

# BS Fifth Semester

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**BS in Arabic**

**Course-I**

**Quran Literature (M-I)**

**BS in Arabic**

**Course-II**

**Introduction to Arabic Language (F-10)**

# BS in Arabic

## Course-III

### Title: Modern Arabic Prose

الساعات المعتمدة: 3 ساعات

البرنامج التي يتم تقديم المقرر ضمنه : بكالوريوس في اللغة العربية و آدابها

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل السادس

CourseCode:ARB-01606

رمز المقرر: عربي 01606

الأهداف:

1. التعرف بالنثر و أقسامه.
2. معرفة فنون النثر الحديث و معرفة أعلام النثر الحديث.
3. الإلمام بأهم أدباء النثر الحديث و خصائص أدبهم.
4. معرفة أبرز خصائص و موضوعات النثر في العصر الحديث.
5. دراسة نصوص النثر الحديث مع الشرح و التفسير و النقد.

مفردات المقرر -الموضوعات الدراسية:

النثر
تعريفه و أقسامه عند العرب و الغربيين
فنون النثر الحديث
الرواية
القصة
القصة القصيرة
الأقصوصة
محمود تيمور حياته و آثاره
أسلوبه في الرواية
خصائصه في الرواية
أنا القاتل ( نبذة و جيزة )
دراسة نصوص الرواية
يوسف السباعي المصري حياته و آثاره

5003

أسلوبه و خصائص أدبه
نفس كريمة ( نبذة و جيزة )
دراسة نصوص مع الشرح والتعليق
<b>القصة (Novel)</b>
عناصرها و أنواعها
<b>عباس محمود العقاد</b>
حياته و آثاره و خصائص أدبه
عبرية خالد ( نبذة موجزة )
دراسة نصوص القصة مع الشرح والتعليق
<b>الدكتور طه حسين حياته و آثاره</b>
أسلوبه و خصائص أدبه
الشيخان ( نبذة موجزة )
دراسته نصوص مع الشرح والتعليق
القصصة القصيرة
تعريفها و عناصرها
<b>مصطفى لطفى المنفلوطي</b>
حياته و آثاره
أسلوبه و خصائص أدبه
الذكري ( من العبرات ) نبذة موجزة
دراسة النص مع الشرح والتعليق
<b>الأقصوصة (Short Story)</b>
تعريفها و عناصرها و حجمها
<b>جبران خليل جبران</b>
حياته و آثاره
أسلوبه و خصائص أدبه
مات أهلي ( من العواصف ) نبذة موجزة
دراسة النص مع الشرح والتعليق
<b>المسرح العربي</b>
المسرحية معناها و أسلوبها
أهم أنواع المسرحية
<b>توفيق الحكيم</b>
حياته و أعماله المسرحية
أريد أن أقتل (نبذة موجزة)

مصادر الدراسة:الكتب الرئيسية:

- 1- العبرات للمصطفى لطفي المنفلوطي مكتبة دار النشر القاهرة مصر 1998م.
- 2- أنا القاتل لمحمود تيمور مكتبة العربي قاهرة مصر 1999م.
- 3- نفس جريمة ليوسف السباعي مكتبة النهضة مصر 1978م
- 4- الشيخان للدكتور طه حسين مكتبة القاهرة مصر 1977م
- 5- دراسات في الأدب العربي الحديث و مدارسه، تأليف د. محمد عبد المنعم خفاجي.
- 6- الجامع في تاريخ الأدب العربي الحديث، تأليف د. حنا الفاخوري، النشر: دار الجيل للطبع و النشر 1991م.

# BS in Arabic

## Course-IV

### Title: History of Arabic Literature (1)

الساعات المعتمدة: 3 ساعات

البرنامج التي يتم تقديم المقرر ضمنه : بكالوريوس في اللغة العربية و آدابها

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل الخامس

CourseCode:ARB-01506

رمز المقرر: عربي 01506

#### الأهداف:

##### أولاً: المعرفة:

أن يتعرف الطالب و يكون قادراً على الآتي:

1. تحديد مفهوم الأدب و العصور التي مرّ بها.
2. معرفة أبرز خصائص و موضوعات الشعر و في العصر الجاهلي و عصر صدر الإسلام و العصر الأموي.
3. معرفة فنون النثر و خصائصه و موضوعاته و في العصر الجاهلي و عصر صدر الإسلام و العصر الأموي.
4. أن يتمكن الطالب من معرفة و نقد أبرز أعلام الشعر و النثر في في العصر الجاهلي و عصر صدر الإسلام و العصر الأموي.
5. معرفة أبرز مصادر الدراسة العلمية للمقرر.

##### ثانياً: المهارات:

أن يكتسب الطالب المهارات الآتية:

1. يستفيد من النصوص في تقوية لغته.
2. يميز قضايا و أحوال العصور التي درسها في المقرر.
3. جمعه جملة من أسماء الشعراء و الخلفاء الكُتّاب من التراث الأدبي.

5006

4. إعداد بحوث و محاضرات من مفردات المقرر تحت إشراف الأستاذ.

### مفردات المقرر -الموضوعات الدراسية

<b>الأدب و تعريفه</b>
<b>تحديد العصور الأدبية التاريخية</b>
<b>العصر الجاهلي</b>
دراسة جغرافية شبه الجزيرة العربية
تحديد القبائل العربية و فروعها العدنانية و الكنعانية و مواقعها الجغرافية
دراسة الأحوال السياسية و الإجتماعية
<b>المجتمع الجاهلي</b>
دراسة الحياة الأدبية في العصر الجاهلي
<b>الشعر الجاهلي</b>
مكانة الشاعر في المجتمع الجاهلي
أغراض و مواضيع الشعر الجاهلي
الخصائص المعنوية في الشعر الجاهلي
الخصائص اللفظية في الشعر الجاهلي
<b>المعلقات السبع</b>
رواية المعلقات و دراسة رواة العلقات
أهمية المعلقات و مكانتها في الجاهلية و سبب تسميتها بهذا الاسم
<b>أعلام الشعر الجاهلي</b>
<b>إمرؤ القيس</b>
(حياته، مكانته الأدبية، خصائص شعره، معلقته و سبب شهرتها)
<b>زهير بن أبي سلمى</b>
(حياته، مكانته الأدبية، خصائص شعره، معلقته)
<b>عمرو بن كلثوم</b>
(حياته، مكانته الأدبية، خصائص شعره، معلقته)
<b>نابغة الذبياني</b>
(حياته، مكانته الأدبية، خصائص شعره، نقده للشعراء)
<b>عنتر بن شداد</b>
(حياته، مكانته الأدبية، خصائص شعره، معلقته)
<b>النثر الجاهلي</b>
<b>خصائص النثر الجاهلي</b>
<b>الحكم و الأمثال</b>
مكانتهما في العصر الجاهلي و أعلامهما
<b>الخطابة</b>
مكانة الخطيب في المجتمع الجاهلي و أهمية الخطابة

أعلام النثر الجاهلي	
قس بن ساعدة الأيادي	
ذو الإصبع العدواني	
عمرو بن معد يكرب الزبيدي	
عصر صدر الإسلام	
التغير الذي أحدثه الإسلام في المجتمع العربي	
دراسة موجزة عن أثر الإسلام في اللغة و الأدب العربي	
موقف الإسلام من الشعر و الشعراء	
القرآن الكريم (تاريخه، أسلوبه، و تأثيره)	
الحديث الشريف (تاريخه، أسلوبه، و قيمته الأدبية)	
الشعر في عصر صدر الإسلام	
الشعر في عهد النبوة و الخلافة الراشدين	
شعر المخضرمين	
شعر الفتوحات الإسلامية	
أغراض و مواضيع الشعر في عصر صدر الإسلام	
خصائص الشعر في عصر صدر الإسلام	
أعلام الشعراء المخضرمين	
حسان بن ثابت	
(حياته، مكانته الأدبية، خصائص شعره، دفاعه عن الإسلام، هجاء الكفار)	
كعب بن زهير	
(حياته، مكانته الأدبية، خصائص شعره دفاعه عن الإسلام)	
الخنساء	
(حياتها، مكانتها الأدبية في فن الرثاء، خصائص شعرها، رثائها)	
النثر في عصر صدر الإسلام	
خصائص النثر الإسلامي	
الخطابة في العصر الإسلامي و أهميتها	
أعلام الخطابة	
عمر بن الخطاب	
علي بن أبي طالب	
العصر الأموي	
المجتمع الأموي	
الأحوال السياسية	
نظرة على الحياة الأدبية في العصر الأموي	
الشعر في العصر الأموي	
الشعر السياسي	
الشعر الغزلي	
النقائض الشعرية	
5008	

فئات الشعراء
أغراض و مواضيع الشعر الأموي
خصائص الشعر الأموي
أعلام الشعر في العصر الأموي
الأخطل
(حياته، مكانته الأدبية، خصائص شعره، شعره و موضوعاته)
جرير
(حياته، مكانته الأدبية، خصائص شعره، شعره و موضوعاته)
الفرزدق
(حياته، مكانته الأدبية، خصائص شعره، شعره و موضوعاته)
عمر بن أبي ربيعة
(حياته، مكانته الأدبية، خصائص شعره، شعره و موضوعاته)
النثر في العصر الأموي
خصائص النثر الأموي
الخطابة
إزدهار الخطابة في العصر العباسي
أعلام الخطابة
حجاج بن يوسف
(حياته، خطابته، مكانته الأدبية)
زياد بن أبيه
(حياته، خطابته، مكانته الأدبية)
سحبان بن وائل
(حياته، خطابته، مكانته الأدبية)
الكتابة الفنية
من أعلامها عبد الحميد الكاتب
(حياته، مكانته الأدبية، رسائله)

### مصادر التعليم:

### الكتب الرئيسية:

1. تاريخ الأدب العربي (العصر الجاهلي- العصر الإسلامي- العصر الأموي) ، تأليف د. شوقي ضيف، الناشر: دار المعارف، مصر، 1997.
2. مصادر الشعر الجاهلي ، تأليف د. ناصر الدين أسد، النشر:

3. الجامع في تاريخ الأدب العربي القديم، تأليف د. حنا الفاخوري، النشر: دار الجيل للطبع و النشر 1991م.
4. تاريخ آداب اللغة العربية ، تأليف د. جرجي زيدان، النشر: دار الفكر للطباعة و النشر و التوزيع، الطبعة الأولى 2005م.
5. تاريخ الأدب العربي ، تأليف د. أحمد حسن الزيات، النشر: دار المعرفة للطباعة و النشر 2000م.
6. تاريخ الأدب العربي، تأليف د. عمر فاروخ، النشر: دار العلم للملايين، بيروت.
7. تاريخ آداب العرب، تأليف مصطفى صادق الرافعي، النشر: المكتبة العصرية، الدار النموذجية، 2001م.
8. المفصل في تاريخ الأدب العربي في العصور القديمة و الوسيطة و الحديثة، تأليف مجموعة مؤلفين، النشر: دار إحياء العلوم، 1996م.

# BS in Arabic

## Course-V

### Course Title: Introduction To Linguistics

الساعات المعتمدة: 3 ساعات

البرنامج التي يتم تقديم المقرر ضمنه : بكالوريوس في اللغة العربية و آدابها

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل السابع

CourseCode:ARB-01702

رمز المقرر: عربي 01702

الأهداف:

1. التعرف بعلم اللغة و مبادئه.
2. معرفة الفصائل اللغوية و اللغات السامية.
3. معرفة اللغة العربية و منزلتها من اللغات السامية.
4. دراسة اللهجات العربية.
5. دراسة الأصوات و المفردات.
6. أن يكتسب الطالب مهارة تحليل النص لغويا.
7. أن يتعرف الطالب على المعاجم اللغوية.

مفردات المقرر -الموضوعات الدراسية

تاريخ البحث اللغوي
نشأة اللغة
التعريف بالفصائل اللغوية
اللغات السامية
منزلة اللغة العربية بين اللغات السامية
العربية البائدة-العربية الباقية
اللهجات العربية ومنزلة لهجة قریش بينها واستيلاؤها عليها
آداب اللغة العربية في العصر الجاهلي
ظاهرة التعريب في العصر الجاهلي
أثر القرآن الكريم والحديث النبوي الشريف في اللغة العربية
الحاجة العامة إلى التعريب علي نطاق واسع في عصر تدوين العلوم مما يتكون اللغة العربية

أصوات
مفردات
قواعد تكوين الكلمة
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عوامل تنمية اللغة العربية
الاشتقاق، القياس، القلب والإبدال، البحث، الترادف، الإشتراك التضاد المولد
أطوار العربية وجهود المسلمين في الحفاظ عليها
الدعوة إلى العامية
المعجمات العربية
معجمات المعابن

### مصادر التعليم:

### الكتب الرئيسية:

1. الساميون ولغاتهم، حسن ظاظا (الدكتور) الإسكندرية، 1971م
2. تاريخ اللغات السامية، إسرائيل ولفنسون القاهرة، 1929م
3. فقه اللغات السامية، كارل بروكلمان، ترجمة: د. رمضان عبدالتواب، القاهرة 1993م
4. فقه اللغة في الكتب العربية، عبده الراجحي (الدكتور) بيروت، 1972م
5. فصول في فقه اللغة، رمضان عبدالتواب، القاهرة، 2000م
6. فقه اللغة، علي عبدالواحد وافي 1995م
7. دروس في علم الأصوات العربية، لجان كاشينو، ترجمة: صالح الفرماي، تونس، 1924م
8. التطور اللغوي، مظاهره وعلله وقوانينه، رمضان عبدالتواب (دكتور) القاهرة، 1981م



# The Islamia University of Bahawalpur

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## BS in BOTANY Course-I

Class: BS- Botany

Semester- 5th

Session:

Instructor			Email:		
Course Title	Bacteriology and virology		Program	BS	
Course Number	BOTA-01501		Credit Hours	3(2+1)	
Lecture	.....day: .... period (00:00a.m to 00: 00a.m), Room# 00				
<b>Course Objective:</b> <ul style="list-style-type: none"><li>➤ To develop a clear understanding about Bacteria and Viruses.</li><li>➤ To enable the students to study and generate new knowledge in a purposeful manner.</li></ul>					
<b>Methods of Teaching</b> <ul style="list-style-type: none"><li>• Assigned readings ✓</li><li>• Group activities &amp; Discussion✓</li><li>• Audiovisual aids lectures ✓</li><li>• Web-assisted instruction ✓</li><li>• Student-Directed Teaching ✓</li></ul>					
Resource Material	<b>1. Recommended books:</b> <ol style="list-style-type: none"><li>1. Okafor, N. 2011. Environmental microbiology of aquatic and waste systems. Springer.</li><li>2. Kathleen, P.T and C. Barry. 2011. Foundations in microbiology. McGraw-Hill science.</li><li>3. Icon group international, 2011. The 2011 Report on in-vitro Diagnostic Microbiology, virology, serology, cytology and histology products: world market segmentation by city. ICON group international.</li></ol>				
	<b>2. Reference Books</b>		<b>3. Research Papers</b>		
	i	Kathleen, P.T and C. Barry. 2011. Foundations in microbiology. McGraw-Hill science.	i	Palukaitis, P and J.P. Carr. 2008. Plant resistance responses to viruses.	
	li	A text book of Botany (paper A). Diversity of plants by Tanveer Ahmad Malik and Dr. Hammad Ashraf.	ii	Mayo, M.A and A.A. Brunt. 2001. The current state of plant virus taxonomy.	
	<b>4.Hot Research Papers</b>		<b>5.Web Resources</b>		
	i		i		
	li		ii		
Office Help Hours					
Grading	Ex				
Problem Session	.....day: 00 and 00 periods (0:00-00:00am), Room# 00				
<b>SEQUENCE OF TOPICS TO BE COVERED</b>					
Lecturer #	Topics (outline of main topics and sub topics)	Chapter #	Tutorial /Laboratory		
1	Introductory lecture to the subject		Different methods of sterilization of glassware and media etc.		
2	History and characteristics of bacteria	Bacteriology			
3	Evolutionary tendencies in Monera		Culturing of bacteria, Preparation of culture media, and isolation techniques.		
4	General classification, Lynn Margulis and karlen Schwartz classification	Classification			
5	Morphology of bacteria				

6	Bacterial cell structure		
7	Transformation, bacterial conjugation and transduction	<b>Genetic recombination in bacteria</b>	Staining of bacteria and different staining techniques.
8	Locomotion, growth and reproduction in bacteria		
9	Glycolysis and alternative pathways to Glycolysis	<b>Bacterial metabolism of respiration</b>	Gram staining technique of bacteria.
10	Krebs cycle or TCA	-	
11	Electron transport chain (ETC)	-	Preparation of slides for study of various forms of capsule/ slime.
12	Fermentation and its types	<b>Fermentation</b>	
13	Light dependent and independent reactions	<b>photosynthesis</b>	
14	Bacterial nitrogen fixation	<b>Nitrogen fixation</b>	Study of flagella-staining with the help of prepared slides.
15	Biological importance of bacteria	<b>Importance of bacteria</b>	
16	Importance with special reference to agriculture, biotechnology and genetic engineering	-	
	<b>Mid Term Exam</b>	Course/Discussion from session 1 to 16	
17	Harmful effects of bacteria	<b>Harmful bacteria</b>	
18	General features of viruses	<b>virology</b>	Study of endospore- staining in bacteria.
19	History of discovery of viruses		
20	Viral architecture		Observation of symptoms of some viral infected plant specimens.
21	Classification, Baltimore classification system		
22	Dissemination and replication of single and double stranded DNA/RNA viruses		
23	Bacteriophage and its life cycle	<b>Phage virus</b>	Collection of at least 10 virus-infected plant specimens.
24	Plant viruses, plant viral taxonomy		
25	Virus biology and virus transmission	<b>Virus transmission</b>	
26	Different methods of virus transmission	-	-
27	Tobacco mosaic virus, transmission and replication	<b>TMV</b>	-
28	Molecular biology of plant virus transmission		-
29	Symptomatology of virus infected plants (internal symptoms)		-
30	External symptoms		
31	Metabolism of virus infected plants		
32	Resistance to viral infection		
	<b>Final Term Exam</b>	Course/Discussion from session 1- 32	

**Student Evaluation criteria:**

Attendance	10 %
Workshop / Assignments/Case study	
Surprise Test/Sudden Test , Quizzes	
Class Participation	
Mid Term Paper	20%
Final Term paper	70%
Total	100%

**Student Responsibilities:**

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum[behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.

**Instructor / Tutor**

**Approved by:**

**Chairman**



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BS in BOTANY  
Course-II

Class:		Semester-		Session:		
Instructor				Email:		
Course Title	Diversity of Vascular Plants			Program	BS (5 <sup>TH</sup> Semester)	
Course Number	BOTA-01502			Credit Hours	3(2+1)	
Lecture	..... day: ..... period (00:00a.m to 00: 00a.m), Room# 00					
Course Objective:						
Methods of Teaching <ul style="list-style-type: none"><li>Assigned readings</li><li>Group activities &amp; Discussion</li><li>Audiovisual aids lectures</li><li>Web-assisted instruction</li><li>Student-Directed Teaching</li></ul>						
Resource Material	1. Text Books					
	i. Sabeeha, S.M., Winslow, R. B., Ort, D. 2011. Annual Review of Plant Biology 2011. Annual Reviews.					
	ii. Shnoonhoven, L. M., van Loon J. J. A., Marcel, D.2009. Isect-plant biology. Oxford University Press					
	iii. Carvan's text book of botany, paper A.					
	2.Reference Books			3.Research Papers		
	i	Thomas, N.T., Edith,L.T., Krings,M. 2009.Paleo Botany: The Biology and Evolution of Foosil Plants, 2 <sup>nd</sup> Edition. Academic Press, USA			i	
	Ii				ii	
4.Hot Research Papers			5.Web Resources			
i				i		
Ii				ii		
Office Help Hours						
Grading						
Exam						
Mid-						
Problem Session						
.....day: 00 and 00 periods (0:00-00:00am), Room# 00						
SEQUENCE OF TOPICS TO BE COVERED						
Lecturer #	Topics (outline of main topics and sub topics)			Chapter #	Tutorial /Laboratory	
1	Introductory Lecture to the Subject					
2	Introduction, Origin, History and features ofPteridophytes.			Pteridophytes.	Study of the morphology and reproductive featuresof available genera of Angiosperms	
3	Generalized life cycle of Pteridophytes			Pteridophytes.		
4	Method of Fossilization & Types of fossils			Fossils and Fossilization		
5	Geological time scale and Importance of Paleobotany			Paleobotany	Study the morphology and reproductive features of available gymnosperms	
6	First vascular plant Rhyniophyta (e.g)Cooksonia					
7	General Characters Classifications and affinities ofPsilopsida					
8	Comparitive account of evolutionary trends of Psilopsida (Psilotum)				Collection of local Angiosperms plants.	
9	General characters, classification and affinities ofLycopsida					
10	Comparitive account of evolutionary trend of Lycopsida (Locopodium, salaginella)					

11	General characters, classification and affinities of spenopriede		
12	Comparitive account of evolutionary trends of spenopriede.(equisetum)		Collection of local gymnosperms plants.
13	General characters, classification and affinities ofpteropsida (Adianturn, Marsilea).		
14	Comparitive account of evolutionary trends of pteropsida (Adianturn, Marsilea).		
15	Origin and Evolution of Seed Habit		
16	Geological history, and Distribution of Gymnosperms		
	Mid Term Exam	Course/Discussion from session 1 to 16	
17	Origin and Morphology of Gymnosperms.		
18	Anatomy and classification of Gymnosperms		
19	Affinities of cycadofilicales and Ginkgoales		
20	Affinities of cycadales and Gnetales		
21	Distribution of Gymnosperms in Pakistan		
22	Economic Importance of Gymnosperms		
23	An Introduction to theGondwana flora of the world		
24	Origin and General Characteristics of Angiosperms		
25	Importance of Angiosperms		-
26	Life cycle of Angiosperms		-
27	An Introduction of Neoplanology		-
28	An Introduction of Paleopolynology		-
29	Application of Neoplanology in Botany, Geology, Archology, Criminology, Medicines, Honey and Oil andGas Exploration		-
30	Application of Neoplanology in Criminology, Medicines,Honey and Oil and Gas Exploration		
31	Application of Paleopalynology in Botany, Geology, Archeology		
32	Application of Paleopalynology in Criminology,Medicines, Honey, Oil, and Gas Exploration		
	Final Term Exam	Course/Discussionfrom session 1- 32	

Student Evaluation criteria:

Attendance	10%
Workshop / Assignments/Case study	
Surprise Test/Sudden Test , Quizzes	
Class Participation	
Mid Term Paper	20%
Final Term paper	70%
Total	100%

Student Responsibilities:

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.



BS in BOTANY  
Course-III

Class: BS (Botany)

Semester- 5<sup>th</sup>

Session:

Instructor			Email:		
Course Title	Phycology and Bryology		Program	BS	
Course Number	BOTA-01503		Credit Hours	3(2+1)	
Lecture	day: .... period (00:00a.m to00: 00p.m), Room# 00				
<b>Course Objective:</b> Phycology: <b>Phycology</b> , also called <b>algology</b> , the study of <b>algae</b> , a large <b>heterogeneous</b> group of chiefly aquatic plants ranging in size from microscopic forms to species as large as shrubs or trees. The <b>discipline</b> is of immediate interest to humans because of algae's importance in <b>ecology</b> . Certain algae, especially planktonic (i.e., floating or drifting) forms, <b>constitute</b> a vital segment of food chains. <b>Bryology:</b> Although plants have changed a lot in the past 450 million years, growing today in an enormous variety of shapes and sizes, they can all be classified into two orders, called tracheophytes and bryophytes. Tracheophytes are plants, like trees, flowering plants, and grasses, that have a well-developed vascular system. In contrast, <b>bryophytes</b> are small plants that grow close together and do not have a vascular system, which makes them very similar to those first plants that grew on Earth millions of years ago. The study of these ancient plants is called <b>bryology</b> , and the scientists who study them are called <b>bryologists</b> .					
<b>Methods of Teaching</b> <ul style="list-style-type: none"><li>Assigned readings</li><li>Group activities &amp; Discussion</li><li>Audiovisual aids lectures</li><li>Web-assisted instruction</li><li>Student-Directed Teaching</li></ul>					
Resource Material	<b>1. Text Books</b> i- Tuba, Z., Nancy G. S.,Lloyd R. S. 2011. Bryophytes Ecology and climate change. Cambridge University Press, USA. ii- Abele , D., Vazquez-Medina, J. P., Zenteno- Savin, T. 2011. Oxidative stress in Aquatic Ecosystems. Wiley-Blackwell. Saunders, D.A. 2010. Phycological Memories. BibloBazaar.				
	<b>2.Reference Books</b>		<b>3.Research Papers</b>		
	I		i		
	li		ii		
	<b>4.Hot Research Papers</b>		<b>5.Web Resources</b>		
	I		i		
	li		ii		
Office Help Hours					
Grading	Exam (.....)  .....)				
Problem Session	.....day: 00 and 00 periods (0:00-00:00am), Room# 00				
<b>SEQUENCE OF TOPICS TO BE COVERED</b>					
Lecturer #	Topics (outline of main topics and sub topics)		Chapter #	Tutorial /Laboratory	
1	Course introductory lecture.				
2&3	Important divisions of algae.			Collection of fresh water and marine algae.	
4&5	Division Chlorophyta: Introduction, general account, evolution, classification, ecology, economic importance.			Identification of benthetic and plank tonic algae.	
6&7	Division Charophyta: Introduction, general account, evolution, classification, ecology, economic importance				
8&9	Division Xanthophyta: Introduction, general account, evolution, classification, ecology, economic importance			Section cutting of thalloid algae	
10&11	Division Bacillairophyta: Introduction, general account, evolution, classification, ecology, economic importance.				
12&13	Division Rodophyta: Introduction, general account, evolution, classification, ecology, economic importance			Prepration of temporary slides.	
14&15	Division Phyaephyta: Introduction, general account, evolution, classification, ecology, economic importance			Uses of camera lucida, micro graphs.	

16	Class discussion, class test and quiz.		
	Mid Term Exam		
17&18	Introduction to Bryology.		
19&20	Classification and general account of Bryology.		Study of Riccia
21&22	Assignment and presentation.		
23&24	General characteristics, distribution, evolutionary trends, phyletic relationships and economic importance Class Hepaticopsida.		Study of Funaria
25&26	General characteristics, distribution, evolutionary trends, phyletic relationships and economic importance of class Bryopsida.		Study of Anthocerose
27&28	General characteristics, distribution, evolutionary trends, phyletic relationships and economic importance Class Anthoceropsidea		
29&30	General characteristics, distribution, evolutionary trends, phyletic relationships and economic importance Class Mosses.		Study of polytrichum
31&32	Course/Discussion from session 1- 32		
	Final Term Exam		

**Student Evaluation criteria:**

Attendance	10%
Workshop / Assignments/Case study	
Surprise Test/Sudden Test , Quizzes	
Class Participation	
Mid Term Paper	20%
Final Term paper	70%
Total	100%

**Student Responsibilities:**

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.

Instructor / Tutor

Approved by:

Chairman



BS in BOTANY  
Course-IV

Instructor		Email:		
Course Title	Mycology and Plant Pathology	Program	BS.Botany	
Course Number	BOTA-01504	Credit Hours	3 (2+1)	
Lecture	..... day: ..... period (00:00a.m to 00: 00a.m), Room# 00			
<b>Course Objective:</b> This course is intended to introduce the student to the Introduction of fungi, fungus classification and thallus, Reproduction and lifecycle, classification of diseases and disease cycle and spread and control measures of diseases.				
<b>Course Outcomes:</b> 1. Understanding of different tupes of Fungi 2. Understanding of morphology of Fungi 3. Understanding of life cycle of Fungi 4. Understanding of disease of Fungi 5. Understanding of different pathogens and spread of diseases				
<b>Methods of Teaching</b> ✓ Assigned readings ✓ Group activities & Discussion ✓ Audiovisual aids lectures ✓ Web-assisted instruction ✓ Student-Directed Teaching				
Resource Material	1. Books Prescribed:  1. Dickinson, M. 2011. Plant Pathology. British Society for Plant Pathology. 2. Gary, D. F. 2011. Molecular Plant Pathology. British Society for Plant Pathology. Gail, L. S., Cleora, J. D. A., 2009. 3. Essential Plant Pathology, Second Edition. Amer Phytopathological Society			
	2.Reference Book		3.Research Papers	
	i		i	
	ii		ii	
	4.Hot Research Papers		5.Web Resources	
	i		i	
	ii		ii	
Office Help Hours	..... day, ..... days ..... n			
Grading	Exam Mid Prc ..... (1070)			
Problem Session	..... day: 00 and 00 periods (0:00-00:00am), Room# 00			
<b>SEQUENCE OF TOPICS TO BE COVERED</b>				
Session #	Topics (outline of main topics and sub topics)	Chapter #	Tutorial /Laboratory	

<b>1</b>	General characters, thallus, cell structure and ultrastructure Asexual and sexual reproduction and reproductive structures Lifecycle, haploid, heterokaryotic and diploid states	<b>Introduction</b>	General characters and morphology of fungi
<b>2 &amp; 3</b>	Myxomycota: General characters, Lifecycle, Plasmodiophora brassicae, Chytridiomycota general characters	<b>Fungal Systematics</b>	Study of unicellular and mycelial forms with septate and aseptate hyphae.
<b>4 &amp; 5</b>	Chytridiomycota, Zygomycota General characters, Lifecycle		
<b>6 &amp; 7</b>	Oomycota General characters classification Peronosporales general characters Pythium general characters, lifecycle		Distinguishing characters of different phyla: study of suitable examples.
<b>8 &amp; 9</b>	Ascomycota General characters Reproduction Erysiphales Pezizales		
<b>10 &amp; 11</b>	Basidiomycota General characters Uredinales Agaricales		
<b>12 &amp; 13</b>	Basidiomycota Polyporales Deuteromycota General characters Types of frutification Classification Alternaria Fusarium		
<b>14 &amp; 15</b>	Lichens: Definition, Components of lichens, Occurrence, Classification, Lichen thallus, Tissue Types, Attachment organs, Vegetative reproduction, Asexual spores, Sexual Reproduction Economic importance		Study of asexual and sexual reproductive structures in different groups of fungi.
<b>16</b>	<b>Mid Term Exam</b>	<b>Course/Discussion</b> from session 1 to 15	
<b>17 &amp; 18</b>	Mycorrhizae Introduction Nature of mycorrhizal relationship Types of mycorrhizae Significance of Mycorrhizae		Study of some common examples of saprophytic, parasitic and air-borne fungi belonging to different phyla.
<b>19 &amp; 20</b>	Pathology Introduction Plant disease Causes of plant diseases Classification of plant diseases Symptoms Pathogenesis Control of Plant disease		
<b>21 &amp; 22</b>	Pathology Loss assessment and disease control Epidemiology and disease forecast Important diseases Damping off Causal organism, Symptoms, Disease Cycle, Control Downy Mildew of pea		

	Causal organism, Symptoms, Disease Cycle,		
23 & 24	Rusts Causal organism, Symptoms, Disease Cycle,		Identification of major plant pathogens under lab and field conditions
25 & 26	Smuts Causal organism, Symptoms, Disease Cycle,		Cultural studies of some important plant pathogenic fungi, application of Koch's postulates for confirmation of pathogenicity.
27 & 28	Red rot of sugar cane Early Blight of potato Mildews Causal organism, Symptoms, Disease Cycle		
29 & 30	Systemic Resistance Induced systemic resistance Acquired systemic resistance Importance of Fungi <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural		Demonstration of control measures through chemotherapye utants.
31	Course/Discussion from session 1 to 30		
32	<b>FINAL TERM EXAMS</b>		

**Student Evaluation Criteria**

Attendance	10%
Workshops/Assignments/Case study	
Surprise Test/Sudden Test/Quizzes	
Class Participation	
Mid term Paper	20%
Final Term Paper	70%
<b>Total</b>	100%

**Students’ Responsibilities:**

Students must attend the class. Failure to attend the class may result in failure in the course. Students must also arrive on time and remain in the class for the entire period. Cellular phones and beepers must be turned off. Proper classroom decorum(behavior) must be adopted. Course outline and calendar explain requirements and assignments. Students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absentees(more than 3) will result in “F Grade”. Student may prepare Sketchbook for taking noted and for reference.

**Instructor/Tutor**

Approved By:  
**Dean/ Chairperson/ HOD/ Subject Specialist/ Program Coordinator**



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BS in BOTANY  
Course-V

Class: BS (Botany)		Semester- 5 <sup>th</sup>		Session:	
Instructor				Email:	
Course Title		Plant Systematics		Program BS	
Course Number		BOTA-01505		Credit Hours 3(2+1)	
Lecture		day: .... period (00:00a.m to00: 00p m), Room# 00			
<b>Course Objective:</b> <b>Plant systematic</b> is the study of kinds and diversity of organisms and the evolutionary relationships among them is called systematics or taxonomy. The study systematics gives the order and relationships among organism. This order and relationship arise from evolutionary processes. These studies also give description of the new species. It organizes the animals into groups (taxa). This grouping is based on degree of evolutionary relatedness.					
<b>Methods of Teaching</b> <ul style="list-style-type: none"><li>Assigned readings</li><li>Group activities &amp; Discussion</li><li>Audiovisual aids lectures</li><li>Web-assisted instruction</li><li>Student-Directed Teaching</li></ul>					
<b>Resource Material</b>		<b>1. Text Books</b> i- Sofia, E , Ahmed, M., Ahmed, H. 2011. Hepatoprotective Potential of Selected Flora of Pakistan. VDM Verlag Dr. Mueller e. K. ii- Books LLC. 2010. Flora of Pakistan. Books LLC, Books Group. iii- Dennis, W.W. 2009. Contemporary Plant Systematics. Andrews University Press. iv- Carvan,s Principles of Botany, by Tanveer Ahmed Malik. Carvan book house Lahore.			
		<b>2.Reference Books</b>		<b>3.Research Papers</b>	
		i		i	
		li		ii	
		<b>4.Hot Research Papers</b>		<b>5.Web Resources</b>	
		i		i	
		li		ii	
<b>Office Help Hours</b>					
<b>Grading</b>		Exa Mid F.			
<b>Problem Session</b>		.... day: 00 and 00 periods (0:00-00:00am), Room# 00			
<b>SEQUENCE OF TOPICS TO BE COVERED</b>					
Lecturer #	Topics (outline of main topics and sub topics)		Chapter #	Tutorial /Laboratory	
1	Course introductory lecture.				
2&3	Importance and relationship with other sciences, Phases of plant taxonomy.			Technical description of plants of the local flora and their identification upto species level.	
4&5	Origin and radiation of angiosperms, their probable ancestors, when and how did the angiosperms evolve; the earliest fossil records of angiosperms.			Preparation of indented and bracketed types of keys	
6&7	Concept of Species: What is a species? Taxonomic species, Biological species, micro and macro species, species aggregates.				
8&9	Speciation: Mechanism of speciation, Mutation and hybridization, Geographical isolation, Reproductive isolation, Gradual and abrupt.			Preparation of permanent slides of pollen grains by acetolysis method and study of different pollen characters. P/6	
10&11	Variation: Types of variation, Continuous and				

5024

P/7

12&13	Systematic and Genecology/Biosystematics: Introduction and importance, Methodology of conducting biosystematics studies, various biosystematics categories such as ecophene, ecotype, ecospecies, coenospecies and comparium.		
14&15	Taxonomic evidence: Importance and types of taxonomic evidences: anatomical, cytological, chemical, molecular, palynological, geographical and embryological.		
16	Class discussion, class test and quiz.		
	Mid Term Exam		
17&18	Nomenclature: Important rules of botanical nomenclature including effective and valid publication, typification, principles of priority and its limitation, author citation, rank of main taxonomic categories, condition for rejecting names.		
19&20	Classification: Why classification is necessary? Importance of predictive value.		Preparation and submission of fully mounted and identified hundred herbarium.
21&22	Brief history , Different systems of classification with atleast one example of each ( Linnaeus, Bentham and Hooker, Engler ad Prantel, Cronquist, Takhtajan and Dahlgren).		
23&24	Brief introduction of Numerical taxonomy.		
25&26	General characteristics, distribution, evolutionary trends, phyletic relationships and economic importance of following:Apiaceace, Arecaceae, Asclepiadaceae, Asteraceace, Convolvaceace, Brassicaceae, Cannaceae.		Field trips undertaken for collection of flora from different ecological zones of Pakistan.
27&28	Chenopodiaceae, Capparidaceae, Cucurbataceae, Cyperaceae, Lamiaceae,Liliaceae,Euphorbiaceae.		
29&30	Fabaceae, Myretaceae, Papavaraceae, Poaceae, Ranunculaceae, Rosaceae, Solanaceae, Malvaceae.		
31&32	Course/Discussion from session 1- 32		

	Final Term Exam	
Student Evaluation criteria:		
Attendance	10%	
Workshop / Assignments/Case study		
Surprise Test/Sudden Test , Quizzes		
Class Participation		
Mid Term Paper	20%	
Final Term paper	70%	
Total	100%	

**Student Responsibilities:**

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.



