New Delhi.

4. Geography of Pakistan

GEOG-5406 Credit= 3(2,1)

Objectives:

This course attempts to impart knowledge about the relationship between man and physical, socio-economic and cultural environment with special reference to Pakistan, including land, population, human settlements, resources and related human activities.

Course outline:

- Introduction
- Geo-strategic position of Pakistan
  - Location and Geographical significance
  - Geo-political Importance
  - Administrative setup
- Land and Physical Environment:
  - Physiography
  - Climate and climatic regions
  - Hydrology
  - Soils and vegetation
- The People
  - Population characteristics: structure, composition and distribution
  - Population Change
  - Urbanization
- Economy
  - Agriculture (crops and livestock)
  - Irrigation
  - Power and mineral resources
  - Industrie
  - Trade
  - Tourism
- Transport and Communication
- Major challenges of Pakistan
  - Water, power, security and environmental issues

Lab. Work:

Survey, data collection and presentation on different thematic maps

Field visits:

To identify various physical regions and study of at least one region's land use, urban structure, mining area, national parks, industrial areas and various rural and urban settlements and other natural resources.

Recommended Books:

Ahmad, K. S. (1978) Geography of Pakistan, Oxford University Press, Oxford.
Burkey, J. S. (1991) Pakistan the continuing search for Nationhood, Western Press Oxford, UK.
Davidson, A. P. & Ahmad, M. (2003) Privatization and the Crisis of Agricultural Extension: The Case of Pakistan, King's Soas Studies in Development Geography, Ashgate Publishing, New Delhi.
Dichter, D. (1967) Geography of N-W.F.P, Oxford University Press, Oxford. Hameed, A. (1972)

Study of the Middle Indus Basin, San Francisco State College, San Francisco.
Johnson, B.L.C (198).
Khan, F. K. (1991) Geography of Pakistan, Oxford University Press, Karachi Spate, O. H. K. (2004) India and Pakistan, Munshiram Mohoanlal Publications Pvt. Ltd., UK.
Tayyeb, A. (1973) A Political Geography of Pakistan, Oxford University Press. Oxford.

Course Contents Health and Physical Education

- **Philosophical Basis of Physical Education**
  Code: (HPE -5104) Cr. Hr (03)

OBJECTIVES OF COURSE

This course is designed to acquaint students with the objectives to make them understand the basic concepts of physical education and its relation to Health Education, and provide preliminary awareness about physical, mental and social developments; interpretation of biological, psychological effects on physical activities.

COURSE CONTENTS

i. INTRODUCTION

a. Historical background of Physical Education
b. Definition and scope of Physical Education
c. Aims and objectives of Physical Education

ii. PHILOSOPHY AND PHYSICAL EDUCATION

a. Definition
b. Components of Philosophy
c. Relationship of Physical Education with Naturalism, Idealism, Realism, Pragmatism, Extencialism

iii. PHYSICAL EDUCATION AS DISCIPLINE

a. Physical Education, an academic discipline
b. Physical Education and Islam
c. Physical Education as a profession

iv SCIENTIFIC FOUNDATION OF PHYSICAL EDUCATION

a. Biological interpretation of Physical Education
b. Psychological interpretation of Physical Education
c. Sociological interpretation of Physical Education

v PHYSICAL EDUCATION AND RECREATION

a. Definition of Recreation
b. Types of Recreation
c. Principles of Leisure
d. Outdoor pursuits

vi LEADERSHIP IN PHYSICAL EDUCATION

a. Definition and kinds of leadership
b. Selection criteria of leader
c. Qualities of a good leader
d. Challenges in Physical Education profession

RECOMMENDED BOOKS

1. Dr. A. Waheed Mughal, Philosophical Basis of Physical Education, Islamabad 2012.
2. Shamshad Ahmed. *Education in Physical Education*. New Delhi: Isha Books, 2005.

3. Syal, Meenu. *Physical Education Sports and Games*. New Delhi: Sports Publication, 2005.
4. Davis, M.B. *Physical Training in School*. New Delhi: Sport Publication, 2004.
5. Shekar, C.K. *Foundation of Physical Education and Sports*. New Delhi: Khel Sahitya Kendra, 2004.
6. Jain, Anoop. *Physical Education Foundation*. New Delhi: Sports Publication, 2003.
7. Jain, D. *Physical Education for Secondary School Children*. New Delhi: Khel Sahitya Kendra, 2003.
8. Gupta, A. K. *Facts and Foundation in Physical Education*. New Delhi: Sports Publication, 2003.
9. Seefeld, E.A. *Physical Education for Children,* New Delhi: Sports Publication, 2002.
10. Charles A. Bucher, Foundation of Physical Education Exercise Sciences & Sports, 14th Edition, 2003. McGraw Hill, New York

2. RULES AND TECHNIQUES OF GAMES
(HPE -5204)
Cr. Hr (2+1)

OBJECTIVES OF COURSE

This course is aimed at developing the knowledge of students about rules of the sports & games along with the coaching skills of different sports among the students. The course will enhance the organizational skills in the students and knowledge regarding organization and conduct of tournament at school, college, university and National levels. It will also help the students to develop discipline, sportsmanship and polish their leadership qualities.

COURSE CONTENTS

i. INTRODUCTION
- a. Definition of Games and Sports
- b. Types of Games and Sports
- c. Values of Games and Sports

ii. SYSTEMS OF TOURNAMENT
- a. Single elimination or knockout system
- b. Round robin or league system
- c. Combination system
- d. Challenge system
  - i. Ladder system
  - ii. Pyramid system

iii. ORGANIZATION AND CONDUCT OF TOURNAMENTS
- a. Board level
- b. University level
- c. Provincial level
- d. National level

iv. HISTORY, RULES AND TECHNIQUES OF GAMES (RACKET)

a. Badminton
b. Tennis
c. Squash
d. Table Tennis

v. HISTORY, RULES AND TECHNIQUES OF GAMES (BALL GAMES)

a. Basket Ball
b. Net Ball
c. Volleyball
d. Handball

vi. HISTORY, RULES AND TECHNIQUES OF GAMES (FIELD GAMES)

a. Foot Ball
b. Hockey
c. Cricket

RECOMMENDED BOOKS

1. Dr. A. Waheed Mughal Rules and Techniques of Games, Islamabad-2012.
2. Malik Asif, *Rules of Games*, 2007, Iqra Publisher Nowshera, K-P, Pakistan.
3. Marshal Cavendish, *Encyclopedia of Sports*
4. *Rules of Games by Nora Roberts, Green Earth Books USA 2014.ISBN-139881480588103*
5. *Rules of the Game by Neil Strauss2013*
6. *Law of Game 2013-14 by FIFA International*

3. TRACK AND FIELD
Course Code (HPE -5304)
Cr. Hr (2+1)

OBJECTIVES OF COURSE

The main purpose of this course is to enhance the knowledge of the students regarding Track & Field. This course will also be helpful in developing the skill of the students regarding the marking, and laying out of standard track and other circles. The students will be able to conduct the track and field competitions at various levels as well as to perform the duties of Technical officials.

COURSE CONTENTS

i. HISTORY OF ANCIENT OLYMPIC GAMES WITH SPECIAL REFERENCE TO TRACK & FIELD

a. Brief History
b. Terms and condition for participation
c. Programme of activities
d. The Olympic Flame
e. The Decline of the Games

ii. **HISTORY OF MODERN OLYMPIC GAMES WITH SPECIAL REFERENCE TO TRACK & FIELD**

a. The History behind the Modern Olympic Games
b. List of the countries organize Olympic games
c. Special features/detail of all time athletes
d. The Olympic Oath
e. The Olympic Hem
f. IOC (international Olympic committee)

iii. **LAYING OUT 200m & 400m TRACK STRAGERS**

iv. **CONDUCT OF TRACK AND FIELD EVENTS**

a. Preparation of Track and Field competition program (Board, University, Province, National)
b. Formation of committees for Track and Field competition

v. **OFFICIALS AND THEIR DUTIES IN TRACK AND FIELD COMPETITION**

vi. **RULES AND TECHNIQUES OF TRACK EVENTS**

vii. **RULES AND TECHNIQUES OF FIELD EVENTS**

viii. **RULES OF CROSS COUNTRY**

ix. **RULES OF WALK-RACE**

x. **DECATHLON, AND PENTATHLON (COMBINED EVENTS)**

RECOMMENDED BOOKS

1. Dr. A. Waheed Mughal, Olympics Games & Athletics, Islamabad, 2012
2. Ch: Hashmat Ali, Olympics and Athletics, Lahore.
3. M. Shafiq History of the Olympic Games with special reference to Athletics, Faisalabad
4 Dr. Abdul Whaeed Mughal, Athletics Skill and Officiating, Islamabad, 2012.
5. John Heaton, Better Athletics field, Kay Ward Ltd. London, 1986.
6. Amateur Athletics Association, Hand Book, 2009.
7. How to organize an Athletics Meet. Amateur Athletics Association Hand Book.
8. IAAF (2005). IAAF Hand Book: International Amateur Athletics Federation.

4. Scientific Sports Coaching

Code: (HPE -5404) Cr. Hrs (03)

OBJECTIVES OF COURSE

The purpose of this course is to provide knowledge about scientific coaching to maintain professionalism, fulfill the responsibilities, to manage the sports training stages, organize the training designed and mature application of teaching the well manners.

COURSE CONTENTS

1 Introduction to sports coaching

a. Introduction and nature of coaching profession
b. Need and importance

2. Teaching Methodology for a Coach

a. Skill, Technique and Ability
b. Skill Development

3. Role of a Coach

a. Coaching Philosophy
b. Coaching Style
c. Coaching Ethics

4. Development of Skill Analysis and Strategies

a. Physical Training
b. Mental Training
c. Tactical Training
d. Technical Training

5. Per iodization of Training

a. Off season Training
b. Pre-season Training
c. Peak/in-season Training
d. Micro cycle
e. Macro cycle
f. Meso cycle
g. Warming up
h. Cooling down

6. Components of Fitness

a. Health related Fitness (Need, Importance & Improvement)
b. Skill related Fitness (Need, Importance & Improvement)
c. Training Laws and Principles

7. Coaching & Training Plans of major Games

a. Athletics
b. Cricket
c. Hockey
d. Football
e. Volley Ball
f. Badminton
g. Basketball

Books & Reference Material

1. Dr. A.Waheed Mughal: The coaching Philosophy, Islamabad- 2012
2. Dr. A.Waheed Mughal: The Theory of training, Islamabad-2013
3. Dr. A.Waheed Mughal: Science of sports training, Islamabad- 2014
4. The Scientific Aspects of Sports Training; A.W.Taylor
5. Sports Coaching Concepts; A Framework for Coaches behaviour. John Lyle
6. Scientific Principles of Coaching; Englewood Cliff
7. Coaching Basketball; Jerry Kraus and Ralph Pim
8. Scientific Foundation of Coaching; Pate Rotella Mcclenghan

Course Contents Economics

1. Principles of Microeconomics

ECO-5105 3 Cr. Hrs.