# The Islamia University of Bahawalpur

Abbasia Campus, Bahawalpur, Pakistan Ph: +92 - 62 - 9239114, Fax: +92 - 62 - 9250099 Email:qec@iub.edu.pk

## Tentative Course Plan DEPARTMENT OF BOTANY

Class: MS Botany

Semester-5th (Botany)

Session:

Instructor			Email:		
Course Title	Plant Anatomy		Program	BS Botany	
Course Number	BOTA- 01506		Credit Hours	3(2+1)	
Lecture	.....day: .... period (00:00a.m to 00: 00a.m), Room# 00				
<b>Course Objective:</b>  1. To provide the students understanding about anatomical features of vascular plants 2. To enable the students to access & generate new knowledge in purposeful fashion.					
<b>Methods of Teaching</b>  • Assigned readings ✓ • Group activities & Discussion ✓ • Audiovisual aids lectures ✓ • Web-assisted instruction ✓ • Student-Directed Teaching ✓					
<b>Resource Material</b>	Books Prescribed: 1. Dickison, W. C. 2000. Integrative plant anatomy. Academic Press, U. K. 2. Fahn, A. 1990. Plant Anatomy. Pergamum Press, Oxford. 3. Esau, K. 1960. Anatomy of Seed Plants. John Wiley, New York. 4. Metcalf, C. R. and Chalk, L. 1950. Anatomy of the Dicotyledons. Clerondon Press. Oxford. 5. Anon. Manual of Microscopic Analysis of Feeding Stuffs. The American Association of feed Microscopists. 6. Vaughan, J. G. 1990. The structure and Utilization of Oil Seeds. Chapman and Hall Ltd. London. 7. Metcalfe, C. R. 1960. Anatomy of the Monocotyledons. Gramineae. Clerondon Press, Oxford. 8. Metcalfe, C. R. 1971. Anatomy of the Monocotyledons.V. Cyperaceae. Clerondon Press, Oxford. 9. Cutler, D. F. 1969. Anatomy of the Monocotyledons. IV. Juncales. Clarendon Press, Oxford. 10. Cutler, D. F. 1978. Applied Plant Anatomy. Longman Group Ltd. England 11. Raymond, E. S. and E. Eichhorn. 2005. Esau’s Plant Anatomy; Meristematic cells and tissues of plant body. John Willey Sons.				
	2.Reference Book		3.Research Papers		
	i	Eames, A.J.and L.H. Mac Daniels. 2002. introduction toPlant Anatomy. Mac-Graw Publishing Company Limited,New Delhi.	An Hill	i	
	ii	Raymond, E.S. and E. Eichhorn. 2005. Esau’s Plant Anatomy; Meristematic cells and tissues of plant body. John Willey Sons.		ii	
	4.Hot Research Papers		5.Web Resources		
	i			i	
	ii			ii	
	<b>Office Help Hours</b>				
<b>Grading</b>					
<b>Problem Session</b>		.....day: 00 and 00 periods (0:00-00:00am), Room# 00			
<b>SEQUENCE OF TOPICS TO BE COVERED</b>					
Session	Topics (outline of main topics and sub topics)		Chapter	Tutorial /Laboratory	
1	Introductory lecture to the subject			Study of organization of shoot and root meristem, different primary and secondary tissues from the living and preserved material in macerates and	
2 & 3	fundamental parts of the plant body, Internal organization		Plant body and its development		
4 & 5	Different tissue systems of primary and secondary body.				
6	Classification of Meristematic tissues		Meristematic tissues		
7& 8	Cytohistological characteristics, initials and their derivatives.		-do-		
9&10	Delimitation, different growth zones, evolution of the concept of apical organization.		Apical meristem		

<b>11&amp;12</b>	Shoot and root apices.	<b>-do-</b>	sections, hairs,
<b>13&amp;14</b>	Types, origin, internal organization of Leaf.	Leaf	glands and other secondary structures.
<b>15&amp;16</b>	Development of different tissues with special reference to mesophyll, venation, bundle-sheaths and bundle-sheath extensions. Enlargement of epidermal cells.	<b>-do-</b>	Study of abnormal/unusual secondary growth.
	<b>Mid Term Exams</b>		
<b>17&amp;18</b>	Origin, structure, storied and non-storied cell types, types of divisions: additive and multiplicative.	Vascular cambium	
<b>19 &amp;20</b>	Cytoplasmic characteristics, seasonal activity and its role in the secondary growth of root and stem.	<b>-do-</b>	Peel and ground sectioning and maceration of fossil material.
<b>21</b>	Abnormal secondary growth		
<b>22 &amp;23</b>	Origin, structure, development, functional and evolutionary specialization of Epidermis and epidermal emergences.	<b>Tissues</b>	
<b>24 &amp;25</b>	Parenchyma, Collenchyma, Sclerenchyma,	<b>-do-</b>	
<b>26 &amp;27</b>	Xylem, Phloem with special emphasis on different types of woods, Periderm.	<b>-do-</b>	Comparative study of wood structure of Gymnosperms and Angiosperms with the help of prepared slides.
<b>28 &amp;29</b>	Laticifers (classification, distribution, development, structural characteristics, functions) and Resin Canals	Secretory tissues	
<b>30</b>	Anatomy of reproductive parts: - Flower - Seed – Fruit	<b>Reproductive Anatomy</b>	
<b>31</b>	Economic aspects of applied plant anatomy.		
	Anatomical adaptations		
<b>32</b>	<b>Final Term Exam</b>		

# BS in Chemistry

## Course-I

**Course Title:** Analytical Chemistry (Separation Methods)

**Course Code:** CHEM-01511

**Credit Hours:** 3

### Course Objectives:

The main objectives of this course are to introduce the students to the basics principles, instrumental aspects and applications of separation and spectrophotometric analytical methods.

### Course Contents: Ultraviolet

#### Spectroscopy:

Excitations, The origin of UV Band Structure, Solvents, Chromosphere, The Effect of conjugation (alkenes), Effect of Conformation & Geometry, Study of Carbonyl and Brief introduction of UV and its instrumentation, Principles. The Nature of Electronic Aromatic Compounds Spectra.

#### Infrared Spectroscopy:

Brief introduction of IR Instrumentation, IR absorption Process, The Mode of Vibration, Bond Properties and Absorption Trends, Factor affecting IR absorption. What to look for Infrared Spectra Examining. Preparation of Samples for IR Spectroscopy. Examples (Alkanes and Aromatics)

#### NMR Spectroscopy:

Brief introduction of NMR and its instrumentation, Absorption of Energy & the Mechanism of Absorption (Resonance), The Chemical Shifting / Shielding / Chemical Environment, Factors Effecting Chemical Shifting, Magnetic Anisotropy,

### Books Recommended for Analytical Chemistry

1. Banwell, C.N., Fundamental of Molecular Spectroscopy, 2<sup>nd</sup> Ed., McGraw-Hill Book Company (UK): Maidenhear, UK, 1972.
2. D.H. Williams and I. Fleming, Spectroscopic Methods in Organic Chemistry Chemistry, 4<sup>th</sup> Ed.; 1988.
3. D.L. Pavia, G.M. Lampman, G.S. Kriz, Introduction to Spectroscopy, W.B. Saunders, 1979.
4. Douglas A. Skoog, F. James Holler, Timothy A. Nieman, Principles of Instrumental Analysis, 5<sup>th</sup> Edition, Saunders College Publishing, New York, 1977.
5. G.D. Christian and J.E. O'Reilley, Allyn and Bacon, Instrumental Analysis, 2<sup>nd</sup> Edition, Boston, 1986.
6. Skoog, D. A., West, P. M., Holler, F. J., Crouch, S. R., *Fundamentals of Analytical Chemistry*, 9th ed., Brooks Cole Publishing Company, (2013).
7. Christian, G. D., *Analytical Chemistry*. 6th ed., John-Wiley & Sons, New York, (2006).

# BS in Chemistry

## Course-II

**Course Title: Intermediary Metabolism**

**Course Code: CHEM-01521**

**Credit Hours: 3**

### Purpose of the Course and Approach to the Subject:

Pre-requisite course is –Enzymes. This course will focus on introduction to the metabolism of various biomolecules. The course will deal with the multistep pathways for degradation and biosynthesis of carbohydrates, lipids, amino acids and nucleotides. Relationship of these multienzyme sequences of reactions with energy production and a variety of cellular activities will be discussed. Interconversion of one type of biomolecules into the other, if any, and corresponding implications will be highlighted. Knowledge of biological catalysts, the enzymes, and co-enzymes required for these metabolic reactions is a prerequisite for this course.

### Course Contents:

Introduction to Intermediary Metabolism. Biomolecules as energy source. Significance of Biological Oxidation. Digestion, absorption, utilization and storage of food components. Role of ATP and other high energy compounds. Chemistry of Carbohydrates. Digestion and absorption of Carbohydrates. Utilization of Glucose and other sugars. Glycolytic pathway and its significance. Fermentation. Coenzymes. Metabolism of hexoses other than glucose. Hexose monophosphate (HMP) shunt pathway. Mechanism, regulation and significance of HMP. Glycogen metabolism. Glycogenesis. Glycogenolysis. Gluconeogenesis. Regulation of glycogen metabolism and blood glucose levels. Tricarboxylic acid (TCA) cycle. Regulation of TCA cycle. Glyoxylate pathway. Biosynthesis of oligosaccharides and glycoproteins. Chemistry of Lipids and Fatty acids.

Digestion, absorption and transport of Lipids. Fatty acid oxidation.  $\alpha$ ,  $\beta$  oxidations. Ketone bodies. Ketogenesis. Ketolysis. Ketoacidosis (Ketosis). Ketonuria. Biosynthesis of fatty acids and triglycerides. Biosynthesis, transport and utilization of cholesterol. Prostaglandins, leukotrienes etc. Chemistry of Amino acids and Proteins. Digestion, absorption and transport of proteins and amino acids. Nitrogen Balance. Nitrogen fixation. Catabolism of individual amino acids. Deamination. Transamination. Transmethylation. Deamidation. Decarboxylation etc. Urea cycle and its regulation. Biosynthesis of essential and non-essential amino acids. Heme metabolism. Creatin metabolism. Synthesis and degradation of Hemoglobin. Chemistry of Purine and Pyrimidines. Metabolism of Purine and Pyrimidine nucleotides. Biosynthesis of ribo- and deoxy- ribonucleotides and corresponding coenzymes. Biosynthesis of Uric acid. Integration and organ specialization of energy metabolism. Electron transport chain. Oxidative phosphorylation and regulation of ATP production. Controls and disorders of metabolic pathways. Endocrinal control of metabolic activities. In-born errors of metabolism.

### Recommended Books:

1. Harper's Illustrated Biochemistry by R.K. Murray, D.K. Granner and V.W. Rodwell. 27<sup>th</sup> Edition. 2006.
2. Lippincott's illustrated reviews. Biochemistry. 3<sup>rd</sup> Edition. Series editors: R.A. Harvey and P.C. Champe. 2005. Lippincott Williams and Wilkins, USA
3. Montgomery, R., Conway, T.W., and Spector, A.A. Biochemistry, A case oriented approach. 5<sup>th</sup> ed. 1990. The C.V. Mosby Co. St. Louis.
4. Outlines of Biochemistry by E.E. Conn, P.K. Stumpf, G. Bruening and R.H. Doi. 5<sup>th</sup> ed. 1987, John Wiley and Sons, Inc. N.Y.
5. Principles of Biochemistry by A.L. Lehninger, 1982, Worth Publish. Inc. USA.
6. Singh, S. 2009. Textbook of Biochemistry. 4<sup>th</sup> Edition
7. Srivastava, S. 2008. Molecular Genetics and Biotechnology. 1<sup>st</sup> edition
8. Voet, D., Voet, J.G., Pratt, C.W. 2008. Principles of Biochemistry. Hoboken, John Wiley & Sons, Inc. 3<sup>rd</sup> Edition.

# BS in Chemistry

## Course-III

**Course Title:** Inorganic Chemistry

**Course Code:** CHEM-01531

**Credit Hours:** 3

### Chemical Bonding

What is chemical bond, Octet rule or rule of eight, Ionic bond, Electrovalency or electrovalence, Inert pair effect, Covalent bond, Covalency and maximum covalency of an element and its applications, Failure of octet rule, Valence bond theory or Heitler-London theory, Pauling-slater's theory, Molecular Orbital Theory, Sigma and Pi( $\pi$ ) bonds, Polar and non polar covalent bond and ionic bond, Dipole moment and applications, Bond moment, Coordinate Bond, Resonance and polarization of ions, Fajan's rules and covalency. Rules of Hybridization, Salient Features of the hybridization phenomenon, Types of hybridization:  $sp$ ,  $sp^2$ ,  $dsp^2$ ,  $sp^3$ ,  $sp^3d$ ,  $sp^3d^2$ ,  $sp^3d^3$ .

### Non Aqueous Solvents

Classification of solvents, General properties of ionizing solvents, Chemical reactions, Liquid  $NH_3$  as solvent, Acetic acid as solvent and its chemical reactions, Liquid  $H_2S$  as solvent and its chemical reactions.

### Metal Carbonyls

General information of metal carbonyl complexes, Mono nuclear carbonyls, Binuclear carbonyls, Poly nuclear carbonyls, Preparation of metal carbonyls.

### Lanthanides and Actinides

Lanthanides: Introduction, Occurrence, Extraction and separation, Lanthanide contraction, Properties, Applications of lanthanides and their compounds. Comparison of d & f block elements. Position of Actinides in Periodic Table, identification and separation, Nuclear synthesis of trans uranium elements, Characteristics.

### Recommended Books:

1. S. Prakash, G. D. Tuli, S. K. Basu and R.D. Mudan; Advanced Inorganic Chemistry, Vol. I, S. CHAND & COMPANY LTD. New Dehli 2004.
2. S. Prakash, G. D. Tuli, S. K. Basu and R.D. Mudan; Advanced Inorganic Chemistry, Vol. II, Eighteenth Revised Edition; S. CHAND & COMPANY LTD. New Dehli 2004.
3. Sharpe, A.G, -Inorganic Chemistry, 3<sup>rd</sup> Edition, Pearson Education (Singapore) Ltd. Indian Branch Dehli 2005.
4. Cotton, F.A. and Wilkinson, G, -Advance Inorganic Chemistry, 4<sup>th</sup> & 5<sup>th</sup> Edition, John Wiley, 1988. ii) F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann, -Advance Inorganic Chemistry, 6<sup>th</sup> Edition, Wiley India, New Delhi(2008).
5. Jolly, W.L -Modern Inorganic Chemistry, 1<sup>st</sup> Edition, McGraw Hill 1985.
6. Huheey, J.E., -Inorganic Chemistry: Principles of Structure and Reactivity, 3<sup>rd</sup> Edition, Harper and Row, 1983, ii) J.E.Huheey, E.A. Keiter, R. L. Keiter, O. K. Medhi, -Inorganic Chemistry: Principles of structure and reactivity, 4<sup>th</sup> Edition, Dorling Kindersely, India(2007).
7. Vogel, I. -Qualitative Inorganic Analysis, 6<sup>th</sup> Edition, Longman, 1989.
8. Holliday, A.K. and A.G. Massey, -Inorganic Chemistry Non-Aqueous Solvents, Pergamon Press, 1985
9. Pass, G. and Hutcliffe, -Practical Inorganic Chemistry, 3<sup>rd</sup> Edition, Prentice Hall, 1985.
10. Douglas, B., D. Mcdaniel and J. Alexander, -Concepts and Models of Inorganic Chemistry, 3<sup>rd</sup> Edition, Malloy Lithographic Inc., 1993.

# BS in Chemistry

## Course-IV

<b>Course Title:</b>	Stereochemistry & Substitution Reactions
<b>Course Code:</b>	CHEM-01541
<b>Course Credit:</b>	3 Credit

### Basic Concepts in Organic Chemistry

Nomenclature of various functional groups and polyfunctional molecules, Concept of orbital hybridization, Inductive effect and field effect, Hydrogen bonding, Concept of Resonance and its applications, Hyperconjugation, Concept of aromatic, non-aromatic and anti-aromatic compounds, Isotopic labeling or tracer technique for the determination of reaction mechanism, Literature survey (Concept of primary and secondary sources of literature).

### Stereochemistry

Introduction; Geometrical isomerism: Determination of configuration of geometrical isomers, *cis*, *trans* isomerism and *Z*, *E* convention, Fisher Projection, Rules for drawing correct Fisher Projection; Conformational isomerism: Conformational analysis of monosubstituted cyclohexanes, disubstituted cyclohexanes. Decalin and Monosubstituted Decalins. Optical isomerism: optical activity, chirality, symmetry elements and optical inactivity, relative and absolute configuration, *R*, *S* notation, methods of determining configuration, optical activity in biphenyls, allenes and spiro compounds,

### Aromatic Electrophilic Substitution Reactions

Orientation and reactivity; Aromatic Electrophilic Substitution Reactions, *i.e.* Nitration, Halogenation, Sulfonation, Friedel-Crafts reactions, diazo-coupling.

### Aromatic Nucleophilic Substitution Reactions

Mechanisms Study of  $S_NAr$ , Benzyne and Diazonium ion mechanisms. The effects of substrate structure, leaving group and the attacking nucleophile on the rates of substitution reactions

# BS in Chemistry

## Course-V

<b>Course Title:</b>	Foundation-V (Physical Chemistry) (Kinetic Theory of Gases, Phase Equilibrium, Chemical Equilibrium, Solution Chemistry)
<b>Code:</b>	CHEM-01551
<b>Credit Hours:</b>	3

### Course Objectives:

Students will be able to understand and acquire knowledge about the principles and theoretical background of quantum chemistry, kinetics theory of gases and phase equilibrium. The knowledge gained thus can be applied to study various aspects of quantum mechanics, gas kinetic behavior and thermodynamics and phase equilibrium. **Course Contents:**

### Kinetic Theory of Gases:

Probability density for molecular speeds of gas molecules, Maxwell distribution of molecular speeds, average speeds, pressure of an ideal gas, calculation of molecular speeds, binary collisions, effusion and mean free paths, Maxwell-Boltzmann's law of energy distribution, method for the determination of the Avogadro's number (NA), statistical probability and entropy.

### Phase Equilibrium:

Gibbs phase rule, Phase diagrams of one component and two component systems, Gibbs energy and the phase diagram of a substance, location of phase boundaries, Clausius-Clapeyron equation, vapor-liquid equilibrium of binary liquid mixtures, binary phase diagrams and lever rule.

### Chemical Equilibrium:

General equilibrium expressions, reaction quotients, examples of equilibrium reactions in solid, liquid and gas phases, extent of reactions and equilibrium constants, Gibbs energies of formation and calculations of equilibrium constants, effect of temperature and pressure on the equilibrium constants/compositions, van't Hoff equation, Le-Chatelier's principle.

### Solution Chemistry:

Physical properties of liquids, surface tension, viscosity, refractive index, dipole moment etc. and their applications, brief account of interactions among the molecules in liquids, ideal and non-ideal solutions, Raoult's law and its applications, lowering of vapor pressure, elevation of boiling point, depression of freezing point, osmotic pressure, vapor pressure of non-ideal solutions and Henry's law, abnormal colligative

properties, degrees of association and dissociation of solutes, osmotic pressure and its measurement, fractional distillation and concept of azeotropic mixtures.

### Recommended Books:

1. Atkins, P. and Paula, J. D., Atkin's Physical Chemistry, 9<sup>th</sup> ed., Oxford University Press, (2010).
2. Silbey, R. J., Alberty, R. A., and Bawendi, M. G., Physical Chemistry, 4<sup>th</sup> ed., John-Wiley & Sons, (2005).
3. McQuarrie, D. A. and Simon, J. D., Physical Chemistry – A Molecular Approach, 1<sup>st</sup> ed., University Science Books, (1997).
4. Moore, W. J., Physical Chemistry, 4<sup>th</sup> ed., Longman Publisher (1972).
5. Keeler, J. and Wothers, P., Chemical Structure and Reactivity: An Integrated Approach, 1<sup>st</sup> ed., Oxford University Press, (2008).
6. Helpert, A. M., Experimental Physical Chemistry: A Laboratory Textbook 2<sup>nd</sup> ed., Prentice Hall, (1997).
7. Garland, C. W., Nibler, J. W. and Shoemaker, D., P., Experiments in Physical Chemistry, 8<sup>th</sup> ed., McGraw-Hill, (2003).
8. Atkins, P., Jones, L., Chemical Principles: The Quest for Insight, 5<sup>th</sup> ed., W. H. Freeman, New York, (2010).
9. James, A. M., Prichard, F. E., Practical Physical Chemistry, 3<sup>rd</sup> ed., Longman Group Limited, New York, (1974).
10. Recent Review articles and updated literature

# BS in Commerce

## Course-I

Course	BUSINESS RESEARCH METHODS	Credit Hours	3
Pre-Requisite	NONE	Semester	V
Objectives	This course has been intended to: <ul style="list-style-type: none"><li>• Meet the challenge of the fast pace decision making environment;</li><li>• Acquaint students with Latest Research Methods and Techniques so as to enable them do the same in order to add value to the existing literature</li><li>• Provide the knowledge and skills a manager needs to solve the problems.</li></ul>		

### COURSE OUTLINE

#### 1. INTRODUCTION TO, AND ROLE OF BUSINESS RESEARCH:

Basic research and applied research; Managerial value of research; Types of business research; Decision alternatives in research process; Influences of uncertainty on type of research; Types of business research; Decision alternatives in research process; Influences of uncertainty on type of research; Scientific investigation; Hallmarks of scientific investigation; Obstacles in conducting scientific research

#### 2. THEORY BUILDING:

Concepts and nature of proposition; Practical value of theory; Deduction and Induction

#### 3. THE RESEARCH PROCESS:

Problem discovery and definition; Planning research design; Sampling; Data collection; Data processing and analysis; Conclusion and report presentation; Ethical issues in research

#### 4. FORMULATING AND CLARIFYING THE RESEARCH TOPIC:

Attributes of good research topic; Importance of problem definition; Process of problem definition; Process of problem definition

#### 5. UNDERTAKING RESEARCH: The

##### Research Proposal

Meanings

Components and Classification

##### The Research Strategy

Deciding the research approach and choosing a **research strategy**; Need for a clearer research strategy; Multi- method approaches; Preliminary data collection; **Literature review**; Planning the literature search; Obtaining and evaluating the literature

##### Exploratory research and qualitative analysis

Why conduct exploratory research; Categories of exploratory research Focus group interviews; Projective techniques

##### Primary Data

Research method for collecting **Primary Data**; Survey research; Errors in **survey research**; Classifying survey research methods; Basic methods for communication with respondents; **Observation methods Experimental research**; Basic issues; Internal and external validity; Types of experimental design and internal validity; Ethical issues in experimental design; Measurement of variables; Operational definitions and scales; Measurement: Scaling, reliability, and validity

##### Secondary data

Objective of secondary data research design; Classification of secondary data; Determining the

**research design;** Overview of research design; Defining **research question** and **hypotheses**; Defining terms and variables; Identifying limitations and delimitations

**Data Collection Methods**

Questionnaire design; Overview of questionnaire designs; Sampling design and sampling procedures; Determining the sample size; Population distribution, sample distribution and sampling distribution; Fieldwork; Principles of good interviewing; Analyzing qualitative data; Overview of qualitative data analysis; Analyzing qualitative data; Editing and coding data

**Research Report**

Integral parts of a Research Report; Discussion on Research Projects; Drafting a Mini Research Report

**6. RESEARCH AND ETHICS:**

Ethical Issues and their Dimensions in Research; Plagiarism and like-wise Activities and the Legal Consequences

**7. THE USE OF SPSS AND E-views**

- a. Data Presentation in SPSS, Distributional Characteristics of data in SPSS
- b. One sample 'T' test, two sample 'T' test, Paired sample 'T' test, ANOVA, Post Hoc Tukey Test, Correlation, Regression and Non parametric Tests.

**Recommended Books:**

1. Zickmund, William G, *Business research methods*, Latest Edition.
2. Collins Jill & Hussey Roger, *Business research*, Latest Edition
3. Sekaran Umma, *Research Methods for Business/Applied Business Research*, Latest Edition.
4. *Business Research Methods* by Cooper and Schindler Latest
5. P.P. Arya & Yesh Pal, *Research Methodology in Management: Theory and Case Studies*, New Delhi, Latest Edition.

*Reference Books:*

1. Basic Business Research by Umma Sekran Latest Edition
2. Straus & Corbin, *Basics of Qualitative Research*, Latest Edition.
3. Yin K Robert, *Case Study Research Design and Method* Latest Edition
4. Chris Hart, *Doing Literature Review*, Sage Publications Latest Edition
5. *Marketing Research* by Donalds S. Tull and Dell I. Harokins Latest Edition

# BS in Commerce

## Course-II

Course	MANAGERIAL ECONOMICS	Credit Hours	3
Pre-Requisite	Micro Economics and Business Mathematics	Semester	V
Objectives	This course will: <ul style="list-style-type: none"><li>• Enable the students learn to implement the Economic and Quantitative Techniques in the world of Business and Finance</li><li>• Enable them to make optimal decisions in real life scenario</li><li>• Enable them to collect, analysis and decipher data in real life situations</li></ul>		

## COURSE OUTLINE

### 1. THE NATURE AND SCOPE OF MANAGERIAL ECONOMICS

The Scope of Managerial Economics, the Theory of the Firm, the Nature and Function of Profits, Business Ethics, the International Framework of Managerial Economics, Managerial Economics and the Internet.

### 2. OPTIMIZATION TECHNIQUES AND NEW MANAGEMENT TOOLS

Methods of Expressing Economics Relationships, Total, Average, and Marginal Relationships, Optimization Analysis, Differential Calculus; The Derivative and Rules of Differentiation, Optimization with Calculus, Multivariate Optimization, Constrained Optimization and unconstrained Optimization, New management Tools for Optimization

### 3. DEMAND THEORY

The demand for a commodity, Price Elasticity of Demand, Income Elasticity of Demand, Cross- Price Elasticity of Demand, Using Elasticity in Managerial Decision Making.

### 4. DEMAND ESTIMATION

The Identification Problem, Marketing Research Approaches to Demand Introduction to Regression Analysis, Simple Regression Analysis Multiple Regression Analysis, Problems in Regression Analysis, Demand Estimation by Regression Analysis.

### 5. DEMAND FORECASTING

Qualitative Forecasts, Time-Series Analysis Smoothing Techniques Barometric Methods, Economic Models

### 6. PRODUCTION AND COST ANALYSIS

Production Theory and Estimation, The Production Function with One Variable, Optimal Use of the Variable Input, The Production function with Two Variable, Optimal **Combination of Inputs**

### 7. COST THEORY AND ESTIMATION

The Nature of Costs, Short-Run cost Functions, Long-Run Cost Curves, opportunity Costs. Learning Curves Cost-Volume-Profit Analysis and Operating.

## **8. LINEAR PROGRAMMING**

Meaning Assumptions, and Applications of Linear Programming, Some Basic Linear Programming Concepts, and Procedure used in Formulating and Solving Linear Programming: Profit Maximization, and Cost Minimization techniques in linear programming

## **9. RISK ANALYSIS**

Risk and Uncertainty in Managerial Decision, Measuring Risk with Probability Distributions, Utility Theory and Risk Aversion, Adjusting the Valuation Model of Risk, Decision Making Under Uncertainty, Foreign- Exchange Risks and Heading

## **10. STRATEGIC MARKET DECISIONS AND GAME THEORY**

The Strategic Decisions and Strategic Market Decisions, The Nature, Use and Application of Game Theory, Evolution and Development of Game Theory.

### **Recommended Books:**

1. Michael Baye, Managerial Economics Latest edition
2. Dominick Salvatore, Managerial Economics in a Global Economy Latest Edition
3. Petersen H. Craig & Lewis. W. Chris. Managerial Economics. Macmillan Publishing Company, New York Latest Edition
4. Douglas, Evan J, 'Managerial Economics Theory', Practice and Problems: Prentice hall Inc. New York Latest Edition
5. Sue. Managerial Economics. McGraw-Hill Latest Edition

### *Reference Books:*

1. Thomas, Maurice. Managerial Economics. International Edition Latest Edition
2. Evan J. Douglas Managerial economics: theory, practice, and problems Latest Edition
3. Howard Davies, Pun-Lee Lam Managerial Economics: and Analysis of Business Issues Latest Edition
5. Mark Hirschey Managerial Economics Latest Edition
6. Journals / Periodicals:  
World Wide Web

# BS in Commerce

## Course-III

Course	FINANCIAL MANAGEMENT	Credit Hours	3
Pre-Requisite	Introduction to Business Finance Financial Accounting	Semester	V
Objectives	This course is intended to: <ul style="list-style-type: none"><li>• Equip the students with the latest knowledge of finance helping them to make rational financial decisions and thereby to maximize the wealth of the owners.</li><li>• Develop understanding of the students in making decisions relating to special situations such as merger, acquisition etc.</li><li>• Equip the students with latest tools and techniques in financial decision-making.</li></ul>		

### COURSE OUTLINE

#### 1. RISK AND RETURN (REQUIRED RATE)

Risk and Return Fundamentals: Definition, and Meanings; Basic Model; Risk Preference, Risk Preferences / Behaviors

Risk of a Single Asset: (1) Risk Assessment including Scenario Analysis and Probability Distribution and (2) Risk Measurement including Standard Deviation and Coefficient of Variation

Risk of a Portfolio: Portfolio Return and Standard Deviation, Correlation, Diversification

The Capital Asset Pricing Model (CAPM): (1) Types of risk and (2) The CAPM Model covering Beta Coefficient, The Equation, The Graph, The security Market Line (SML) and Shifts in the security Market Line

#### 3. SHORT-TERM FINANCING DECISIONS (Current Assets and Current Liabilities)

- **Current Asset Investment Policies**
- **Working Capital Management**
  - Working Capital Terminologies: Gross VS Net
  - Trade-off between Profitability and Risk
- **Cash Operating / Conversion Cycle**
  - Calculating Cash Conversion Cycle
  - Funding Requirement of the Cash Conversion Cycle Cash Management Alternative Strategies
  - Cash Budget
- **Management of Marketable Securities**
- **Inventory Management**
  - Inventory Levels and Costs
  - Common Techniques for managing Inventory
- **Receivables Management**
  - Credit Selection and Standards
  - Credit Terms and Policy
  - Credit Monitoring
- **Management of Receipts and Disbursements**

- Float
- Speeding-up Receipts and Slowing-down Payments
- Cash Concentration
- Zero-balance Accounts
- **Generic Current Assets' Management**
  - Financing Current Assets
  - Alternative Current Asset Financing Policies
  - Advantages and disadvantages of Short Term Financing
- **Management of Current Liabilities**
  - Sources of Short Term Financing
  - Spontaneous Liabilities
    - Accounts Payable Management
    - Accruals
  - Unsecured Sources of Short Term Financing
    - Bank Loans
    - Commercial Papers
  - Secured Sources of Short Term Financing
    - Accounts Receivables as Collaterals
    - Inventory as Collateral

#### 4. LEVERAGE, AND CAPITAL STRUCTURE

- **Leverage:**
  - **Meanings and Use of Leverage**
  - Breakeven Analysis
  - Operating Leverage
  - Financing Leverage
- **Capital Structure:**
  - Types/Dimensions of Capital
  - External Assessment of Capital Structure
    - Theory of Capital Structure
    - Target/Optimal Capital Structure, and its Determination
    - EBIT - EPS Approaches to Capital Structure
    - Variations in Capital Structures
    - Comparing Alternative Capital Structures
    - Capital Structure and Risk
    - Value Estimation
    - Maximizing Value VS Maximizing EPS

#### 5. PAYOUT POLICY

- **Basics of Payout Policy**
  - Elements of Payout Policy
  - Trends in Earnings and Dividends
  - Trends in Dividends and Repurchase
  - Dividends versus Capital Gains
  - Dividend Policy Issues
  - Dividend Stability
  - Establishing the Dividend Policy in Practice
  - Dividend Reinvestment Plans
  - Factors affecting Dividend Policy
- **Mechanics of Payout Policy**
  - Cash Dividend Payment Process in Pakistan (Legal)
  - Dividend Warrants

- Share Repurchase/Buyback Procedure in Pakistan (Legal)
- Tax Treatment of Dividends and Repurchase
- Dividend Reinvestment
- Effects of Corporate Payouts on Stock price
- **Relevance of Payout Policy**
  - Residual Theory of Dividends
  - Dividend Irrelevance Theory
  - Other Arguments for Dividend Payout
- **Factors affecting Dividend Policy**
  - General, Contractual, Growth, Market and Legal etc.
- **Classification of Dividend Policies** (General and w.r.t. Pakistan)
  - Constant Payout Ratio Policy
  - Regular Dividend Payout Policy
  - Law-Regular-and-Extra Dividend Policy
  - Stock Dividends & Stock Splits
  - Other Forms/Types of Dividend around the world

## 6. LONG-TERM DEBT MANAGEMENT

- **Long-term Debt Considerations**
  - Standard Debt Provisions
  - Restrictive Debt Provisions
  - Cost of Long Term Debt
  - Characteristics of Term Loan Agreements
  - Term Lenders
- **Corporate Bonds**
  - Legal Aspects of Corporate Bonds
  - General Features of a Bond Issue
  - Bond Rating
- **Preferred Stock**
  - Basic rights of preferred stockholders
  - Features of preferred stock
  - Special types of preferred stock
  - Advantages & disadvantages of preferred stock
- **Leases**
  - Basic types of leases
  - Leasing agreements
  - The lease contract (IAS 17)
  - Lease VS Purchase Decisions
- **Mergers**
  - Definition of Mergers
  - Motives for Mergers
  - Types of Mergers
  - Leveraged Buyouts
- **Convertible Securities**
  - Types of Convertible Securities
  - General Features of Convertible Securities
  - Financing with Convertible Securities
- **Options**
  - Major Types of Options
  - Calls and Puts

- Options Markets and Trading

### **Recommended Books:**

1. Brigham F Eugene, Houston F Joel (Latest edition), Fundamentals of Financial Management, South Western Publishers, Ohio
2. Lawrence J. Gitman, Latest Edition, 'Principles of Managerial Finance'
3. Horne Van, Jr. Wackowicz (Latest Edition), Fundamentals of Financial Management, Apprenrice Hall International Inc, New Jersey.

#### *Reference Books:*

1. Weston & Brigham: Essentials of Managerial Finance, the Dryden Press. (Latest Edition)
2. Jr. Scott Martin, Petty J. William (Latest edition), Basic Financial Management, Apprenrice Hall International Inc, New Jersey.

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# BS in Commerce

## Course-IV

Course	PRINCIPLES OF MARKETING	Credit Hours	3
Pre-Requisite	NONE	Semester	V
Objectives	<p>This course is intended to:</p> <ul style="list-style-type: none"><li>• Introduce, to students, the key Marketing Ideas and Phenomena, especially the Core Theme of delivering Benefits to Customers.</li><li>• Develop students' Skills in Marketing Analysis and Planning.</li><li>• Familiarize students with the Tactics of the Marketing(Product [Promotion], and distribution [Place], and Price - 4P's), and other 3 Ps of services, and enhance problem solving and decision making abilities in these areas.</li><li>• Evaluate the attractiveness of different markets.</li></ul>		

### COURSE OUTLINE

#### 1. INTRODUCTION TO MARKETING

The Field of Marketing, Basic Concepts of Marketing; Definition and Need for Marketing as a proper Formal Process; Adapting Marketing Strategy to the New Economy; Positioning; Marketing as the Driver in the Digital Economy; Scope of Marketing Today

#### 2. THE MARKETING ENVIRONMENTAL SCANNING

Marketing-oriented Strategic Planning; Scanning the Marketing Environment - Internal and External; Studying and Analyzing the Needs of all concerned Stakeholders including PESTEL

#### 3. THE MARKETING RESEARCH

Marketing Research Process, and it's Use; Marketing information systems; Identifying Marketing Opportunities

#### 4. CONSUMER BEHAVIOR AND MARKET, AND PRODUCER'S BEHAVIOR AND MARKETS

Consumer Behavior; Consumer Purchase Decision Process: Influences on Consumer Behavior; Social Influences

Producer Behavior; Producer Purchase Decision Process

#### 5. MARKETING SEGMENTATION, TARGETING AND POSITIONING

Identifying Marketing Segments, and Selecting Target Markets; Product Positioning and Differentiating the Marketing Offering

The Product Life Cycle

#### 6. MARKETING MIX FOR GOODS AND SERVICES (7 Ps)

##### The Marketing Mix

**Product;** Meaning and Classification of product; Development of New Product; Determinants of Product Mix; Product Adoption-Diffusion process; Product Portfolio Classification; Product Deletion Strategy; Packaging.

**Price;** Nature and importance of pricing; Pricing objectives; Factors influencing

pricing decision; Developing Price Strategies and Programs; Policy of Credit

**Promotion** Strategy; Role of promotion in business marketing; Developing and implementing the promotional mix; Advertising, sales promotion and public relations; Managing the Sales Force

**Place**; Designing distribution channel; Selecting the type of channel.

**People**; their Behaviors and Attitudes; People as Contributors/Sellers etc. and People as Beneficiaries/Buyers etc., Politics in Marketing (Internal and External)

**Process**; the way/mode services are rendered and received or exchanged; Differentiating among various Methods of rendering services

**Physical Evidence**; Artefacts, Norms, Values, Interior, Dress/Uniform, Structure, Managers' Appearance etc.

## **7. MARKETING RETAILING, WHOLESALING AND MARKET LOGISTICS, AND MARKETING PLAN**

Managing Retailing, Wholesaling and Market Logistics; Their Types and respective Uses; Managing the Total Marketing Effort

Socially Responsible Marketing Communications, Marketing Plan Development and Analysis

## **8. MARKETING CHANNELS, SUPPLY CHAIN MANAGEMENT, ADVERTISING AND PUBLIC RELATIONS**

**Supply Chain**: Nature, Need and Use

**Marketing Channels**: Nature, Need, Types and Use/Importance

**Advertising**: Objectives, Budgets and Strategy.

**Public Relations**: Role and Impact, and Major Tools

## **9. PERSONAL SELLING, DIRECT MARKETING, ONLINE MARKETING /E-MARKETING AND SERVICES MARKETING**

**Personal Selling**: Nature, Use/Role and Process; Sales Force Management; Sales Promotion

**Direct Marketing**: Nature, Use/Role, Growth, Benefits, and various Forms of Direct Marketing;

**E-Marketing**: Nature, Use/Role, Growth, Benefits, and various Forms of E-Marketing;

**Services Marketing**: Nature and Scope of Services Marketing including Financial Services and their Marketing

## **10. CRAFTING STRATEGIES TO ATTAIN COMPETITIVE EDGE**

**Competitor Analysis**: Identification, Assessment and Selection.

**Competitive Strategies**: Approaches, Forms, Positioning, Leadership and Challenge.

## **11. GLOBAL MARKET PLACE, MARKETING ETHICS AND SOCIAL RESPONSIBILITY**

**Global Marketing:** Considerations, Forms/Approaches, and Global Marketing Mix.

**Marketing Ethics and Social Responsibility:** Meanings and Need/Rationale for Ethics, Social Criticism, Citizenship in Marketing

### **Recommended Books:**

1. Kotler, Philip. *"Marketing Management"*. Latest Edition, Prentice Hall.
2. Stanton, Etzel, Walker. *Marketing*, Latest Edition, McGraw-Hill.
3. Marketing by Evens and Berman
4. Krishnamacharyulu, Ramakrishan. *Rural Marketing Text and Cases*, Pearson Education.
5. Harvard Business Review w.r.t. Marketing Periodic for Latest Research and Development
6. Cases in Marketing by Prof. Dr. Khawaja Amjad Saeed

### *Reference Books:*

1. W. D. Perreault, Jr., J.P Cannon, and E. J. McCarthy, Basic Marketing: A Marketing Strategy and Planning Approach, Latest Edition, Irwin/McGraw-Hill.
2. C. H. Mason and W. D. Perreault, Jr. The Marketing Game! Latest Edition, McGraw-Hill, New York.
3. Kotler, Philip, and Jain C Dipak, *Marketing Moves (A New Approach to Profits, Growth, and Renewal)*, Harvard Business School Press

# BS in Commerce

## Course-V

Course	BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY (CSR)	Credit Hours	3
Pre-Requisite	NONE	Semester	V
Objectives	<p>The objectives of this course are:</p> <ul style="list-style-type: none"><li>• To sensitize the students to the ethical dimensions of business and to train them to identify ethical dilemmas, analyze them systematically and resolve them based on ethical principles and moral theory.</li><li>• To examine the ethical dimensions of business from different perspectives (American/British, European/Japanese, etc) and to introduce tools of ethical analysis of management decisions involving difficult choices between right and right and wrong and wrong.</li><li>• To convey the importance and functionality of core values, codes of contact and a culture of ethical behavior as powerful management tools in the workplace and sources of trust and reputation in the marketplace</li><li>• To differentiate between responsive and strategic CSR in terms of shareholder and social value, competitive advantage and sustainability.</li><li>• To help participants evaluate the CSR standards of their own companies, identify CSR initiatives and convey competencies for their effective implementation and evaluation.</li></ul>		

### Course Outline

#### Introduction

Meanings/Definitions of Ethics and Social Responsibility; Basic Principles, Use/Scope etc. of everyday ethical dilemmas

1. WHY BE ETHICAL?

Who cares? Who bothers? The “amoral” majority, Unconscious biases

2. BUSINESS/PROFESSIONAL ETHICS

Definitions, The case for and against ethics in business, Why the law cannot do it? Do Business Ethics make economic sense? The invisible hand and market failures; Distinction between Social Ethics and Professional/Business Ethics

3. COMMON ETHICAL DILEMMAS IN BUSINESS

Human resource issues, Conflict of interest issues, Customer confidence issues, Use of corporate resources, Blowing the whistle

4. ETHICAL THEORIES

Consequentialist or teleological theories (ethical egoism and utilitarianism), Non-consequentialist or deontological theories (normative ethical relativism, golden rule and Kantianism), Virtue ethics and defining moments, Rawlsian Theory of Justice, Stakeholder theory of management

5. ETHICAL DECISION MAKING AND GOVERNANCE

Eight steps to resolving ethical dilemmas and conflicts, Applications to Ethical dilemmas of managers - Ethical dilemmas of organizations

6. CORE VALUES AND CODES OF CONDUCT AS MANAGEMENT AND

## **BRANDING TOOLS**

Asymmetry of information and adverse selection, Principal-agent problems and imperfect contracts, the market value of trust and reputation.

### **7. FUNCTIONAL AREA APPLICATION OF BUSINESS ETHICS**

Ethics in finance and accounting, Ethics in marketing and advertising, Ethics in human resource management, Ethics in governance and leadership

### **8. ETHICS IN THE GLOBAL BUSINESS ENVIRONMENT**

### **9. CORPORATE SOCIAL RESPONSIBILITY**

CSR as an ethical responsibility of business towards society, Responsive vs. strategic CSR, Choosing the right CSR initiatives to create shared social and business value, Implementing, evaluating and scaling up CSR to maximize shared value.

### **10. DOES IT PAY TO BE ETHICAL AND SOCIALLY RESPONSIBLE?**

The time horizon: short term vs. long term, Empirical evidence

### **11. CASES**

Enron  
Procter & Gamble Co. Aluminium  
Co of America Nestle  
Hooker Chemical Company NYEC  
The Wall Street effect McDonald's  
Polystyrene Case Philip Morris  
The Markin Mining Company Texaco  
Other old and latest Cases from Pakistan's Corporate Sector etc.

#### **Recommended Books:**

1. Code of Corporate Governance 2013 or Latest, issued by SECP
2. Business and Society: Ethics, Sustainability, and Stakeholder Management, Latest Edition Archie B. Carroll, Ann K. Buchholtz South- Western College Publications, Cengage Learning
3. Business and Society: Stakeholders, Ethics, Public Policy, Latest Edition Anne T Lawrence and James Weber McGraw-Hill/Irwin
4. Business Ethics and Corporate Social Responsibility, Latest Edition, Paul Griseri and Nina Seppala CENGAGE Lrng Business Press

#### **Reference Books:**

- ☐ Journal of Business Ethics
- ☐ Social Responsibility Journal
- ☐ Business Ethic
- ☐ Journal of Academic and Business Ethics
- ☐ Newspapers, Magazines, Journals etc. for Business Ethics and Social

Responsibility Issues

# BS in Commerce

## Course-VI

Course	LEADERSHIP AND COMMUNITY DEVELOPMENT	Credit Hours	3
Pre-Requisite	Principles of Management	Semester	V
Objectives	This course is meant to: <ul style="list-style-type: none"><li>To provide a conceptual and theoretical knowledge of Leadership</li><li>To examine the motives for and meanings of “community development” and the pros and cons of various community development approaches</li><li>To understand various intervention measures in solving social problems in a society</li><li>To use local resources to empower the societies in order to become self-reliant</li><li>Social Action Projects will enable students to harmonize the knowledge and skills gained through these projects with CSR in their professional lives, which is one of the major concerns for future leaders, managers and organizations globally. Start career as Auditor at initial level</li></ul>		

## COURSE OUTLINE

### 1. Fundamentals of Leadership and Servant Leadership

- What is leadership
- Leadership Traits
- Servant Leadership

### 2. Foundations of Community Development

- The frame work for community and economic development
- Seven theories for seven community developers
- Bases of community development
- Process of community development
- Challenges of the process

### 3. Social Capital, Community Building and Community Development Practices

- Social capital
- Community social capacity and how does it influence development
- Intentional action to increase social capacity
- Factors that influence the success of community-building efforts
- Principles and process of practicing community development
- How does community development practice relate to economic development
- Professional standards of ethical practices in community development

### 4. Entrepreneurship as a Community Development Strategy

- Introduction to Entrepreneurship
- Understanding an Entrepreneur
- Opportunity recognition and role of creativity

### 5. Community development assessment, Community Asset mapping and surveys, Assessing local economy.

- Community Mapping
- Surveys Forms

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- The importance of asset mapping.

## **6. Building Powerful Community Organizations**

- Bringing a group together
- Scanning the functions of Community Organizations present in the market
- The idea generation
- Developing Vision, Mission and Goals
- Structuring the Organization
- Defining SOPs

## **7. Marketing your Organization**

- Marketing a Community Organization
- Effective role and guidelines for conducting meetings

## **8. Mobilizing Resources: Raising Money**

- Community development finance
- Finding sources of money
- Securing grants for community development projects
- Preparing grant proposals

## **9. Measuring Progress**

Community development indicators, Best practices & Benchmarking

### *Recommended Books:*

1. The heart of leadership: A leader people want to follow by Mark Miller, Berret-Kohler Publisher 2013.
2. Leadership and Art of Struggle by Steven Snyder & B. Geage Berret Kohler Publisher 2013.
3. Strategic Leadership: How to think and plan by John Adair, Kogan Page Ltd 2010.

# BS in Computer Science

## Course-I

Visual Programming					
Credit Hours:	3	Course Code:	SENG-4115	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Understand the different elements of a visual programming language as building blocks to develop correct, coherent programs.				C	2
2. Program using the fundamental software development process, including design, coding, documentation, testing and debugging.				C	2
3. Implement syntax rules in Visual Basic programs and explain variables and data types used in program development				C	3
4. Analyze problems, develop conceptual designs that solve those problems, and transform those designs to Visual Programs				C	4
* BT= Bloom's Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Visual Programming Basics, Introduction to Events, Fundamentals of Event-Driven, Programming, Message Handling, User Interfaces, Graphics Device Interface, Painting and Drawing, Windows Management, InputDevices, Resources, String and Menu Resource, Dialogs and Windows Controls, Common Controls, Dynamic Link Libraries, Threads and Synchronization, Network Programming, Building Class Libraries at the Command Line, Class Libraries, Using References, Assemblies, Private Assembly Deployment, Shared Assembly Deployment, Configuration Overview, Configuration Files, Programmatic Access to Configuration, Using SDK Tools for Signing and Deployment, Metadata, Reflection, Late Binding, Directories, Files, Serialization, Attributes, Memory Management and Garbage Collection, Threading and Synchronization, Asynchronous Delegates, Application Domains, Marshal by Value, Marshal by Reference, Authentication and Authorization, Configuring Security, Code Access Security, Code Groups, Evidence, Permissions, Role-Based Security, Principals And Identities, Using Data Readers, Using Data Sets, Interacting With XML Data, Tracing Event Logs, Using the Boolean Switch and Trace Switch Classes, Print Debugging Information with the Debug Class, Instrumenting Release Builds with the Trace Class, Using Listeners, Implementing Custom Listeners.					
Teaching Methodology:					
Lectures, Written Assignments, Practical labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.					
Reference Material:					
1. Visual C#: How to Program by Deitel and Deitel, Pearson; 6th Edition, 2016. ISBN-10: 0134601548,ISBN-13: 978-0134601540 2. Programming in Visual C# 2008 by <u>Julia Case Bradley</u> and <u>Anita Millsbaugh</u> , McGraw-Hill Education; 3rd Edition, 2009.ISBN-10: 0073517216,ISBN-13: 978-0073517216 3. Microsoft Visual C# 2013 Step by Step by John Sharp, Microsoft Press; 1 <sup>st</sup> Edition , 2013. ISBN-10: 073568183X, ISBN-13: 978-0735681835					

BS in Computer Science

Course-II

Information Security					
Credit Hours:	3	Course Code:	COSC-3102	Prerequisite:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Knowledge of the concepts, models and terms commonly used in the area of Information security.				C	2
2. Understand the basic concepts and scientific thinking in information security.				C	3
3. Identify the current IT security issues.				C	4
4. Evaluate factors that influence the security of systems.				C	5
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction to information security, Security Models and Policies, Program Security, Malicious Software, Operating system security, Privacy and Privacy Enhancement Tools, Steganography, Social Engineering, Security threats on Social networks Stream ciphers, Semantic security, Block ciphers and pseudorandom functions, Chosenplaintext security and modes of operation, The DES and AES block ciphers, Message integrity. CBC-MAC, HMAC, PMAC, and CW-MAC, Collision resistant hashing, Authenticated encryption. CCM, GCM, TLS, and IPsec, Key derivation functions, Odds and ends: deterministic encryption, non-expanding encryption, and format preserving encryption, Basic key exchange: Diffie-Hellman, RSA, and Merkle puzzles, Computational number theory, Numbertheoretic hardness assumptions, Public key encryption, Trapdoor permutations and RSA, The ElGamal system andvariants.					
Teaching Methodology:					
Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations					
Course Assessment:					
Midterm Exam, Quizzes, Home Assignments, Projects, Presentations, Final Exam					
Reference Material:					
1. Network Security Essentials: Applications and Standards by William Stallings, Pearson; 5 <sup>th</sup> Edition, 2013; ISBN-13: 978-0133370430					
2. Computer Networks: A system approach by Larry L. Peterson, Bruce S. Davie, Morgan Kaufmann; 5 <sup>th</sup> Edition, 2011; ISBN-13: 978-0123850591					
3. Cryptography and Network Security by Behrouz A. Forouzan, Tata McGraw-Hill Education; 2 <sup>nd</sup> Edition, 2010; ISBN: 9780070702080					
4. .Introduction to Cryptography – Principles and Applications by Delfs and Knebl, Springer; 2 <sup>nd</sup> Edition, 2007; ISBN-13: 978-3540492436					

**BS in Computer Science**

**Course-III**

**Cloud Computing**

**BS in Computer Science**

**Course-IV**

**Computer Architecture & Organization**

## BS in Computer Science

## Course-V

<b>Numerical Computing</b>				
<b>Credit Hours:</b>	3	<b>Course Code:</b>	MATH-3123	<b>Prerequisites:</b> None
<b>Course Learning Outcomes (CLOs):</b>				
At the end of the course, the students will be able to:				<b>Domain</b> <b>BT Level*</b>

1. The student would understand the fundamental concepts of Scientific Programming using programming language(s)	C	1
2. Use a computer algebra system to investigate and solve mathematical problems relating to integration, differential equations and approximation.	C	2

\* BT= Bloom's Taxonomy, C=Cognitive Domain, F=Psychomotor Domain, A=Affective Domain

**Course Contents:**

Mathematics

**Course Contents:**

Mathematical preliminaries and error analysis, round-off errors and computer arithmetic. Calculate Divided Differences. Use Divided-difference Table. Find Newton's Interpolation Polynomial. Calculate Interpolation with Equally Spaced Data. Find the Difference Table. Calculate Newton's Forward & Backward Difference Formulae. Use Gauss Formulae. Use Stirling's Interpolation Formula. Use Bessel's Interpolation Formula. Use Everett's Interpolation Formula. Solve Nonlinear Equations. Solve Equations by Bisection Method. Solve Equations by Regula Falsi Method. Solve Equations by Secant Method. Solve Equations by Newton-Raphson Method. Find Fixed Point Iteration. Solve Equations by Jacobi Iterative Methods. Solve Equations by Gauss-Seidel Method. Calculate Numerical Differentiation. Find Numerical Differentiation Formulae Based on Equally Spaced Data. Find Numerical Differentiation Based on Newton's Forward Differences. Find Numerical Differentiation Based on Newton's Backward Differences. Find Numerical Differentiation Based on Stirling's Formula. Find Numerical Differentiation Based on Bessel's Formula. Find Numerical Differentiation Based on Lagrange's Formula. Calculate Error Analysis of Differentiation Formulae. Solve Richardson Extrapolation. Calculate Numerical Integration. Use Trapezoidal Rule with Error Term. Use Simpson's  $1/3$  Rule with Error Term. Use Simpson's  $3/8$  Rule with Error Term. Use Composite Numerical Integration. Use Composite Trapezoidal Rule. Use Composite Simpson's Rule. Find Richardson's Extrapolation. Find Newton-Cotes Closed Quadrature Formulae.

**Teaching Methodology:**

Lectures, Written Assignments, Semester Project, Lab Assignments, Presentations.

**Course Assessment:**

Sessional Exam, Home Assignments, Quizzes, Final Exam

**Reference Material:**

1. Numerical Analysis by Richard L. Burden, J. Douglas Faires, Brooks/Cole Boston USA, 9<sup>th</sup> Edition, 2011.  
ISBN-10: 0538733519.
2. Numerical Methods for Scientific Computing by J.H. Heinbockel Trafford Publishing USA, 2004,  
ISBN 10: 1412031532.

BS in Computer Science

Course-VI

Entrepreneurship					
Credit Hours:	3	Course Code:	MSCI-3111	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Develop an idea for a new venture.				C	2
2. Research its potential and understand the risks associated;				C	2
3. Undertake marketing, positioning, customer development and analysis of the financial requirements				C	3
4. Plan for the execution and management of all the relevant functional areas of new venture including operations, supply chain, information systems, and human resources etc.				C	4
5. Develop a comprehensive business plan for their venture.				C	5
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Entrepreneurship: an evolving concept, understanding strategic issues in business plan development, understanding strategic issues in business plan development, understanding the entrepreneurial perspective in individuals, entrepreneurial perspective in organizations – corporate entrepreneurship Social entrepreneurship and the ethical challenges of entrepreneurship, innovation: the creative pursuit of ideas, pathways to entrepreneurial ventures, legal challenges for entrepreneurial ventures, sources of capital for entrepreneurial ventures, assessment of entrepreneurial plan, marketing challenges for entrepreneurial ventures, financial preparation for entrepreneurial ventures, developing an effective business plan, strategic entrepreneurial growth, valuation of entrepreneurial ventures, harvesting the entrepreneurial venture					
Teaching Methodology:					
Lectures, Written Assignments, Practical Labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.					
Reference Material:					
1. Entrepreneurship – Theory Process Practice by Donald F. Koratko, Cengage Learning, 10 <sup>th</sup> Edition, 2016; ISBN-10-1305576241					

# **BS in Economics**

## **Course-I**

### **ECON 11501: MICROECONOMIC THEORY 1**

#### **Monopolistic Competition and Oligopoly**

Characteristics of monopolistic competition , Short run and Long run equilibrium, The basic theories of monopolistic competition Comparison with pure competition & monopoly, The role of advertisement and media,.

#### **Duopoly and oligopoly**

Models of non collusive Oligopoly Cournot, Bertrand, Chamberlain, Sweezy etc. Price leadership and cartel formation monopolistic competition, the economic cost of imperfect competition, elasticity of demand and Lerner index of market power, the case of public utilities and marginal cost pricing, natural monopolies and the global markets, the multinational corporations,

#### **Game theory**

introduction to : Game theory and strategic behavior, market with uncertainty and imperfect information.

#### **Pricing of the Factors of Production**

Derived Demand for variable inputs, the marginal productivity theory and its criticism , Modern theory of factor demand with emphasis on the labour and capital markets, The labour supply function, Wage determination and the role of government and labour unions, Input price elasticity, Pricing of factors that are fixed in the short run Rents & Quasi-rents, Stock prices.

#### **Recommended Material:**

1. Nicholson, W., (6<sup>th</sup> edition), Microeconomic Theory: Basic Principles and Extensions, South-Western.
2. Layard, P.R.G and A. A. Walters, (Latest Edition), Microeconomic Theory, McGraw Hill Publishing Company.
3. Henderson, J.M & R.E. Quandt, (Latest Edition), Microeconomic Theory, Melliwra H A Book Co., N.Y.
4. Ferguson, C.E & J.P.Gould, (Latest Edition), Microeconomic Theory, Macmillan.
5. Silberberg, E and Suen W., (2001), The Structure of Economics: A Mathematical Analysis, McGraw Hill International.
6. Perloff, Jeffery, (1999), Microeconomics, Addison Wesley Longman.
7. Pindyck and Rubinfeld, (2004), Microeconomics, Pearson Education Asia.

# **BS in Economics**

## **Course-II**

### **ECON 11502: MACROECONOMIC THEORY 1**

#### **Aggregate supply and the labour market**

The aggregate production function, demand for labour in the short run, labour market and its equilibrium: the flexible and sticky wage models, the imperfect information model, the short run aggregate supply function, the concepts of full employment and underemployment, supply shocks and stabilization, interaction of aggregate supply and demand and price determination.

#### **Inflation and unemployment**

Types, causes and measurement of inflation, the structural and monetary approaches to inflation, global inflation and its impacts on developing economies, transitory and structural unemployment, the problem of unemployment with special reference to Pakistan, the relationship between inflation and unemployment, Phillips curve in the short run and long run, remedial measures to combat inflation and unemployment.

#### **Macroeconomics: The Classical Framework**

Ingredients of the Classical model: The Says law of markets, The Quantity theory of money, the Marginal Productivity theory. Equilibrium in the goods and money markets. A critical appraisal of the Classical model. Dichotomy in the economy.

#### **The Demand Management Economy**

The Keynesian framework, characteristics of a depression economy. Innovations due to Keynes: the consumption function, the liquidity preference function, wage rigidity in the labour market, the IS-LM model, mathematical derivation of the IS and LM functions, the interaction of the goods and money markets in a closed economy, the role of public sector investment, the multiplier effects of fiscal and monetary actions, derivation of the aggregate demand curve/function, stabilization and the relative effectiveness of fiscal and monetary policies, the neoclassical critique of the Keynesian model: the Keynes effect, the Pigou effect, the real balances effect, the Keynesian-neoclassical synthesis.

#### **Recommended Material**

Dornbusch, R., Stanley, F., (2008/9<sup>th</sup> Edition), Macroeconomics, McGraw-Hill Inc

Shapiro, E., (2000/7<sup>th</sup> Edition), Macroeconomic Analysis, Harcourt Brace Inc.

Froyen, R. T., (2002/7<sup>th</sup> Edition), Macroeconomics: Theories and Policies, Macmillan.

Mankiw, G. N., (2007/6<sup>th</sup> Edition), Macroeconomics, Worth Publishers, New York.

Blanchard, O., (2000/2<sup>nd</sup> Edition), Macroeconomics, Prentice Hall International..

Pakistan Economic Survey (Latest),

Annual Reports of the State Bank of Pakistan,

Federal and Provincial Budgets (Latest).

# **BS in Economics**

## **Course-III**

### **ECON 11503: MATHEMATICAL ECONOMICS**

#### **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 exercise tax revenues, monopolistic competitive market, comparative static analysis: partial equilibrium market model, national income model, partial and substitution elasticities, optimization of unconstrained functions and the economic applications, profit maximization by a multi-product multi-plant firms, price discrimination and monopoly, optimization by using Cobb-Douglas, CES and Translog functions with interpretation of the results.

#### **Complex Numbers and Circular Functions:**

Imaginary and Complex Numbers. Complex Roots. Circular Functions. Properties of Sine & Cosine functions. Euler and Maclaurin Series. Alternative Representation of Complex Numbers.

#### **Integral Calculus:**

Comparative Dynamics and Integration. The Nature of Indefinite Integrals, Rules of Integrations & Operation: Substitution Rule, Integration by Parts. Definite Integrals and their Properties. Definite Integrals and Area Under a Curve. Improper Integrals. Economic Applications of Integrals: Finding Total Functions from Marginal Functions, Investment & Capital Formation, Present Value of Cash Flow. P. V. of a Perpetual Flow, The Domar Growth Model.

#### **Differential Equations: Continuous Time:**

##### **(i) First Order Linear Differential Equations**

Meaning and Definition; Homogenous & non-Homogenous Cases. Solution of First Order Linear Differential Equation: with Constant Coefficient & Constant Term, with variable coefficient and variable term, Qualitative Approach: Concept of Phase Diagrams, types of time paths and dynamic stability of equilibrium, Exact Differential Equations: Solution and Verification, N and its Verification. Economic Application: Dynamics of Market Price. Solution and its Verification of First Order Differential Equation with Variable Coefficient and Variable Term. Exact Differential Equation, its Solution and Verification. Non-linear Differential Equations of the First Order and First Degree. Bernoulli Equation, Separable Variables. Economic Application: Dynamics of Market Models, Solow Growth Model.

##### **(ii) Higher Order Differential Equations**

Solution and Verification of Second order Linear Differential Equations with Constant Coefficient and Constant terms, Real and Imaginary Roots, Distinct, Repeated and Complex Roots. Dynamic Stability of Equilibrium. Economic Applications: Market Model with Price Expectations. The Interaction of Inflation and Unemployment in continuous time, Higher order Differential Equations, Convergence and the Routh Theorem. Solution of Simultaneous Differential Equations.

#### **Linear Programming**

Ingredients of linear programming, graphical approach, simplex method, economic application of linear programming, concept of primal & dual, Duality theorem, solving of primal via dual, economic interpretation of a dual.

#### **Recommended Material:**

1. Chiang, A. C. (1984), Fundamental Methods of Mathematical Economics- 3<sup>rd</sup> Edition, McGraw Hill Publishing Company.
2. Frank, B. (1993), Applied Mathematics for business economics and Social Sciences – 4<sup>th</sup> Edition or latest – McGraw Hill Publishing Company.
3. Dowling, E. T. (2001), Mathematics for Economists, Schaum's Outline Series- 3<sup>rd</sup> Edition.
4. George, Alvery et al (1995)., - Essentials of Mathematics with Business Applications – 5<sup>th</sup> Edition – McGraw Hill Publishing Company.
5. Weber E. Jean - Mathematical Analysis. Business and Economic Applications – (Latest Edition) - Harper and Row Publishers, New York.
6. Colin, Glass – An Introduction to Mathematical Methods in Economics – (Latest Edition) – McGraw Hill Publishing Company.

# **BS in Economics**

## **Course-IV**

### **ECON 11504: STATISTICAL ECONOMICS**

#### **Probability and Probability Distribution**

A survey of probability concepts: Classical probability, Empirical concept, Subjective probability; some rules of probability: Rules of addition, Rules of multiplication; Conditional Probability, Bayes Theorem; Counting rules: The multiplication formula, The permutation formula, The combination formula; Discrete probability distribution, Random variables, Discrete random variable Continuous random variable; The mean, variance and standard deviation of a probability distribution; Binomial probability distribution, and its computation, Cumulative probability distributions, Properties of Binomial probability distribution; The normal probability distributions: Properties of normal distribution, Applications of the standard normal distribution, Areas under the normal curve, Finding areas under the normal curve; the normal approximation to the binomial; Continuity correction factor.

#### **Survey Sampling and Sampling Distributions**

Sampling and Sample: Advantages of sampling, Representative samples, design and sample survey, Sampling frame; Probability and non-probability sampling; Sampling with and without replacement; Sampling and non-sampling error, sampling bias; Sampling distribution of the mean; The central limit theorem; Sampling distribution of differences between means; Sampling distribution of sample proportion; Sampling distribution of differences between proportions; Sampling distribution of the variance.

#### **Estimation Theory & Hypothesis Testing**

Point estimates and confidence intervals; Criteria for good estimators; The t-distribution; Point estimators of mean and variance; Estimation by confidence interval: Confidence interval estimate of a population mean (Known & Unknown Variances), Confidence interval for differences of means, Confidence interval for population proportion, Confidence interval for differences between proportions; Types of hypotheses; Type I versus Type II errors; Tests of population means and variances; Two sample tests; The F distribution; Testing for the variances of two populations

#### **Chi Square Application & Analysis of Variance**

Introduction; Goodness-of-fit test: Equal and unequal expected frequencies; Limitations of Chi square; Using the goodness-of-fit test to test for normality; Contingency Table Analysis. Introduction, The F-distribution; Comparing two population variances; ANOVA assumptions; ANOVA test; Inferences about pairs of treatment means; Two-way analysis of variance.

#### **Recommended Books:**

1. H.K. Chow et al., *Introductory Statistics*, 2nd edition, Prentice Hall, 2007.
  2. Barrow, M., *Statistics for Economics, Accounting and Business Studies*, 4th edition (Longman), 2005.
  3. Agresti, Alan, *Statistical methods for the social sciences*, 3rd Edition, Upper Saddle River, N.J., London, Prentice Hall, 1997.
  4. Mc Clave, J.M., Benson, P. G., Sincich, T., *Statistics for Business and Economics* (9th or 10<sup>th</sup> ed.) Pearson Publishing, 2005.
  5. Berenson M L., D. M. Levine, and T. C. Krehbiel, *Basic Business Statistics*, 11th edition, Pearson Prentice Hall, 2009.
  6. Lind, Marchal, Wathen, *Statistical Techniques in Business and Economics*, McGraw-Hill Companies, 12th Edition, 2005.
  7. Chaudhry, Sher Mohammad and Kamal, Shahid, *Introduction to Statistical Theory 1 & 2*, Lahore: Ilmi Kitab Khana, 2009.
  8. J. Siegel, Andrew F., *Practical Business Statistics* (5th edition). Boston: McGraw Hill, 2003.
  9. New bold, Paul, Carlson, William L. and Thorne, Betty M, *Statistics for Business and Economics* (5th edition), New Jersey: Prentice Hall, 20m.
  10. Keller, Gerald and Warrack, Brian, *Statistics for Management and Economics* (5<sup>th</sup> edition). Boston: Duxbury Thomson Learning, 2000.
- Stephan and Spegal, *Statistics*, latest Edition, Schum's Outline Series.

# **BS in Economics**

## **Course-V**

### **ECON 11505: ISLAMIC ECONOMICS**

#### **Introduction to Islamic Economics**

Islamic Economics: Definition, Nature, and Importance, Islamic Economics vs. Secular Economics, The foundations of Islamic Economics, Brief introduction of the basic values of Islam: Piety (Taqva), The lawful and unlawful (Halal and Haram), Trusteeship, Accountability, Justice, Benevolence, Equality, Brotherhood and Cooperation, Determinants of Economics behavior and policies in Islam.

#### **Islamic Economic Thought**

Contribution of prominent scholars towards development of Islamic Economic thought (Imam Abu Yousuf, Imam Abut Ubaid Al-Qasim, Ibn-e-Khuldoon, Imam Ibn-e-Taimiyah, Shah Waliullah Dehlawi, Maulana Maududi, Baqar-al-Sadar etc.).

#### **Islamic Economic system**

Salient features of an Islamic Economic system: Objectives, Economic freedom, Equity and efficiency, Social and distributive justice, The relative importance of capital and labour, Private ownership and property rights, Family system and the law of inheritance, The institution of Zakat and Bait-ul-Mal, Wider circulation of wealth, Fulfillment of basic needs, The institution of interest and its inconsistency, Rationale for prohibition of interest, Role of the state in an Islamic system, Protection of faith and Islamic values, Economic and social welfare, Alleviation of poverty and reducing of inequalities, Comparison of Islamic economic system with Capitalism and Socialism.

#### **Microeconomics in Islamic Framework**

##### **Consumer's Behaviour**

Objectives, Success in this world and the life Hereafter, Moderation in consumption, Restricted set of preferences, Altruism and charitable donations (Zakah and Sadaqat), Utility function, Consumer's equilibrium in an Islamic framework.

##### **Behavior of the Firm**

Business ethics in production and marketing, Permissible and prohibited activities, Hoarding and gains, Forms of business organization: Proprietorship, Partnership (Muzara'h, Mudharabah, Musharakah), Joint stock company (Sharikah), Modes of investment and financing.

#### **Macroeconomics in Islamic Framework**

##### **Some Basic Macroeconomic Concepts**

Consumption, Saving and investment functions, Determinants of consumption and investment functions in Islamic environment, Concept of helping others, The parameters of public spending in Islamic framework, International trade relations, Inflation and unemployment, Stabilization policies in Islamic framework.

##### **Money and Banking**

Commodity money, Paper money and credit money, The concept of Riba (interest): Its interpretation and implications, Justification of interest in the conventional theory, Rationale for prohibition of interest-based transactions and gambling, Models of interest-free commercial banking, Modes of financing: Investment leasing (Ijarah), Partnership in capital (Musharka), Principal-agent Murabaha Bai-Salam, Bai Muahhal etc., Central banking and monetary policy in Islamic framework: Combating inflation, Design of capital markets and insurance.