Course objectives

Microeconomics studies the behavior of specific economic units that make up the economic aggregates. Microeconomics is the subject matter of this course explaining the behavior of specific economic units. The main focus will be on theories of consumption, production, distribution and role of the government. Topics include demand, supply, household behavior and consumer choice, the cost structure of the firms, market structures, market failures and externalities, economic regulations and Good governance. The course will rely heavily on graphical analysis and simple numerical calculations.

Course Contents

Introduction to Economics

Studying Choice in a World of Scarcity :The No-Free-Lunch Principle , The Cost-Benefit Principle , Reservation Prices , Economic Surplus , Opportunity Cost , The Role of Economic Models , To What Extent should an Activity be Perused , Micro Economic Versus Macro Economics , Economic Naturalism , Positive Versus Normative Economics , Some common Pitfalls for Decision Makers , Conclusion.

Consumer Behaviour

Cardinal Approach/Utility Analysis, Marginal Utility, Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility, Consumer Equilibrium

Ordinal Approach of Consumer Behavior, Indifference Curves, Features of Indifference Curves, Budget Line, Consumer Equilibrium, Comparison between two approaches, Conclusion

Demand & Supply

Demand Function, Law of Demand, Shift in Demand, Change in Demand, Factors Affecting Demand, Supply Function, Law of Supply, Changes in Supply, Price Equilibrium, Market Equilibrium

Elasticity of Demand & Supply

Price Elasticity of Demand & Supply, Point Elasticity of Demand & Supply, Arc Elasticity of demand & Supply, Income Elasticity of Demand & Supply, Cross Elasticity of demand & Supply, Conclusion

Efficiency and Exchange

Market Equilibrium and Efficiency, Economic Surplus, the Cost of Preventing Price, Adjustments, Taxes and Efficiency, Conclusion

The Theory of production & Theory of Cost

The Production Function , Total, average and marginal product, Laws of Returns to Scale , Short run Theory of Cost , Seven family cost curves, Relationship between Production and Cost Curves . Long-run Theory of Cost: Graphical Representation of Long Run Cost. Economies, Diseconomies and Constant Returns to Scale

Market Structure

Perfect Competition vs. Pure Competition, Different Possibilities of SR firm Equilibrium, Profit Maximization in the Short-run and long-run

Monopoly: Short run and Long run Equilibrium under Monopoly**.** Conclusion. (Comparison of both). Imperfect Competition: Monopolistic Competition, Price and output determination in monopolistic

completion, Comparison perfect completion with monopolistic completion. Oligopoly: Definition, Strategic behavior and game Theory, Price Rigidity and the kinked demand curve, Conclusion (Comparison of both)

Labor Markets

The Market Demand for Labor, Supply of labor, Shifts in the market demand for and supply of labor, Inefficiency wages, monophony

Emerging trends/Issues in Micro Economics

Recommended Textbooks:

1 Mankiw, "Principles of Economics" 7th Edition (2008) southwest publishers

2. Miller, R.L –EconomicsToday-14th Edition (2005) Addison Wesley publisher

2. PRINCIPLES OF MACROECONOMICS

ECO-5205 3 Cr. Hrs.

Course objectives

The course is designed for the beginners with no formal background or little acquaintance with economics. The objective is to give the students with a clear understanding of the basic concepts, tools of analysis and terminologies used in macroeconomics. Emphasis will be on the use of graphs, diagrams and numerical tables/schedules for exposition. The teacher is expected to draw examples from the surrounding world to clarify the concepts.

Course Contents

Introduction

The economy in aggregate, Complexities of the world of business, Scope of macroeconomics, Brief account of the development of macroeconomics after the World War-II, Concept of business cycles: Boom and Depression, Concepts of Inflation and Unemployment, Macroeconomic variables and their mutual relationship, Macro-models as abstraction from the real economy.

National Income

Definition and concept of national income, Measures of national income: Gross Domestic Product (GDP) and Gross National Product (GNP), GDP at factor cost and at market prices, Computation of

national income: Product, Income and Expenditure approaches, Circular flow of income, Nominal versus Real income, Per capita income and the standard of living.

Components of Aggregate Demand

The Concept of Open and closed economy models, Concept of aggregate markets: Product, Money, Labor and Capital markets, Components of aggregate demand: Consumption, Investment and Government spending, Income and expenditure identities.

Money and Banking

Money: definition, forms and functions, Central Bank and its functions with reference to the State Bank of Pakistan, Commercial banking, The Quantity Theory of money, Inflation: measurement and impacts, causes of inflation and remedies, Monetary policy: brief introduction.

Public Finance and Taxation

Sources of public revenue, Various forms of taxes: Direct and Indirect, Income and Commodity taxes, Sales, Excise, Customs, Non-tax revenues, Major heads of public expenditure, Revenue and Capital account, Concept of budget deficits and sources of filling the gaps, Deficit financing, Fiscal policy: meaning and objectives.

International Trade

Global distribution of resources, Concept of imports and exports, Theory of absolute and comparative advantage, Currency exchange rates, Balance of Payments: causes of deficits in BOP of Pakistan and remedial measures, Custom Unions, The problem of external debt, Commercial Policy: objectives and scope.

Emerging trends in Macro Economics

Recommended Books:

• Mankiw,G–Principles of Economics-2nd Edition (2001)- South-West Publishers.
• Samulson and Nordrons - Economics –18th Edition (2004)- McGraw Hill. Inc.
• Parkin, Michael - Macroeconomics, 7th Edition (2004)- Prentice Hall.
• Miller, R.L.– Economics Today -14th Edition (2005) - Addison Wesley

2. Mathematical Economics

ECO-5305 03 Cr. Hrs

Course objectives

The course is designed to enable the students use mathematical tools in clarifying their economic concepts and solving problems. This is because economic analysis requires extensive use of mathematics in the present day world of complexity. Mere logical reasoning and diagrammatic

approach is perhaps not sufficient. This is true for positive economics in particular. As such, the students of economics have to learn and apply mathematics alongside their theoretical underpinnings.

Homework: The students may be given assignments and exercises from the texts and weekly or fortnight class tests including MCQ's and confronted to extensive practice.

Course Contents

The Nature of Mathematical Economics

Pure and applied mathematics, The use of mathematical tools in social sciences, particularly in economics, Economic theory (logical argument) as description of some kind of relationship between variables, Mathematical Support: Expression of theory in functional form, Explaining properties of economic parameters like elasticity, propensity to consume etc., Verification of hypotheses and the use of mathematical models, Parameters and variables (dependent and independent), Linear and non-linear functions: quadratic, polynomial, circular, Types of functions: constant, rational, non-algebraic, logarithms & exponential, Rules of logarithms and exponents, Functions of more than two independent variables, Graphs of various functions, The importance and limitations of mathematical models.

Equilibrium Analysis

Equation of a straight line: Intercept and Slope parameters and their economic interpretation, Partial and general equilibrium analysis, Single and Simultaneous equation models, Examples from market models: Demand and supply equations, Determination of price and quantity, Calculation of elasticities at equilibrium, The effect of an excise tax on market equilibrium, National Income determination: Closed economy with goods and money markets.

Linear Models and Matrix Algebra

Simultaneous equations models and the use of matrices, Types of matrices: Square, identity, null, idempotent, diagonal, transpose and their properties, Laws of matrix operations: addition/subtraction, scalar and vector multiplication, Conditions for non-singularity of a matrix, Determinant & its properties, Minors and cofactors, Ad-joint and inverse of a matrix, Properties of inverse of a matrix, Solution of linear equations: the Gaussian method, the Cramer's rule and Inverse matrix method, Economic applications: Solution of market models, national income models, and the normal equations of the Least-Squares econometric model via matrix approach.

Differentiation

The concept of derivations, Functions of one variable and rules of differentiation: Sum-difference, product and quotient rules, chain rule, power function rule, inverse function rule, Implicit functions rule, Combinations of rules, differentiation of logarithmic & exponential functions, Higher order derivatives, Concept of maxima & minima, First and second derivative tests, point of inflection, Free and Constrained optimization, Partial differentiation & its rules, Hessian and Jacobian determinants, Higher order & cross partial derivatives (Young's theorem), Total differentials & total derivatives, Optimizing cubic functions.

Economic Applications of Differential Calculus

Analysis of Utility, Demand, Production, Cost and Supply functions, Lagrange function: Profit maximization and cost minimization under perfect competition and monopoly, Maximizing excise tax revenue in monopolistic competitive market, Comparative static analysis: Partial equilibrium market model, National Income model, Partial and Substitution elasticity's, Optimization of unconstrained functions and their economic applications, Profit maximization by a multi-product and multi-plant firms, Price discrimination and monopoly, Optimization by using Cobb- Douglas, CES and Translog functions with interpretation of the results.

Linear Programming

Ingredients of linear Programming, Graphical approach, Simplex method, Economic application of

linear programming, Concept of primal & dual, Duality theorems, Solving of Primal via dual, Economic interpretation of a dual.

Recent developments in mathematical economics

Recommended Books

- Chiang, A. C. - Fundamental Methods of Mathematical Economics – 3rd Edition (1984) - McGraw Hill Publishing Company.
- Frank, Budnick - Applied Mathematics for Business, Economics and Social Sciences- 4th Edition (1993) or latest – McGraw Hill Publishing Company.
- Dowling E. T.- Mathematics for Economists, Schaum's Outline Series- 3rd Edition
- (2001) – McGraw Hill Publishing Company.
- George, Alvery et al – Essentials of Mathematics with Business Applications-
- 5th Edition (1995) - McGraw Hill Publishing Company.
- Weber E. Jean - Mathematical Analysis: Business and Economic Applications- (Latest Edition) - Harper and Row Publishers, New York.
- Colin, Glass – An Introduction to Mathematical Methods in Economics- (Latest Edition) - McGraw Hill Publishing Company.

3. STATISTICAL ECONOMICS

ECO- 5404 Cr. Hrs. 03

Course Contents

What is Statistics?

Definition of Statistics, Population, sample Descriptive and inferential Statistics, Observations, Data, Discrete and continuous variables, Errors of measurement, Significant digits, Rounding of a Number, Collection of primary and secondary data, Sources, Editing of Data. Exercises.

Presentation of Data

Introduction, basic principles of classification and Tabulation, Constructing of a frequency distribution, Relative and Cumulative frequency distribution, Diagrams, Graphs and their Construction, Bar charts, Pie chart, Histogram, Frequency polygon and Frequency curve, Cumulative Frequency Polygon or Ogive, Histogram, Ogive for Discrete Variable. Types of frequency curves. Exercises.