##### **Public finance and Fiscal Policy**

Sources of revenue and heads of expenditure of an Islamic State, The scope for taxation, Objectives of fiscal policy: Social justice, Equity in distribution and elimination of poverty, Beneficiaries of Zakah, Exemption limits and rates of Zakah, Economic impacts of Zakah & Usher: The multiplier effect, Financing economic growth and development in Islamic perspective, The case of domestic and foreign borrowing.

##### **Islamization Process in Pakistan**

Islamization of the banking and financial system: Reports of the CII and implementation issues, The role of financial institutions in the private sector, Implementation of Zakah and Usher system: Prospects and problems, A brief survey of changes that have taken place in economic and financial structure since 1980's, Islamic banking practice and the role of the State Bank of Pakistan, The process of Islamization in other countries like Iran, Sudan, Malaysia.

##### **Recommended Material:**

1. Ahmed, K., (1980), Studies in Islamic Economics, King Abdul Aziz University, Jeddah and The Islamic Foundation UK.
2. Ziauddin, et al., (1983), Money and Banking in Islam, King Abdul Aziz University, Jeddah and The Institute of Policy Studies, Islamabad.

3. Ziauddin, et al., (1983), Fiscal Policy and Revenue Allocation in Islam, King Abdul Aziz University, Jeddah and The Institute of Policy Studies, Islamabad.
4. Siddiqui, M. N., (1983), Issues in Islamic Banking, The Islamic Foundation, Leicester, UK.
5. Iqbal, M., (1986), Distributive Justice and Need Fulfillment in an Islamic Economy, International Islamic University, Islamabad.
6. Mannan, M. A., (1986), Islamic Economics: Theory and Practice, A Comparative Study, Hodder and Stoughton, Cambridge.
7. Sayyid, T., et al., (1992), Readings in Microeconomics: An Islamic Perspective, Longman Malaysia.
8. Chapra, M. U., (1993), Just Monetary system, IIIT New York and Islamic Research Institute, Islamabad.
9. Taqi, U., Justice, M., (2000) - Introduction to Islamic Finance, Idarat-al Ma'arif, Karachi.
10. Siddiqui, M. N., (2001), Economics: An Islamic Approach, Institute of Policy Studies, Islamabad and The Islamic Foundation, UK.

**BS in Education**  
**Course-I**

Course Unit Code	EDU-21211
Title	Islamic Concept of Education
Credit Hours	3
Level	BS Education
Semester	5 <sup>th</sup>
Prerequisites	None

**Curriculum Contents**

- **Basics of Islamic Education**
- Ideological foundations
- Islamic system of values
- Effects of Islamic Ideology on human life
- **Knowledge and Education Process**
- Concept and importance of education (Quran and Hadith)
- Sources of knowledge
- Concept of training
- **Islamic System Of Education**
- Objectives of education
- Curriculum
- Teaching Methods
- Female Education
- Co-curricular Activities
- **Islam and contemporary issues in Education**
- Literacy
- Science and Technical Education
- Education and unemployment
- Education and Social Problems
- Educational Administration

**Recommended Books**

Khalid, M. (2008). Islami Nizam-e-Talleem Lahore: Pakistan Educaiton Foundation

Khoursheed Ahmed (2005). Islami Nazaria-e-Hayat Karachi: Shouba Tasneef-o-Tarjuma Karachi University.

Naizi, LA (2006). Pakistan ke lye Misali Nizam-e-Taleem Ke Tashkeel Lahore: Sang-e-Meel Publication.

Saqib, GN (2006). Modernization of Islamic Educaiton Lahore: Islamic Book Service.

Shehzad Ahmed (2004). Islamic Educaiton New Delhi: Anmol Publications.

**BS in Education**  
**Course-II**  
Course outline

Course Unit code:	EDU-21212
Title:	Foundations of Education
Credit Rating:	03 credit hours
Level:	BS Education
Delivery:	Semester 5th
Pre-requisites:	None

**Curriculum Contents**

- 1- Introduction to Philosophy
- 2- Branches of Educational Philosophies
  - Meta physics
  - Epistemology
  - Axiology
- 3- Educational implications of Philosophies
  - Concept of state by Plato
  - Reality of life stated by Aristotle
  - Education of Emile by Rousse
  - Philosophical concepts of John Dewey
- 4- Modern Philosophies
  - Perennialism
  - Existentialism
  - Experimentalism
  - Progressivism
  - Reconstructionalism
- 5- Philosophy and Education
- 6- Islamic Philosophers of Education
  - Allama Muhammad Iqbal
- 7- Educational policies of 1959, 1972, 1998-2010

**Recommended Books**

Canestrari, A. (2000). *Foundations of Education*. New York: Sage Publications.

Eugene, F.P. (2006). *Critical issues in education: Anthology of reading*. New York: Sage Publications.

Goldblatt, P.F., & Smith, D. (2008). *Cases for teacher development*. New York: Sage Publications.

Holt, L.C. (2004). *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. (2009). *Foundations of Education: The essential texts*. USA: Routledge

**BS in Education**  
**Course-III**

**Research Method**

Course outline

Course unit code	EDU-21213
Title:	Research Methods
Credit Rating:	03
Level:	BS Education
Delivery:	Semester 5th
Pre-requisites	None

**Curriculum Contents**

- Types of Research
- By Purpose                      By Method
- Steps of Research
- Proposal Writing
- Literature Review
- Data Collection tools
- Sampling Procedure
- Data Analysis technique
- Research Ethics
- Report Writing
- Citation and Referencing

**Recommended Books**

Shalowitz,D. & Miller, F. (2002). The Search For Clarity in Communicating Research Resuts to Study Participants. Jornal of Medical ethics.

Cohen, L and Manion, L. (2001) Research Methods in Education (8<sup>th</sup> Edition) Routledge

Manly, the Design and Analysis of Research Studies. Cambridge University Press

Willing, C. (2005) Introduction to Qualitative Research: adventures in theory and methods, Buckingham: Open University Press.

Teddlie, C., & Tashakkori, A. (Eds.). (2006). Foundation of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences. Thousands Oaks Sage Publication.

Ward, E. C., Clark le, O., & Heidrich, S. (2006). Africans American Women’s beliefs coping behaviors, and barriers to seeking mental health services. Qual Health Res, 19 (11), 1589-1601.

**BS in Education**  
**Course-IV**  
Course outline

Course Unit Code	EDU-21214
Title	Teaching Strategies
Credit Hours	3
Level	BS Education
Semester	4 <sup>th</sup>
Prerequisites	None

**Curriculum Content**

- 1- Introduction to teaching methods
- 2- Difference Between teaching methods and teaching techniques
- 3- Pedagogy and Andragogy
- 4- Types of Traditional teaching methods
  - Lecture method
  - Imitation
  - Bookish
  - Socratic method
- 5- Types of Modern teaching methods
  - Inquiry based teaching methods
  - Collaborative teaching method
  - Interactive teaching method
  - Activity based teaching methods
- 6- Roles of teacher
- 7- Types of teaching techniques
- 8- New trends in teaching
- 9- Preparation of Audio visual aids
- 10- Applying teaching learning resources in the classroom
- 11- Lesson planning and classroom settings

**BS in Education**  
**Course-V**  
**Course outline**

Course Unit Code	EDU-21215
Title	Secondary school Planning and Administration
Credit Hours	03
Level	BS Education
Delivery	5th Semester
Pre-requisites	None

**Curriculum Contents**

- 1- Concepts of Educational planning
- 2- Levels of planning
- 3- Types of Planning
- 4- Educational statistics
- 5- Project Proposal writing
- 6- Educational Planning in Pakistan
- 7- Introduction to Management
- 8- Management Functions
- 9- Leadership in Education
- 10- Supervision and control
- 11- Decision Making
- 12- School Management
- 13- Classroom organization and Management

**Recommended Books**

Ahmad, Z. et al (Ed.) (1998). *Process of educational planning* (Units 1-8, M.A. EPM Course, Code: 502) Islamabad: Allama Iqbal Open University.

Hoy, W.K. & Miskel, C.G. (2005). *Educational administration: Theory, research, and practice*. Boston: McGraw Hill.

Khan, M.A. et al (Ed.) (). *Plan Implementation and Management*. (Units 1-6, M.A. EPM Course, Code: 503) Islamabad: Allama Iqbal Open University.

Robbins, S.P. & Coulter, M. (2004). *Management*. (7<sup>th</sup> Ed.). Pearson Education: New Delhi.

Thakar, Devendra & Thakar, D.N. (Ed.). (2001.) *Educational planning and administration*. New Delhi: Deep & Deep Publications.

**BS in Education**  
**Course-VI**  
Course outline

Course Code	EDU-23216
Title of the course	Learning Technology
Credit Rating:	03
Level:	BS Education
Delivery:	5 <sup>th</sup> Semester
Pre-requisites:	None

**Curriculum Contents**

- Introduction to learning technologies
- Role of learning technologies in Education
- Types of learning technologies
- Traditional Technologies
  - Writing Boards
  - Charts
  - Models
  - Hand outs
  - Pictures
  - Posters
- Modern Technologies
  - Preparation and use of Power point Presentations
  - Internet Browsing skill
  - Learning Management Systems (LMSs) and We-based learning
  - Blogs
  - Wikis
  - Video Conferencing
  - Use of Skype in learning
- Development of low cost learning material

**Recommended Books**

Hirtz, S., Harper, G. D. and Mackenzie, S. (Eds.) (2006). *Education for a Digital World: Advice, guidelines and effective practice from around the globe*. Commonwealth of Learning Canada; Vancouver, British Columbia

Hussain,I. (2005). *A study of emerging technologies and their impact on teaching learning process*; A PhD unpublished dissertation. Islamabad, Allama Iqbal Open University

Rashid, M. (2005). *Educational Technology*. National Book Foundation, Islamabad

Siemens, G. and Tittenberberger, P. (2009). *Handbook of emerging technologies for learning*; University of Manitoba. Learning Technologies Centre and Extended Education.[ <http://ltc.umanitoba.ca/etl>]

- Modern Critical Interpretations*). Chelsea House Pub.
- Allen, Walter *The English Novel*
  - Ashton, Rosemary. *George Eliot: A Life*. London, 1996.
  - Battestin, Martin C. *The Moral Basis of Fielding's Art: A study of Joseph Andrews*
  - Beer, Gillian. *George Eliot*. Brighton, 1986.
  - Butt, John *Fielding*
  - Church, Richard *The Growth of the English Novel*.
  - Collins, Philip, *Dickens: The Critical Heritage*, 1971
  - Copeland, Edward and McMaster, Juliet, *The Cambridge Companion to Jane Austen*, 1997
  - Elliot, Albert Pettigrew. *Fatalism in the Works of Thomas Hardy*, 1935
  - Forster, E.M. *Aspects of the Novel*. (Pelican Paperback)
  - Gard, Roger. *Jane Austen's Novels: The Art of Clarity*, 1998
  - Hardy, Barbara. *The Novels of George Eliot*. London, 1959.
  - Kettle, Arnold *Introduction to the English Novel* (vol. .I & II)
  - Lubbock, P. *The Craft of Fiction*. Jonathan Cape,
  - MacDonaugh, Oliver, *Jane Austen: Real and Imagined Worlds*. 1993
  - Neill, Edward. (1999). *Trial by Ordeal: Thomas Hardy and the Critics (Literary Criticism in Perspective)*. Camden House.
  - Neill, Edward. *The Politics of Jane Austen*, 1999
  - Smith, Grahame, *Charles Dickens: A Literary Life*, 1996
  - Thomas, Jane. *Thomas Hardy, Femininity and Dissent*, 1999
  - Watt, Ian *The Rise of Novel*. Chatto Windus, London, (1955-7)

## **FIFTH SEMESTER**

**Course Title: Introduction to International Relations**

**Level: BS 5<sup>th</sup>**

**Course Code: GC301**

### **Course Description**

This course offers an introduction to contemporary analysis of international relations. Students will learn major theories of international relations and apply them to understand international situations and issues in the modern world. Emphases are on clearly comprehending the relationship between international conflicts and cooperation and on recognizing the shift from "internationalization" to "globalization". Extensive use of internet information, articles from professional journals

and newspapers will enable students to update information about imminent international issues today and to think about them critically.

### **Course Objectives**

By the end of this course, students will be able to:

1. Demonstrate comprehension of theories of international relations including realism, idealism, liberalism, neorealism, integrationism, interdependence, dependency, world system and regime;
2. Tell exact locations of major countries on a world map and explain what problems those countries are facing;
3. Demonstrate understanding of the causes and processes of modern international issues;
4. Differentiate the concept of internationalization from that of globalization;
5. Skillfully use extensive sources of information including internet, government publications, professional journals, and newspaper;
6. Demonstrate critical thinking skills through research paper writing and discussion

### **Course Contents**

Course topics will include the following:

1. What is international relations?
2. Theories of international relations
3. Brief history of modern international relations
4. National perspectives of different nations
5. Power
6. Balance of power
7. International security
8. Principal causes of war
9. International political economy
10. International trade & monetary system
11. International law
12. International organization
13. International integration and transnational participation
14. Future world order

### **Suggested Readings**

- Allan, Stuart (2010) *The Routledge companion to news and journalism*. New York, NY: Routledge.
- Andrew Cottey (2007) 'Ch.1: Security in the new Europe', in *Security in the new Europe*. New York: Palgrave Macmillan, pp. 5–31. Available at: <https://contentstore.cla.co.uk//secure/link?id=9416ad17-7936-e711-80c9-005056af4099>.
- Ba, A. and Hoffmann, M. J. (2003) 'Making and Remaking the World for IR 101: A Resource for Teaching Social Constructivism

in Introductory Classes', *International Studies Perspectives*, 4(1), pp. 15–33. doi: 10.1111/1528-3577.04102.

- Bache, Ian, George, Stephen and Bulmer, Simon (2011) *Politics in the European Union*. 3rd ed. Oxford: Oxford University Press.
- Baylis, John, Smith, Steve and Owens, Patricia (2011a) *The globalization of world politics: an introduction to international relations*. 5th ed. Oxford: Oxford University Press.
- Baylis, John, Smith, Steve and Owens, Patricia (2011n) *The globalization of world politics: an introduction to international relations*. 5th ed. Oxford: Oxford University Press.
- Bennett (1994) 'The news about foreign policy', in *Taken by storm: the media, public opinion, and U.S. foreign policy in the Gulf War*. Chicago: University of Chicago Press, pp. 12–40.
- Berdal, M. (2004) 'The UN after Iraq', *Survival*, 46(3), pp. 83–101. doi: 10.1080/00396330412331343743.
- Blair, T. (2001) *The power of community can change the world*.
- Bomberg, Elizabeth E., Peterson, John and Stubb, Alexander C-G. (2008) *The European Union: how does it work?* 2nd ed. Oxford: Oxford University Press.
- Brooks, S. G. and Wohlforth, W. C. (2002) 'American primacy in perspective', *Foreign affairs*. [New York: Council on Foreign Relations], 81(4), pp. 20–33.
- Brown, Chris (2005) 'US hegemony and world order', in *Understanding international relations*. 3rd ed. Basingstoke: Palgrave Macmillan, pp. 232–254.
- Calhoun, Craig J., Price, Paul and Timmer, Ashley S. (2002) *Understanding September 11*. New York: New Press.
- Chris Brown (2005) 'US hegemony and world order', in *Understanding international relations*. 3rd ed. [Perth, Australia]: Ebook Library, pp. 232–254. Available at: [http://ls-tlss.ucl.ac.uk/course-materials/SESS1102\\_46625.pdf](http://ls-tlss.ucl.ac.uk/course-materials/SESS1102_46625.pdf).
- Christopher Hill and Michael Smith (2011) 'Acting for Europe: reassessing the EU's place in international relations', in *International relations and the European Union*. 2nd ed. Oxford: Oxford University Press, pp. 458–481. Available at: [http://ls-tlss.ucl.ac.uk/course-materials/SESS1102\\_60047.pdf](http://ls-tlss.ucl.ac.uk/course-materials/SESS1102_60047.pdf).
- Cottey, Andrew (2007) 'Security in the new Europe', in *Security in the new Europe*. New York: Palgrave Macmillan, pp. 5–31.
- Cox, M. (1990) 'From the Truman Doctrine to the Second Superpower Detente: the rise and fall of the Cold War', *Journal of peace research*. London: Sage Publications [etc.], 27(1), pp. 25–41.
- Cox, M. (2009) 'Rethinking the End of The Cold War', *Review of International Studies*, 20(02). doi: 10.1017/S0260210500117887.

**Course Title: Introduction to Environmental Studies**

**Level: BS 5<sup>th</sup>**

**Course Code: GC302**

### **Course Description**

In the last few decades "environment" has become a buzz word. A basic understanding of this term has become necessary in every field of life. Therefore, this course is designed for non-environmental science students keeping in view their diverse background of science and non-science subjects. This course only provides a basic understanding of the environment around us which is necessary to understand the environmental problems we face in our everyday life. This course is designed to provide a basic understanding of the environment, its components and its processes. The course will also provide a brief history and background of the environmental movements.

The course is designed to demonstrate knowledge and understanding of the environmental pollution, its causes and impact on human beings and ecosystem. Course will take a multidisciplinary approach and will cover contemporary environmental problems. Course will be beneficial in general to all students but particularly for students of economics, sociology, communication studies, management sciences and law due to wide scale application of these concepts in these fields.

The course will provide an introduction to a range of "global environmental challenges" facing humanity. It will provide the necessary background to understanding the policies, politics, governance and ethics, and decision-making processes that underpin the causes of, and responses to, environmental change. It will include an appreciation of the social construction of the term global environmental challenges and the implications of this.

### **Course Objectives**

The course is designed to:

- provide students with a basic understanding of the environment, its components and processes.
- develop student capabilities to understand the man-environment interaction and ways human can impact environment.
- Provide: (1) an introduction of human attitude towards environment and how it has changed overtime, (2) overview of the pollution; its causes and impacts, (3) understanding of the role of human activities in causing environmental pollution, (4) outline of the factors including physic-chemical, biological and socio-economic which contribute to accelerate or de-accelerate the rate of pollution.

### Course Contents

Environment; definition and concept; ecosystem, its component; material and energy flow in an ecosystem; Terrestrial and aquatic ecosystems; biomes and their distribution; Atmosphere; composition, air pollution, causes and its impacts. Hydrosphere; water distribution on earth, water quality and quantity problems. Lithosphere; earth structure, soil resources, pollution and problem. Human population and resource use, Human attitude towards environment; history and background. Environmental Pollution: Concept, history and background, Pollution sources and types: point and non-point sources. Air pollution; sources, types of pollutants, sources and fate, impacts on human health and on environment, Water pollution; water quality and quantity problems, sources, types of pollutants, sources and fate, impacts on human health and on environment, Solid Waste, Noise Pollution, Toxic chemicals in environment, approaches to manage environmental pollution.

Global Environmental Problems: Ozone Depletion; history, science, world response. Climate change: a myth or reality, Conflicting Theories, climate change scientific basis, its impacts, world response, climate change politics. Acid Rain. Human Population and sustainability, International environmental laws.

### Recommended Readings

1. *Environmental Science: Earth as a Living Planet*, Botkin, D.B & Keller, E.A. 9<sup>th</sup> Ed. John Wiley & Sons, 2013.
2. *Environmental Science: systems and solutions*, McKinney, M.L., Schoch, R.M. & Yonavjak, L. 5<sup>th</sup> Ed. Jones & Bartlett Publishers, 2013
3. *Environmental Science: Toward a Sustainable Future*, Wright, R.T. & Nebel, B.J. 10<sup>th</sup> Ed. Pearson Educational, 2007.
4. *Environmental Science: Earth as a Living Planet*, Botkin, D.B & Keller, E.A. 9<sup>th</sup> Ed. John Wiley & Sons, 2013.
5. *Environmental Science: systems and solutions*, McKinney, M.L., Schoch, R.M. & Yonavjak, L. 5<sup>th</sup> Ed. Jones & Bartlett Publishers, 2013
6. *Environmental Science: Toward a Sustainable Future*, Wright, R.T. & Nebel, B.J. 10<sup>th</sup> Ed. Pearson Educational, 2007.
7. *Environmental Science: working with the Earth*. 11<sup>th</sup> Ed. Miller, G., Tyler. Cengage Learning, 2005.
8. *Environmental Science: Earth as a Living Planet*, Botkin, D.B & Keller, E.A. 9<sup>th</sup> Ed. John Wiley & Sons, 2013.
9. *Environmental Science: systems and solutions*, McKinney, M.L., Schoch, R.M. & Yonavjak, L. 5<sup>th</sup> Ed. Jones & Bartlett Publishers, 2013
10. *Environmental Science: Toward a Sustainable Future*, Wright, R.T. & Nebel, B.J. 10<sup>th</sup> Ed. Pearson Educational, 2007.

11. *Environmental Science: working with the Earth*. 11<sup>th</sup> Ed. Miller, G., Tyler. Cengage Learning, 2005.
12. *Al Gore Documentary: "An inconvenient Truth"*

**Course Title: Romantic & Victorian Poetry**

**Level: BS 6<sup>th</sup>**

**Course Code: ELL301**

### **Course Description**

This course analyzes representative examples of British poetry of the nineteenth century, that is, from the French Revolution to the first stirrings of modernism in the early 1900s. It comprises the poetry of two eras which came one after each other, namely Romantic and Victorian age. The first half of this module extends from the mid-1770s to the 1830s, a period marked by what Wordsworth referred to as those 'great national events' which were 'almost daily taking place': the American and French revolutions, the Napoleonic wars, imperial expansion, industrialization, and the growth of the political reform movement. The production and consumption of books took on a heightened political significance in these decades and this selection includes selection from the 'big six' Romantics (Blake, Wordsworth, Coleridge, Keats, P.B. Shelley, Byron). The second half of this course includes the poetry of the poets who are called as 'cunning terminators of Romanticism' by some critics. This era, marked by the coronation of Queen Victoria in 1837, known as Victorian age, spans till her death in 1901. The Victorians saw the virtues attendant upon a strong will as central to themselves and to their culture, and Victorian poetry strove to find an aesthetic form to represent this sense of the human will. Through close study of the metre, rhyme and rhythm of a wide range of poems - including monologue, lyric and elegy - the technical questions of poetics are related, in the work of these poets, to issues of psychology, ethics and social change.

### **Course Objectives**

The aim of this module is to introduce students to the literary culture of this rich and exciting period, which, in the first half, begins in the year of America's declaration of independence and ends with the British reform act of 1832 and from there onwards till the first decade of the twentieth century.

### **Course Content**

*The Longmans Anthology of British Literature vol 2A ,2B*

- 1) **William Blake :-**
  - i) *The Sick Rose*
  - ii) *London*
  - iii) *A Poison Tree*
  - iv) *The Tygre*

- 2) **William Wordsworth:-**
  - i) *The World is Too Much with us*
  - ii) *Ode to Intimation of Immortality*
  - iii) *We Are Seven*
  - iv) *The Last of The Flock*
- 3) **S.T . Coleridge:-**
  - i) *Dejection: An Ode*
  - ii) *Frost at Midnight*
  - iii) *Christabel*
  - iv) *Kubla Khan*
- 4) **John Keats:-**
  - i) *La Belle Dame Sans Mercy*
  - ii) *A Thing of Beauty*
  - iii) *Ode on Melancholy*
  - iv) *Ode to Nightingale*
  - v) *Ode on the Grecian Urn*
- 5) **Lord Byron:-**
  - i) *She Walks in Beauty*
  - ii) *When We Two Parted*
  - iii) *I Watched Thee*
  - iv) *So We'll go No More A Roving*
- 6) **P.B. Shelly:-**
  - i) *Ode To The West Wind*
  - ii) *Ozymandis*
  - iii) *Ode To A Sky Lark*
  - iv) *The Indian Serenade*
  - v) *Love's Philosophy*
- 7) **Alfred Lord Tennyson:-**
  - i. *The Lotos Eaters*
  - ii. *St Agnes Eve*
  - iii. *Tears Tears Idle Tears*
- 8) **Robert Browning : -**
  - i) *Porphyria's Lover*
  - ii) *My Last Duchess*
- 9) **Mathew Arnold :-**
  - i) *Lines Written in Kensington Garden*
  - ii) *Dover Beach*
- 10) **Dante Gabriel Rossetti**  
*The Choices 1, 2 ,3*
- 11) **Cristina Rossetti**
  - i. *Song*
  - ii. *After Death*
  - iii. *In an Artist's Studio*
- 12) **Algernon Charles Swinburne (1837-1909)**
  - i. *Choruses from Atlanta In Calydon*

- ii. *From the Triumph of Time*
- iii. *(I Will Go Back to the Great Sweet Mother)*

#### **Suggested Readings**

- Aidan Day, *Romanticism* (1995)
- Anne Mellor, *Romanticism and Gender* (1993)
- Cynthia Chase, ed., *Romanticism* (1993)
- Harold Bloom, *The Visionary Company: A Reading of English Romantic Poetry* (1961)
- Iain McCalman, *An Oxford Companion to the Romantic Age* (1999)
- Isobel Armstrong, *Victorian Poetry: Poetry, Poetics, and Politics* (1993)
- Joseph Bristow, ed., *The Cambridge Companion to Victorian Poetry* (2002)
- Linda K. Hughes, *The Cambridge Introduction to Victorian Poetry* (2010)
- M. H. Abrams, *The Mirror and the Lamp: Romantic theory and the Critical Tradition* (1958)
- Margaret Homans, *Women Writers and Poetic Identity* (1980)
- Marilyn Butler, *Romantics, Rebels and Reactionaries* (1982)
- Paula Feldman and Theresa Kelley, ed., *Romantic Women Writers* (1995)
- Richard Cronin et al, ed., *A Companion to Victorian Poetry* (2002)
- Stephen Copley and John Whale, eds. *Beyond Romanticism: New Approaches to Texts and Contexts 1780-1832* (1992)
- Stuart Curran, *Poetic Form and British Romanticism* (1986)

**Course Title: Foundations of Literary Theory & Criticism**

**Level: BS 5<sup>th</sup>**

**Course Code: ELL302**

#### **Course Description**

This course introduces some of the most vital debates in the tradition of English literary criticism from Plato and Aristotle in the Greek times to T. S. Eliot in early twentieth century. Equipped with the ability of analyzing and appreciating this literary tradition through all these centuries, the students would be able to grasp arguments in classical and romantic schools of literary criticism, represented by critics like Samuel Johnson, Mathew Arnold, T. S. Eliot, and F. R. Leavis on the one hand, and Philip Sidney, Wordsworth, and Coleridge on the other. That would help students be conversant with 'practical criticism' / 'close reading' and ideas-led' criticism respectively. By concentrating on this rich canonical tradition, students will be able to learn how each generation of critics has responded to critical theorizing and creative works of not only their own times but also the ages preceding them. What is likely to excite and

engage the students is debates like Plato's theory of imitation and his standpoint on poets, challenged not only by his contemporary and disciple, Aristotle, but also by Philip Sidney and others. Similarly, the import of Mathew Arnold's view---one needs to study poetry of at least two different cultures, the more different the better---will be transformative for students of literature. Moreover, this course will ground the students in familiar critical concepts and thus prepare them to grasp the complexities of literary and cultural theory in later semesters.

### **Course Objectives**

It is an intensive course in literary criticism focusing on the following aspects

- It would prepare the learners of literature and language to understand the historical background to literary criticism, exploring its developmental changes from Plato till T.S Eliot
- It would focus on the poetic and dramatic forms in order to highlight some significant trends and concepts in world literature in general and English literature in particular.
- It would also provide a brief introduction to the contemporary literary theories.

### **Course Contents**

#### **Aristotle to Modern Times**

##### **1. The Greek Critics**

- Plato (427-347 BC): Selections from *The Republic* (c. 380 BC)
- Aristotle (394-322 BC): *The Poetics* (c. 335 BC)

##### **2. Renaissance to Eighteenth Century Critics**

- Sir Philip Sidney (1554-1586): *An Apology for Poetry* (1595)
- b) John Dryden (1631-1700): *Essay on Dramatic Poesy* (1668)
- c) Samuel Johnson (1709-1784): "From Milton" (1779-81)

##### **3. The Romantic Critics**

- William Wordsworth (1770-1850): *Preface to Lyrical Ballads* (1798-1802)
- S.T. Coleridge (1772-1834): *Biographia Literaria* (Chapters xiv, xv, xvi, xvii) (1817)

##### **4. The Victorian Critics**

- Matthew Arnold (1822-1888):
  - *The Study of Poetry* (1880)
  - *Function of Criticism at the Present Time* (1865)
- Walter Pater (1839-1894): *Appreciations: "On Style"* (1895) (Optional)

##### **5. Modern Critics**

- T.S. Eliot (1888-1965): "Tradition & the Individual Talent"

(1921)

## 6. A Brief Introduction to Contemporary Literary Theories

### Recommended Readings

1. Barry, P. *Beginning Theory: An Introduction to Literary and Cultural Theory*. Manchester: Manchester UP, 1995
2. Booker, Keith M. *A Practical Introduction to Literary Theory and Criticism*. New York: Longman Publishers, 1996.
3. Kamran, Robina and Farrukh Zad. Ed. *A Quintessence of Literary Criticism*. National University of Modern Languages, Islamabad.
4. Leitch, Vincent B. (General Editor). *The Norton Anthology of Theory and Criticism*. New York & London: W. W. Norton and Company, 2001 (or later editions)
5. Lodge, David. Ed. *Modern Criticism and Theory: A Reader*. Longman, 1988.
6. Newton, K. M. ed. *Twentieth Century literary Theory: A Reader*. Second Edition. New York: St. Martin's, 1998 (or later editions)
7. *Selected Terminology from any Contemporary Dictionary of Literary Terms*.
8. Selden, R. & Widdowson P. *A Reader's Guide to Contemporary Literary Theory* (3rd Edition). New York: Harvester, 1993.

**Course Title: Sociolinguistics**

**Level: BS 5<sup>th</sup>**

**Course Code: ELL303**

### Course Description

This course provides a general introduction to Sociolinguistics. It examines language use in society, with a particular focus on the connections between language and different aspects of the society. In particular, this course is intended to provide the students with two general topics, i.e. micro-level and macro-level analysis of the relationship between language and society. The micro-level analysis includes various functions of language in society, solidarity and politeness, code-switching, kinesics, style, bilingual individuals, etc.; the macro-level analysis incorporates speech community, language planning, social and regional variations, bilingual community, etc. In addition, this source also gives the students information about methodological concerns in investigating sociolinguistic phenomena.

### Course Objectives

The course aims at bringing about awareness of the dynamics of language and its social operations. The course will focus on the contemporary developments in sociolinguistics and the new dimensions of research in the area. The objectives of the course are to:

- Develop an understanding of the social, political and utilitarian dimensions of linguistics
- Explore modern trends and practices in sociolinguistics
- Link sociolinguistic theories with societal practices and ongoing global transformations

#### **Course Contents**

- Scope and ramifications of sociolinguistics
- Theories of sociolinguistics
- Language in culture and culture in language
- Societal multilingualism
- Linguistic inequality in social paradigms
- Social practices and ongoing global processes
- Language planning and societal issues
- Language conflicts and politics in south Asia
- Global language practices

#### **Recommended Readings**

- Blommaert, J. (2010). *The sociolinguistics of globalization*. Cambridge University Press.
- Chaika, E. (1994). *Language: The social mirror* (3rd Edition). Boston, MA: Heinle&Heinle Publishers
- Chambers, J. K. (1995). *Sociolinguistic theory: Linguistic variation and its social significance*. Oxford: Blackwell.
- Chambers, J.K. (1994). *Sociolinguistic theory: Language variation and its social significance*. Oxford: Blackwell.
- Coulmas, F. (ed.) (1998). *The Handbook of Sociolinguistics*. Oxford: Blackwell.
- Coupland, N., & Jaworski, A. (2008). *Sociolinguistics: a reader and coursebook*. Palgrave.
- Fasold, R. (1987). *The Sociolinguistics of society*. Oxford: Blackwell.
- Fasold, R. (1990). *The sociolinguistics of language*. Oxford: Blackwell.
- Hudson, R.A. (1980). *Sociolinguistics*. Cambridge: CUP.
- Lantolf, J. P. (Ed.) (2000). *Sociocultural theory and second language learning*. Oxford University Press.
- Trudgill, P. (1983). *Sociolinguistics: An introduction to language and society*. Harmondsworth: Penguin.

#### **Course: Popular Fiction**

**Level: BS 5<sup>th</sup>**

**Course Code: ELL304**

#### **Course Description**

This course helps students understand different popular texts in the genre of fiction and the subgenres of fiction, across the world. This course will broaden students' vision with respect to English literature in general and popular fiction in particular, written in different cultures with different language use. The popular fiction texts in this course have been selected from a wide range of cultures so that students can experience different cultures as well as writing styles in these texts. This course makes an interesting read for the students as they will come across different writers' interests, stories, characters, conflicts/issues and themes etc. Responding to these diverse texts will be challenging to the students as well making them think critically and formulate their own meanings and ideas as they come across each text. The works selected for this course have been taken from different writers who belong to different parts of the world and communities. This diversity is reflected in these authors' work though they reflect other communities as well, the ones they have not lived in. These works fulfill the needs of the modern day reader to read a good literary piece of work that they can relate to as these works are related to contemporary themes and elements. For example suspense, mystery, crime, love, trust deceit, destiny, redemption, guilt, friendship, death etc. These works can also be analyzed through different critical theories like Female Violence, Psychological Violence, Magical Realism, Feminism, and Cultural Hybridity etc. These works can make students think critically and motivate them to do further research and studies related to the selected works.

### **Course Objectives**

The objectives of this course are

1. To expose the students to what is popularly read and appreciated worldwide in the genre of fiction.
2. To familiarize students with popular fiction in English literature written by the most recognized authors.
3. To construct the ability to think critically and promote intellectual growth of the students.
4. To nurture sensitivity towards cultural diversity through a critical study of the selected works.

### **Course Contents**

A Reader Comprising the core text will be provided to the students.

1. *And Then There Were None* (1939) Agatha Christie (1890-1976)
2. *Harry Potter and the Philosopher's Stone* (1997) J. K. Rowling (1965-)
3. *The Hobbit* (1937) J. R. R. Tolkien (1892-1973)
4. *Shutter Island* (2003) Dennis Lehane (1965-)
5. *Burnt Shadows* (2009) Kamila Shamsie (1973-)
6. *Frankenstein* (1818) Mary Shelley (1797-1851)

7. The Hitchhiker's Guide to the Galaxy (1979) Douglas Adams (1962-2001)
8. Dr. Jekyll and Mr. Hyde (1886) Robert Louis Stevenson (1850-1894)
9. Cinder (2012) Marissa Meyer (1984-)
10. The Diary of a Social Butterfly (2008) Moni Mohsin (1963-)

### Suggested Readings

- Anatol, Giselle L. *Reading Harry Potter: Critical Essays*. Westport, Conn: Praeger, 2003.
- Bloom, Clive. *Bestsellers: Popular Fiction Since 1900*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2002.
- Christie, Agatha. *Agatha Christie, an Autobiography*. New York, N.Y: Harper, 2011.
- Gelder, Ken. *Popular Fiction: The Logics and Practices of a Literary Field*. London: Routledge, 2004. Internet resource.
- Glover, David, and Scott McCracken. *The Cambridge Companion to Popular Fiction*. Cambridge, UK: Cambridge University Press, 2012.
- Gupta, Suman. *Re-reading Harry Potter*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan, 2003.
- Highfield, Roger. *The Science of Harry Potter: How Magic Really Works*. New York: Viking, 2002.
- Hinckley, Karen, and Barbara Hinckley. *American Best Sellers: A Reader's Guide to Popular Fiction*. Bloomington: Indiana University Press, 1989.
- Hogle, Jerrold E. *The Cambridge Companion to Gothic Fiction*. Cambridge: Cambridge University Press, 2002.
- Joosten, Melanie. *Burnt Shadows by Kamila Shamsie: Notes*. Melbourne: CAE Book Groups, 2011.
- McCracken, Scott. *Pulp: Reading Popular Fiction*. Manchester: Manchester University Press, 1998.
- Morgan, Janet P. *Agatha Christie: A Biography*. New York: Knopf, 195.
- Nash, Walter. *Language in Popular Fiction*. London: Routledge, 1990.
- Neimark, Anne E, and Anne E. Neimark. *Mythmaker: The Life of J.r.r. Tolkien, Creator of the Hobbit and the Lord of the Rings*. Boston: Harcourt Children's Books, 2012.
- Shapiro, Marc. *J.k. Rowling: The Wizard Behind Harry Potter*. New York: St. Martin's Griffin, 2000.
- Shippey, T A. *J.r.r. Tolkien: Author of the Century*. Boston: Houghton Mifflin, 2001.