Measures of Central Tendency

Introduction, Different types of Averages, Quantiles, The Mode, Empirical Relation between Mean, Median and mode, Relative Merits and Demerits of various Averages. Properties of Good Average, Box and Whisker Plot, Stem and Leaf Display, definition of outliers and their detection. Exercises.

Measures of Dispersion

Introduction, Absolute and relative measures, Range, The semi-Inter-quartile Range, The Mean Deviation, The Variance and standard deviation, Change of origin and scale, Interpretation of the

standard Deviation, Coefficient of variation, Properties of variance and standard Deviation, Standardized variables, Moments and Moments ratios. Exercises.

Regression and Correlation

Introduction, cause and effect relationships, examples, simple linear regression, estimation of parameters and their interpretation. r and R^2. Correlation. Coefficient of linear correlation, its estimation and interpretation. Multiple regression and interpretation of its parameters. Examples

Index Number

Simple aggregative index, Un-weighted index numbers;; Weighted indexes; Laspyer's price index, Paaseche's price index, Marshal- Edgeworth price index; Fisher's ideal index; Consumer Price Index (CPI), Producer Price Index (PPI), CPI versus GDP Deflator; Issues in constructing and using index numbers; Application of index numbers to business and economics.

Emerging Trends and Recent Issues

Recommended Books

- Walpole, R. E. 1982. "Introduction to Statistics", 3rd Ed., Macmillan Publishing Co., Inc. New York.
- Muhammad, F. 2005. "Statistical Methods and Data Analysis", Kitab Markaz, Bhawana Bazar Faisalabad.
- M.Mood,Alexandder,Franklin A.Graybill and Duane C.Boes(2003), "Introduction to the theory of Statistics", 3rd edition.
- Walpole, Ronalde, E(2002), " Introduction to Statistics" 3rd edition.
- Chaudhry S. M., and Shahid Kamal (1996). Introduction to Statistical theory; Part-I. Ilmi Kitab Khana, Lahore

4. Fundamentals of Economics

ECO-5103 Cr. Hrs= 03

(Compulsory courses for Associate degree in Arts)

Introduction

Nature, scope and importance of Economics, Microeconomics vs Macroeconomics, Scarcity and choice, Opportunity cost, Factors of production, Production possibility frontier.

Demand, Supply and Equilibrium

Concepts of demand and supply, Laws of demand and supply, Market equilibrium, Shifts in demand and supply curves, and market equilibrium.

Elasticity

Concept of elasticity, Price elasticity of demand, Income elasticity of demand, Cross Elasticity of Demand, Price elasticity of supply, Application of elasticity.

Utility Theory

Consumer behavior, Preferences, Utility function, Laws of Increasing and diminishing marginal utility, Law of Equi-marginal utility.

Theory of Firm

Factors of production and their rewards, Total, average, and marginal products, Laws of returns, Cost of production, Total, average, and marginal costs, Total, average, and marginal revenue. Concept of profit maximization/Cost minimization.

Market Structure

Perfect competition & imperfect competition: assumptions and Price/Output determination.

National Income

Concepts of national income, GDP & GNP, Real vs. nominal GNP, NNP, NI, PDY, Saving and Personal Consumption.

Macroeconomic Issues

Concept of inflation, unemployment, Balance of payment, Exchange rate and Business cycles. Monetary Policy and Fiscal Policy and their role in the economy.

Recommended Books:

1. Michel Parkin. 2004. Economics, 5th Ed., Addison Wesley.
2. Paul A. Samualson and W.D. Nordhaus. 2004. Economics, 18th Ed., McGraw Hills, Inc.
3. John Sloman, Economics (Latest edition).
4. Miller. Microeconomic Theory (Latest edition).
5. Lipsey and Crystal. Economics (Latest edition).

This course will focus on the ideological, philosophical, psychological, socio-economic and historical foundations of education. The major focus will be on developing an understanding of the participants how different philosophical theories affect education. The course will also include historical development of education of the Pakistan. Emphasize will be given on analyzing various sociological, political, economic and ideological forces that influence the process of education in our culture context. This course will also be used to develop the ability in prospective teachers to interpret knowledge within its historical, philosophical, ideological, and social contexts, which will lead to produce critical perspectives on education both within, and outside of, schools.

Course Contents for Education

Course-I

Foundations of Education (EDU-5103)

Semester-1

Credit Hours 03

Learning outcome

The students will be able to:

- Explain the important features of foundation of education
- Specify the role of educational thinkers in education
- Discuss the modes of education
- Discuss historical development of Pakistan
- Evaluate the issues and problems of education.

Course Outline

Unit 1 Ideological Foundation of Education

1.1. Islamic Foundations
1.2. Islamic concept of Peace
1.3. Other religions and Islam
1.4. Ideology and teachers

Unit 2 Philosophical Foundations of Education

2.1. Philosophy and Education
2.2. Main Philosophical Thoughts
2.3. Idealism
2.4. Realism
2.5. `Pragmatism
2.6. Re-constructionism

Unit 3 Psychological Foundations of Education

3.1. Learning and Maturation
3.2. Individual Differences
3.3. Self Concept
3.4. Academic Aptitude
3.5. Instructional Strategies and Psychology

Unit 4 Socio-Economic Foundations of Education

4.1. Concept of Society and Culture
4.2. Social Conditions and Education
4.3. Economic Conditions and Education
4.4. Politics and Education

Unit 5 Historical Foundations of Education

5.1. History as a foundation of education
5.2. Historical perspectives of education
5.3. Education and ideology of Pakistan
5.4. Pre-Pakistan Period (712 A.D. to onward)
5.5. Education in Pakistan after independence

Unit 6 Aims of Education

6.1. Aims, Goals and Objectives
6.2. Taxonomies of Objectives
6.3. Aims and Objectives of Education in Pakistan

Course-II

Educational Psychology (EDU-5203)

Semester-II

Credit Hours: 03

Course Description

The purpose of this course is to *develop learner's* insight. Its unique approach helps students teachers to understand different psychological concepts by encouraging them to examine their own learning and then showing them how to apply these concepts as teachers. This course concentrates on core concepts and principles. It gives readers an in- depth understanding of the central ideas of educational psychology.

Learning Outcomes

By the end of the course students should be able to:

- describe in detail the multidisciplinary nature of educational psychology
- familiarize students with basic theories derived from various discipline which are related to education
- develop critical thinking about and appreciation of education psychology as multidisciplinary subject
- familiarize with the concept of test development

Course Outline

Unit 1 Introduction to psychology

1.1. Schools of thoughts
1.2. Structuralism
1.3. Functionalism
1.4. Behaviorism
1.5. Nature and function of educational Psychology

Unit 2 Fundamentals of Human Development

2.1. Overview of Growth and Development
2.2. General nature of growth and Development
2.3. Factors influencing Child Development

Unit 3 Learning

3.1. Definition of learning
3.2. Learning theories
3.3. Learning Process

Unit 4 Information Processing

4.1. What is Memory
4.2. Parts of memory
4.3. What is Forgetting
4.4. Methods to improve memory

Unit 5 Intelligence

5.1. Concept of intelligence
5.2. Theories of intelligence
5.3. Individual difference
5.4. Intelligence Testing

Unit 6 Measurement and evaluation in educational Psychology

6.1. Test
6.2. Characteristics of Test
6.3. Reliability
6.4. Validity
6.5. Items Analysis

Course-III

Contemporary Issues and Trends in Education
Semester-III
Credit Hours:03
Course Code:EDU (5303)

Introduction

Competent teachers are usually knowledgeable in their respective content areas. Being part of the education system, teachers need to be aware of the contemporary issues and trends in education. Issues such as population explosion, Gender Development, sustainable development require a broad based knowledge approach for teacher preparation. Therefore, a course on contemporary issues and trends in education is considered significant to develop an insight among teachers.

Learning Outcomes

At the end of this course, the students will be able to:

- argue on the positive and negative impact of the information explosion
- explore the gap between madrassah and mainstream education and identify appropriate government responses
- identify barriers to the achievement of universal literacy and how these may be removed at the local level
- discuss the gradually reducing gender disparity in education in Pakistan and its likely consequences
- analyze the relationship between national curriculum structure and career opportunities
- consider how best environmental awareness can be enhanced through schools
- consider the consequence of the growing privatization of education

Course Outline

Unit 01 Education as a Complex Enterprise

1.1 Diversity of aims and approaches in education.
1.2 Variety of philosophical approaches to education.
1.3 Education in different periods and societies

Unit 02 Madrassah Education

2.1 Madrassah: origin, aims and objectives
2.2 Role of madrassah in 21st century
2.3 System of education in madrassah
2.4 Madrassah reforms in Pakistan

Unit 03 Universal Literacy

3.1 Literacy and individual rights
3.2 Factors affecting program for universal literacy: medium of instruction

3.3 Formal and Non formal education: Advantages and disadvantages

Unit 04 Gender Disparity

4.1 Concept of gender equality
4.2 Factors affecting the status and role of women
4.3 Steps towards reducing gender disparity.

Unit 05 Population Education:

5.1 Concept of Population Education.
5.2 Factors affecting Population Education.
5.3 Impact of Population Growth on National Development.
5.4 Roles and responsibilities of family, school, mosque and community in population education.
5.5 Steps towards population planning and welfare.

Unit 06 Environmental Awareness

6.1 Types of pollution
6.2 Causes of pollution
6.3 Environmental education

Unit 07 Privatization of Education

7.1 Government resources and multiple demands
7.2 Need of private sector education
7.3 Challenges of quality education

Unit 08 Information in Education

8.1 New concept of information explosion
8.2 Expanding learning resources
8.3 Information and communication technology (ICT) literacy
8.4 Technology in education

Unit 9 Problems and Issues in Education in Pakistan

9.1. Universalization of Primary Education
9.2. Literacy
9.3. Medium of Instruction
9.4. Diversification of Education
9.5. Environmental Education
9.6. Gender and Education
9.7. Islamiazation of Education
9.8. Special Education
9.9. Health Education / Drug Education

Course-IV

Development of Education in Pakistan
Semester-IV
Credit Hours: 03
Code: (EDU-5403)

Course Description

This course is designed to develop prospective teachers towards knowledge of education of the development of education in Pakistan. Prospective teachers will develop their knowledge about different phases of development of education keeping in view different stages like preprimary education, primary education, elementary education, secondary education and higher education. In this process different policies and plans will also be studied. Teacher educator will ensure that different components of education like curriculum, teacher education, school buildings, physical facilities are also taken into account during the enactment of the course.

Learning Outcomes

At the end of the course, the students will be able to:

- Understand role of Islamic values and ideology of Pakistan in education.
- Decipher the nature and purposes of education in the Mughal empire, the British period and post independence period.
- Delineate the historic roots and subsequent development of the madrassah education.
- Evaluate education in Pakistan in the light of different policies and plans.
- Critically analyze educational development at different levels of education i.e Pre- primary education, Primary education, Elementary education, secondary education and higher education.