- The Poetics of Murder: Detective Fiction and Literary Theory Paperback – June, 1983 **by** Glenn W. Most (Editor), William W. Stowe (Editor)
- Tolkien, J R. R, and Peter S. Beagle. *The Tolkien Reader*. New York: Ballantine Books, 1966.
- Watt, James. *Contesting the Gothic: Fiction, Genre and Cultural Conflict, 1764-1832*. Cambridge: Cambridge University Press, 1999. Internet resource.

## **SIXTH SEMESTER**

**Course: Modern Poetry**

**Level: BS 6<sup>th</sup>**

**Course Code: ELL 305**

### **Course Description:**

This course aims at teaching critical analysis of modern poetry and, thus, developing an understanding of the aesthetic and intellectual contexts in which it was produced. The beginning and ending of modernist period are arbitrary, however, it is generally agreed that works written between 1890 and 1950 in North America and Western Europe follow the modernist tradition. The course will examine the roles of poets like T.S. Eliot and Ezra Pound, who are credited with radical shifts in style and content from their predecessors, to introduce modernist aesthetics in poetry. The students will do close reading of poems to discern differences in poetic style and idiom of authors.

### **Course Objectives:**

- to identify and critically examine form, style and themes in modernist poetry.
- to study historical and cultural developments in which modernist poetry evolved and later gave way to confessional and other forms of poetry.

### **Course Contents/Core Texts**

- |                |   |
|----------------|---|
| 1. T. S. Eliot | The Hollow Men<br>The Waste Land<br>The Love Song of J. Alfred Prufrock |
| 2. Ezra Pound  | In a Station of the Metro<br>73   |

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# **BS in Geography**

## **Course-I**

### **Foundation VI (Historical Development of Geographical Thoughts)**

Course Code: GEOG01501 CH 3(3+0)

#### **Objective**

To conceptualise geographical thoughts and concepts developed in the past. To develop the concept of unity and diversity and the scope of geographical education

#### **Course Outline**

- Nature of Geography: evaluation of Geography its scope and status
- Geography as revealed in the Holy Quran
- Pre-classical period: ancient geography, geography in the middle ages, Muslim contributions European contributions.
- Modern geography: Humboldt and Ritter, Geography from the middle of the 20th century, Dichotomies- physical and human, systematic and regional. Darwin and its influence on Geography, Quantitative Revolution, Geoinformatics.
- Established traditions: Earth science, area study, spatial organization, man-land, system analysis and cartographic.
- Man-environment interaction themes: Environmental Determinism, Possibilism, Probabilism, Cognitive Behaviourism, Islamic concept of man-environment relationship.
- Development of nomothetic traditions: facts, concepts, hypotheses and paradigms, ideographic vs. nomothetic, quantitative revolution.
- Philosophical framework: Positivism in geography, Critical theory: Pragmatism, Marxism, Phenomenology, Existentialism, Islamic philosophy and geography, ideology, realism, Environmental causation.
- Impact and use of modern tools, like computers, Remote Sensing,
- Geographical Information Systems (GIS), Global Positioning System (GPS) and Geomatics in modern geography.

#### **Lab Outline:**

Writing of assignments and drawing of maps relating to geographical thought and seminar presentation.

#### **Books Recommended**

1. Clayton, K. & JOHNSON, J.H. (Ed.), (1988), Aspects of Geography, , London: Macmillan
2. Dickinson & Howarth, O.J.R. (1933), The Making of Geography, Oxford, The Clarendon Press.
3. Dickinson, R.E. (1969), The Makers of Modern Geography, London, Routledge and Kegan Paul
4. Greogry, D. & MARTIN, R. et al. (1988), Rethinking Human, Geography Society, Space and the Social Sciences, London: Macmillan
5. James, P.E & Mailim G.J. (1981), All Possible Worlds, John Wiley & Sons, New York
6. Johnston, R.J. (1983), Geography and Geographers, London Edward Arnold
7. Kenzer, M.S. (Ed.), (1989), On Becoming a Professional Geographer Columbus, Merril Publishing Co.
8. Majid, Muhammad. (1989), Evaluation of Geographic Thought, New Delhi
9. Mayhew, S. (1986), Geography, Harmonds Worth: Penguin
10. Mitchel, B. (1989), Geography and Resources Analysis, New York: Longman
11. Murty, K.L. et al. (1992), Research in Geography, New Delhi: Ashish Publishing
12. Tim, U. (1992), The Place of Geography, London: Longman
13. Unwin, D. (1989), Introductory Spatial Analysis, New York, Methuen
14. Pakistan Geographical Review (Lahore)
15. Pakistan Journal of Geography (Peshawar)
16. Journal Geography (Karachi)
17. HEC Digital Library

# **BS in Geography**

## **Course-II**

### **FOUNDATION-VII (Principles of Cartography)**

Course Code: **GEOG01502 CH 3(1+2)**

#### **Objective**

To familiarise students with map-making science and its applications.

#### **Course Outline**

- Evolution of Cartography,
- Basic geodesy, spherical, ellipsoidal and geoidal earth, geographical coordinates, properties of the graticule, geodetic position determination.
- Map projections: merits and demerits of commonly used map projections (perspective and non-perspective).
- Symbolization, symbol types and graphic variables, the symbolization problem, symbolizing graphic features.
- Mapping statistical surfaces: Form, dimension and colour, texture, classification and generalization. Lettering native of typography, lettering methods, types and type characteristics, photo lettering and automatic control lettering. Thematic map choropleth, dot map, isopleths.
- Map reading principles of cartographic design, general design problems; design of map symbols. Basic procedure and designing of the thematic maps such as, topographic, climatic, economic, population, settlements, urban morphology
- Map production, form of map output, construction material, output options, composing separations, proofing.
- Introduction to Digital Cartography

#### **Laboratory Work**

Drawing of various thematic maps and other relevant exercises in cartography and mapping.

#### **Books Recommended**

1. Aronoff, S. (2004), Geographic Information Systems, A Management Perspective, WDL Publications, Ottawa.
2. Burrough, P. (2002), Principles of Geographic Information Systems for Land Resources Management. Oxford University Press, Oxford,
3. Bygot, J. (1960), An Introduction to Map Work & Practical Geography, Tutorial Press London.
4. Campbell, James B. (2002), Introduction to Remote Sensing,, The Guilford Press
5. Clarke, K. (2004), Getting started with Geographic Information System, Prentice Hall , New York,
6. Clendinning, J. (1960), Principles of Surveying. , Blackie and Sons, Limited Glasgow
7. Debenham, F., (latest edition), Exercises in Cartography.
8. Foresman, T. (1997), The history of Geographic Information System, Prentice Hall, New York
9. Guljan Mushtaq-Ur-Rehman, (1974), Map Projection, Oxford University Press.
10. Heywood, I., Cornelius, S. and Carver, S. (2003), An introduction to Geographic Information System, Addison Wesley Longman, New York
11. Jensen, J. (2000), Introductory Remote Sensing: Principles and Concepts, W H Freeman & Co
12. Lillesand, T. M. and Kiefer, R. W. (2004), Remote Sensing and Image Interpretation., John Wiley and Sons
13. Maguire, D.J. (1991), Geographic Information System., Longman London
14. Mather, P.M. (2004), Computer Processing of Remotely Sensed Images, John Wiley and Sons
15. McDonald, R. and Burrough, P. (2001), Principles of Geographic Information Systems, Oxford University Press,
16. Monkhouse F.J. & Wilkinson, H.R. (Latest Edition), Maps and Diagrams, Methuen London
17. Riasz Erwin, (Latest Edition), General Cartography, , McGraw Hill New York
18. Robinson, A. N. (Latest Edition), Elements of Cartography, , John Wiley New York
19. Robinson, A. N. (Latest Edition), An Introduction to the Study of Map Projections, , London, University of Press London

20. Steers, J.A., (Latest Edition) An Introduction to the Study of Map Projections, London, University of Press London
21. Pakistan Geographical Review (Lahore)
22. Pakistan Journal of Geography (Peshawar)
23. Journal Geography (Karachi)
24. HEC Digital Library

# **BS in Geography**

## **Course-III**

### **FOUNDATION-VIII (Map Work)**

Course Code: **GEOG01503 CH 3(1+2)**

#### **Objective:**

To train students in map drawing, reading and its use for geographical analysis

#### **Course Outline:**

- Maps: its elements and types
- Principles and methods of map making, reading and reproduction
- Scale: types and their use, grid reference and indexation,
- Map projections: choice, construction, characteristics, and uses
- Enlargement and reduction of maps
- A study of the Survey of Pakistan maps
- Physical and cultural features to be described and interpreted
- Interpretation of weather maps of Pakistan

#### **Field visits:**

Visit to Survey of Pakistan and Pakistan Meteorological Departments.

#### **Recommended Books:**

1. Carey, H. H. (1983) How to Use Maps and Globes, Franklin Watts, New York.
2. Guljan, R. & Mushtaq, R. (1974) Map Projection, Oxford University Press, Oxford.
3. Kraak, M. J. & Ormelling, F. J. (1996) Cartography: Visualization of Spatial Data Harlow, Longman.
4. Robinson, A. H. (2002) Elements of Cartography, John Willey & Sons, New York.
5. Singh. L. & Raghunaadam, S. (1964) Map work and practical Geography, kalyani publishers, New Delhi.

# **BS in Geography**

## **Course-IV**

### **MAJOR-I (Geomorphology)**

Course Code: **GEOG02504 CH 3(2+1)**

#### **Objective**

To make students understand and recognize different types of landforms; the formation and modification of landforms. To explain the different geomorphic processes.

#### **Course Outline**

- Introduction to key geomorphic concepts, Geological time scale,
- Factors of landform development and geomorphic processes; Endogenic and Exogenic extra terrestrial
- Weathering and mass wasting: their geomorphic significance.
- Fluvial geomorphic cycle, valley development; classification of valleys; drainage patterns and texture; landforms by surface runoff
- Glaciers and their topographic effects: types and regimes of glaciers, major features resulting from glacial erosion and deposition, glacio-lacustrine and glacio-fluvatile features.
- Eolian landforms: creation and modification of landforms, arid erosion cycle.
- Groundwater morphology, including aquifer, porosity and permeability.
- Karst topography: processes and associated landforms.
- Coastal geomorphology: erosional and depositional features created by sea waves.
- Soil development: factors of soil formation, soil profile, texture and structure.

#### **Laboratory Work**

Lab work may be conducted Soil, rocks and water analysis where relevant material is readily available. Geomorphological profiles, use of aerial photo and Remote sensing techniques for the interpretation of landforms and geomorphic features.

#### **Field Studies**

Recommended in depth geomorphologic study and field trips to any accessible area.

#### **Books Recommended**

1. Burbank, D.W.& R.S. Anderson (2001), Tectonic Geomorphology: A Frontier in Earth Science, Blackwell Science
2. Clarke, (1958), The Study of Soils. Oxford University Press.
3. Dury, G.H. (1960), The Face of the Earth. Penguin Books. London.
4. Hugget, R.J. (2002), Fundamentals of Geomorphology, Routledge
5. King, CAM (1966), Techniques in Geomorphology. Edward London.
6. Leopold, L.B., M.G. Wolman & J.P. Miller (1995), Fluvial Processes in Geomorphology, Dover Publications.
7. Martini, I.P. et al. (2001), Glacial Geomorphology and Geology, Prentice Hall.
8. Ritter, D.F., R.C. Kochel & J.R. Miller (2001), Process Geomorphology., McGraw-Hill
9. Russels, (1959), The World of Soils. Collins Books London
10. Spark, B.W. (1986), Geomorphology, Longmans. London /New York
11. Summerfield, M. (1996), Global Geomorphology. Prentice Hall.
12. Thornbury, W.D. (1969), Principles of Geomorphology. John Wiley & Sons. London
13. Wooldridge, S.W. & R.S. Morgan (1959), An Outline of Geomorphology: The Physical Basis of Geography. Longmans. London /New York.
14. Pakistan Geographical Review (Lahore)
15. Pakistan Journal of Geography (Peshawar)
16. Journal Geography (Karachi)
17. HEC Digital Library

# **BS in Geography**

## **Course-V**

### **MAJOR-II (Climatology)**

Course Code: **GEOG02505 CH 3(2+1)**

#### **Objective**

This course has been designed to introduce climatic elements, spatial and temporal variations in weather and climate to familiarise students with the major climatic regions of the world.

#### **Course Outlines**

- Key concepts in climatology and meteorology,
- Elements and factors of climate
- Structure and composition of atmosphere,
- Temperature, insolation
- Pressure and winds; Jet streams; air masses and fronts;
- Condensation: Precipitation, storms, cyclones, tornadoes and thunderstorm, fog
- Classification of climates; a critical study of the Koppen, Miller and Thornthwaite classifications of major climates; climatic types;
- Climatic regions of Pakistan and their characteristic features and geographical distribution.
- Climatic change and variability: Climatic changes consequent upon the phenomena. Global Warming: El-Nino and La-Nina, causes, impact and trends.
- Atmospheric pollution: causes impact; include Ozone layer depletion.
- Climatic data, collection, presentation and analysis,

#### **Laboratory Outline**

Recording and analysis of weather data, interpretation of weather maps and synoptic charts, Visit to Met office and hands on exercises; including weather processes

#### **Books Recommended**

1. Barry. R. (1998), Atmosphere, Weather and Climate, London: Clays St. Davis.
2. Byers, H. R. (1993), General Meteorology, McGraw Hill New York.
3. Byers, H. R. (1991), General Climatology, Prentice Hall New Delhi.
4. Graedel, T. (1995), Atmosphere, Climate and Change, Scientific American Library, New York.
5. Haurwitz, B & Austin, J. , (1944), Climatology,, McGraw Hill New York
6. Kendrew, W.G. (1959), Climatology, University Press Oxford.
7. Lamb, H, (1992), Climate History and the Modern World, Methun & Co. Ltd. London.
8. MacIleeven J.F. (1991), Fundamentals of Weather and Climate, Chapman & Hall London.
9. Miller A. (2001), Climatology, Methuen New York.
10. Oliver, J. (1981), Climatology: Selected Applications: Edward Arnold USA.
11. Sellers, A. & Henderson, A. (1986), Contemporary Climatology, Longman London.
12. Shamshad, K.M. (1988), The Meteorology of Pakistan,, Royal Book Co. Karachi
13. Shapley, H. (1960), Climatic Change, Evidence, Causes & Effects, Harward University Press, Cambridge.
14. Stringer, E.T. (1989), Foundation of Climatology, Surjeet Publishers New Delhi.
15. Thompson, R. (1997), Applied Climatology, Principles and Practice, Routledge Canada.
16. Trenberth, K. (1992), Climate System Modeling, McGraw Hill New York.
17. Trewartha, G.T. (1996), Climate System Modeling, McGraw Hill New York.
18. Whyte, I. (1999), Climatic Change and Human Society , Arnold Division London
19. Pakistan Geographical Review (Lahore)
20. Pakistan Journal of Geography (Peshawar)
21. Journal Geography (Karachi)
22. HEC Digital Library



BS in Information Technology

Course-I

Web Technologies					
Credit Hours:	3	Course Code:	INFT-3103	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Demonstrate knowledge in web technologies including HTML, XHTML, CSS, image-editing software, web authoring software, and client-side scripting				C	2
2. Select appropriate Web tools for a Web development project.				C	3
3. Identify various formats and languages used in modern web-pages: HTML, XHTML, CSS, XML, XSLT, Javascript, DOM.				C	3
4. Identify Web authoring obstacles created by the availability of various web browsers and markup language versions.				C	4
5. Create a well-designed and well-formed, professional Web site utilizing the most current standards and practices.				C	4
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction to Web Applications, TCP/IP Application Services. Web Servers: Basic Operation, Virtual hosting, Chunked transfers, Caching support, Extensibility. SGML, HTML5, CSS3. XML Languages and Applications: Core XML, XHTML, XHTML MP. Web Service: SOAP, REST, WML, XSL. Web Services: Operations, Processing HTTP Requests, Processing HTTP Responses, Cookie Coordination, Privacy and P3P, Complex HTTP Interactions, Dynamic Content Delivery. Server Configuration. Server Security. Web Browsers Architecture and Processes. Active Browser Pages: JavaScript, DHTML, AJAX. JSON, Approaches to Web Application Development. Programing in any Scripting language. Search Technologies. Search Engine Optimization. XML Query Language, Semantic Web, Future Web Application Framework.					
Teaching Methodology:					
Lectures, Written Assignments, Practical Labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.					
Reference Material:					
1. Web Application Architecture: Principles, protocols and practices by Leon Shklar and Richard Rosen, Wiley, 2 <sup>nd</sup> Edition, 2009; ISBN-10:047051860X 2. Web Technologies: A Computer Science Perspective by Jeffrey C. Jackson, Prentice Hall, 1 <sup>st</sup> Edition, 2006; ISBN-10:0131856030					

BS in Information Technology

Course-II

System and Network Administration					
Credit Hours:	3+1	Course Code:	INFT-3101	Prerequisites:	COSC-2102
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Acquire essential IT support skills for operating systems, hardware, and networks including installation, configuration, and troubleshooting.				C	2
2. Demonstrate the ability to acquire new skills, independently, in order to keep their skills current.				C	3
3. Apply systems administration skills related to server operating systems, system and network service administration, and directory services administration.				C	4
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction To System Administration, Server Hardware, Network Concepts. System Administration Components. Server Environment (Microsoft and Linux). Reliable Products, Server Hardware Costing, Maintenance Contracts and Spare Parts, Maintaining Data Integrity, Discuss Alternative Network Options (Peer to Peer and Server-Based Networks), Design and configure a domain environment, Connect clients to a network. Introduce the concepts involved with accessing and administrating data. Introduction to network security concepts Client Server OS Configuration, Providing Remote Console Access. Comparative Analysis of Operating Systems, Operating Systems Installation and Verification, Configuring Local Services and Managing Basic System Issues. Administer Users and Groups. Software Management. Managing Network Services and Network Monitoring Tools. Boot Management and Process Management. IP Tables and Filtering. Securing Network Traffic. Advanced File Systems and Logs. Bash Shell Scripting. Configuring Servers (FTP, NFS, Samba, DHCP, DNS and Apache).					
Teaching Methodology:					
Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations					
Course Assessment:					
Midterm Exam, Quizzes, Home Assignments, Projects, Presentations, Final Exam					
Reference Material:					
1. The Practice of System and Network Administration by Thomas Limoncelli, Christina Hogan and Strata Chalup, Addison-Wesley, 3 <sup>rd</sup> Edition, 2016; ISBN-10: 0321919165					
2. CCNA Routing and Switching ICND2 200-105 Official Cert Guide by Wendell Odom, Cisco Press, 1 <sup>st</sup> Edition, 2016; ISBN-13: 978-1-58720-579-8.					
3. Studyguide for Practice of System and Network Administration by Thomas A. Limoncelli, Cram101, 2 <sup>nd</sup> Edition, 2011; ISBN-10: 1428851755					

BS in Information Technology

Course-III

Information Security					
Credit Hours:	3	Course Code:	COSC-3102	Prerequisite:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Knowledge of the concepts, models and terms commonly used in the area of Information security.				C	2
2. Understand the basic concepts and scientific thinking in information security.				C	3
3. Identify the current IT security issues.				C	4
4. Evaluate factors that influence the security of systems.				C	5
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction to information security, Security Models and Policies, Program Security, Malicious Software, Operating system security, Privacy and Privacy Enhancement Tools, Steganography, Social Engineering, Security threats on Social networks Stream ciphers, Semantic security, Block ciphers and pseudorandom functions, Chosen plaintext security and modes of operation, The DES and AES block ciphers, Message integrity. CBC-MAC, HMAC, PMAC, and CW-MAC, Collision resistant hashing, Authenticated encryption. CCM, GCM, TLS, and IPsec, Key derivation functions, Odds and ends: deterministic encryption, non-expanding encryption, and format preserving encryption, Basic key exchange: Diffie-Hellman, RSA, and Merkle puzzles, Computational number theory, Number theoretic hardness assumptions, Public key encryption, Trapdoor permutations and RSA, The ElGamal system and variants.					
Teaching Methodology:					
Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations					
Course Assessment:					
Midterm Exam, Quizzes, Home Assignments, Projects, Presentations, Final Exam					
Reference Material:					
1. Network Security Essentials: Applications and Standards by William Stallings, Pearson; 5 <sup>th</sup> Edition, 2013; ISBN-13: 978-0133370430					
2. Computer Networks: A system approach by Larry L. Peterson, Bruce S. Davie, Morgan Kaufmann; 5 <sup>th</sup> Edition, 2011; ISBN-13: 978-0123850591					
3. Cryptography and Network Security by Behrouz A. Forouzan, Tata McGraw-Hill Education; 2 <sup>nd</sup> Edition, 2010; ISBN: 9780070702080					
4. .Introduction to Cryptography – Principles and Applications by Delfs and Knebl, Springer; 2 <sup>nd</sup> Edition, 2007; ISBN-13: 978-3540492436					

BS in Information Technology

Course-IV

Virtual Systems and Services					
Credit Hours:	3+1	Course Code:	INFT-4101	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Describe the virtualization software choices available and how they compare.				C	2
2. Identify features and functions of the key hardware components of personal computer (PC) workstations and servers, peripheral devices, and networking devices.				C	3
3. Determine the requirements for a virtualized environment.				C	4
4. Plan and design a virtual client and server infrastructure.				C	5
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction to Virtualization, Operating Systems Primer, Virtual Machines, Cloud Computing and Virtualization, Network Virtualization, Understanding the role of Network Virtualization, Overview of Virtualization products, Server Virtualization, Leading Platforms of Server Virtualization, Vmware-Vsphere and others, Introduction to the Virtual Data Center, Applications Virtualization and Storage, Partitioning via hardware and software, Security implications, Managing virtual servers remotely, Exploiting remote management consoles and security, Connecting to the web interface, Migrating physical to virtual servers, Accessing Storage Area Networks (sans), Clustering virtual machines & resilience Distributing workloads via Network Load Balancing (NLB) & Teaming, High AvailLability and other services, Creating Virtual Machines, Comparing NV products, Vmware NSX, Microsoft Hyper V Network Virtualization, Open Switch (KVM) Protocols, VXLAN, NVGRE.					
Teaching Methodology:					
Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations					
Course Assessment:					
Midterm Exam, Quizzes, Home Assignments, Projects, Presentations, Final Exam					
Reference Material:					

BS in Information Technology

Course-V

Data Science					
Credit Hours:	3	Course Code:	COSC-3109	Prerequisites:	None
Course Learning Outcomes (CLOs):					
At the end of the course, the students will be able to:				Domain	BT Level*
1. Understand data science and basic concepts related to data science				C	1
2. Identify or Explain tools/techniques or algorithms to solve the data science problems.				C	2
3. Manage the data science cycle including getting data, cleaning data, data preprocessing, and data visualization.				C	3
4. Practice data science issues in statistical computing using programming language such as R and Python.				C	4
* BT= Bloom’s Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain					
Course Contents:					
Introduction to Data Science, Data Science Life cycle & Process (Asking Right Questions, Obtaining Data, Understanding Data, Building Predictive Models, Generating Visualizations), For Building Data Products, Introduction to Data (Types of Data and Data Sets), Data Quality (Measurement and Data Collection Issues), Data pre-processing Stages (Aggregation, Sampling, Dimensionality Reduction, Feature subset selection, Feature creation etc.), Algebraic & Probabilistic View of Data, Introduction to Python Data Science Stack (Python, Numpy, Pandas, Matplotlib), Relational Algebra & SQL, Scraping & Data Wrangling (assessing, structuring, cleaning & munging of data), Basic Descriptive & Exploratory Data Analysis using Plotly and Matplotlib, Introduction to Text Analysis (Stemming, Lemmatization, Bag of Words, TF-IDF), Introduction to Prediction and Inference (Supervised & Unsupervised) Algorithms, Introduction to Scikit Learn, Bias-Variance Tradeoff, Model Evaluation & Performance Metrics (Accuracy, Contingency Matrix, Precision-Recall, F1-Score, etc.), Introduction to Map-Reduce paradigm, Introduction to R, Reading data into R, Data frames, Basic and advanced plots for Data Visualization.					
Teaching Methodology:					
Lectures, Written Assignments, Practical Labs, Semester Project, Presentations.					
Course Assessment:					
Mid Term Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.					
Reference Material:					

**BS in Information Technology**

**Course-VI**

**Professional Ethics**

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# BS in International Relations

## Course-I

### INTR-02501 Theories and Approaches to International Relations Semester 5

Cr.hr: 3

#### Course Description:

This course aims to provide the students with the opportunity to explore international relations in a variety of ways, and to familiarize them with the major theoretical traditions which explain the world politics, to grasp the main themes of the theories that have been most influential over the past two centuries. It also explains the recent theoretical work in world politics by providing an up-to-date survey of the foundational and anti-foundational theoretical literature and to understand the main themes of the various theories and be able to assess their comparative strengths and weaknesses.

#### Contents:

- **Normative Approaches:** Evolutionary world politics, Legal, institutionalism, Cosmopolitanism, Constructivism, Feminism, Critical social approach, Imperialist approach
- **Empirical Approaches:** Functionalism, Behaviouralism, Structuralism, Positivism, Rationalism, Modernity and Post Modernity

- Introduction to Theories, Paradigms, Concepts in International Relations
- **Foundational Theories:**

- **Realism:** Timeless wisdom of Realism, Essentials of Realism: State, survival and self help, Kinds of Realism: Structural Realism, Historical and Practical Realism, Liberal Realism, Neo-Realism, Neo-Classical Realism
- **Liberalism:** Liberal Debate, Varieties of Liberalism: Idealism, Liberal Institutionalism and Liberal Internationalism, Crisis of Liberalism
- **Marxist Theories:** Essential Elements of Marxist Theories, World System Theory, Dependensia, Gramscianism, Critical theory, Neo-Marxism.
- **Feminist Theory:** Liberal feminism, Marxist / Socialist feminism, Post-modern feminism, Stand-point feminism
- **Post-Modernism:** Double-reading, Deconstructionism, Historical Sociology
- **Social Constructivism**

#### Core Books:

1. Griffiths, M. *Fifty Key Thinkers in International Relations*. London: Routledge, 1999.
2. Keohance, R. O. *Neoliberalism and its Critics*. NY: Columbia University Press, 1986.
3. Burchill, S., Linlater, A., Devetak, R., Donnelly, J., Paterson, M., Reus-Smit, C., and True, J., eds. *Theories of International Relations*. New York: Palgrave, 2005.

#### Recommended Books:

1. Mearsheimer, J. *The Tragedy of Great Power Politics*. New York: W.W. Norton and Company, 2002.
2. Jones, D., and Pfaltzgraff, L. R. Jr., *Contending Theories of international Relations*. New York: Harper & Row, 1981.
3. Buzan, B., Waever, U., and Wilde, J. *Security: A new Framework for Analysis*. Boulder: Lynne Rienner Publishers, Inc., 1988.
4. Lobell, S.E., Ripsman, N.M., and Taliaferro, J.W., eds. *Neoclassical Realism, The State, And Foreign Policy*. New York: Cambridge, 2009.

# BS in International Relations

## Course-II

### INTR-02502 Public International Law-I Semester 5

Cr.hr: 3

#### Course Description:

Objectives of this course are to generate awareness among the students regarding the nature, evolution, development and application of International Law, upon the members of international community such as states, international institutions and individuals. This course also addresses the issue of practicability of International Law.

#### Contents:

- Definition, Nature, and Scope of International Law; Binding Nature of International Law;
- Origin and development of International Law; theories of International Law; relationship between municipal and International Law;
- Sources of International Law
- Subjects of International Law: States, international organizations, individual and non-State entities
- Recognition of State and government, *Dejure* and *Defacto* Recognition, legal effects of Recognition, Recognition of insurgency and belligerency and its impacts.
- State Succession and its effects
- State Sovereignty: Acquisition of territorial sovereignty
- Law of extradition and asylum
- Individuals in International Law: Nationality, Conflict of Nationality, Loss, Acquisition and Loss of Nationality.

#### Core Books:

1. Akehurest, M. *A Modern Introduction to International Law* London: Allen & Unwin, 1997.
2. August, R. S. *Public International Law: Text, Cases, and Readings*, New York: Prentice Hall, 1995.
3. Starke, J. G. *An Introduction to International Law*, 4<sup>th</sup> ed. London: Butterworth, 1978.

#### Recommended Books:

1. Brierly, J. J. *The Law of Nations: An Introduction to International Law, of Peace* (edited by Humphrey Wedlock 6th Edition). New York: Oxford University Press, 1963.
2. Collins, E. *International Law in a Changing World: Cases, Documents and Readings*, New York: Random House, 1970.
3. Galhn, G. V. *Law Among Nations: An Introduction to Public International Law*, London: Mac Millan, 1986.
4. Oppenheim, L. *International Law A Treatise* (Vol. I & II). London: Longman, 1955.

# BS in International Relations

## Course-III

### INTR-02503 Foreign Policy Analysis Semester 5

Cr.hr: 3

#### Course Description:

The course is designed to develop conceptual and analytical skills among the students to understand the objectives, determinants and importance of foreign policy. To enable students to learn about the patterns and approaches to the formulation of foreign policy, and actors playing role in this regard and to link theoretical foundations with practical foreign policy making.

#### Contents:

- Importance of foreign policy in international relations.
- Principles and objectives of foreign policy.
- Determinants of foreign policy.
- Foreign policy making/formulation: Approaches to the study of foreign policy-formulation, Internal and external inputs/pressures and limitations in the formulation of foreign policy
- Foreign policy-making Process: Leaders, Institutions and Process, Foreign Policy, Media, Public Opinion and Domestic Politics, Foreign Policy; National and Transnational Actors

- Various strategies for the achievement of the aims and objectives of Foreign Policy; foreign policy implementation-opportunities and obstacles
- Foreign policy-formulation and the political systems
- Foreign policy-formulation in USA and China

#### Core Books:

1. Younas, M. *Foreign Policy: A Theoretical Introduction*, Oxford: Oxford University Press, 2003.
2. Rosenau, J., ed., *International Politics and Foreign Policy*. London: Francis Pinter, 1980.
3. Rosenau, J. *The Scientific Study of Foreign Policy*, London: Francis Pinter, 1970.

#### Recommended Books:

1. Deutsch, K. W. *The Analysis of International Relations*. New York: Prentice-Hall, 1978.
2. Fuller, G. E. *The Center of the Universe: The Geo-Politics of Iran*. New York: West View, 1991.
3. Holsti, K. J. *International Politics: A Framework for Analysis* Eaglewood Cliffs: Prentice-Hall, 1978.
4. Macridis, R. C. *Foreign Policy in World Politics*, 6<sup>th</sup> ed. Eaglewood Cliffs: Prentice-Hall, 1985.

# BS in International Relations

## Course-IV

### INTR-02504 Conflict Resolution Semester 5

Cr.hr: 3

#### Course Description:

The course provides student the basic knowledge about the conflicts, its nature, types and techniques to resolve conflicts. Students explore a variety of methods and techniques for resolving conflict such as negotiation, mediation, and facilitation. Using an interdisciplinary framework, students are encouraged to be critically reflective and to challenge their preconceptions about conflict.

#### Contents:

- **Defining Conflict and its Sources:** Definition and Nature of Conflict, Systemic Sources, Societal Sources, Bureaucratic and Organizational Sources, Terrorism and Religion: New Dimensions
- **Basic and Complex Level of Analysis:** The Individual Level, The Group Level, The State Level, The Decision Making Level, The Ideological, Social and Economics Levels
- **Typologies of Conflict:** Low Intensity Conflict, High Intensity Conflict, International Conflict, Non-International Conflict
- **Basics of Conflict Management and Resolution:** Conflict Management and Resolution between States, Conflict Management and Resolution in Civil Wars, Conflict Management and Resolution in State Formation

- **Techniques of Conflict Management and Resolution:** Negotiation; New Trends in Negotiation Theory, Facilitation, Good Offices, Mediation in International Relations, Commission of Enquiry, Conciliation, Arbitration, Adjudication, Improvements in the Bargaining Strategies, Confidence Building Measures
- **Conflict Prevention and Pre-emption:** From Prevention to Pre-emption Preventive Diplomacy
- **Case Studies**

#### Core Books:

1. David .P. B., & Charles. P. W. *Peace and Conflict Studies*. 3<sup>rd</sup> ed. USA: SAGE Publications, 2013.
2. Peter. W. *Understanding Conflict Resolution*. UK: SAGE Publications. 2002.
3. Sandra, C., Daniel D., & Larissa, F., eds. *Conflict: From Analysis to Intervention*. London: Continuum, 2003.

#### Recommended Books:

1. Allen, John, ed. *The Rainbow People of God: The Making of a Peaceful Revolution*. New York: Doubleday, 1994.
2. Boulding, Elise. *A Culture of Peace: The Hidden Side of History*. Syracuse: Syracuse University Press, 2000.
3. Sloan. Douglas, ed., *Education for Peace and Disarmament*. New York: Columbia University, 2003.
4. George, A. L. *Avoiding War: Problems of Crisis Management*. Boulder: Westview, 1991.

# BS in International Relations

## Course-V

### INTR-01505 Terrorism and Counter-Terrorism Semester 5

Cr.hr:3

#### Course Description:

This course offers a window into the study of terrorism, giving students a critical survey of terrorism as an historical phenomenon and of 'terrorism studies' as a field of academic research. The course discusses terrorism as a concept and as a strategy, terrorism through a (social) psychological lens and through critical theory, and examines several contrasting cases. It also examines counter-terrorism, looking at multiple cases, some normative issues, bringing in perspectives from political philosophy and theory.

#### Contents:

- **Defining Terrorism:** What is terrorism and how to study terrorism?
- **Terrorism in Historical and Strategic Perspective:** Evolution of Terrorism: anarchist, revolutionary, nationalist, jihadist, Terrorism as insurgency: means to liberation, revolution and transformation
- **Psychological approaches to studying terrorism:** Radicalisation, violence, and the terrorist act
- **Comparison of Cases:** IRA, al-Qaida and Hamas; Religion or Nationalism?
- **'Homegrown' or 'Lone Wolf' Terrorism**
- **Critical Approaches to Terrorism:**

- **Countering Terrorism:** whose job is this; the police, the politicians or the military? Counterterrorism and Counterinsurgency, The US and the War on Terror
- **Normative Perspectives on Terrorism and Counter-Terrorism:** Just War?

#### Core Books:

1. White, J. *Terrorism: An Introduction*. 4<sup>th</sup> ed. Belmont: Wadsworth/Thompson Learning, 2002.
2. Nacos, B. L. *Terrorism and Counterterrorism*, 5<sup>th</sup> ed. U.K: Routledge, 2016.
3. Bakker, E. *Terrorism and Counterterrorism Studies: Comparing Theory and Practice*. Amsterdam: Amsterdam University Press, 2015.

#### Recommended Books:

1. Poland, J. *Understanding Terrorism*. 2<sup>nd</sup> ed. Uppersaddle River, N.J: Pearson Education, Inc. 2005.
2. Howard, R. D. *Terrorism and Counterterrorism: Understanding the New Security Environment, Readings and Interpretations*. McGraw-Hill Higher Education, 2015.
3. Silke, A. *The Psychology of Counter-Terrorism*. New York: Routledge, 2011.
4. Lynch, A., McGarrity, N., & Williams, G., eds. *Counter-Terrorism and Beyond: The Culture of Law and Justice After 9/11*. New York: Routledge, 2010.

### مطالعہ سیرت النبی ﷺ Study of Seerah of Holy Prophet

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Foundation (F-7)
Course Code	ISL-01501
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	<p>۱۔ طلباء کو مطالعہ سیرت طیبہ کی ضرورت و اہمیت سے آگاہ کرنا</p> <p>۲۔ تعمیر شخصیت میں مطالعہ سیرت طیبہ کے کردار کو واضح کرنا</p> <p>۳۔ بعثت نبوی کے موقع پر اقوام کے موصو تصور تھالے آگاہ کرنا</p> <p>۴۔ طلباء کو عہد نبوی کے معاشرت، سیاست، معیشت سے آگاہ کرنا</p>

#### Course Description

S.No.	Title	Description
1	سیرت النبی صلی اللہ علیہ وسلم: تعارف و اہمیت	<p>۱۔ سیرت کا لغوی اور اصطلاحی مفہوم</p> <p>۲۔ سیرت النبی کی ضرورت و اہمیت</p> <p>۳۔ تعمیر شخصیت اور معاشرتی استحکام میں مطالعہ سیرت کی اہمیت</p>
2	بعثت نبوی کے وقت دنیا کے حالات (۱)	<p>۱۔ بعثت نبوی کے وقت اہم تہذیبیں</p> <p>۲۔ عرب، مصر، حبشہ، بازنطینی، ساسانی</p> <p>۳۔ بعثت نبوی کے وقت اہم تہذیبوں کی مذہبی و معاشی حالت</p> <p>۴۔ بعثت نبوی کی تہذیبوں کی سماجی اور سیاسی حالت</p>
3	بعثت نبوی کے موقع پر دنیا کے حالات (۲)	<p>۱۔ ہندوستان، چین اور مغرب کی مذہبی و سماجی حالت</p> <p>۲۔ ہندوستان، چین اور مغرب کی معاشی حالت</p> <p>۳۔ ہندوستان، چین اور مغرب کی سیاسی صورت حال</p>

4	حضور صلی اللہ علیہ وسلم کے ابتدائی حالات زندگی	۱۔ حضور صلی اللہ علیہ وسلم کا خاندانی حسب و نسب ۲۔ پیدائش اور ابتدائی تربیت ۳۔ لڑکپن اور جوانی کے حالات زندگی
5	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
6	مکی دور میں حضور صلی اللہ علیہ وسلم کی دعوت اسلام	۱۔ دعوت اسلام کا آغاز اور طریق کار ۲۔ دعوت اسلام کے اثرات اور ابتدائی مسلمان
7	مکی دور میں حضور صلی اللہ علیہ وسلم کی دعوت اسلام عزیمت و استقامت	۱۔ قریش مکہ کی مخالفت کے اسباب ۲۔ ایذا رسانیوں اور ترہیبات کے اسالیب ۳۔ حضور صلی اللہ علیہ وسلم کی عزیمت استقلال اور صبر اور طائف کی طرف سفر
8	ہجرت مدینہ: اسباب و اثرات	۱۔ ہجرت مدینہ کے اسباب اور پس منظر ۲۔ ہجرت مدینہ کے لیے حضور صلی اللہ علیہ وسلم کا سفر اور اس سے متعلقہ واقعات ۳۔ ہجرت کے اثرات
9	حضور صلی اللہ علیہ وسلم کے مدینہ میں ابتدائی اقدامات	۱۔ مَوَاخَاة ۲۔ میثاق مدینہ ۳۔ مہاجرین کی بحالی اور اسلامی ریاست کا قیام
10	غزوات نبوی (۱)	۱۔ غزوہ بدر، اسباب، واقعات اور نتائج ۲۔ غزوہ احد، اسباب، واقعات اور نتائج ۳۔ غزوہ خندق، اسباب، واقعات اور نتائج
11	غزوات نبوی (۲)	۱۔ صلح حدیبیہ ۲۔ غزوہ خیبر ۳۔ فتح مکہ
12	غزوات نبوی کے اثرات	۱۔ غزوات نبوی کے سیاسی اور دفاعی اثرات ۲۔ غزوات نبوی کے معاشی اثرات ۳۔ غزوات نبوی کے سماجی اور دعوتی اثرات

13	حضور صلی اللہ علیہ وسلم کے داخلی سیاسی اقدامات	۱۔ یہود سے تعلقات ۲۔ مشرکین اور منافقین سے تعلقات ۳۔ قبائل عرب سے تعلقات
14	حضور صلی اللہ علیہ وسلم کے خارجی تعلقات	۱۔ غیر ملکی سربراہوں سے حضور صلی اللہ علیہ وسلم کی مراسلات ۲۔ غیر ملکیوں کے ساتھ وفود کا تبادلہ ۳۔ فتح مکہ۔ دعوت اسلامی کا فروغ ۴۔ حضور صلی اللہ علیہ وسلم کی خارجی سیاست کے اثرات
15	عہد نبوی۔ تہذیبی مطالعہ	۱۔ عہد نبوی کا معاشرتی و معاشی نظام ۲۔ عہد نبوی کا مذہبی نظام ۳۔ عہد نبوی کا نظام حکومت

### نصابی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	ابن ہشام	السيرة النبوية
2	مولانا شبلی نعمانی، سید سلمان ندوی	سيرة النبي صلى الله عليه وسلم
3	قاضی محمد سلیمان سلمان منصور پوری	رحمة اللعالمین
4	مولانا سید ابوالحسن علی ندوی	نبی رحمت صلی اللہ علیہ وسلم
5	ڈاکٹر یسین مظہر صدیقی	عہد نبوی کا نظام حکومت
6	ڈاکٹر خالد علوی	انسان کامل

### حوالہ جاتی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	ڈاکٹر اکرم الضیاء العمری	السيرة النبوية الصحيحة
2	مولانا عبد الرؤف دانا پوری	اصح السير
3	مولانا صفی الرحمن مبارکپوری	الرحیق المختوم

ضیاء النبی صلی اللہ علیہ وسلم	پیر محمد کرم شاہ الازہری	4
سیرت سرور عالم صلی اللہ علیہ وسلم	سید ابوالاعلیٰ مودودی	5

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### تاریخ تفسیر History of Tafseer

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Foundation (F-8)
Course Code	ISL-01502
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	<p>۱۔ طلباء کو تفسیر کے مفہوم اور اسکی اہمیت سے آگاہ کرنا</p> <p>۲۔ تفسیر کی مختلف اقسام اور اسالیب سے آگاہ کرنا</p> <p>۳۔ تاریخ تفسیر کے مختلف ادوار کا مطالعہ کروانا</p> <p>۴۔ مختلف اسالیب کی نمائندہ تفاسیر کا مطالعہ کروانا</p>

### Course Description

S.No.	Title	Description
1	علم تفسیر کا تعارف	<p>۱۔ تفسیر کا لغوی و اصطلاحی مفہوم</p> <p>۲۔ تفسیر و تاویل میں فرق</p>
2	علم تفسیر کی اہمیت	<p>۱۔ علم تفسیر کی قرآن فہمی میں اہمیت</p> <p>۲۔ علم تفسیر کی قانون سازی میں اہمیت</p> <p>۳۔ دینی علوم میں علم تفسیر کا مقام</p>
3	تفسیر کی اقسام I	<p>۱۔ تفسیر بالماثور کا تعارف</p> <p>۲۔ تفسیر بالماثور کی اقسام</p> <p>۳۔ تفسیر بالماثور کے اسالیب اور درجات</p>
4	تفسیر کی اقسام II	<p>۱۔ تفسیر بالرأے کا مفہوم</p> <p>۲۔ تفسیر بالرأے کی اقسام و شرائط</p> <p>۳۔ تفسیر بالرأے کی حجیت کے بارے میں مفسرین کی آراء</p>

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5	تفسیر بالمآثور کی نمائندہ کتب تفسیر	۱۔ تفسیر بالمآثور کی ابتدائی کتب ۲۔ تفسیر بالمآثور کی قرون وسطیٰ میں کتب ۳۔ تفسیر بالمآثور کی معاصر کتب
6	تفسیر بالرائے کی نمائندہ کتب	۱۔ تفسیر بالرائے کی ابتدائی کتب ۲۔ تفسیر بالرائے کی قرون وسطیٰ میں کتب ۳۔ تفسیر بالرائے کی معاصر کتب
7	علم تفسیر کا ارتقاء	۱۔ عہد نبوی میں علم تفسیر ۲۔ دور صحابہ میں علم تفسیر ۳۔ تابعین اور تبع تابعین کے دور میں علم تفسیر
8	تفسیری رجحانات (۱)	۱۔ فقہی اسلوب ۲۔ سائنسی اسلوب ۳۔ فلسفیانہ اسلوب
9	تفسیری رجحانات (۲)	۱۔ ادبی تفاسیر ۲۔ بلاغی تفاسیر ۳۔ اشاری تفاسیر
10	تفسیری رجحانات (۳)	۱۔ دعوتی تفسیر ۲۔ اجتماعی تفسیر ۳۔ کلامی تفسیر ۴۔ الحادی و باطنی تفسیر ۵۔ موضوعی تفسیر
11	علم تفسیر میں علماء بر صغیر کی خدمات (۱)	۱۔ شاہ ولی اللہ کی خدمات ۲۔ قاضی ثناء اللہ پانی پتی کی خدمات ۳۔ ابوالکلام آزاد کی خدمات ۴۔ عبدالحق حقانی کی خدمات
12	علم تفسیر میں علماء بر صغیر کی خدمات (۲)	۱۔ فراہی مکتب فکر ۲۔ حسین علی (میانوالی) مکتب فکر

13	علم تفسیر میں علماء بر صغیر کی خدمات (۳)	۱۔ علامہ شبیر احمد عثمانی کی خدمات ۲۔ مولانا اشرف علی تھانوی کی خدمات ۳۔ مفتی محمد شفیع کی خدمات ۴۔ مولانا محمد ادریس کاندھلوی کی خدمات
14	علم تفسیر میں علماء بر صغیر کی خدمات (۴)	۱۔ مولانا سید ابوالاعلیٰ مودودی کی خدمات ۲۔ پیر محمد کرم شاہ الازہری کی خدمات ۳۔ علامہ غلام رسول سعیدی کی خدمات

### نصابی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	جلال الدین السيوطي	الإتقان في علوم القرآن
2	صبيح صالح	علوم القرآن
3	محمد حسين ذهبي	التفسير والمفسرون
4	شاه ولي الله	الفوز الكبير في أصول التفسير
5	غلام احمد حريري	تاريخ تفسير ومفسرون
6	محمد تقی عثمانی	علوم القرآن

### حوالہ جاتی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	خالد عبد الرحمن	أصول التفسير
2	محمد سليمان كافي	التيسير في أصول التفسير
3	ابن تيمية	مقدمة في أصول التفسير
5	ڈاکٹر صاحبزادہ ساجد الرحمن (مرتب)	سہ ماہی فکر و نظر اسلام آباد کی اشاعت خاص۔ بر صغیر میں مطالعہ قرآن حکیم

**مطالعہ متن قرآن مجید-I Textual Study of Al Quran-I**

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Major (M-1)
Course Code	ISL-01503
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	<p>۱۔ طلباء کو متن قرآن کے مطالعہ سے آگاہ کرنا۔</p> <p>۲۔ طلباء کو مطالعہ متن کے ذریعے سورۃ النساء، سورۃ الذاریات اور سورۃ الحاقة کے مطالعہ سے آگاہ کرنا</p> <p>۳۔ طلباء سے مطالعہ متن کے ذریعے قرآن پاک سے استنباط کی صلاحیت پیدا کرنا</p>

**Course Description**

S.No.	Title	Description
1	مطالعہ متن قرآن کے اصول	<p>۱۔ مطالعہ متن قرآن کا مفہوم</p> <p>۲۔ مطالعہ متن قرآن کی ضرورت و اہمیت</p> <p>۳۔ طلباء متن قرآن کے اصول و ضوابط</p>
2	سورۃ النساء کا تعارف	<p>۱۔ سورۃ النساء کا تعارف</p> <p>۲۔ سورۃ النساء کی اہمیت اور شان نزول</p> <p>۳۔ سورۃ النساء کے اہم مضامین کا تعارف</p>
3	مطالعہ متن سورۃ النساء I	<p>۱۔ آیت نمبر ۸ تا ۸ کا مطالعہ</p> <p>۲۔ آیت نمبر ۹ تا ۱۸ کا مطالعہ</p> <p>۳۔ آیت نمبر ۱۹ تا ۲۶ کا مطالعہ</p>
4	مطالعہ متن سورۃ النساء II	<p>۱۔ آیت نمبر ۲۷ تا ۳۳ کا مطالعہ</p> <p>۲۔ آیت نمبر ۳۴ تا ۴۱ کا مطالعہ</p> <p>۳۔ آیت نمبر ۴۲ تا ۹۴ کا مطالعہ</p>

5	مطالعہ متن سورة النساء III	۱۔ آیت نمبر ۵۰ تا ۵۸ کا مطالعہ ۲۔ آیت نمبر ۵۹ تا ۶۷ کا مطالعہ ۳۔ آیت نمبر ۶۸ تا ۷۵ کا مطالعہ
6	مطالعہ متن سورة النساء IV	۱۔ آیت نمبر ۷۶ تا ۸۲ کا مطالعہ ۲۔ آیت نمبر ۸۳ تا ۹۰ کا مطالعہ ۳۔ آیت نمبر ۹۱ تا ۹۷ کا مطالعہ
7	مطالعہ متن سورة النساء V	۱۔ آیت نمبر ۹۸ تا ۱۰۶ کا مطالعہ ۲۔ آیت نمبر ۱۰۷ تا ۱۱۵ کا مطالعہ ۳۔ آیت نمبر ۱۱۶ تا ۱۲۵ کا مطالعہ
8	مطالعہ متن سورة النساء VI	۱۔ آیت نمبر ۱۲۶ تا ۱۳۵ کا مطالعہ ۲۔ آیت نمبر ۱۳۶ تا ۱۴۵ کا مطالعہ ۳۔ آیت نمبر ۱۴۶ تا ۱۵۲ کا مطالعہ
9	مطالعہ متن سورة النساء VII	۱۔ آیت نمبر ۱۵۲ تا ۱۶۰ کا مطالعہ ۲۔ آیت نمبر ۱۶۱ تا ۱۶۹ کا مطالعہ ۳۔ آیت نمبر ۱۷۰ تا ۱۷۶ کا مطالعہ
10	سورة الذاریات کا تعارف	۱۔ سورة الذاریات کا تعارف ۲۔ سورة الذاریات کی اہمیت اور شان نزول ۳۔ سورة الذاریات کے اہم مضامین
11	مطالعہ متن سورة الذاریات I	۱۔ آیت نمبر ۱ تا ۱۰ کا مطالعہ ۲۔ آیت نمبر ۱۱ تا ۲۰ کا مطالعہ ۳۔ آیت نمبر ۲۱ تا ۳۰ کا مطالعہ
12	مطالعہ متن سورة الذاریات II	۱۔ آیت نمبر ۳۱ تا ۴۰ کا مطالعہ ۲۔ آیت نمبر ۴۱ تا ۵۰ کا مطالعہ ۳۔ آیت نمبر ۵۱ تا ۶۰ کا مطالعہ

13	تعارف سورۃ الحاقۃ	۱۔ سورۃ الحاقۃ کا تعارف ۲۔ اہمیت اور شان نزول ۳۔ سورۃ الحاقۃ کے اہم مضامین
14	مطالعہ متن سورۃ الحاقۃ I	۱۔ آیت نمبر ۱ تا ۸ کا مطالعہ ۲۔ آیت نمبر ۹ تا ۱۸ کا مطالعہ ۳۔ آیت نمبر ۱۹ تا ۲۶ کا مطالعہ
15	مطالعہ متن سورۃ الحاقۃ II	۱۔ آیت نمبر ۲۶ تا ۳۲ کا مطالعہ ۲۔ آیت نمبر ۳۳ تا ۴۰ کا مطالعہ ۳۔ آیت نمبر ۴۱ تا ۵۲ کا مطالعہ

### نصابی کتب

نمبر شمار	نام مصنف	نام کتاب
1	مولانا عبد الماجد دریا آبادی	تفسیر ماجدی
2	محمد میاں صدیقی	مطالعہ قرآن
3	پروفیسر حافظ احمد یار	قرآن و سنت چند مباحث
4	اردو تفسیری ادب	تفہیم القرآن، ضیاء القرآن، تدبر قرآن، بیان القرآن، معارف القرآن، تبیان القرآن

### حوالہ جاتی کتب

1	ابن کثیر	تفسیر القرآن العظیم
2	مفتی محمد شفیع	معارف القرآن
3	سید ابوالاعلیٰ مودودی	تفہیم القرآن
4	پیر محمد کرم شاہ	ضیاء القرآن
5	مولانا عبد الماجد دریا آبادی	تفسیر ماجدی

مطالعہ متن حدیث-I Textual Study of Al Hadith-I

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Major (M-3)
Course Code	ISL-01504
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	۱۔ صحاح ستہ اور حدیث کے دوسرے اہم مصادر سے تعارف کروانا ۲۔ مصادر حدیث کے مختصر متن کا مطالعہ کروانا

Course Description

S.No.	Title	Description
1	امام مالک اور مؤطاء امام کا تعارف	۱۔ امام مالک کے حالات زندگی ۲۔ مؤطاء امام مالک کا تعارف اور خصوصیات
2	مؤطاء امام مالک (کتاب الجامع) میں سے منتخب متن کا مطالعہ	۱۔ باب الدعاء للمدينة وأهلها ۲۔ باب ماجاء في تحریم المدينة ۳۔ باب ماجاء في إجلاء اليهود من المدينة ۴۔ باب ماجاء في أهل القدر ۵۔ باب ماجاء في حسن الخلق ۶۔ باب ماجاء في الغضب
3	امام بخاری اور الجامع الصحیح کا تعارف	۱۔ امام بخاری کا تعارف اور حالات زندگی ۲۔ الجامع الصحیح للبخاری کا تعارف اور خصوصیات
4	الجامع الصحیح للبخاری میں سے (کتاب المناقب) کے منتخب متن کا مطالعہ	۱۔ باب نزل القرآن بلسان قریش ۲۔ باب ما ينهى من دعوة الجاهلية ۳۔ باب كان النبي صلى الله عليه وسلم تمام عيناه ولا ينم قلبه ۴۔ باب علامات النبوة في الإسلام ۵۔ باب فضائل أصحاب النبي صلى الله عليه وسلم

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		۶۔ باب مناقب المهاجرين وفضلهم
5	امام مسلم اور صحیح مسلم کا تعارف	۱۔ امام مسلم کا تعارف اور حالاتِ زندگی ۲۔ الجامع الصحیح کا تعارف اور خصوصیات
6	صحیح مسلم کے متن کا مطالعہ	1- کتاب الجہاد والسير: باب ربط الأسير وجبه، وجواز المن علیہ 2- باب إجلاء اليهود من الحجاز 3- کتاب الإمارة: باب کراهية الإمارة بغير ضرورة 4- باب فضيلة الإمام العادل 5- باب تحريم هدايا العمال 6- باب وجوب طاعة الأمراء
7	امام ابو داؤد اور سنن ابی داؤد کا تعارف	۱۔ امام ابو داؤد کا تعارف اور حالاتِ زندگی ۲۔ سنن ابی داؤد کا تعارف اور خصوصیات
8	سنن ابی داؤد (کتاب الصلوٰۃ) میں سے منتخب متن کا مطالعہ	۱۔ باب فرض الصلوٰۃ ۲۔ باب فی المواقیت ۳۔ باب وقت صلوٰۃ النبی وکیف کان یصلیہا ۴۔ باب من أدرك رعدة من الصلوٰۃ فقد أدركها ۵۔ باب التشدید فی تأخیر العصر ۶۔ باب من نام عن صلوٰۃ أو نسیها
9	امام ترمذی اور جامع ترمذی کا تعارف	۱۔ امام ترمذی کا تعارف اور حالاتِ زندگی ۲۔ جامع ترمذی کا تعارف اور خصوصیات
10	جامع ترمذی (ابواب المناقب) میں سے منتخب متن کا مطالعہ	1- باب فی فضل النبی صلی اللہ علیہ وسلم 2- باب ماجاء فی صفة النبی صلی اللہ علیہ وسلم 3- باب فی کلام النبی صلی اللہ علیہ وسلم

11	امام ابن ماجہ اور سنن ابن ماجہ کا تعارف	۱۔ امام ابن ماجہ کا تعارف اور حالاتِ زندگی ۲۔ سنن ابن ماجہ کا تعارف اور خصوصیات
12	سنن ابن ماجہ (المقدمہ) میں سے منتخب متن کا مطالعہ	1۔ باب اتباع سنة رسول الله صلى الله عليه وسلم 2۔ باب تعظيم حديث رسول الله صلى الله عليه وسلم 3۔ باب التوقي في الحديث عن رسول الله صلى الله عليه وسلم 4۔ باب من حدث عن رسول الله صلى الله عليه وسلم حديثاً ويرى أنه كذب 5۔ باب اتباع سنة الخلفاء الراشدين المحدثين 6۔ باب اجتناب الرأي والقياس
13	امام حاکم کا تعارف اور مستدرک امام حاکم (کتاب الجنائز) متن کا مطالعہ	۱۔ امام حاکم کے حالاتِ زندگی ۲۔ مستدرک امام حاکم کی اہمیت اور خصوصیات ۳۔ مستدرک امام حاکم میں سے کتاب الجنائز کا مطالعہ
14	امام نسائی اور سنن نسائی کا تعارف	۱۔ امام نسائی کے حالاتِ زندگی ۲۔ سنن نسائی کا تعارف اور سنن نسائی کی خصوصیات
15	سنن نسائی (کتاب البيوع) میں سے منتخب متن کا مطالعہ	1۔ باب التجارة 2۔ الخديعة في البيع 3۔ بيع الرجل على بيع أخيه 4۔ بيع المناذرة 5۔ حسن المعاملة والرفق في المطالبة

### نصابی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	امام مالک	الموطأ
2	امام بخاری	الجامع الصحيح للبخاری
3	امام مسلم	الجامع الصحيح للمسلم
4	امام ترمذی	جامع ترمذی
5	امام ابوداؤد	سنن ابی داؤد
6	امام نسائی	سنن النسائی

المستدرک	امام حاکم	7
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**Study of Islamic Fiqh I (العبادات) مطالعہ فقہ اسلامی**

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Foundation Course (F-6)
Course Code	ISL-01505
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	<p>۱۔ طلباء کو مختصر امتن فقہ کا مطالعہ کروانا</p> <p>۲۔ طلباء میں ایسی مہارت اور صلاحیت پیدا کرنا جس کی مدد سے عبادات کے متعلق فقہی مسائل سمجھ سکیں۔</p> <p>۳۔ طلباء میں فقہی مسائل کو سمجھنے کی صلاحیت پیدا کرنا۔</p> <p>۴۔ مختلف مسائل میں قرآن و سنت کے دلائل سے واقفیت حاصل کرنا</p>

**Course Description**

S.No	Title	Description
1.	متن ”مختصر القدوری“ اور اسکے مصنف کا تعارف	<p>۱۔ احمد بن محمد بن محمد قدوری کے حالات زندگی اور علمی خدمات</p> <p>۲۔ ”مختصر القدوری“ کا اسلوب</p> <p>۳۔ فقہ میں اسکی اہمیت</p> <p>۴۔ ”مختصر القدوری“ کی خصوصیات</p>
2.	”مختصر القدوری“ کی کتاب الطہارۃ میں سے مطالعہ نص ۱	<p>۱۔ فرائض وضوء</p> <p>۲۔ سنن وضوء</p> <p>۳۔ نواقض وضوء</p>
3.	”مختصر القدوری“ کی کتاب الطہارۃ میں سے مطالعہ نص ۲	<p>۱۔ فرضیت غسل</p> <p>۲۔ سنن غسل، واجبات غسل</p> <p>۳۔ جنبی اور حائضہ کے احکامات</p>

4.	”مختصر القدوری“ کی کتاب الطہارۃ میں سے مطالعہ نص ۳	۱۔ احکام المیاء ۲۔ پانی میں نجاست گر جانے کا حکم ۳۔ کنویں میں نجاست گر جانے کا حکم
5.	”مختصر القدوری“ کی کتاب الطہارۃ میں سے مطالعہ نص ۴	۱۔ تیمم کے احکامات ۲۔ فرضیت، سنن ۳۔ کن چیزوں پر تیمم جائز ہے ۴۔ مسح علی الخفین کا حکم
6.	”القدوری“ کی کتاب الصلوٰۃ میں سے مطالعہ نص ۱	۱۔ اوقات الصلوٰۃ ۲۔ مستحب اوقات ۳۔ مکروہ اوقات
7.	”مختصر القدوری“ کی کتاب الصلوٰۃ میں سے مطالعہ نص ۲	۱۔ شرائط وجوب ۲۔ ارکان صلاۃ، واجبات، سنن، مستحبات ۳۔ مکروہات، مفسدات
8.	”مختصر القدوری“ کی کتاب الصلوٰۃ میں سے مطالعہ نص ۳	۱۔ سجدہ سہو کا وجوب ۲۔ صلاۃ المریض ۳۔ صلاۃ المسافر
9.	”مختصر القدوری“ کی کتاب الصلوٰۃ میں سے مطالعہ نص ۳	۱۔ صلاۃ الکسوف ۲۔ صلاۃ الخسوف ۳۔ صلاۃ العیدین
10.	”مختصر القدوری“ کی کتاب الصوم میں سے مطالعہ نص ۱	۱۔ رویت ہلال کا مسألہ ۲۔ فرضیت، شرائط وجوب ۳۔ اقسام
11.	”مختصر القدوری“ کی کتاب الصوم میں سے مطالعہ نص ۲	۱۔ مفسدات صوم ۲۔ قضاء صوم، کفارات ۳۔ حکم المریض

12.	’مختصر القدوری‘ کی کتاب الحج میں سے مطالعہ نص ۱	۱۔ فرضیت حج ۲۔ شرائط وجوب ۳۔ اوقات حج
13.	’مختصر القدوری‘ کی کتاب الحج میں سے مطالعہ نص ۲	۱۔ ارکان حج، شرائط حج ۲۔ مواقیت کا بیان ۳۔ احرام کے احکامات
14.	’مختصر القدوری‘ کی کتاب الحج میں سے مطالعہ نص ۳	۱۔ اقسام حج ۲۔ جنایات، کفارات
15	’مختصر القدوری‘ کی کتاب الحج میں سے مطالعہ نص ۴	۱۔ الحج عن الغیر ۲۔ ہدی کے احکامات ۳۔ احصار

### نصابی کتب

نمبر شمار	نام مصنف	نام کتب
۱۔	آبوالحسن احمد بن محمد القدوری	مختصر القدوری فی الفقہ الحنفی

### حوالہ جاتی کتب

نمبر شمار	نام مصنف	نام کتب
۱۔	عبداللہ بن المودود الموصلی	الاختیار لتعلیل متن المختار
۲۔	ابن رشد	بداية المجتهد
۳۔	وهبة الزحيلي	الفقه الإسلامي وأدلتہ
۴۔	عبدالرحمن الجزيري	کتاب الفقہ علی المذاهب الأربعة

## تجوید القرآن

Title	Description
Semester	5 <sup>th</sup>
Nature of Course	Compulsory
Course Code	ISL-01506
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	طلبا و طالبات میں قرآن پاک کی تلاوت کا شوق پیدا کرنا۔ مخارج کی درستگی، تجوید کے ساتھ تلاوت قرآن پاک کی مشق، قرآن پاک کو خوش الحانی سے پڑھنا۔

### Course Description

درج ذیل سورتوں کو حفظ کرنا، قواعد اور ان کی مشق۔

(سورۃ یسین سورۃ الملک آخری پارہ کا آخری ربع (سورۃ القدر تا سورۃ الناس

صفات عارضہ صفات لازمہ نون ساکن اور نون تنوین کے قواعد الف، لام اور را کے قواعد میم ساکن کے قواعد ۹۔ ادغام کا بیان مد کی اقسام وقف کا بیان

حروف قمریہ اور شمسیہ تلاوت کلام پاک کے درجے تلاوت کلام پاک کے محاسن

پارہ ۳۰ تجوید کے ساتھ پڑھنے کی مشق

کتاب مقرر: جمال القرآن۔ اشرف علی تھانوی

مجوزہ کتب:-

۱۔ علم تجوید قاری غلام رسول

۲۔ کتاب تجوید و قرأت جاوید اقبال

۳۔ قرآنی قاعدہ دارالسلام

۴۔ آخری پنج پارہ تجویدی پاک کمپنی

۵۔ مدنی قاعدہ مکتبہ المدینہ

# **BS in Mathematics**

## **Course-I**

### **Math-01501, Mechanics**

**Credit Hours: 03**

#### **Course Outlines:**

Kinetics: Work, power, kinetic energy, conservative force fields, conservation of energy, impulse, torque, conservation of linear and angular momentum, non-conservative forces. Simple harmonic motion: The simple harmonic oscillator, period, frequency, resonance and energy, the damped harmonic oscillator, over damped, critically damped and under damped, motion, forces and vibrations. Central forces and planetary motion: Central force fields, equations of motion, potential energy, orbits, Kepler's law of planetary motion, apsides and apsidal angles for nearly circular orbits, motion in an inverse square field, planer motion of rigid bodies, introduction to rigid and elastic bodies, degree of freedom, translations, rotations, instantaneous axis and centre of rotation, motion of the centre of mass, Euler's theorem and Chasle's theorem, rotation of a rigid body about a fixed axis, moments and products of inertia, parallel and perpendicular axis theorem. Motion of rigid bodies in three dimensions: General motion of rigid bodies in space, the momental ellipsoid and equimomental systems, angular momentum vector and rotational kinetic energy, principal axes and principal moments of inertia, determination of principal axes by diagonalizing the inertia matrix.

#### **Prescribed Books:**

- 1) E. Di Benedetto, Classical Mechanics. Theory and Mathematical Modeling, ISBN: 978-0-8176-4526-7, Birkhauser Boston (2011)
- 2) R. John Taylor, Classical Mechanics, ISBN: 978-1-891389-22-1, University of Colorado (2012)
- 3) H. Goldstein, Classical Mechanics, Addison-Wesley Publishing Co. (2010)
- 4) M. R. Spiegel, Theoretical Mechanics, 3<sup>rd</sup> Edition, Addison-Wesley Publishing Company (2010)
- 5) G. R. Fowles and G. L. Cassiday, Analytical Mechanics, 7<sup>th</sup> Edition, Thomson Brooks/COLE, USA (2011)

# **BS in Mathematics**

## **Course-II**

### **Math-01502, Real Analysis**

**Credit Hours: 03**

#### **Course Outlines:**

Number systems: Ordered fields, rational, real and complex numbers, Archimedean property, supremum, infimum and completeness. Topology of real numbers: Convergence, completeness, completion of real numbers, open sets, closed sets, compact sets, Heine Borel theorem, connected sets. Sequences and series of real numbers: Limits of sequences, algebra of limits, Bolzano Weierstrass theorem, Cauchy sequences, liminf, limsup, limits of series, convergence tests, absolute and conditional convergence. Continuity: Functions, compactness, existence of minimizers and maximizers, uniform continuity, continuity and connectedness, intermediate mean value theorem, monotone functions and discontinuities. Differentiation: Functions of several variables, limit and continuity of functions of two and three variables, differentiable functions, partial derivatives, mean value theorem, L'Hospital's rule, Taylor's theorem.

#### **Prescribed Books:**

- 1) S. Lang, Analysis I, Addison-Wesley Publ. Co., Reading, Massachusetts (2010)
- 2) W. Rudin, Principles of Mathematical Analysis, 3<sup>rd</sup> Edition, McGraw Hill(2011)
- 3) B. S. Thomson, J. B. Bruckner and A. M. Bruckner, Elementary Real Analysis, 2<sup>nd</sup> Edition (2008)
- 4) G. Boros, V. Moll, Irresistible Integrals: Symbolic, Analysis Experiments in the Evaluation of Integrals, Cambridge University Press (2012)
- 5) J. Borwein, D. Bailey, R. Girgenson, Experimentation in Mathematics: Computational Paths to Discovery, A.K. Peters (2009)

# **BS in Mathematics**

## **Course-III**

### **Math-01503, Group Theory**

**Credit Hours: 03**

#### **Course Outlines:**

Group: Subgroup, subgroup generated by a set, cyclic groups, cosets and Lagrange's theorem, normalizer, centralizer, centre of a group, equivalence relation in a group, conjugacy classes, normal subgroups, quotient group. Group homomorphisms: Homomorphism, isomorphism and automorphism, kernel and image of homomorphism, isomorphism theorems. Permutation groups: Cyclic decomposition of a permutation group, Cayley's theorem, direct product of two groups and examples.

#### **Prescribed Books:**

- 1) Rose, A Course on Group Theory, Cambridge University Press (2012)
- 2) I. N. Herstein, Topics in Algebra, Xerox Publishing Company (2013)
- 3) P. B. Bhattacharya, S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra, Cambridge University Press (2014)
- 4) J. B. Fraleigh, A First Course in Abstract Algebra, Addison-Wesley Publishing Company (2009)
- 5) D. S. Dummit and R. M. Foote, Abstract Algebra, 3<sup>rd</sup> Edition, Addison-Wesley Publishing Company (2012)

# **BS in Mathematics**

## **Course-IV**

### **Math-01504, Ordinary Differential Equations**

**Credit Hours: 03**

#### **Course Outlines:**

Preliminaries: Introduction and formulation, classification of differential equations, existence and uniqueness of solutions, introduction of initial value and boundary value problems.

First order ordinary differential equations: Basic concepts, formation and solution of differential equations, separable variables, exact equations, homogeneous equations, linear equations, integrating factors, some nonlinear first order equations with known solution, differential equations of Bernoulli and Riccati type, Clairaut equation, modeling with first-order ODEs, basic theory of systems of first order linear equations, homogeneous linear system with constant coefficients, non-homogeneous linear system. Second and higher order linear differential equations: Initial value and boundary value problems, homogeneous and non-homogeneous equations, superposition principle, homogeneous equations with constant coefficients, linearly independent/dependent solutions and Wronskian, non-homogeneous equations, undetermined coefficients method, variation of parameters, Cauchy-Euler equation. Sturm-Liouville problems: Introduction to eigenvalue problem, adjoint and self-adjoint operators, self-adjoint differential equations, eigenvalues and eigen functions, Sturm-Liouville (S-L) boundary value problems, regular and singular S-L problems, properties of regular S-L problems. Series solutions: Power series, ordinary and existence of power series solutions, power series solutions, Frobenius theorem, existence of Frobenius series solutions, solutions about singular points, the Bessel, modified Bessel, Legendre, Hermite equations and their solutions.