Course outline

Unit 01 Education, its meaning and types

1.1 Definitions and meaning of Education
1.2 Types of education
   a) Formal
   b) Non Formal
   c) Informal
1.3 Education as a process
1.4 Aims of education as stated in National Educational policy 2009

Unit 02 Education in sub-continent Indo-Pak Since 712 A.D

2.1 Education in sub-continent Indo-Pak during Muslim period since 712A.D
2.2 Education in sub-continent Indo-Pak during Mughal period
2.3 Education in sub-continent Indo-Pak during British rule.
2.4 Comparison of characteristics of Education system between Muslim period and British rule.

Unit 03 Education in Pakistan after independence

3.1 : First Educational Conference 1947.
3.2 : National Education Commission 1959.
3.3 : Education Commission for Welfare of students 1962.
3.4: Education policy 1972.
3.5: National Education Policy 1978.
3.6: Education policy 1992-2010
3.7: Education Sector reforms 2001
3.8: Education policy 2009
3.9: 18th Constitutional amendment and education in Pakistan
3.10: Single National Curriculum
3.11: Comparison of characteristics of different education policies and their role in the development of education in Pakistan.

Unit 04 Status of Formal Traditional System of Education

4.1 Pre-primary education
4.2 Primary Education
4.3 Elementary Education
4.4 Secondary Education
4.5 Higher Education
4.5 Vocational Education
4.6 Technical Education
4.7 Teacher Education

Unit 05 Madrassah Education

5.1: Madrassah Education During Mughal Period
5.2: Madrassah Education During British Period
5.3: Madrassah Education after independence
5.4: Study of "Muslim education movements", contribution of Deoband, Aligarh, Jamia Millia, Anjuman-e-Himayatul Islam, Sindh Madersatul-Islam.

Unit 05 Education as an agent of Change

5.1 Meaning and factors of social change
5.2 Education as tool for social change
5.3 Education as conservative and creative force.
5.4 Education for peace and universal brotherhood.

Unit 06 Salient Features of Education Policies

6.1 All Pakistan Educational Conference 1947
6.2 The Commission on National Education 1959
6.3 The Education Policy 1972-80
6.4 National Education Policy 1979
6.5 National Education Policy 1992

6.6 National Education Policy 1998-2010
6.7 National Education Policy 2009

Recommended Books (English Medium)

Canestrari, A. (2009). Foundations of Education. New York: Sage Publications.
Eugene, F.P. (2005). Critical issues in education: Anthology of reading. New York: Sage Publications.
Goldblatt, P.F., & Smith, D. (2005). Cases for teacher development. New York: Sage Publications.
Holt, L.C. (2005). Instructional patterns: Strategies for maximizing students learning. Murphy, D. (2005). Foundations/Introduction to Teaching. USA: Allyn & Bacon, Inc.New York: Sage Publications.
Semel, S. F. (2010). Foundations of education: The essential texts. USA: Routledge
Ormrod, Jeane, (2010) Educational Psychology: Developing Learners: Pearson
Santrock, John W., (2001) Educational Psychology, USA. Mc-GrawHill Anita Woolfolk; Educational Psychology, USA.
Al-Naqib-al-Attas, Syed Muhammad (1979). Aims and Objectives of Education, Jeddah: King Abdul Aziz University.
Iqbal Muhammad, (1999). The Reconstruction of Religious thought in Islam, Lahore: Shaikh Muhammad Ashraf.
John, S. Brubacher (1987). Modern Philosophies of Education, New Delhi: TATA McGraw Hill Publication Co.
Mansoor, A. Qureshi, (1983). Some Aspects of Muslim Education, Lahore: Universal Books.
AIOU (2006) Population Education Course MA EPM 584, Islamabad: AIOU.
Badran, M. (2005). The Gender of Islam, Al-Ahram: Cairo.
Haltak, J. (1990). Investing in the Future, Setting Educational Priorities in the Developing World, Paris, UNESCO. McGraw-Hill Kogakusha. Ministry of Education, Curriculum Wing (2010), 13 Modules on Various Core Themes of Population Education, Islamabad. Modhukar Indira (2003). Changing Demands of Technical and Vocational Education, Annual Publication New Delhi.
Mohantry, Jagannath. Primary and Elementary Education, Deep & Deep Publication Private Ltd.
Pakistan, Govt: (2003). Education for All, Ministry of Education Curriculum Wing Islamabad.
Rao, V. K. (2004). Population Education efficient Printer, New Delhi. Sylvester, C. (1994). Feminist Theory and International Relation, in Post Modern Era, Cambridge University Press.
UNESCO, Pakistan (2004). Quality of education in Pakistan, UNESCO Office, Islamabad. Usmani, B. D. (2004). Women Education in 21st Century Annual publication, New Delhi.
W. H. O. (2005). Emerging Issues in Water and Infections, U.N.O. Publishers, Philadelphia. Walt, S. (1992). The Renaissance of Security Students, New York. Colombia Press.

مجوزہ کتب اردو میڈیم

۱۔ علم التعلیم بی اے حصہ اول ۔ ایس ایم شاھد

۲۔ علم التعلیم بی اے حصہ دوم ۔ ایس ایم شاھد

۳۔ علم التعلیم بی اے حصہ اول ۔ مرزا یحیٰ محمد

۴۔ علم التعلیم بی اے حصہ دوم ۔ مرزا یحیٰ محمد

۵۔ علم التعلیم بی اے حصہ اول ۔ عقیلہ ظہور

۶۔ علم التعلیم بی اے حصہ دوم ۔ عقیلہ ظہور

۷۔ علمی اساسیات علم التعلیم بی اے حصہ اول ۔ مقبول احمد

۸۔ علمی اساسیات علم التعلیم بی اے حصہ دوم ۔ مقبول احمد

یہ تمام کتابیں پنجاب یونیورسٹی اساتذہ کے زیر مطالعہ ہیں

۹۔ تعلیمی جائزہ و پیمائش ایس ایم شاھد

۱۰۔ تعلیمی نفسیات جائزہ اور رہنمائی ایس ایم شاھد

۱۱۔ ایجوکیشنل ریسرچ ایس ایم شاھد

۱۲۔ تعلیمی انتظام و نگرانی ایس ایم شاھد

۱۳۔ ایجوکیشنل سائیکالوجی (محرک) ایس ایم شاھد

Course Contents for AD in commerce (ADC)

PRINCIPLES OF ACCOUNTING
ADC-5103
Cr.Hrs: 03

Objectives

- Apprehend and explain the Fundamental Accounting Principles, Concepts and Conventions
- Record transactions in the General Journal, Prepare Ledger Accounts, Unadjusted Trial Balance
- Prepare Bank and Cash accounts, Bank Reconciliation Statements and Petty Cash Statements
- Make Year-end Adjustments (Adjusting Entries) and, prepare Adjusted Trial Balance
- Make Closing and Reversing Entries
- Prepare Income Statement, and Balance Sheet from adjusted Trial Balance keeping in view IFRS/IAS and Companies Ordinance Format
- Calculate and Record Depreciation by using permitted Methods

COURSE OUTLINE

1. Accounting Conventions, Concepts and Principles:
   Definition and Scope of Accounting; Basic Principles of Accounting; Concepts and Conventions, Underlying Accounting Statements, Substance over Form, the Generic Impact of International Accounting Standards on Accounting Procedures, Practices and Statements' Preparation as applicable in Pakistan (IAS-1)
2. Accounting Systems and Procedures:
   Principles of Double-entry Book-keeping; Accrual-based Accounting System; Adjusting, Closing and Reversing Entries; Methods of keeping and presenting Books of Prime Entry (Cash Book, Petty Cash Book, Sales Journal, Purchase Journal, Purchase and Sales Return Journals etc.); Principal and Subsidiary Ledgers; Trial Balance; Completion of Accounting Cycle; Components of Financial Statements; Responsibility, and Users of Financial Statements.
3. Control Accounts:
   Receivable Control Accounts; Payable Control Accounts, Errors of Control Accounts (including subsidiary ledger) and Reconciliation of Control Accounts and Subsidiary Ledger.
4. Cash Control:
   Preparation of Three-column Cash Book as well as Petty Cash Statement and maintenance of Petty Cash System; Preparation of Bank Reconciliation Statement; Cash Receipts and Payments Accounts. The purpose, requirements and process of Internal Audit relating to Cash Control; Financial Control,

Errors and Frauds.

5. Rectification of Errors:
Types and Corrections of Errors not affecting Trial Balance; Corrections of Errors affecting Trial Balance including Suspense Accounts.

6. Basic Principles of Calculating and Recording Depreciation of Tangible Non-Current Assets – Depreciation Methods (only) as per IAS-16:
Recognition and Measurement of Tangible Non-Current Assets; distinction between and application of principles of Capital and Revenue Expenditures, Concept of Depreciation; Methods of Measuring and Recording of Depreciation as per IAS-16.

7. **Preparation and Presentation of Financial Statements:** Preparation and Presentation of Financial Statements for Trading & Services Concerns; Elements/Components of Financial Statements in accordance with the format of lAS-I and Companies Ordinance; Financial Statements (Balance Sheet, Income Statement, Cash Flow Statement and Statement of Changes in Equity) in respect of Trading; and Services Enterprises.

Recommended Books:

1. Jerry. J, Weygandt, Paul D. Kimmel and Donald E. Kieso Accounting Principles.
2. Frankwood, Business Accounting, Volume-1
3. Financial Accounting, Mark S. Bettner, Jack L. Smith.
4. IFRSs / lASs, International Financial Reporting Standards/International Accounting Standards Board London, published/issued by ICAP in Pakistan Latest Edition

Reference Books:

5. Introduction to Financial Accounting – Study Text by Mohyuddin Tahir Mahmood
6. Financial Accounting by M. Hanif and A. Mukherjee

2. INTRODUCTION TO BUSINESS
ADC-5104
Cr.Hrs: 03

Objectives

- To acquaint students with full range of functions of business organizations
- To apprehend about Businessman and Entrepreneurial Activities
- To make students well aware of various Legal Forms of a Business, and about their respective Pros and Cons
- To know about the various Resources desired for a successful business, and the Sources of Finance

- To familiarize students with Pattern, Practices, Operational Factors etc. for operating domestically and/or internationall
- **COURSE OUTLINE**

1.1 Scope, Importance and Functions, Entrepreneurial Qualities of a Businessman
1.2 Business Environment and Social Responsibility
1.3 Role of business in Economic Progress of the country
1.4 Problems of a Business and Business Environment

2. FORMS OF BUSINESS ORGANIZATION

2.1 Sole-proprietorship Nature, Scope, Advantages and Disadvantages
2.2 Partnership - Classification of Partnership, Advantages and Disadvantages, Rights, Duties and Liabilities of Partners, Kinds of partners, and Dissolution of Partnership and Firm
2.3 Joint Stock Company –Types / Classification, Formation, Memorandum of Association, Articles of Association, Prospectus, Capital Management, Meetings and Winding up Features, Merits and Demerits, Management of the Companies.