#### **Prescribed Books:**

- 1) D. G. Zill and R. Michael, Differential Equations with Boundary-value Problems by Cullin, 5th Edition, Brooks/Cole (2013)
- 2) E. William Boyce and C. Richard DiPrima, Elementary Differential Equations and Boundary value Problems, 7<sup>th</sup> Edition, John Wiley & Sons, Inc. (2012)
- 3) D. G. Zill and M. R. Cullen, Advanced Engineering Mathematics, PWS Publishing Co. (2012)
- 4) L. Brand, Differential and Difference Equations, John Wiley & Sons, Inc. (2011)
- 5) T. Apostol, Multi Variable Calculus and Linear Algebra, 2<sup>nd</sup> Edition., John Wiley and Sons (2001)

# **BS in Mathematics**

## **Course-V**

### **Math-01505, Differential Geometry**

**Credit Hours: 03**

#### **Course Outlines:**

Theory of space curves: Introduction, index notation and summation convention, space curves, arc length, tangent, normal and binormal, osculating, normal and rectifying planes, curvature and torsion, the Frenet-Serret formulas, natural equation of a curve, involutes and evolutes, helices, fundamental existence theorem of space curves. Theory of surfaces: Coordinate transformation, tangent plane and surface normal, the first fundamental form and the metric tensor, the second fundamental form, principal, Gaussian, mean, geodesic and normal curvatures, Gauss and Weingarten equations, Gauss and Codazzi equations. Tensor analysis: Einstein summation convention, tensors of different ranks, contravariant, covariant and mixed tensors, addition, subtraction, inner and outer products of tensors, contraction theorem, quotient law, the line element and metric tensor, Christoffel symbols.

#### **Prescribed Books:**

- 1) R. S. Millman and G. D. Parker, Elements of Differential Geometry, Prentice-Hall, New Jersey (2014)
- 2) A. Goetz, Introduction to Differential Geometry, Addison-Wesley (2014)
- 3) M. R. Spiegel, Vector Analysis, McGraw Hill Book Company, Singapore (2012)
- 4) A. W. Joshi, Matrices and Tensors in Physics, Wiley Eastern Limited (2011)
- 5) F. Chorlton, Vector and Tensor Methods, Ellis Horwood Publisher, U.K. (2011)

# **BS in Mathematics**

## **Course-VI**

### **Math-01506, Set Topology**

**Credit Hours: 03**

#### **Course Outlines:**

Topological spaces: Open and closed subsets, metric spaces, neighbourhoods, limit points and accumulation points, interior, closure, dense subsets, constructing new topological spaces, cartesian products, induced topology and quotient topology, continuous maps, open and closed maps, homeomorphisms,  $\mathbb{R}$ ,  $\mathbb{R} \times \mathbb{R}$ ,  $S^1$ ,  $S^2$ , torus, cylinder, Cauchy sequences, complete metric spaces, separation axioms. Compact spaces: Properties, power of compactness, image of a compact set through a continuous map, compactness and completeness of metric spaces, connected spaces, connected components, image of a connected set through a continuous map, path-connectedness.

#### **Prescribed Books:**

- 1) J. Kelly, General Topology, Springer (2013)
- 2) J. Hocking, G. Young, Topology, Dover Publications (2014)
- 3) J. R. Munkres, Topology - A First Course, Prentice-Hall (2012)
- 4) G. Simmons, Topology and Modern Analysis, McGraw-Hill (2011)
- 5) S. Lipschutz, General Topology, McGraw-Hill (2009)

# BS in Physics

## Course-I

### Semester —V

Phy-01501

Mathematical Methods- I

3 Credit Hrs.

**Vector Analysis:** Review of vectors algebra, vector differentiation and gradient, divergence and Gauss's theorem, vector integration, Green's theorem in the plane, curl and Stokes' theorem. Integral form for Del.

**Curvilinear Coordinates:** Curvilinear coordinate system, Transformation., Orthogonal C.C, Unit vectors, scale factors, Arc length & Volume elements in C.C. Gradient, Divergence and Curl in the curvilinear coordinates system, Cartesian, spherical and cylindrical coordinate system.

**Tensors:** Covariant and Contravariant tensors, tensor algebra, The Summation convention, Mixed tensors, Tensor Field, Symmetric & Skew-symmetric tensors, Fundamental operations with tensors. Generalization of tensors. quotient rule

**Matrices:** Determinants, matrices, Symmetric & anti-symmetric matrices, Hilbert spaces, eigenvalues and eigenvectors of matrices, orthogonal matrices, Hermitian matrices, similarity transformations, diagonalization of matrices. **Complex Variables: Functions of a complex variable,** Cauchy Riemann conditions and analytic functions, Cauchy integral theorem and integral formula, Harmonic Functions, Complex differential operator, Jordan curve theorem, Morera's theorem, Liouville's theorem. Taylor and Laurent series, calculus of residue, complex integration.

#### Recommended Books:

1. George B Arfken, Mathematical Methods for Physicists: A Comprehensive Guide. (Academic Press Academic Press, 2013, 7<sup>th</sup> Edition.
2. M.R. Spiegel, 'Vector and Tensor Analysis' Schaum's Outline Series, McGraw Hill, New York.
3. M.R. Spiegel, 'Schaum's Outline of Complex Variables, 2ed, McGraw Hill Professional, 2009
4. H.K. Dass, Mathematical Physics, Revised Edition, Ram Nagar, New Delhi
5. Michael T. Vaughn 'Introduction to Mathematical Physics. John Wiley & Sons, 2008
6. Hassani, 'Mathematical Physics: A Modern Introduction to Its Foundations Springer Science & Business Media, 2013
7. Tai L. Chow, Mathematical Methods for Physicists: A Concise Introduction. Cambridge University Press, 2000

# BS in Physics

## Course-II

Phy-01502

Classical Mechanics

3 Credit Hrs.

**Elementary Principles:** Overview of classical mechanics, Inertial frames, Brief Survey of Newtonian mechanics of a system of particles, Conservation of linear & angular momentum, constraints, Alembert's principle, virtual work, Lagrange's equation and its applications.

**Variational Principles:** Calculus of variation and Hamilton's principle, derivation of Lagrange's equation from Hamilton's principle.

**Two Body Central Force Problem:** two body problem and its reduction to one body problem. Equation of motion and its first integral, Kepler's Laws, Laboratory and centre of mass systems, Rutherford scattering.

**Kinematics of Rigid Body Motion:** Orthogonal transformations, Euler's theorem, the coriolis force.

**Rigid Body Equation of Motion:** Angular momentum, tensors and diadics, moment of inertia, rigid body problems and Euler's equations.

**Hamilton Equation of Motion:** Legendre transformation and Hamilton equations of motion, Conservation theorems.

**Canonical Transformations:** Examples of canonical transformations, Lagrange and Poisson brackets

### Recommended Books:

1. H. Goldstein, 'Classical Mechanics', 2nd. Ed., Addison Wesley, Reading, Massachusetts (1980).
2. V.I. Arnold, 'Mathematical Methods of Classical Mechanics' Springer verlag, New York (1980).
3. S.N. Rasband, 'Dynamics', John Wiley & Sons, New York (1983).
4. R.A. Matzner & L.C. Shepley, 'Classical Mechanics', Prentice Hall Inc., London (1991).
5. N.M.J. Woodhouse, 'Introduction to Analytical Dynamics', Oxford Science Publications, Oxford (1987).
6. Classical Mechanics, John R. Taylor, University Science Books.
7. Introduction to Classical Mechanics, with Problems and Solutions, David Moran, Cambridge University Press

# BS in Physics

## Course-III

Phy-01503

### Quantum Mechanics-I

3 Credit Hrs.

**Quantum Mechanics of One Dimensional Problems:** Review of concepts of classical mechanics, state of a system, Hilbert space, Orthonormality, Postulates of Quantum Mechanics, Eigen Function, Eigen value, properties of one dimensional potential functions, functions and expectation values, Dirac notation,

Hermitian operators, Unitary Operator, solutions of Schrödinger equation for free particles, the potential barrier problems, The linear harmonic oscillator, Particle in a box.

**Formalism of Quantum Mechanics:** The state of a system, Dynamical variables and operators, commuting and non commuting operators, Simultaneous measurements, Heisenberg uncertainty relations, time evolution of a system, Schrödinger and Heisenberg pictures, Symmetry principles and conservation laws.

**Angular Momentum:** Orbital angular momentum, Spin, The eigenvalues and eigen functions of  $L^2$  and  $L_z$ , Matrix representation of angular momentum operators, Addition of angular momenta.

**Schrödinger Equation in Three Dimensions:** Separation of Schrödinger equation in Cartesian coordinates, the free particle, three dimensional square well potential, The hydrogenic atom, Three dimensional square well potential.

#### Recommended Books:

1. B.H. Bransden & C.J. Joachain, 'Introduction to Quantum Mechanics' Longman Scientific & Technical London.
2. R.K. Shankar, Principles of Quantum Mechanics
3. R.L. Liboff, 'Introductory Quantum mechanics', Addison Wesley Publishing Company, Reading Mass.
4. Bialynicki-Birula, M. Cieplak & J. Kaminski, 'Theory of Quantua', Oxford University Press, New York.
5. W. Greiner, 'Relativistic Quantum Mechanics', Springer Verlag, Berlin.
6. F. Schwable, 'Quantum Mechanics', Narosa Publishing House, New Delhi.
7. David J. Griffiths, Introduction to Quantum Mechanics, PRENTICE Hall, Int., Inc.

# BS in Physics

## Course-IV

Phy-01504

Basic Electronics

3+1 Credit Hrs.

### Theory:

3 Credit Hrs.

**Thyristors and Special Devices:** Schockley diode, Silicon Controlled Rectifier (SCR), LASCR and SCS, Diac, Triac, Unijunction transistor (UJT) and PUJT, Phototransistor.

**Oscillators:** Oscillator principles, RC feedback oscillators, Hartley and Colpitts oscillators, Bistable, Monostable and Astable multivibrators, 555 timer as an Astable multivibrators.

**Active Filters:** Basic filter response, Active Low pass, High pass, Band pass and Band stop filters.

**Voltage Regulators:** Voltage regulation, basic series, shunt and switching regulators, integrated circuit voltage regulators.

**Communication Circuits:** Fundamental of modulation, Amplitude modulation, the frequency and power spectrum in AM, the linear detection for AM signals, Basic receivers, Super heterodyne AM receiver, Frequency modulation, The frequency spectrum of FM signals.

**Transducer and Sensors:** Light dependent Resistor (LDR), Photo-transistor, Solar Cell, Thermocouple, Thermistor, Thermostat, Doppler Effect Sensors, Carbon Microphone, Piezo-electric Crystal.

### Recommended Books:

1. T.L. Floyd, 'Electronic Devices', 6<sup>th</sup> edition, Pearsons Education Inc.,(2003).
2. J. D. Ryder and C. M. Thomson, "Electronic Circuits and System", Prentice Hall Inc. (Latest Edition).
3. A.P. Malvino, 'Electronic Principles', Tata McGraw Hill, New Delhi (1988).
4. D.B. Bell, 'Electronic devices & Circuits', Reston Publishing Company Inc., (1980).

**Note:** The Instructor may suggest any relevant/latest book available.

### Lab.

1 Credit Hr.

1. Introduction to components and laboratory equipment and their use..
2. Construct a half wave and full wave (center tap and bridge) rectifier circuits. Observe and measure the effect of filter capacitor on ripple and DC output.
3. Construct different series, parallel, unbiased, biased and double biased diode wave clipper circuits, observe the wave shapes and make suitable measurements.
4. Construct full wave and half wave voltage doublers circuits. Measure the voltage at key points. Observe the clamping waveform in half wave doublers.
5. Design and construct a single stage R-C coupled Common emitter amplifier. Draw its frequency response curve and calculate its bandwidth.
6. Design and construct inverting and non-inverting amplifier of two different gains using Operational Amplifier.
7. Illustrate the on/off application (burglar) alarm of a silicon controlled rectifier.
8. Design and construct an R-C phase shift oscillator using BJT or op-amp.
9. Design and construct astable multivibrator using BJT.
10. Set up astable multivibrator using 555 timer IC.
11. Design a low pass and high pass filter circuit using Op-Amp and draw its response.
12. Design and construct a dual-polarity dc voltage power supply using IC voltage regulators.

**Note:** Six experiments is the minimum requirement.

# BS in Physics

## Course-V

Phy-01505

### Modern Physics Lab-I

2 Credit Hrs.

1. Estimation of carrier concentration of n-type Ge crystal by Hall Effect measurements.
2. Determination of Hall-coefficient of n-type Ge crystal by Hall Effect measurements.
3. Study of the visible part of hydrogen spectrum (Balmer series).
4. Analysis of random data by Poisson distribution.
5. Determination of Planck's constant by photoelectric effect.
6. Measurement of operating voltage, resolving time correction and random nature of the radioactive radiations being emitted from a radioactive source using a given G.M. tube.
7. Study of the absorption coefficient of  $\beta$ -rays in aluminum sheets.
8. Study of the absorption coefficient of  $\gamma$ -rays in lead sheets.
9. Determination of Rydberg's constant.

NOTE: Six experiments is the minimum requirement.

# **BS in Physics**

## **Course-VI**

### **Advanced Elective-I**

**Course Objectives**

The particular course is developed for the understanding about sports training and the performances of the trainer in particular sports. The course deals with introduction, keep an eye on fitness components, coaching styles and its functions, coach characteristics, expertise, and leadership, coach and athlete powers, interactions, and their relationships. At the end of this course, the students will be able to know how to train the athletes/players in diverse sport disciplines keeping in view to the sport performances in Pakistani prospects.

**Course Contents****I. Introduction to Sports Training**

- a. What is sport training?
- b. Perspectives on sports training
- c. Training process
- d. Benefits of sports training

**II. Training Laws & Principles**

- a. Gradualness
- b. Age dependence
- c. Utility
- d. Loading/Over loading
- e. Reversibility
- f. Specificity

**III. Implementation of Fitness Components****i- Health Related Fitness Components**

- a) Aerobic Capacity
- b) Muscular Strength
- c) Muscular Endurance
- d) Flexibility
- e) Body Composition

**ii- Sports/Skills Related Fitness Components**

- a) Power
- b) Speed
- c) Agility
- d) Balance
- e) Coordination

**IV. Characteristics of A Trainer**

- a. Knowledgeable
- b. Organizer
- c. Communicator
- d. Personality
- e. Motivator
- f. Social
- g. Competitive

h. Instructor  
**V. Load (Outer & Inner Load)**

- a. Introduction
- b. Loading factors
- c. Training methods (forms of organization and load structure)
- d. Load and adaptation
- e. On selected principles for the arrangements of load (increasing load, continues load)

**VI. Warm up & Warm down**

- a. Introduction
- b. Types (General, Specific)
- c. Need and Importance
- d. Effects of Warm up and warm down

**Books Recommended:**

1. Davis, D., Kimmet, T., Ackerly, D., & McAree, A. (2013). *VCE physical education* (4<sup>th</sup> ed.). South Yarra: Macmillan Education Australia.
2. Denison, J. (2016). *Coaching knowledge: Understanding the dynamics of sport performance*. Norfolk: Palimpsest Book Production.
3. Gordon, D. (2015). *Coaching science*. Southernhay East, Exeter: Learning Matters.
4. Jones, R. L., Potrac, P., Cushion, C., & Ronglan, L. T. (2016). *The sociology of sports coaching*. New York, NY: Routledge.
5. Kidman, L., & Hanrahan, S. J. (2014). *The coaching process: A practical guide to becoming an effective sports coach*. New York, NY: Routledge.

### OBJECTIVES OF COURSE

This course is designed to provide knowledge to the students about the rehabilitation of special persons through physical activities, teaching methods useful to special people to adjust in the society.

### COURSE CONTENTS

#### I. HISTORICAL BACKGROUND OF SPECIAL POPULATIONS

- a. Concepts of Special Populations:
  - Dark Age
  - Modern Age
- b. Concept for Special Populations in our Society

#### II. UNDERSTANDING OF SPECIAL POPULATION

- a. W.H.O.'s Definition and Classification of Special Population
- b. Basic Terms
- c. Public Law
- d. Posture and its Importance

#### III. TYPES OF SPECIAL POPULATION

- a. Mental Retardation:
  - Mild
  - Moderate
  - Severe
  - Profound
- b. Deaf and Defective:
  - Mild
  - Moderate
  - Severe
  - Profound
- c. Visually Impaired:
  - Blind
  - Partially Sighted
  - Partially Blind
  - Low Vision
- d. Physically Disabled:

- Mild
- Moderate
- Severe
- Profound

#### IV. TEACHING PROGRAMMES FOR SPECIAL POPULATION

- a. Individual Programmes
- b. Developmental Programmes
- c. Remedial Programmes
- d. Therapeutic Programmes

#### V. ADJUSTMENT OF SPECIAL POPULATION

- a. Factors Affecting Adjustment
- b. The Effects of Environment
- c. Ways of Making Adjustment
- d. Adjustment of Special Populations in Society through Teachers and Parents

#### VI. PHYSICAL ACTIVITIES FOR SPECIAL POPULATION

- a. Games and Sports activities for Special Population
- b. Fitness Exercises for Special Population
- c. Understanding the Nature of Motor Learning
- d. Movement Mechanical Principles for Special Population

#### VII. PHYSICAL EDUCATION TEACHER FOR SPECIAL POPULATION

- a. Attributes of Physical Education Teacher
- b. Qualifications of Physical Education Teacher

#### RECOMMENDED BOOKS

1. Harry, B., & Klingner, J. (2014). *Why are so many minority students in special education*. Teachers College Press.
2. Iermakova, T. S. (2014). *Development of the idea of forming health culture of a person in the world educational thought*. Pedagogics, psychology, medical-biological problems of physical training and sports, 4.
3. Salvia, J., Ysseldyke, J., & Witmer, S. (2012). *Assessment: In special and inclusive education*. Cengage Learning.
4. Gallahue, D. L., & Donnelly, F. C. (2007). *Developmental physical education for all children*. Human Kinetics.

Group

MZ

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Novel

**OBJECTIVES OF COURSE**

Health of the athlete is of paramount importance and needs due considerations. The knowledge regarding different components of nutrition and their implications upon human body in general and loss or gain of weight, appetite, use of different components of foods to remove the deficiencies of sodium and calcium or any other basic ingredients will prove helpful to the Physical Educators.

**COURSE CONTENTS****I. INTRODUCTION**

- a. Definition, Importance of Food and Nutrients obtained from food
- b. Sports nutrition for maintaining health and improving sports performance

**II. CONCEPT OF HUMAN ENERGY**

- a. Definition and types of energy
- b. Human Energy systems

**III. CARBOHYDRATES**

- a. Types and Sources
- b. Metabolism and functions of carbohydrates
- c. Carbohydrate loading
- d. Glycemic Index

**IV. LIPIDS**

- a. Role of lipid in the body
- b. Lipid as energy source and reserve
- c. Use of lipid during exercise

**V. PROTEINS**

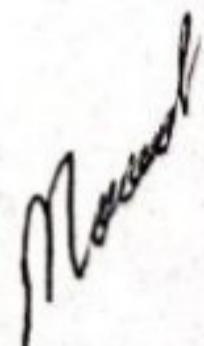
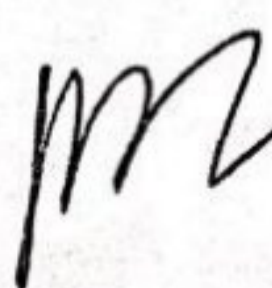
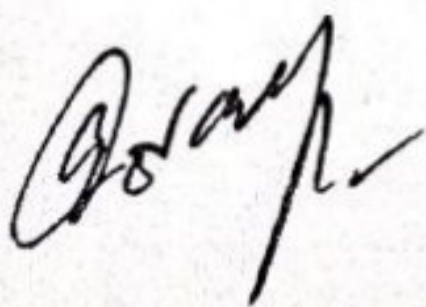
- a. Functions, sources, recommended intake
- b. Metabolism
- c. Protein and exercise
- d. BMI
- e. BMR

**VI. VITAMINS**

- a. Introduction, sources

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- b. Types, importance
- c. Supplements its uses and importance

## VII. MINERALS

- a. Introduction, sources
- b. Types, Importance
- c. Mineral intake, supplements

## VIII. WATER

- a. Recommended water intake
- b. Functions, Regulation of Body Temperature
- c. Fuel & Electrolyte losses and replacements
- d. Body regulation during exercise

## IX. WEIGHT MANAGEMENT

- a. Concepts of dieting
- b. Physiological factors of weight management
- c. Obesity

## X. NUTRITION FOR OPTIMAL HEALTH & PHYSICAL PERFORMANCE

- a. Balanced diet
- b. Pre, during and post contest meal
- c. Dietary recommendations for health & physical performance
- d. Food supplements

## RECOMMENDED BOOKS

1. Clark, N. (2013). *Nancy Clark's Sports Nutrition Guidebook*, 5E. Human Kinetics.
2. Antonio, J., Kalman, D., Stout, J. R., Greenwood, M., Willoughby, D. S., & Haff, G. G. (Eds.). (2009). *Essentials of sports nutrition and supplements*. Springer Science & Business Media.
3. Burke, L. (2007). *Practical sports nutrition*. Human Kinetics.
4. Benardot, D. (2006). *Advanced sports nutrition* (Vol. 11). Champaign, Ill, USA: Human kinetics.
5. Burke, L., & Deakin, V. (Eds.). (2000). *Clinical sports nutrition*(pp. 457-459). Beijing, Boston: McGraw-Hill.
6. Torres-McGehee, T. M., Pritchett, K. L., Zippel, D., Minton, D. M., Cellamare, A., & Sibilia, M. (2012). Sports nutrition knowledge among collegiate athletes, coaches, athletic trainers, and strength and conditioning specialists. *Journal of athletic training*, 47(2), 205-211.

Gray

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P

M

### OBJECTIVES OF COURSE

This course is comprised of two components: theoretical and lab practice. The theoretical portion introduces students to the basic concepts and theories related to the mechanics of movement and the principles of motor control. Students will develop an understanding of the basic principles and mechanics of human movement and their relationship to function and mobility. Identify the planes of motion, major muscle groups and bones of the human skeleton using the correct terminology. Identify the major joints of the body and their functional movements, using correct terminology and palpation techniques. Recognize normal gait patterns. Recognize and perform correct body mechanics for safe practice. Perform safe and effective passive range of motion techniques for upper and lower limbs, including functional and combined movements. Perform the proper selection and use of mobility device.

### COURSE CONTENTS

#### I. INTRODUCTION

- a. An orientation of human movement
- b. Nature of human Movement
- c. Theories of Movement

#### II. FUNDAMENTAL OF HUMAN MOVEMENT

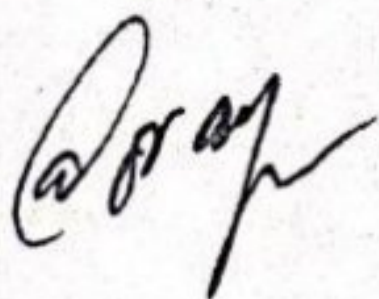
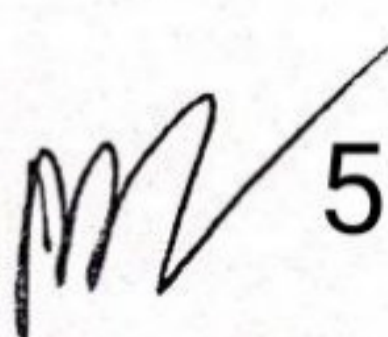
- a. Identification of major muscles, joints, and bones
- b. Posture and Gait across the lifespan
- c. Planes of human movement
- d. Range of joints movements

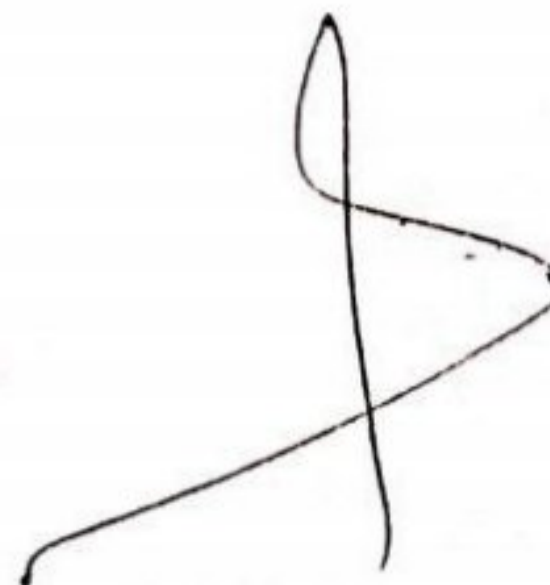
#### III. FACTOR EFFECTING ON HUMAN MOVEMENT

- a. Physiological Factors
- b. Mechanical factors
- c. Psychological Factors

#### IV. Types of Human Movement

- a. Loco motor Movements


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Walking-Running-Jumping-Hopping-Sliding-Leaping-Rolling Gliding

b. **Non-Loco Motor Movement**

- Curling and Stretching
- Turning and Twisting
- Pushing and Pulling
- Lifting and Lowering
- Swinging and Circling
- Stillness and Balancing

**V. EFFECTS OF EXERCISE ON HUMAN MOVEMENT**

- Neuromuscular coordination
- Movement Sequence
- Partner and Group Work
- Small Area Games and Lead-up Activities

**RECOMMENDED BOOKS**

1. Bartlett, R. (2007). *Introduction to sports biomechanics: Analysing human movement patterns*. Routledge.
2. Enoka, R. M. (2008). *Neuromechanics of human movement*. Human kinetics.
3. Hamill, J., & Knutzen, K. M. (2006). *Biomechanical basis of human movement*. Lippincott Williams & Wilkins.
4. Knudson, D. V. (2013). *Qualitative diagnosis of human movement: improving performance in sport and exercise*. Human Kinetics.
5. Palastanga, N., Field, D., & Soames, R. (2006). *Anatomy and human movement: structure and function* (Vol. 20056). Elsevier Health Sciences.
6. Rothwell, J. C. (2012). *Control of human voluntary movement*. Springer Science & Business Media.
7. Tözeren, A. (1999). *Human body dynamics: classical mechanics and human movement*. Springer Science & Business Media.
8. Winter, D. A. (2009). *Biomechanics and motor control of human movement*. John Wiley & Sons.

**OBJECTIVES OF COURSE**

This practical course has been designed with the purpose to provide technical knowledge to students to develop their skills in selected games.

**I. Hockey (Skills, Coaching and Officiating)**

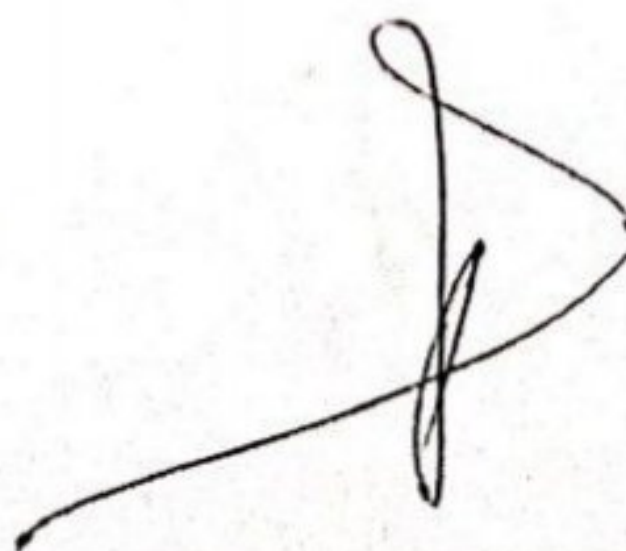
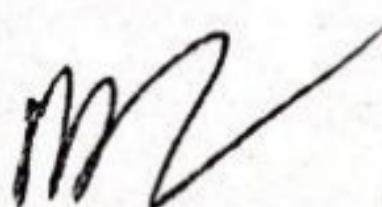
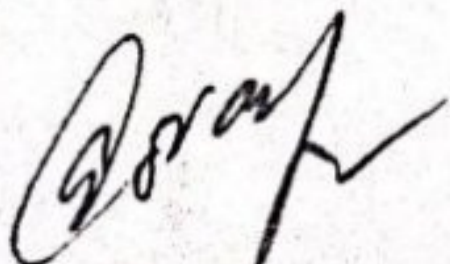
- a. Dribbling
- b. Passing
- c. Stopping
- d. Hitting
- e. Scooping
- f. Goal Keeping

**RECOMMENDED BOOKS**

1. Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT press.
2. Hagemann, S., & De Clerck-Sachsse, J. (2004). Old rules, new game. *Decision-Making in the Council of Ministers after the*, 13.
3. Rogers, J. L. (Ed.). (2000). *USA track & field coaching manual*. Human kinetics.
4. Gifford, C. (2008). *Track and Field*. The Rosen Publishing Gr
5. Barber, G. (2006). *Getting Started in Track and Field Athletics: Advice & Ideas for Children, Parents, and Teachers*. Trafford Publishing

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**Scouting (Roaring) Objective**

Individual Character training in resourcefulness, observation, self-reliance to gain the scouts badge.  
Handicrafts or hobbies which may help a boy to make his way in life, for which we give Proficiency badges.

**Course Content**

- I. **Introduction and Explanation of Scouting**
  - a. Scouts' Work
  - b. What Scouts Do
  - c. Becoming a Scout
  - d. Scout Patrols
  - e. Sea and Air Scouting
  - f. Signals and Commands
  - g. Pioneering
  - h. Camping
  - i. Observation of "Sign"
  - j. Reading "Sign" or Observation
  - k. Health Giving Habits
  - l. Be Prepared for Accidents
  - m. Helping Others
- II. **Explanation: Girls Guiding**
  - a. What is Girl Guiding
  - b. The story of the Brownies
  - c. The Recruit Brownie
  - d. Proficiency Badges for Brownies
  - e. How to Become a Tenderfoot?
  - f. How to Become a First Class Guide?

**RECOMMENDED BOOKS**

1. Baden-Powell, R. (2007). *Scouting for boys: the original 1908 edition*. Courier Corporation.
2. Baden-Powell, R. (2014). *Scouting for boys: a handbook for instruction in good citizenship through woodcraft*. Kreactiva Editorial.
3. Baden-Powell, R. (2014). *Scouting for boys: a handbook for instruction in good citizenship through woodcraft*. Kreactiva Editorial.
4. McCallum, M. J. L. (2002). *To make good Canadians: Girl Guiding in Indian residential schools*.
5. Girlguiding, U. K. (2007). *Girls shout out. A UK-wide research report by Girlguiding UK*. London: The Guide Association. UK.
6. Stanhope, S. K. (2012). " *White, Black, and Dusky*": Girl Guiding in Malaya, Nigeria, India, and Australia from 1909-1960

3. Socialist theory
4. Capitalist theory
5. Bloc within Bloc

#### Ethnicity and conflict:

1. Variables leading to conflict
2. Strategies to control

#### Case studies:

1. USA
2. Pakistan
3. India

#### Recommended Books:

1. Khalid, Iram, Conflict within State edited by Maktaba Tamir-i-Insaniyat, Lahore.
2. Meken Kanp, Monique, Searching For Peace in Central and South Asia, Lynne Reinner Publisher, 2002.

#### PS- 501:

#### MUSLIM POLITICAL INSTITUTIONS:

The major purpose of this course is to acquaint the students with the major political concepts of Islam, the structural functional aspect of Islamic polity, the writings of some prominent Muslim thinkers and with the prospect relating to the application of Islamic principles to modern times.

#### 1. Political Concepts of Islam:

- a) Islamic concept of State: Nature of Islamic Polity-Sphere of Islamic State-Islam and Theocracy-Democratic ideal of Islamic Polity.
- b) Concept of Sovereignty and its Implication.
- c) Islamic Law and its sources-Place of Ijtihad in Islamic Law-Constitutional Law-Personal Law, Muslim International Law-Sources and Characteristics.
- d) Concept of Millat and Position of Religious minorities in Islamic State.
- e) Concept of Liberty and Fundamental Human Rights in Islam.
- f) Principles of Social and Economic Justice in Islam - A Comparative View with reference to modern secular ideologies.

#### 2. Traditional Institutions and their organization and procedural form in a modern environment.

### Recommended Books:

1. Allama Iqbal, Reconstruction of Religious Thought in Islam.
2. Khurshid Ahmad (ed.) Islamic Law and Constitution.
3. Dr. M. Hameed Ullah, Muslim Conduct of State.
4. T. W. Arnold, the Caliphate.
5. Ibn Khaldun, The Muqqadimah, Trans, by Rosenthal, Vol. 1.
6. Sherwani, H. K. Studies in Early Muslim Political Thought and Administration.
7. Hassan Perveen Feroze, The Political Philosophy of Iqbal.

PS-502:

### FOUNDATION OF WESTERN POLITICAL THOUGHT:

This course is designed to provide grounding in evolution of Western Political Thought from Greek to the modern period, with a focus on the political thought of most representative thinkers of major political movements:

1. Nature of Greek Political Thought: Socrates, Plato, Aristotle.
2. Saint Augustine, Thomas Aquinas.
3. Conflict between Church & State; The Conciliary theory of Church Government.

### Recommended Books:

1. George H. Saleive & Thomas L. Thorson. A History of Political Theory, Driden Press Hinsdale, Illinois, 1973.
2. William Ebenstein, Modern Political Thought, Three Great Issues, New York, Holt, Rinchart and Winston, 1960.
3. William Ebenstein, Political Thought in Perspective, New York, MacGraw Hill, 1957.
4. William A. Dunning, History of Political Theories, New York, Macmillan, 1957.
5. Judd Harmon, Political Thought from Plato to Present: New York Mc graw Hill, 1964.

PS-503:

### GENESIS OF PAKISTAN:

The purpose of this paper is to make an in-depth study of the ideological, social, cultural and economic bases of Muslim struggle for freedom in the subcontinent, leading to the establishment of Pakistan.

1. Significant events and ideological movements bearing upon the development of Muslim nationalism; beginning of the Indian political movement and the Indian National Congress; The Aligarh Movement-its phases and contribution; Muslim response to Hindu religio-political and cultural movements; partition of Bengal; Simla Deputation; Establishment of the Muslim League; Circumstances leading to the cooperation between the Muslim League and Congress; The Lucknow Pact; Khilafat Movement; Politic in the 1920s; Nehru Report; Jinnah's Fourteen Points,

15. Communal Award, Congress Rule in the provinces under the Govt. of India Act 1935; Lahore Resolution, Cripps proposals, Cabinet Mission Plan.
2. Constitutional Reforms. The India Councils Acts, 1861, 1892 and 1909 Govt. of India Acts, 1919 and 1935. The Indian Independence Act 1947.
  3. Ideological foundations of the two-nation theory with special reference to the contribution of Sir Syed Ahmed Khan, Allama Iqbal and Quaid-e-Azam, Secular versus Muslim Nationalism.
    - g) Pro-Congress Ulema.
    - h) Pro-Muslim League Ulema.
  4.
    - a) An appraisal of the ideas and role of the following leaders and organization in the Muslim Political Movement; Sir Syed Ahmad Khan; Syed Amir Ali, Mohsin ul Mulk, Viqr ul Mulk, Maulana Muhammad Ali, Maulana Zafar Ali.
    - b) Study of Quaid-e-Azam as Legislator, Politician, Negotiator and Mass Leader.
    - c) Anjuman-I-Himayat-I-Islam; Muslim Students Federation.
    - d) Women's role in the struggle for Pakistan.

#### *Recommended Books:*

1. S.M. Ikram, Modern Muslim India and the Birth of Pakistan.
2. Chaudhry Muhammad Ali, The Emergence of Pakistan.
3. Abdul Hamid, Muslim Separatism in India.
4. I. H. Qureshi, (ed.) A Short History of Pakistan, Book IV, Alian Rule and Rise of Muslim Nationalism, Karachi, 1967.
5. Abu Kalam Azad, India Wins Freedom, Calcutta, Orient Longmans.

PS-504:

#### COMPARATIVE POLITICS:

The course is designed to enable the students to comprehend with existing approaches in comparative politics. Socialization of citizens is the way towards political stability. So the contents will focus on the related concepts and issues.