3. COOPERATIVE OWNERSHIP AND BUSINESS COMBINATIONS

3.1 Meanings, Types of Cooperatives, Advantages and Disadvantages.
3.2 Business Combination: Meaning, Types and Forms, Causes and Purposes, Advantages and Disadvantages.

4. ENTREPRENEURSHIP

4.1 Meanings/Definition, Nature, Features, Scope, Pros and Cons
4.2 Differences and Similarities between a Businessman and an Entrepreneur, Competitive Advantage of organizations having Entrepreneurial Edge
4.3 Real World Examples, Prospects for Entrepreneurs in Pakistan, Need for Entrepreneurial Education and Activities

5. INTERMEDIATION / MIDDLEMANSHIP

5.1 Meanings/Definition, Nature, Rationale/Theme, Features, Scope, Pros and Cons
5.2 Differences and Similarities between a Businessman and a Middleman
5.3 Real World Examples, Prospects for Intermediation in Pakistan, Need for Intermediation Education and Activities

6. FINANCE

6.1 Definition, Components, Importance, Kinds and Sources

6.2 Long Term and Short Term Financing.
6.3 Some Important Financial Institutions and Regulatory Bodies.
6.4 Stock Exchange and Commodity Exchange: Nature, Role and Significance.
6.5 Risk and Risk Management: Insurance, Protection against Risks, Importance and Types of Insurance, Types of Risks.

7. MARKETING

7.1 Process of Marketing, Definition, Functions and Scope,
7.2 Approaches to the Study of Marketing.
7.3 Marketing Mix for Physical Goods and Service Products, and Importance.
7.4 Channels of Distribution for Consumer Good and Organizational Goods.
7.5 Marketing Communication and Promotion, Advertising, Personal Selling, Sales Promotion, Public Relation, Packaging.

8. TRADE

8.1 Wholesale and Retail, Meaning, Importance, Functions, Advantages and Disadvantages.
8.2 Foreign Trade, Imports and Exports, Role in Economic Development of the Country.

9. PHYSICAL FACTORS

9.1 Selecting Business Location, Factors Influencing Locations, Small Business, VS Large Business
9.2 Purchasing and Inventory Control Coordination of Purchasing with Sales, Organization of Purchasing Department, Centralize vs. Decentralize Purchasing, Purchasing Policies and Procedure Inventory Control.

10. THE PERSONEL DEPARTMENT

10.1 Employment Division, Recovering, Placement Promotion.
10.2 Wages and Salary Section, Analysis & Job Classification, Pay Scales.
10.3 Training Program, Apprentice, Supervisory etc.

11. BUSINESS CYCLE, AND INFORMATION TECHNOLOGY

11.1 Definition/Meaning, and the Existence in the real world.
11.2 Wage Iterative Stages/Segments of Business Cycle.
11.3 Definition/Meaning, Scope & Role of IT in Business

11.4 E-Business, and E-Commerce, and their respective Scope & Role
11.5 Business IT Domains/Orientations including: B2C, C2C, C2B etc.

12. OPERATING IN INTERNATIONAL/GLOBAL ENVIRONMENT

12.1 Definition/Meaning of International /Global Operations /Business.
12.2 Reasons, and Scope of International/Global Operations/Business.
12.3 Environment and Challenges for International/Global Operations/Business.

Recommended Books:

1. Rober C. Appleby, Modern Business Administration
2. Theodre J. Sielaff & Belmont, Introduction to Business, California
3. David L. Kurtz and Louis E. Boone, Contemporary Business, 14th Edition
4. John W. Aberle, Business Studies, Wordsworth Publishing Company Inc.

Reference Books:

3. Muhammad Irshad, Introduction to Business, Naveed Publication Lahore.
4. Ali M. H., Introduction to Business.
5. Business Organizations by 'Nisar-ud-din'.
6. Introduction to Business by 'M. Saeed Nasir'.

3. COST ACCOUNTING
(ADC-5204)
Cr.hrs: 03

Pre- Requisite

Principles of Accounting, and Financial Accounting

Objectives

This course will enable students:

- Understand Cost Concepts, Objectives, Scope, Cost Flow and Classification, Cost Behavior and other associated Concepts
- Understand and explain Material, Labor, Factory Overhead Costing and Control,
- Accounting for Joint- and By-Products
- Prepare Job-order Cost Sheet and Cost of Production Report

COURSE OUTLINE

1. CONCEPTS, AND SCOPE OF COST ACCOUNTING:

Definition and concept of cost, Cost object, Cost elements, Sources and uses of cost data, Cost accounting v / s financial accounting, Costing department and its

relationship with other departments, Role of cost accounting in a management information system, Uses of cost data.

2. COST CLASSIFICATION, AND FLOWS:

Direct and Indirect cost, Product and Period cost, Controllable and Uncontrollable cost, Cost Behavior, Fixed and Variable cost, Semi- variable and Step Fixed Cost, Cost Accounting Cycle/Flow, Chart of account and coding for costing, Statement of Cost of Goods manufactured and sold.

3. MATERIAL COSTING AND CONTROL:

Procedure of material procurement, application of IAS-2. Two-bin system, The use of FIFO, and Weighted Average for Material Valuation and the pricing for material issue, Stock taking periodic and perpetual inventory, Treatment of differences between physical and book stock, Economic order quantity, Effect of quantity discount on EOQ, Reorder level, safety stock and maximum stock, ABC Control.

4. LABOUR COSTING AND CONTROL:

Objectives of payroll accounting. Calculations and recording of payroll, payroll taxes and deductions. Direct and Indirect Labour, Productivity and efficiency, Remuneration methods, Straight piece rate and differential piece rate, Incentive wage plan, Group bonus, Time sheet and job cards, Overtime and idle time; Labour turnover rate.

5. FACTORY OVERHEAD COSTING AND CONTROL:

Classification and collection of overhead, Predetermined overhead applied rate, Factory overhead cost: planned, applied and actual, Over and under applied factory overhead' and its disposal, Departmentalization of overhead, Allocation, apportionment and reapportionment of overhead costs, Repeated Distribution and Algebraic Method for reciprocal, service department costs.

6. TYPES OF COSTING SYSTEMS:

Establishment of cost accounting system, Integrated cost accounts, Introduction to process costing, Incomplete process and concept of equivalent units, Format of Process Account and Format of 'Cost of Production' Report, Job-order Costing, Costing for Joint- and By- products, Operation *I* service costing.

Recommended Book:

1. Cost Accounting by F. Usry, H. Hammer & Adolph Matz
2. Cost and Management Accounting Latest Edition by Collin Drury
3. Cost Accounting for CA Intermediate Stage student-Latest Edition by PBP (Professional business Publications)

Reference Books:

1. Costing Latest Edition by Emile Woolf
2. Cost Accounting by T. Lucy DP Publications, Aldyne Place 142-144 Uxbridge Road, Shepherds Bush Green, London W128AW
3. General Journals/Periodicals: Journal of Management Accounting, ICMAP

4. PRINCIPLES OF AUDITING
ADC-5306
Cr.Hrs: 03

Objectives

This course is meant to:

- Comprehend and Interpret Audit Reports of any organization
- Comprehend the Auditing Principles, Techniques, and Generic Auditing Process
- Assess the risk of material misstatements
- Assess the strengths and weaknesses of internal control systems
- Start career as Auditor at initial level
- Start higher professional studies.

COURSE OUTLINE

1. NATURE AND PURPOSE OF AUDITING:

Nature, definition, scope, objective and principles of an audit, Classification (kinds/types) of an audit, the need and usefulness of an audit, distinction between accounting and auditing, concepts of reasonable assurance, audit risk and materiality, true and fair view, recurring audit, management responsibility for preparation and presentation of financial statements, regulatory framework for Auditing in Pakistan, responsibility of an auditor (external) and role of auditor as detector of error/mistake and fraud, Postulates of Auditing, Glossary of Terms for Auditing attached with ISAs issued by IAASB/IFAC.

2. INTERNAL CONTROLS:

Definition, meaning objectives, types, principles and techniques of internal control, difference between internal check and internal control, categories of internal control, systems of internal control, key components and important elements of internal control, limitations on the effectiveness of internal control/audit, evaluation of internal controls and accounting systems, substantive procedure, and analytical procedure, tests of controls: purchase system, sales system, payroll system, inventory system, cash system, capital and expenditure, controls in small entities, internal control in an EDP environment

3. INTERNAL AUDIT:

Scope and limitations and types of internal audit, responsibilities of internal auditor, internal audit and corporate governance, internal audit assignments, outsourcing the internal audit function, impact of internal controls and audit work, issuance of management letter, relationship between internal and external audit, audit working papers, functions of chief internal auditor,

reporting by internal auditors, difference between internal audit and external audit, reliance of external auditor on internal auditor' report.

4. LEGAL AND PROFESSIONAL CONSIDERATIONS:

Appointment, remuneration, resignation, removal, rights, powers, duties and liabilities, qualifications and dis-qualifications etc., of auditor, procedure for appointment of first and subsequent auditors under Companies Ordinance, 1984, provisions related to appointment of auditor by a listed company and appointment of sole proprietor chartered accountants as auditors by business name, international standards on auditing (ISAs) and guidelines, statements of standard accounting and auditing practices and technical releases issued by local professional institute of Pakistan, professional ethics.

5. AUDIT PLANNING AND CONTROL (w.r.t. ISA 300, 320):

Concept of audit planning, benefits and factors of audit planning, planning procedure overall audit strategy, Review of the client's business and accounting requirements, systems and procedures, preceding year's financial statements, client generated information, determining the audit risk and materiality level, audit planning memorandum, preparation of audit plans, preparation of detailed audit programmes, documentation of audit plan, audit timetable, changes in audit plan during the course of an audit, direction, controlling, supervision and review of audit work, monitoring time and costs.

6. AUDIT PROCEDURES AND TECHNIQUES (w.r.t. ISA 210, 315, 330):

Terms of audit engagement, engagement Letter and its contents, acceptance of and amendments in engagement letter, techniques of commencement of audit work, procedures affecting audit work, cut-off procedure. Definition of audit technique, kinds of audit techniques, tests of control and substantive procedures, management representation, vouching and verification of assets and liabilities, scrutiny of trading, profit and loss account, sampling techniques, compliance techniques, substantive testing, analytical review, use of computer assisted audit techniques (CAATs), reliance on other auditors, and reliance on experts.

7. AUDIT EVIDENCE AND DOCUMENTATION (w.r.t. ISA 500, 230): Concept of audit evidence, use of assertion in obtaining audit evidence, audit procedure for obtaining audit evidence, inspection of records and tangible assets, observation inquiry, confirmation from third party, recalculation, re-performance, analytical procedure, Need for documentation of work done, audit notebook, nature and types of working papers, contents of working papers, ownership and retention of working papers, recording of significant points, audit files.

8. PERFORMANCE OF AUDIT AND UNDERSTANDING THE RISK:

Assessment of Audit Risk, Materiality Assessment, and Audits Sampling Definition of risk, liquidity risk, management risk, operational risk, credit risk, market risk, compliance /legal or regulatory risk, reputation risk, risk management, board and senior management oversight.

9. COMPLETION OF AN AUDIT:

Completion procedures, events after reporting period, events occurring up to the date

of audit report, letter of representation, letter to management, points carried to next period, summary record of errors, contingent liabilities and commitments, review of audit work and company's financial statements, conclusions drawn and action taken.

10. THE REPORTING OF AUDIT:

Audit Reports, their contents and qualifications, forms of qualifications, statement of compliance, dating and signatories of the auditors' report, other information in report containing audited financial statements, reports on accounts of association of persons and sole traders, special purpose reports, requisites of code of corporate governance.

Recommended Books:

1. Auditing by A.H. Millichamp published by British Library Continuum
2. International Standards on Auditing (ISAs), issued by IFAC, and published by ICAP
3. Auditing by Basu, Latest Edition
4. Auditing by Depaula, Latest Edition
5. Advanced Auditing by Prof. Dr. Khawaja Amjad Saeed.
6. Practical Auditing by Spicer & Pegler's by Butter worth & Co. Ltd., Latest Edition

Reference Books:

1. Auditing, CA Examination Study Text (Latest Edition) Professional Business Publication, Lahore.
2. Contemporary Auditing, Gupta, Kamal (Latest Edition) Tata McGraw Hills, Delhi.
3. Journals/Periodicals: The Pakistan Accountant and other Publications by ICAP
4. Journals / Periodicals: Journal of Management Accounting, ICMAP

5. ADVANCED ACCOUNTING – I

ADC-5305

Cr. Hrs: 03

Pre- Requisite Financial Accounting

Objectives

- Preparation of Financial Statements of Companies in accordance with statutory requirements of Companies Ordinance and International Financial Reporting Standards (IFRS) / International Accounting Standards (IAS) with appropriate notes to a preliminary extent,
- Compute working capital ratios for business sectors.
- Identify and explain Reasons for Profit Appropriation,
- To learn about practical Implication of IAS-16, 18 and 38
- Application and selection of accounting techniques and procedures to specific circumstances like leases, branches, departmental stores, consignment, joint venture and construction contracts.
- prepare accounts and financial statements of joint venture, partnership, branches &

departmental types of businesses,

- Identify and explain reasons why any loss/gain is debited or credited to retained earnings,
- Prepare a statement of changes in Equity

COURSE OUTLINE

1. PREPARATION OF FINAL ACCOUNTS UNDER THE PROVISIONS OF COMPANIES ORDINANCE 1984 AND IFRS/IAS

   a. Conceptual Framework concerning Presentation Requirements of relevant IFRSs / IASs; 4th & 5th Schedule of Companies Ordinance, 1984 as to contents and presentation of Financial Statements
   b. General Trading and Profit and Loss Account, Profit and Loss Appropriation Account, Concept of 'Statement of Comprehensive Income', and Balance Sheet
   c. Statement of Changes in Owners' Equity (with concept of negative Equity) and Cash Flows Statement (w.r.t. IAS-7)
   d. Certain ancillary concepts including Off Balance Sheet Items, Residual Equity etc.
   e. Treatment of the following Items;

i.	Issue of Shares	**viii.**	Long Term Loans and their current Maturity
ii.	Cash Dividends	**ix.**	Bad Debts & Provisions
iii.	Right Shares and Bonus Issue	**x.**	Workers Profit Participation Fund
iv.	Reserves	**xi.**	Workers' Welfare Fund
v.	Govt. Levies (especially Sales Tax)	**xii.**	bank margins and guarantees including Commitments and Guarantees
vi.	Prior Period Adjustments		
vii.	Excise Duty and Sales Tax		

2. DEPARTMENTAL ACCOUNTING

   Departmental Accounting an Introduction, Accounting Systems for maintaining Departmental Accounts, Advantages of Departmental Accounts, Profit and Loss Account, Allocation of Departmental Expenses, Inter-departmental Transfers – Cost or Market Price Basis, Accounting treatment of unsold stock with the departments

3. BRANCH ACCOUNTING

   Nature and Operational System of a Branch, Its Comparison with Department, Accounting Systems for Depended Branches, Independen Branches and Head Office Reconciliation, Inter-branch Transactions, Issues with Wholesale Branch

4. ACCOUNTING FOR JOINT VENTURE

Nature of Joint Venture Enterprises, Accounting Treatment – When separate books of accounts are maintained, and When separate books are not maintained, Memorandum Recording Methods, Profit or Loss Computation

5. PARTNERSHIP ACCOUNTING
(Selected Topics – Formation, Admission & Goodwill Calculation)

Features and Formation of Partnership, Distribution of Profits among Partners, Changes in Partners' Sharing Ratios, Partners' Capitals and their Kinds, Accounting Treatment for Issues on Admission of a Partner, Calculation of Goodwill under Partnership

6. PROPERTY, PLANT AND EQUIPMENT w.r.t. IAS-16

Definitions provided in IAS-16; Methods of Depreciation and Change of Method, and its implications; Revision of Life of an Asset, and its implications; Accounting for Disposal and Exchange of an Asset, Disclosure Requirements.

7. REVENUE RECOGNITION w.r.t. IAS-18

Scope, and Definitions; Measurement of Revenue; Identification of the Transaction; Sale of Goods; Rendering of Services; Interest Royalties and Dividends.

8. INTANGIBLE ASSETS w.r.t. IAS-38

Definitions and Concepts; Recognition and Measurement; Internally Generated Intangible Assets; Research Phase and Development Phase; Practical Implications of the IAS through practice of some basic Illustrations.

Recommended Texts:

1. International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) Latest Edition by ICAP
2. Kieso, Weygandt, and Warfield (Latest Edition) Intermediate Accounting, Latest Edition Wiley Higher Education.
3. Javed H. Zuberi , "*Advanced Accounting", Latest Edition, Petiwala Book Depot.*
4. An Insight into IFRSs by Mohyuddin Tahir

Recommended Texts:

1. Gateway to IFRS Latest Edition
2. Mukherjee A. Hanif, "Modern Accountancy", Volume I & II. Latest Edition.

5. BUSINESS TAXATION

ADC-5404

Cr.Hrs: 03

Pre-Requisite Financial Accounting Semester IV

Objectives

This course is intended to:

- Familiarize the students with the Income and Sales Tax Laws in Pakistan.
- Introduce to students the important elements and aspects of tax system and authorities and their limits.
- Equip the students with necessary skills to deal with the situations concerning the field of taxation.

COURSE OUTLINE

1. **INTRODUCTION AND SCOPE OF INCOME TAX LAW IN PAKISTAN.**
   Definitions and Terminologies; Exclusions from total income; Reduction in tax liability; Exemption from specific provisions of income tax ordinance 2001.
   Distinction between capital and revenue items of expenditures; Tests for differentiating between capital and revenue receipts and expenditures; Capital loss.
2. INCOME FROM SALARY, SCOPE OF SALARY INCOME.
   Allowances and relieves under the Ordinance; Types of provident fund, treatment of provident fund, the sixth schedule, employer's contribution of approved gratuity fund deduction from income, gratuity fund deduction from income, gratuity fund and schemes; Computation of income tax payable from salaried persons.
3. INCOME FROM BUSINESS AND PROFESSION
   Terms used; Considerations governing taxation of business profits; Maintenance of accounts on mercantile or cash basis; Income chargeability under income tax law on income from business; Principles of computation of taxable profits, allowable deductions; Deduction for computing business income, significant changes introduced by the ordinance; Non-admissible expense; Bad-debts etc.
4. INCOME FROM PROPERTY TAX ON AGRICULTURE INCOME.
   Income from property tax on agriculture income; Calculation of ALV; Allowable deduction from income from property; Set-off and carry forward of losses; Types of Losses; Rules for set-off and carry forward; Penalties, offenses, appeals and prosecutions; Income tax authorities their appointments, adducties and the limitation and powers.
5. INCOME FROM OTHER SOURCES
   Deduction for computing income from other sources; Capital gains; Exchange gain/losses, income deemed to accrue or arise
6. OTHER ANCILLARY PROVISIONS
   Tax accountings and assessment cycle, procedure filling of return; Power to grant extension of time for filling the return, assessment procedure, provisional assessment, notes for production of books of accounts, evidence, etc.; Assessment on the basis of return, wealth statement, simplification of assessment of procedure, payment of tax before assessment, changes in tax withholding and collection of tax; Withholding tax rates under section 50(6) collection of tax on demand, recovery of tax; Recovery of

arrears/ refunds demand, refund and tax credit, persons entitled to claim refund in certain case, income tax refunds, penalties, enhanced tax rates for higher slabs of income, first schedule rates of income tax for individuals, unregistered firms,

Objectives

This course is intended to:

- Acquaint students with Legal System of Pakistan
- Familiarize the students with the different Mercantile Laws affecting the economic and business environment in Pakistan.
- Make students understand the important elements and aspects of business and industrial laws.
- Enable the students to assess the nature and Impact of certain types of rules and regulations by analyzing the cases referred to in the recommended books/sources.
- Equip the students with the necessary skills and aptitude to deal tactfully with the legal situations arising out of business routine matters.

association of persons and Hindu individuals.
Assessment of individual salaried and non-salaried person; Self- assessment scheme; Appeals; Practical Problems

7. INTRODUCTION AND SCOPE OF SALES TAX.
Definitions and Terminologies; Sales Tax Authorities; Registration in Sale Tax; Book Keeping and Invoicing Requirements; Furnishing of Return of Sales Tax; Appeals; Practical Problems.

Recommended Books / Texts:

1. Income Tax Ordinance, 2001 issued by FBR
2. Sales Tax Act, 1990 issued by FBR
3. Income Tax Ordinance, 2001 published by Mehboob, A. Sheikh, Taxation, latest edition – current year.
4. Sales Tax Act, 1990 published by Mehboob, A. Sheikh, Taxation, latest edition – current year.
5. Synopsis of Taxes by Mirza Munawwar Hussain, Latest Edition – current year

Reference Books:

2. Mughal, Muhammad Muazzam, Income Tax-Principles and Practice, Syed Mobin & Co., Lahore.

6. **BUSINESS LAW**
ADC-5405
Cr.Hrs: 03

COURSE OUTLINE

1. LEGAL SYSTEM OF PAKISTAN

Meaning of Legal System; Major Components / Divisions of Legal System of Pakistan; Comprehensive Analysis of Legal System of Pakistan; Factors of Economic Development w.r.t to Pakistan; Various Measures / Strategies to enhance Economic Growth

2. BUSINESS LAW

Nature of Business Law; Major Sources of Business Law; Application / Use of Business Law;

3. CONTRACT ACT, 1872

Proposal and Acceptance including Legal Definition, and Meaning, Communication of Offer and Acceptance, Revocation of Offer and Acceptance;

Agreement and Contract including Legal Definition, Meaning, and Difference, Legal Capacity to make a Contract, Major Classification and Kinds of Contracts, Essential Elements / Ingredients of a Valid Contract, Trinity of a Contract.

Legal Rules pertaining to Consideration, and Exceptions thereof, Major Types of Void Agreements.

Flaws in Contracts, Free Consent, and its Flaws (Coercion, Undue Influence etc.), Doctrine of Frustration of Contract.

Quasi Contract, and its Types, Contingent Contract, and its Types, Performance of Contracts including Reciprocal Promises

Breach and Discharge of Contracts, Remedies for Breach of Contract

Contracts of Indemnity and Guarantee covering Legal Definition, Meaning, and Difference, Rights and Liabilities of Indemnity-holder, Consideration for Guarantee, Nature and Extent of Surety's Liability, Continuing Guarantee, and its Revocation, Rights of Surety, Discharge of Surety from Liability

Law of Agency covering Legal Definition, and Meaning, General Rules of Agency, Eligibility to employ an Agent, and Eligibility to become an Agent, Necessity of Consideration for Agency, Classification of Agents, Modes of Creation of Agency, Extent of Agent's Authority, and Delegation of Authority, Distinction between Sub-agent and Substituted Agent, Duties and Rights of Agent, Personal Liability of Agent to Third Parties, Rights and Duties of Principal, Liability of Un-named, and Un-disclosed Principal, Modes of Termination of Agency

Bailment and Pledge including Essential features, and parties; Rights and duties of parties; Termination of pledge and Bailment

4. PARTNERSHIP ACT, 1932

Nature of Partnership including Legal Definition, and Meaning of Partnership and

Firm, Essential Elements

Formation of Partnership, and Ancillary Provisions; Pre-requisites to form Partnership, Partnership Deed, and its Constituents, Classification of Partnership, Kinds of Partners, Status of a Minor admitted to the Benefits of Partnership, Registration of a Firm, and its Rationale (i.e. Effects of Non-registration), Rights and Duties of Partners, Relations of Partners to Third Parties, and Liabilities thereto, Incoming and Outgoing partners

Dissolution of Partnership Firm covering Dissolution of Partnership, and Dissolution of Firm, Modes of Dissolution of a Firm, Classification of Partnership, Kinds of Partners, Status of a Minor admitted to the Benefits of Partnership

5. SALE OF GOODS ACT, 1930

Contract of Sale of Goods covering Legal Definition, and Meaning of a Contract of Sale, Essential Elements of a Contract of Sale, Distinction between Sale and Agreement to Sell, Classification (Kinds) of Goods, The Provisions pertaining to 'Price' Conditions and Warranties covering, Legal Definition of Condition and Warranty, The Distinction between them thereof, Conditions and Warranties (Express and Implied) in a Contract of Sale Provisions pertaining to 'Transfer of Property' Performance of a Contract of Sale including Legal Definition, and Meaning of 'Performance' in a Contract of Sale, Modes of Delivery, Acceptance of Delivery by Buyer, Sale by non-owner Remedial Measure in a Contract of Sale, Legal Definition, and Meaning of 'Unpaid Seller' in a Contract of Sale, Rights of an 'Unpaid Seller', Rights of a Buyer against Seller, Auction Sale, and Legal Provisions regarding it

6. NEGOTIABLE INSTRUMENTS, 1881

Nature and Meaning of Negotiable Instruments including Legal Definition, and Meaning of a Negotiable Instruments, Characteristics of Negotiable Instruments, Presumptions as to Negotiable Instruments

Classification (Kinds) of Negotiable Instruments; Promissory Notes Definition, and Essential Elements, Bill of Exchange Definition, and Essential Elements, Cheque Definition, and Essential Elements, Hundi Definition, and Meanings

Parties to Negotiable Instruments: Holder Meanings, and Features; Holder-in- due-course Meanings, and Features; Capacity of Parties

Presentment of Negotiable Instruments: Presentment for Acceptance; Presentment for Sight; Presentment for Payment

Negotiation of Negotiable Instruments: Definition, Eligibility for Negotiation, and Duration of Negotiability; Distinction between Negotiation and Assignment; Modes of Negotiation; Endorsement, and its Kind

Dishonor and Discharge of Negotiable Instruments: Definition, and Meaning of Dishonor and Discharge; Modes of Dishonor (Non-acceptance and Non- payment); Discharge of the Instruments and the Parties; Modes of Negotiation

Banker and Customer Relation (Legal): Definition, and Meaning of Banker and Customer

Crossing of Cheques, and its Types; Bouncing of Cheques (Provisions from Banking Law / Circulars)

Recommended Books:

1. Mercantile Law - Bare Acts Latest Edition
2. Mercantile Law by M. C. Kuchhal Latest Edition
3. Mercantile Law by M. C. Shukla Latest Edition
4. Saeed, Khawaja Amjad, Mercantile and Industrial Laws in Pakistan, Institute of Business Manageent, Lahore Latest Edition

Reference Books:

1. Mercantile Law by Luqman Baig Latest Edition
2. Business Law by Khalid Mehmood Cheema, Sayed Mobin Mahmud & Co. Lahore Latest Edition
3. Business Law By Nazir A. Sheikh Latest Edition
4. Internet source: www.Paksearch.com

COURSE OUTLINE PSYCHOLOGY

Semester /year	Name of Subject	Credits
PSY-3106	Introduction to Psychology	3
PSY-3206	History and Schools of Psychology	3
PSY-4306	Personality Theories I	3
PSY-4405	Personality Theories II	3

Course contents

PSY-3106 Introduction to Psychology

1. Introduction to Psychology

a. Nature and Application of Psychology with special reference to Pakistan.
b. Historical Background and Schools of Psychology (A Brief Survey)

2. Methods of Psychology

a. Observation
b. Case History Method Experimental Method
c. Survey Method
d. Interviewing Techniques

3. Biological Basis of Behavior

a. Neuron: Structure and Functions
b. Central Nervous System and Peripheral Nervous System
c. Endocrine Glands

4. Sensation, Perception and Attention

a. Sensation
(I) Characteristics and Major Functions of Different Sensations
(II) Vision: Structure and functions of the Eye.
(III) Audition: Structure and functions of the Ear.

b. Perception

(I) Nature of Perception
(II) Factors of Perception: Subjective, Objective and Social
(III) Kinds of Perception:
(IV) Spatial Perception (Perception of Depth and Distance)
(V) Temporal Perception; Auditory Perception.

c. Attention

(I) Factors, Subjective and Objective
(II) Span of Attention
(III) Fluctuation of Attention
(IV) Distraction of Attention (Causes and Control)

5. Motives

a. Definition and Nature
b. Classification

Primary (Biogenic) Motives: Hunger, Thirst, Defection and Urination, Fatigue, Sleep, Pain, Temperature, Regulation, Maternal Behavior, Sex

Secondary (Sociogenic) Motives: Play and Manipulation, Exploration and Curiosity, Affiliation, Achievement and Power, Competition, Cooperation, Social Approval and Self Actualization.

6. Emotions

a. Definition and Nature

b. Physiological changes during Emotions (Neural, Cardial, Visceral, Glandular), Galvanic Skin Response; Pupilliometrics

c. Theories of Emotion

d. James Lange Theory; Cannon-Bard Theory

e. Schachter –Singer Theory

7. Learning

a. Definition of Learning

b. Types of Learning: Classical and Operant Conditioning Methods of Learning: Trial and Error; Learning by Insight; Observational Learning

8. Memory

a. Definition and Nature

b. Memory Processes: Retention, Recall and Recognition

c. Forgetting: Nature and Causes

9. Thinking

a. Definition and Nature

b. Tools of Thinking: Imagery; Language; Concepts

c. Kinds of Thinking

d. Problem Solving; Decision Making; Reasoning

10. Individual differences

a. Definition concepts of;

b. Intelligence, personality, aptitude, achievement

RECOMMENDED BOOKS

1. Atkinson R. C., & Smith E. E. (2000). Introduction to psychology (13th ed.). Harcourt Brace College Publishers.

2. Fernald, L. D., & Fernald, P. S. (2005). Introduction to psychology. USA: WMC Brown Publishers.

3. Glassman, W. E. (2000). Approaches to psychology. Open University Press. Hayes, N. (2000). Foundation of psychology (3rd ed.). Thomson Learning. Lahey, B. B. (2004). Psychology: An introduction (8th ed.). McGraw-Hill Companies, Inc.

4. Leahey, T. H. (1992). A history of psychology: Main currents in psychological thought. New Jersey: Prentice-Hall International, Inc.

5. Myers, D. G. (1992). Psychology. (3rd ed.). New York: Wadsworth Publishers.

6. Ormord, J. E. (1995). Educational psychology: Developing learners. Prentice- Hall, Inc.

PSY-3206 History and Schools of Psychology

1. Introduction

a. Why study the history of psychology? Revisions in the traditional views of science Persistent questions in psychology

b. Early Greek Philosophy.

c. The first philosophers: Thales, Alaxinander, Heraclites, Parmenides, Pythagoras, Empedoclesm, and Democritus

d. Early Greek Medicine

e. The relativity of Truth; Protagoras, Gorgias, Xenophobes, Socrates, Plato, Aristotle; After Aristotle

f. Skepticism & Cynicism

g. Epicureanism and Stoicism Neoplatonism and Emphasis on spirit Contribution of Muslim Philosopher
h. Scholasticism

2) The Beginning of Modern Science and Philosophy

a. Renaissance Humanism; Challenges to Church authority; Rene Descartes
b. Empiricism, Sensationalism, and positivism
c. British Empiricism; French Sensationalism; Positivism
d. Rationalism
e. Spinoza; Immanuel Kant; Johann Friedrich Herbert; Friedrich Hegel
f. Romanticism and Existentialism
g. Early developments in physiology and the rise of experimental psychology; Individual differences; Early Research on brain functioning Voluntarism, Structuralism and other early approaches to psychology Voluntarism.

3) Psychobiology

a. Karl and Lashley; New connectionism; Behavioral genetics
b. Contemporary Psychology
c. The Diversity in contemporary psychology
d. The tension between pure, scientific and applied psychology
e. Psychology's status as a science; Post modernism

4) Systems and Schools of Thought

a. Structuralism Functionalism Behaviorism
b. Gestalt psychology and Field Theory

c. Psychodynamics Humanistic Psychology Cognitive Psychology
d. New trends in Psychology
e. Psychology in Pakistan

Recommended Books

1. Hergenhahn, B. R. (2001). An introduction to the history of psychology. New York: Wadsworth.
2. Sharma, N., & Sharma, R. (2003). History and schools of psychology. New Delhi: Atlantic Publishers.
3. Ajmal, M. (1986). Muslim contribution to psychotherapy and other essays. Islamabad: National Institute of Psychology, Quaid-i-Azam University.
4. Boring, E. G. (1957). A history of psychology. New Jersey: Prentice-Hall.
5. Leahey, T. H. (1987). A history of psychology. New Jersey: Prentice-Hall Inc.
6. Murphy, G. (1949). Historical introduction to modern psychology. London: Routledge & Kegan Paul.
7. Shultz, D. (1981). A history of psychology. Florida: Academic Press.
8. Wolmen, B. B. (I 979). Contemporary theories and systems in psychology. New York: Harper & Row.

PSY – 4306 Personality Theories-I

1. Psychology of personality

a. Introduction to the Discipline
b. Meaning of personality

c. Meaning of theory
d. Components of personality theory
2. The Psychoanalytic Legacy; Sigmund Freud
a. Biographical sketch
b. Basic concepts
c. Personality structure
i. Three interacting systems.
ii. Personality development
iii. Five sequential stages.
iv. Personality dynamics
v. instincts / anxiety / catharsis and anti-catharsis
vi. Defense mechanisms
d. Application of psychoanalytic theory; Dream analysis paraphrases
e. Psychotherapy
f. Critical evaluation
3. Personality's ancestral foundations: Carl Jung:
a. Biographical sketch
b. Basic concepts: Conscious and unconscious; Archetypes, Personality typology Personality development
c. Further applications: Dream analysis; Psychopathology; Psychotherapy
d. Critical evaluation
4. Overcoming inferiority and striving for superiority: Alfred Adler
a. Biographical sketch
b. Basic concepts:
I. Developing social feelings: society; work and love
II. Style of life; future goals vs. past events; overcoming inferiority Striving for superiority and superiority complex; Family influences on personality development
c. Further applications: Dream analysis; Psychopathology Psychotherapy
d. Critical evaluation
5. Neo Freudians
a. Karen Horney
i. Basic anxiety
ii. Coping by way of 10 neurotic needs moving towards, or against, or away from people
iii. Development of an idealized vs. a real image of self
iv. Claims, should and Defense mechanisms.
b. Harry Stack Sullivan
i. Empathy
ii. Anxiety and security
iii. 3 modes of experience
iv. 6 stages of Development
c. Henry A. Murray
i. Definition of need
ii. variety of needs
iii. Strength of needs and interactions Environmental press
iv. Thema

d. Erik Erikson
i. Psycho-social stages of personality development
ii. Identity crises
e. Erich Fromm
i. Existential needs
ii. Individual and social characters
f. Evolutionary Psychology
RECOMMENDED BOOKS:

1. Buss, D. M. (2004). Evolutionary psychology: The science of mind (2nd ed.) Boston: Allyn & Bacon.
2. Ewen, R. B. (1998). An introduction of theories of personality. (5th ed.).
New Jersey: Lawrence Erlbaun Associate Publishers.
3. Feist, J. (1985). Theories of personality. Sydney: Holt Rinehart & Winston, Inc.
Pervin, L. A., Cervone, D., & John, O. P. (2005). Personality theory and research

PSY – 4405 Personality Theories-II
1. Dispositional theories:
a. Gordon Allport
i. Personality development
ii. Personality traits
iii. Critical evaluation
b. Raymond Cattell
i. View of a person; Understanding of the person Factor analysis; Economic model
ii. Basic concepts; Data types; Traits; Personality of nations c) Critical evaluation
iii. Hans Eysenck
iv. Basic concepts; Traits and types; Measuring and describing E, N, and P
v. Critical evaluation
2. Humanistic and existentialist theories
a. Abraham Maslow
i. Basic concepts
ii. Five basic human needs
iii. Self actualizing person
iv. Critical evaluation
b. Carl Rogers
i. Biographical sketch
ii. Basic concepts
iii. Actualization
iv. Importance of self
v. Personality development
vi. Client centered therapy
vii. Critical evaluation
c. George Kelly
i. Biographical sketch
ii. Basic concepts
iii. Personality as a system of constructs
iv. Relation among constructs

v. Personality development
vi. Predictability
vii. Dependency constructs
viii. Role playing
ix. Choices: the C-P-C cycle
x. Critical evaluation

3. Behaviorist theories
(I) B.F. Skinner
a. Basic Concepts
i. Operant conditioning
ii. Positive reinforcement
iii. Negative reinforcement and punishment
iv. Schedules of reinforcement
v. Operant conditioning and reinforcement
vi. Development of humans: Language, Personality and child rearing
b. Critical evaluation
(II) John Dollard and Neal E. Miller
a. Basic concepts
i. Psychopathology
ii. How fear is learned
iii. Effect of fear
iv. Critical evaluation

(III) Social Learning Theory of Albert Bandura
a. Basic concepts
i. Models and modeling
ii. Goals and self regulating
iii. Self efficacy
iv. Reward
v. Defensive behavior
b. Critical evaluation
i. Current paradigms
RECOMMENDED BOOKS:
1. Allen, B. P. (1997). Personality theories: Development, growth and diversity. (2nd ed.). Boston: Allyn & Bacon.
2. Ewen, R. B. (1998). An introduction to theories of personality. (5th ed.) New Jersey: Lawrence Erlbaun Associate Publishers.
Feist, J. (1985). Theories of personality. Sydney: Holt Rinehart & Winston, Inc.

Everyday Science

Course Contents

1. Introduction

- Introduction Nature of Science;
- Brief History of Science with special reference to contribution of Muslims in the
- Evolution and development of science:
- Impact of science on society.

2. The Physical Sciences

- Constituents and Structure: “Universe, Galaxy. Solar system, Sun, Earth. Minerals;
- Processes of Nature —Solar and Lunar Eclipses Day and Night and their variation:
- Energy :- sources and resources of Energy Energy conservation
- Ceramics, Plastics, Semiconductors
- Radio. Television, Telephones, Camera, Laser, Microscope.
- Imputers, Satellites;
- Antibiotics, Vaccines, Fertilizers, Pesticides,

3. Biological Sciences

- The basis of life - the cell, chromosomes, genes, nucleic acids.
- The building blocks - Proteins. Harmones and other nutrients
- Concept of balanced diet
- Metabolism
- Survey of Plant and Animal Kingdom (A brief survey of plant and animal kingdom to pinpoint similarities and diversities in nature).
- The Human body - a brief account of human Physiology, Human behaviour.

Recommended Books

- Encyclopedic Manual of everyday science by Dr. Rabnawaz Samo
- Exploring life Sciences by Turber, Kilburn &amp Howell
- Exploring Physical Sciences by Turber, Kilburn &amp Howell

Library and information science III for A.D Program

Introduction to classification

Theory 70	Practical 30

Definition. Importance of classification. Historically development. Types of classification in library science. Introduction of classification schemes (D.D.C, U.D.C, L.C and colon classification) subject headings. Methods of subject heading. Use of D.D.C (1st, 2nd and III summaries) schedule of classification. Notations and their kinds. Call number. Importance of call numbers. Standard sub division. Assigning call numbers.

Practical work

Assigning and analyzing of classification numbers 10+5 with the help of D.D.C scheme (20th/21 edition)

Assigning subject heading	**05**
Practical note book	**05**
Viva	**05**

Books recommended.

1. شبیر شاہد ہوتوانی

رہبر لائبریری سائنس ایسوسی ایٹ ڈگری پروگرام حصہ اول۔ جدید ترمیم شدہ ایڈیشن لاہور: قریشی برادرز پبلشرز 2021

2. اقرار حسین شیخ

لائبریری کا درجہ بندی نظام کیوں او کیسے۔ بار چہارم، راولپنڈی: دی بکس، 2019۔

Library & information science I for A.D Program

Introduction of libraries

Introduction and definition of library. Kinds of libraries (Academic libraries, Special libraries, Public libraries, National libraries) Objective of libraries. Importance of libraries in education and society. Role of libraries in education. Administrative structure of libraries (Different sections) Historical development of book and libraries. Resources of libraries (printed & electronic, e-books) definition of bibliography. Bibliographical information. Scope and importance of bibliography. Bibliographical description.

Recommended books

1. شبیر شاہد ہوتوانی

رہبر لائبریری سائنس ایسوسی ایٹ ڈگری پروگرام حصہ اول۔ جدید ترمیم شدہ ایڈیشن لاہور: قریشی برادرز پبلشرز 2021

2. اقرار حسین شیخ

لائبریری سائنس ماضی، حال اور مستقبل، بار چہارم، راولپنڈی: دی بکس، 2019۔

3. ڈاکٹر نسیم فاطمہ

علم کتب خانہ اطلاعات۔ فرسٹ ایڈیشن، کراچی: ادارہ فروغ کتب خانہ جات، 1985۔

4. اقرار حسین شیخ

اصول انتظام اور کتب خانے۔ بار چہارم، راولپنڈی: دی بکس، 2019۔

Library and information science IV (for A.D program)

Cataloguing

Theory 70	Practical 30

Definition. Historical development. Importance and function. Cataloguing tools. Kinds and types/forms of catalogue. Historical development of cataloguing codes. Introduction of AACR-1, AACR-2, and AACR-2 revised. ALA rules of filling 1980. Automated cataloging (OPAC)

Practical:

Main entry card, added entry card, Author and title. Keywords. Arrangements. Automated cataloging.

Marks distribution:

Practical	**20**
Note Book	**05**
Viva	**05**
Total	**30**

Recommended Books:

1. شبیر شاہد ہوتوانی

رہبر لائبریری سائنس ایسوسی ایٹ ڈگری پروگرام حصہ دوئم ___ جدید ترمیم شدہ ایڈیشن، لاہور: قریشی برادر پبلشرز، 2021۔

2. اقرار حسین شیخ

کیٹلاگ اور کیٹلاگ سازی۔ بار چہارم، راولپنڈی: دی بکس، 2019۔

Library & information science II for A.D Program

Information sources and services

Acquisition of reading material (Goals of acquisition, selection of books in libraries, principles of selections, selection tools, accessioning of reading material) Reference sources. (Bibliographical tools for current literature, Directories, Geographical information sources, Electronic references sources) History of databases. Important Websites for literature searching. Reference service (Organizing and objective of reference section, information function, Classification of question, guidance function, Bibliographical function) Evaluation of reference service. Use of Computer in Libraries.

Recommended books

1. شبیر شاہد ہوتوانی

رہبر لائبریری سائنس ایسوسی ایٹ ڈگری پروگرام حصہ اول۔ جدید ترمیم شدہ ایڈیشن لاہور: قریشی برادرز پبلشرز 2021

2. اقرار حسین شیخ

لائبریری سائنس ماضی، حال اور مستقبل، بار چہارم، راولپنڈی: دی بکس، 2019۔