1. Introduction to World Politics
  - What is Politics
  - Comparing Political Systems
  - Environment and Interdependence
2. Political Culture and Political Socialization
  - Political Culture
  - Political Socialization
  - Agents of Socialization
  - Trends in Contemporary Cultures
  - Citizen Action
  - Interest Groups
  - Policy Perspectives on Interest Articulation

3. Interest Aggregation and Political Parties
  - Personal interest aggregation
  - Institutional Interest Aggregation
  - Authoritarian Party System
  - The Military and Interest Aggregation
  - Significance of Interest Group
4. Government and Policy-Making
  - Government and Decision Rules
  - Democracy and Authoritarianism
  - Separation of Government powers
  - Geographic distribution of Government Power
  - Assemblies
  - Political Executives
  - The Bureaucracy
5. Political Participation
  - What is Political Participation
  - Who Participates
  - Social, capital and Political Participation
  - A crisis of Participation

***Recommended Books:***

1. Brown, Bernard. E. Comparative Politics
2. Gabriel, Almond. Comparative Politics Today
3. Gabriel, Almond. A Discipline Divided: Schools and Sects in Political Science.
4. Wiards, Howard, J. New Direction in Comparative Politics.

**PS-505: THEORIES AND CONCEPTS OF INTERNATIONAL RELATIONS:**

The objective of this course is to provide a conceptual understanding of the International System and the Competing Theories of I.R.; their application to the World Order. The course also includes the discussion of basic theoretical and analytical tools developed by political scientists to understand the complexities of International Politics.

1. Introduction to International Relations.
2. Various approaches to International Relations (Traditional/Modern).
3. The Phenomenon of Power & National Power
4. Balance of Power: Nature, Types, Techniques & Future
5. Modern Sovereign State System.
6. Nationalism.
7. Contemporary Global System.
8. Various features of contemporary global system.

1. Robert, J. Lieber, Theory and World Politics (London, George Allen & Unwin Ltd. 1973).
2. James N. Rosenau ed. International politics and Foreign Policy (N. Y. Free Press, 1969).
3. Linkage Politics (The Free Press, New York, 1969).
4. Hedley Bull, The Anarchical Society (Columbia University, Press, 1977).
5. E.H. Carr, The Twenty Year Crisis (New York Harper & Row 1964).
6. Kenneth Waltz, Theory of International Politics (1979).
7. Geoffrey Baraclough, An Introduction to Contemporary History, Penguin Books, 1981.
8. Tahir Amin, Nationalism and Internationalism in Three Traditions (I.I.I. Islamabad 1991).
9. Karl W. Deutsch, The Analysis of International Relations (Harvard University, 1978).
10. Hans. J. Morgenthau, Politics among Nations (New York Alfred Knopf 1973).
11. Wolfgang S. Mommsen, Theories of Imperialism. (Chicago; University Chicago Press, 1980).
12. Ernest Gellner, Nations and Nationalism (Cornel University Press, 1987).
13. K. J. Holsti, International Politics: A Framework of Analysis (N. J. Prentice Hall, 1988).

### SEMESTER-VI:

#### PS-506: DYNAMICS OF POLITICS IN PAKISTAN

The objective of this course is to familiarize the students with the impact of various forces on the political development of Pakistan. The course also deals with the various challenges in the political growth in Pakistan:

1. Ideological Moorings:
  - a) Evolution and Genesis of Two Nation Theory.
  - b) Significance of Pakistan Ideology for Political Process, State and Nation Building and governmental policies.
2. Military:
 

Role of military in the politics of Pakistan. Major causes of the imposition of military intervention in the 1958, 1969 and 1977 and 1999.
3. Bureaucracy:
  - a) The Heritage and its reorganization after independence. Role of Bureaucracy in Pakistan.
4. National integration:
  - a) Salient issues of national integration.
  - b) The East Pakistan Crisis.
  - c) Nature and Problem of center-province relations since 1972.
5. Political Participation:

Physical development  
Cognitive development in infancy with reference to Piaget's theory  
Language development in infancy  
Socio emotional development in infancy

### **Childhood**

Physical development  
Emotional development  
Cognitive development in childhood with reference to Piaget's theory  
Personality development (role of familial and extra familial influences)

### **Adolescence**

Physical development  
Emotional development  
Identity formation in adolescence  
Cognitive development in adolescence with reference to Piaget's theory  
Social development  
Problems and disturbances in adolescence

### **Early Adulthood**

Physical development  
Occupational adjustments  
Family adjustments

### **Middle Adulthood**

Physical changes  
Social adjustments  
Occupational adjustments  
Family adjustments

### **Gerontology**

Physical changes  
Challenges faced by the elderly  
The elderly and death

### **Utility of Theoretical Knowledge**

The students will be expected to deliver a seminar on any developmental theory.

### **Recommended Books**

Slater, A., & Bremner, J. G. (2017). *An introduction to developmental psychology*. John Wiley & Sons.  
Berk, L. E. (2017). *Exploring Life Span Development* Pearson.

### **Suggested Books**

Kathleen S. Berger. (4<sup>th</sup> Ed.). (2018). *Invitation to the Span*. Worth Publishers.  
Carol. A Sigleman., & Elizabeth, A. Rider. (9<sup>th</sup> Ed.). (2017). *Life Span Human Development*. Cengage Learning.  
John W. (17<sup>th</sup> Ed.). (2018). *Life Span Development*. McGraw-Hill Education.  
Laura E. Berk. (4<sup>th</sup> Ed.). (2017). *Exploring Life Span Development*. Pearson  
Barbara M.N., & Philip R.N. (13<sup>th</sup> Ed.). (2017). *Development through life*. Cengage Learning.  
Patricia H.M. (2016). *Theories of Developmental Psychology*. Worth Publishers  
Peter.M., & Fenja Ziegler. (2<sup>nd</sup> Ed.). (2017). *Fundamentals of developmental psychology*. Psychology Press.

### **PSY-01501      Personality Psychology**

#### **Course Objectives:**

1. To understand reflect and critically evaluate basic concepts of personality psychology.
2. To help you better understand things such as how best to study for tests, how to read affectively, and how to remember difficulty to learn material.
3. To help students in understanding personality theories and knowledge of personality assessment.

### **Course Contents**

Introduction to Personality Theory: Brief History of Personality Psychology.  
Measuring and Assessing the Personality  
Psychoanalysis: Freud.  
Neo Analytic and Ego Aspects of Personality,  
Biological Aspects of personality  
The behaviorist perspective  
Cognitive and Social-Cognitive Aspects of Personality  
Trait Aspects of Personality  
Humanistic, Existential, and Positive Aspects of Personality  
Person-Situation Interactionist Aspects of Personality  
Male-Female Differences in the Personality  
Influence of Personality on Stress, Adjustment, and Health Differences  
Personality Influences among Culture, Religion, and Ethnicity, Love and Hate  
Personality Testing  
Objective Personality Testing  
Minnesota Multiphase Personality Inventory (MMPI)  
Sixteen Personality Factors Questionnaire (16PF)  
The Big Five Personality Traits  
Eysenck Personality Questionnaire  
Rotter's Incomplete Sentence Blank  
Projective Techniques  
Thematic Apperception Test (TAT)  
Rorschach Inkblot Test  
House Tree Person (HTP)  
Sentence Completion Tests

### **Utility of Theoretical Knowledge**

The students will administer 2 Objective and 2 subjective tests and prepare report.

### **Recommended Text book:**

Friedman, H. S., & Schustack, M. W. (2016). *Personality: Classic theories and modern research*.

### **Suggested books**

- Burger, J. M. (2019) (10th ed.). *Personality*. Boston, MA: Cengage Learning.
- Carver, C. S., & Scheier, M. F. (2017). *Perspectives on Personality* (8th ed.). New York: Pearson Education.
- Cervone, D., & Pervin, L. A. (2016). *Personality: Theory and Research* (13th ed.). Hoboken, NJ: John Wiley & Sons.
- Haslam, N., Smillie, L., & Song, J. (2017). *An Introduction to Personality, Individual Differences and Intelligence* (2nd ed.). New York: Sage Publications.
- Larsen, R.J., & Buss, D. M. (2018). *Personality Psychology: Domains of Knowledge About Human Nature* (6th ed.). New York: McGraw-Hill Education.
- Mayer, J. D. (2018). *Personality: A Systems Approach* (2nd ed.). Lanham, MD: Rowman and Littlefield.
- Feist, J., Feist, G. J., & Roberts, T-A. (2018). *Theories of Personality* (9th ed.). New York: McGraw-Hill.
- Schultz, D. P., & Schultz, S. E. (2017). *Theories of Personality* (11th ed.). Boston, MA: Cengage Learning.

### **PSY-01502 Psychological Testing and Measurement**

#### **Course Objectives**

1. Provide students knowledge about test construction, types and purpose of psychological testing, psychometric properties of psychological tests.
2. Demonstrate theoretical and practical knowledge of psychological testing and test construction.

3. Administer, score and interpret results of different psychological test.
4. Enable students to understand rational, administration, scoring and interpretation of psychological tests.
5. The course also aims to provide students practical experience of administration, scoring, interpreting and writing report following code of ethics.

### **Course Contents**

#### **Psychological Test**

Definition and nature of psychological test  
 Uses and types of psychological test  
 Psychological test and assessment  
 Ethical, legal and professional issues in assessment

#### **Test Construction and Standardization**

Different taxonomies of test development  
 Types of items  
 General guidelines for writing items  
 Item writing and item analysis  
 Approaches of item writing  
 Types of item analysis  
 Item difficulty index, item discrimination index  
 Item response theory, item characteristics curve

#### **Characteristics of a Test**

##### **Reliability**

Concept of reliability  
 Types and measurement of reliability  
 Standard error of measurement

##### **Validity**

Meaning and purpose  
 Types and assessment of validity  
 Standard error of estimate

##### **Test Norms**

Definition and types of norms  
 Development of norms  
 Within group norms  
 Norm referenced test vs. criterion reference tests

##### **Types of Testing**

##### **Ability testing**

Intelligence – Nature and meaning/different view points  
 Types of intelligence tests: Stanford Binet Intelligence Scale, Wechsler Adult Intelligence Scale  
 Raven's Progressive matrices  
 Aptitude tests

##### **Personality Testing**

##### **Objective Personality Testing**

Minnesota Multiphase Personality Inventory (MMPI)  
 Sixteen Personality factors Questionnaire (16PF)  
 The Big Five Personality Traits  
 Eysenck Personality Questionnaire

##### **Projective Techniques**

Thematic Apperception Test (TAT)  
 Rorschach Inkblot Test  
 House Tree Person (HTP)  
 Sentence Completion Tests

##### **Neuropsychological and Diagnostic Testing**

Introduction to neuropsychological assessment  
 Types of neuropsychological tests: Halsted Battery, Luria Nebraska Battery, Wisconsin  
 Dysexecutive Functioning test, Neurological Functioning inventory, Wisconsin

Card sorting technique.  
Assessing psychiatric conditions, anxiety, depression, OCD

### **Application of Testing**

Testing in Clinical Settings  
Testing in counseling settings  
Testing in Educational Settings  
Testing in Organizational Settings  
Group vs. individual tests

### **Utility of Theoretical Knowledge**

1. After completing the theoretical work all students will be instructed administration of one test from each category i.e. aptitude, personality, ability, adjustment.
2. All students will be instructed to formulate a portfolio according to APA style format.
3. Evaluation will be carried out by course instructor.

### **Recommended Books**

- Cohen, R. J., Swerdlik, M. E., & Sturman, E. D. (2013). *Psychological testing and assessment: An introduction to test and measurement*. (8<sup>th</sup> ed). McGraw hill.
- Cohen, J. R., & Swerdlik, M. (2017). *Psychological testing and assessment: An introduction to test and management*. (9<sup>th</sup>). McGraw hill.
- Gold finger, K. B. (2018). *Psychological testing in everyday life: History science and practice*. (1<sup>st</sup>). United state of America: Sage.
- Kaplan, R. M., & Saccuzzo, D. P. (2017). *Psychological testing: Principles applications and issues*. (9<sup>th</sup> ed). Boston: Cenage learning.
- Miller, L. A., & Lovler, R. L. (2020). *Foundations of Psychological testing: A practical approach*. (6<sup>th</sup>). USA: Sage.

## **PSY-01503      Abnormal Psychology**

### **Course Objectives**

1. The course aims to familiarize the students with basic concepts of Abnormal Psychology; about historical development and current status of abnormal Psychology.
2. To familiarize the students about systems of classification and diagnosis, symptoms diagnostic criteria and etiological factors of different psychological disorders.
3. To educate them about how they can use DSM 5 TM for making five axial for diagnostic purpose.
4. To educate them how they can examine clinical manifestations, epidemiology, etiology, treatment, course and prognosis of selected disorders.
5. To educate them about how they can identify physical / organic problems that can cause or exacerbate emotional and interpersonal problems.
6. To guide them how can do case formulation

### **Course Contents**

#### **Introduction to Abnormal Psychology**

Criteria of normality and abnormality  
Diagnostic classification system-DSM & ICD

#### **History of Abnormal Psychology**

Dark ages & demonology  
Greeks & Romans  
Middle ages  
Renaissance  
Nineteenth & twentieth centuries  
Current status and controversies

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Significant developments & achievements  
**Major Etiological Models**  
**Neurodevelopment Disorders**  
 Intellectual Disabilities  
 Communication Disorders  
 Autism spectrum Disorder  
 Attention Deficit Hyperactivity Disorder  
 Specific Learning Disorder  
 Motor Disorders  
**Schizophrenia Spectrum and other Psychotic Disorders**  
 Schizotypal Personality Disorder  
 Delusional Disorders  
 Brief Psychotic Disorders  
 Schizophreniform Disorder  
 Schizophrenia  
 Schizoaffective Disorder  
**Bipolar and related disorders**  
 Bipolar I Disorder  
 Bipolar II Disorder  
 Cyclothymic Disorder  
**Depressive Disorders**  
 Disruptive Mood Dysregulation Disorder  
 Persistent Depressive Disorder  
 Premenstrual Dysphoric Disorder  
**Anxiety disorders**  
 Separation Anxiety Disorder  
 Selective Mutism  
 Specific Phobia  
 Social Anxiety Disorder  
 Panic Disorder  
 Agoraphobia  
 Generalized Anxiety Disorder  
**Obsessive compulsive and related disorders**  
 Obsessive Compulsive Disorder  
 Body Dysmorphic Disorder  
 Hoarding Disorder  
 Trichotillomania  
 Excoriation Disorder  
**Trauma and stressor related disorders**  
 Reactivity attachment Disorder  
 Disinhibited social Engagement disorder  
 Posttraumatic Stress Disorder  
 Acute Stress Disorder  
 Adjustment Disorders  
**Dissociative Disorder**  
 Dissociative Identity Disorder  
 Dissociative Amnesia  
 Depersonalization / Derealization Disorder  
**Somatic symptoms and related Disorders**  
 Somatic symptoms Disorder  
 Illness Anxiety Disorder  
 Conversion Disorder  
 Factitious Disorder  
**Feeding and Eating disorders** Food Intake Disorder  
 Pica Disorder  
 Rumination Disorder  
 Avoidant / Restrictive

Anorexia Nervosa  
 Binge Eating  
 Bulimia Nervosa  
 Binge Eating Disorder  
**Elimination Disorder**  
 Enuresis  
 Encopresis  
**Sleep-wake Disorders**  
 Insomnia Disorder  
 Hyper somnolence Disorder  
 Narcolepsy  
 Breathing and Sleep related disorder  
 Obstructive Sleep Apnea  
 Circadian Rhythm Sleep wake Disorders  
 Parasomnias  
**Sexual Dysfunctions**  
 Delayed Ejaculation  
 Erectile Disorder  
 Female Orgasmic Disorder  
 Female Sexual interest / Arousal Disorder  
**Gender Dysphoria**  
 Gender Dysphoria in children  
 Gender Dysphoria in Adolescents and Adults  
**Disruptive Impulse control and Conduct Disorders**  
 Oppositional Defiant Disorder  
 Intermittent Explosive Disorder  
 Conduct Disorder  
 Antisocial Personality Disorder  
 Pyromania  
 Kleptomania  
**Substance related and Addictive Disorders**  
 Alcohol related Disorders  
 Caffeine related Disorders  
 Cannabis Related Disorders  
 Opioid related Disorders  
 Sedative, Hypnotic or Anxiolytic use Disorders  
 Stimulant related Disorder  
 Tobacco related Disorder  
**Neuro Cognitive Disorders**  
 Delirium  
 Alzheimer Disease  
 Parkinson's disease  
 Neuro Cognitive disorders due to Brain injury  
**Personality Disorders**  
 Cluster A Personality Disorders  
 Cluster B Personality Disorders  
 Cluster C Personality Disorders  
**Paraphilic Disorders**  
 Voyeuristic Disorder  
 Exhibitionistic Disorder  
 Frotteristic Disorder  
 Sexual Masochism Disorder  
 Sexual Sadism Disorder  
 Pedophilic Disorder  
 Fetishistic Disorder  
 Transvestic Disorder

### Utility of theoretical knowledge

Students will be instructed to formulate a portfolio after a detailed examination of a patient having psychological disorder. (Case report will be prepared by students individually on the disorders assigned by course instructor)

### **Recommended Books**

- American Psychiatric Association (2013). *Diagnostic & Statistical Manual of Mental Disorders* (5<sup>th</sup> ed.). Washington DC.
- Barlow, D., Durand, V. M., & Hofmann, S. G. (2017). *Abnormal Psychology: An Integrative Approach* (8<sup>th</sup> ed.). Cengage Learning.
- Comer, R. J., & Comer, J. S. (2017). *Abnormal Psychology*. (10<sup>th</sup> ed.). New York: Worth publishers.
- Miller, R. B., (2015). *Not so abnormal psychology*. (1<sup>st</sup> ed.). Washington: American psychological association.
- Oltmanns, T. F., & Emery, R. E. (2012). *Abnormal psychology*. (7<sup>th</sup> ed.). Boston: Pearson.
- Ray, W. J., (2020). *Abnormal psychology*. (3<sup>rd</sup> ed.). United state of America: Sage.

### **PSY-01504**

### **Physiological Psychology**

#### Course Objectives

1. This course aims to educate the students about underlying biological basis of human behavior including Brain and Glands.
2. It is designed to be an introductory course focusing on the relationship between the nervous system, structure and function of brain, glandular system and human behavior as well as implications of glands and nervous system in psychiatric disorders.

#### Course contents

##### **Introduction**

Brief historical background,  
Current trends in the field of Behavioral neuroscience  
Contribution of various areas and related disciplines

##### **Structure and Function of Nervous System**

Neurons and Glial cells  
The neuron: neuronal characteristics, types, transmission and communication systems.  
Neuro anatomical directional terms and planes of reference  
Structures of Nervous System, their functions and connections

##### **The central nervous system**

Fore brain, mid brain, hind brain  
Spinal cord, peripheral nervous system  
Autonomic nervous system

##### **Methods of studying the nervous system**

Behavioral research methods of biopsychology

##### **Glands**

Endocrine glands: type of gland,  
Function of glands  
Effect of hormones on human behavior

##### **Neurochemistry**

Characteristics of neurotransmitters, Neuro modulators and Neuro Hormones  
Major neurotransmitters

Dopamine

Nor epinephrine

Serotonin

Acetylcholine

GABA

Glycine, Peptides (opiates)

**Brain and Behavior**

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Homeostasis  
Involvement of brain and neurotransmitters in motivational behavior  
Aggression  
Sleep and circadian rhythms (types and basic function)  
Eating behavior  
Weight, Glucose & Metabolic Regulation

#### **Emotions**

Hormonal changes in emotion  
Involvement of brain in emotions

#### **Memory and Amnesia**

Involvement of brain in memory  
Memory disorders (Korsakov, Alzheimer's, Parkinson diseases etc)

#### **Communication**

Factors in the development of speech  
Speech abnormalities, speech disorders  
Brain areas in speech

#### **Neurological Disorders**

Epilepsy, Cerebral Palsy, Multiple Sclerosis.  
Psychiatric disorders with organic/ biochemical etiology: Mood Disorder, Anxiety Disorders, and Schizophrenia, Mental Retardation.

#### **Brain Damage**

Causes of brain damage: CVA, Head injury, Infections  
Psychological implications of brain damage

#### **Clinical Neuropsychology**

Introduction to Neuropsychology  
Role of a Neuropsychologist  
Neuropsychological assessment techniques

#### **Utility of theoretical knowledge**

Perform neuropsychological assessment technique and prepare a report.

#### **Recommended books**

Kalat, J. W., (2018). *Biological Psychology* (13 ed.) USA: Cengage.  
Garrett, B. & Hough., G., (2017) *Brain and behaviour: An introduction to behavior neuroscience*. (5<sup>th</sup> ed.) Los Angeles: Sage.  
Higgs, S., Cooper, A. & Lee, J., (2019). *Biological Psychology* (2<sup>nd</sup> ed.) Los Angeles : Sage.

### **PSY-01505 Clinical Psychology**

#### **Course objectives**

The students will be able to:

1. Demonstrate an understanding of how clinical psychologists' approach mental health from a biological, cognitive, and social perspective
2. They will be able to identify the major tasks and responsibilities of clinical psychologists as health care professionals.
3. They can communicate effectively about clinical psychological science in both written and oral formats
4. It will increase their ability to participate in the field of clinical psychology as a practitioner.

#### **Course Contents**

Foundations of Clinical Psychology  
An Introduction  
Historical Overview of Clinical Psychology  
Current Issues in Clinical Psychology  
Research Methods in Clinical Psychology  
Diagnosis and Classification of Psychological Problems  
DSM & ICD

Clinical Assessment  
 Assessment of Intelligence  
 Personality assessments  
 Behavioral Assessment  
 Clinical Judgement  
 Clinical Interventions  
 The Ethics of Intervention  
 Theoretical Approaches  
 Short-Term Psychodynamic Psychotherapies  
 Cognitive Behavior Therapy (CBT)  
 Behavior Therapy  
 Client Centered Approaches  
 Teletherapy  
 Current trends in Psychotherapy and Clinical Psychology

### **Utility of theoretical knowledge**

Submit a case report based on clinical assessments and application of psychotherapy

### **Recommended book**

Hunsley, J., & Lee, C. M. (2013). *Introduction to Clinical Psychology* (3rd ed.). Wiley.

### **Suggested Books**

- Hunsley, J., & Lee, C. M. (2009). *Introduction to Clinical Psychology: An Evidence-Based Approach* (1st ed.). Wiley.
- Llewelyn, S., & Murphy, D. J. (2014). *What is Clinical Psychology?* (5th ed.). Oxford University Press.
- Plante, T. G. (2004). *Contemporary Clinical Psychology*. Wiley.
- Trull, T. J. (2004). *Clinical Psychology, 7th Edition (with InfoTrac)* (7th ed.). Wadsworth Publishing.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition: DSM-5* (5th ed.). American Psychiatric Publishing.
- Messer, S. B., & Kaslow, N. J. (2019). *Essential Psychotherapies, Fourth Edition: Theory and Practice* (Fourth ed.). The Guilford Press.

## **PSY-01601      Counseling & Educational Psychology**

### **Course Objectives**

1. The students will learn counseling techniques and develop an ethical approach to counselling
2. The students will recognize behavioral problems and examine strategies for positive behavior management
3. understand the concepts of guidance and counseling
4. To teach students different methods of improving teaching skills
5. To make them aware of importance of psychology in the field of education
6. To provide them knowledge about improving student-teacher relationship

### **Course Contents**

Counseling: Concept, Need and Goals  
 Types of Counseling: Directive Counseling, Non-Directive Counseling, Eclectic Counseling, Interview Process in Counseling  
 Counseling Services: Individual Counseling, Group Counseling  
 Counseling: Meaning and Process, Dealing with Psychological Disturbance,  
 Counseling Approaches: Cognitive Approach, Environmental Approach ; Counselor:  
 Role and Qualities  
 Guidance: Meaning, Nature and Scope, Guidance: Goals and Principles  
 Guidance Services: Concept and Importance  
 Educational and Vocational Guidance  
 Personal and Group Guidance: Concept, Aims and Methods,  
**Introduction**

# **BS in Statistics**

## **Course-I**

### **STAT-21101                      Probability & Probability Distributions-I**

Probability as a set function. Conditional probability and Bays' theorem. Random variables, Distribution function, Probability mass function and probability density function. Joint and conditional distributions for two and more random variables. Marginal and conditional distributions, stochastic independence. Mathematical expectation and its properties Conditional expectation, variance and moments. Probability generating function. Moment generating and characteristic functions and their properties. Relation between moments and cumulants. Probability distributions: Hyper geometric, Binomial, Multinomial, Negative Binomial, Geometric, Poisson, Normal and Lognormal distributions with moments and commulants.

#### **Books Recommended**

1. Lefebvre, M. (2009), Basic Probability Theory with application, Springer
2. A`SH, R.B. (2008) Basic Probability Theory Dover Publications INC. New York.
3. TIGMS, H. (2007) Understanding Probability, 2nd Edition, Cambridge University Press.
4. SCHAY, G. (2007), Introduction to Probability with Statistics Applications, Birkhauser Boston (New York)
5. Suhov, Y. and KELBERT, M. (2005), Probability Statistics, Cambridge University Press.
6. Fraser, D. A. S. (1976), Probability and Statistics: Theory and Applications, Duxbury Press, Massachusetts.
7. Johnson, N. L., et al (1994), Continuous Univariate distributions – Vol. 2, Wiley.
8. Wilks, S. S. (1963), Mathematical Statistics, Wiley
9. Stuart A. and Ord J. K. (1991), Kendall's Advanced Theory of Mathematical Statistics – Vol I, Charles Griffen and Co., London
10. Kotz, S., Balakrishnan, N. and Johnson, N. L. (2000), Continuous Multivariate Distributions – Volume 1, Models and Applications, 2nd Ed., Wiley
11. Ross, S. M. (2002), Introduction to Probability Models, Eighth Edition, Academic Press.
12. Ross, S. M. (2005), A First Course in Probability, Prentice Hall

# BS in Statistics

## Course-II

### STAT-21102 Sampling Techniques-I

Basic concepts, advantages of sampling methods, requirements of a good sample, bias, sampling and non-sampling errors. Steps and problems involved in planning and conduct of census and sample surveys. Selection and estimation procedures. Description and properties of simple random sampling. Sampling for proportions and percentages. Estimation of variances, standard errors and confidence limits. Sample size determination under different conditions. Description and properties of stratified random sampling. Formation of strata, Different methods of allocation of sample size. Systematic sampling. Ratio and regression estimates in simple and stratified random sampling.

**Note:** Practical of this course shall include visits of the students to various national statistical organizations and a report submitted to this effect.

#### Books Recommended

1. Raj, D. & Chandhok, P. (1998), *Sample Survey Theory*. Narosa Publishing House, New Delhi.
2. Ferguson, T.S. (1996), *A Course in large Sample Theory*, Chapman & Hall, London. 21
3. Singh, R. and Singh N, (1996) *Elements of Survey Sampling*, Kulwar Academic Publisher, Dodrecht.
4. Kish, L. (1992). *Survey Sampling*, John Wiley, New YorkSukhatme, P.V, Sukhatme, B., Sukhatme, S., and Asok, A. (1985), *Sampling Theory of Survey with Application*. Iowa State University Press.
5. Cochran, W.G. (1996), *Sampling Techniques*, 3rd ed, John Wiley and Sons, New York.  
Raj, D. (1971) *Design of Sample Survey*. McGraw Hill, New York

# **BS in Statistics**

## **Course-III**

### **STAT-21302    Regression Analysis**

General linear model and its assumptions, Least squares estimators, MLE, Least squares estimators, tests of hypothesis, tests of significance of a single and complete regression, tests of significance of subset of coefficients. Significance tests and confidence intervals. Test of linearity of regression. Use of extraneous information in linear regression model. Residual analysis, Detection and study of outliers. Polynomial regression, orthogonal polynomial, orthogonal regression analysis. Specification of models

#### **Books Recommended**

1. Greene, W.H. (2011) Econometric Analysis 7<sup>th</sup> Edition, Paternice Hall.
2. Stock, J.H and Watson., M.W. (2010). Introduction to Econometrics. 3<sup>rd</sup> Edition-Addison-Wesley.
3. Gujarati, D.N. (2010) Econometrics by Example. Palgrave Macmillan,, New York.
4. Bingham, N.H and Fry, J.M. (2010) Regression. Springer, New York.
5. Yan, X and Su, X.G. (2009) Linear Regression analysis. World Science Co, Singapore.
6. Wooldridge, J.M. (2008) Introductory Econometrics. 4<sup>th</sup> Edition. South Western College Publishers.
7. Chatlerjee, S. , Hadi, A.S and Price, B. (2006) Regression analysis by Example. 3<sup>rd</sup> Edition. Wiley, New York
8. Wesberg, S. (2005). Applied Linear regression. 2<sup>nd</sup> edition Wiley, New York.
9. Annette J. Dobson. (2001). An Introduction to Generalized Linear Models. Text in Statistical Science.
10. Christensen, J. (2002). Advanced Linear Modeling. Springer Texts in Statistics
11. Draper, N.R. and Smith, H (2004). Applied Regression Analysis. John Wiley and Sons.
12. Gujrati. D. (2003). Econometrics, John Wiley, New York.
13. Harrell, F. E. (2003). Regression Modeling Strategies. Springer Texts in Statistics

# **BS in Statistics**

## **Course-IV**

**STAT-21103**

**Design & Analysis of Experiments-I**

Principles of Design of Experiments. Analysis of variance and its assumptions. Cochran theorem. Fixed, random and mixed effect models. Effect of violation of assumptions and transformations. Completely Randomized, Randomized Complete Block, Latin square, Graeco-Latin square and cross-over designs. Missing observations. Relative efficiency of designs. Estimation of mean squares and their expectations. Multiple Comparisons. Analysis of covariance in CR, RCB designs. Estimation of missing values in analysis of covariance.

### **Books Recommended**

- 1 Montgomery, D.C. (2010) Design and Analysis of experiments, 7th edition, Wiley, New York.
- 2 Ryan, T.P. (2007). Modern Experimental designs. Wiley, New York.
- 3 HinKermann, K. and Kempthorne, D. (2005) Design and analysis of experiments, Wiley. New York.
- 4 Dean A. and Voss, D. (1998) Design and Analysis of Experiments. Springer, New York.
- 5 Myres, R.H. and Montgomery, D.C. (1995), Response Surface Methodology: Process and Product Optimization using Designed Experiments, John Wiley and Sons.
- 6 Montgomery D.C. (2000). Design and Analysis of Experiments, John Wiley, NY.
- 7 Clarke, G.M., and Kempton, R.E. (1997), Introduction to the Design & Analysis of Experiments, Edward Arnold.
- 8 Myers, R.H. and Montgomery, D.C. (1995). Response Surface Methodology; Process & Product Optimization using design, John Wiley.
- 9 Harold, R. L (1992) Analysis of Variance in Experimental Design. Springer Verlag:
- 10 Khuri, A. I. and Cornell, J. A. (2001) Response Surfaces; design and Analysis, 2nd ed, CRC Press, USA.

# **BS in Statistics**

## **Course-V**

### **Statistical Quality Control or Non-Parametric Methods**

## مجوزہ کتب:

- ۱۔ سرائیکی اکھان (جلد اول، دوم، سوم)
- ۲۔ سرائیکی لوک گیت
- ۳۔ سرائیکی ثقافت
- ۴۔ سرائیکی سٹل
- ۵۔ تلاوڑے
- ۶۔ مہاندرا ڈیکھینس
- ۷۔ دیوان فرید
- ۸۔ ملتان مرثیہ
- ۹۔ ساہ دی بکل
- ۱۰۔ ارداساں
- ۱۱۔ ویندی رت دی شام
- ۱۲۔ ٹکڑ ناٹک
- ۱۳۔ سانول سلونے
- ۱۴۔ مرکبیاں
- ۱۵۔ حکایات سعدی
- ۱۶۔ دھابے دھوڑے، درشن
- ۱۷۔ کشکول وچ سمندر، ورقہ ورقہ زخمی
- ۱۸۔ وزیر آغا کی اردو نظموں کا انتخاب
- ۱۹۔ پاندھی پچھاں واٹیں تکاں
- ۲۰۔ سرائیکی شاعری دا ارتقا
- ۲۱۔ سرائیکی زبان و ادب کی مختصر تاریخ
- ۲۲۔ ملتان زبان اور اس کا اردو سے تعلق
- ۲۳۔ A Century Study of the Sairai-ki / دلشاد کلا نجوی
- شوکت مغل
- ڈاکٹر مہر عبدالحق
- جاوید احسن
- جمشید کمتر رسول پوری
- اسلم رسول پوری
- انیس شاہ جیلانی
- خواجه فرید
- خلش پیر اصحابی
- حیدر گردیزی
- جانبا زجتوئی
- حفیظ خان
- خالد اقبال
- عبدالباسط بھٹی
- غلام فرید
- غلامی بہاولپوری
- حسن رضا گردیزی، عزیز شاہد
- ممتاز حیدر ڈاہر، اقبال سوکڑی
- فرحت نواز
- حمید الفت ملغانی
- ڈاکٹر نصر اللہ خان ناصر
- ڈاکٹر سجاد حیدر پرویز
- ڈاکٹر مہر عبدالحق

## پانچواں سمسٹر:

اساسی کورس - ۱ کورس کوڈ: URDU-1501 کریڈٹ آورز: ۳  
کلاسیکی اردو غزل

- کلاسیکی غزل کی فکریات اور فنی خصائص
- کلاسیکی غزل کی روایت
- دکنی دور، اٹھارویں صدی، لکھنوی دور، کلاسیکی غزل کا آخری دور
- نمائندہ کلاسیکی غزل گو شعرا کا خصوصی مطالعہ:
- ۱۔ ولی دکنی ۲۔ میر تقی میر ۳۔ خواجہ میر درد
- ۴۔ حیدر علی آتش ۵۔ غلام ہمدانی مصحفی ۶۔ اسد اللہ خاں غالب
- ۷۔ مومن خان مومن ۸۔ ابراہیم ذوق ۹۔ مرزا داغ دہلوی

## مجوزہ کتب:

- ۱۔ دہلی کا دبستان شاعری
- ۲۔ لکھنؤ کا دبستان شاعری
- ۳۔ اردو کلاسیکی شاعری
- ۴۔ ولی سے اقبال تک
- ۵۔ ولی کا تحقیقی مطالعہ
- ۶۔ میر محمد تقی
- ۷۔ مصحفی: حیات اور شاعری
- ۸۔ غالب شاعر امروز و فردا
- ۹۔ غالب آشفیتہ نوا
- ۱۰۔ اردو کے نمائندہ کلاسیکی غزل گو
- ۱۱۔ کلاسیکی شعر پر تنقیدی مقالات
- ۱۲۔ اردو غزل کی تہذیبی و فکری بنیادیں
- ۱۳۔ تاریخ ادب اردو
- نور الحسن ہاشمی
- ڈاکٹر ابواللیث صدیقی
- ڈاکٹر تنویر احمد علوی
- ڈاکٹر سید عبداللہ
- خان محمد اشرف (مرتب)
- ڈاکٹر جمیل جالبی
- نور الحسن نقوی
- ڈاکٹر فرمان فتح پوری
- ڈاکٹر آفتاب احمد
- ڈاکٹر عامر سہیل
- ایم حبیب خان
- ڈاکٹر سعد اللہ کلیم
- ڈاکٹر جمیل جالبی

الف) اردو داستان

- ۱۔ باغ و بہار میرامن
- ۲۔ عجائب القصص شاہ عالم ثانی
- ۳۔ الف لیلہ و لیلہ (جلد اول) رتن ناتھ سرشار (مترجم)
- ۴۔ آرائش محفل حیدر بخش حیدری

ب) اردو ڈراما

- ۱۔ رستم و سہراب آغا حشر
- ۲۔ انارکلی امتیاز علی تاج
- ۳۔ تعلیم بالغاں خواجہ معین الدین
- ۴۔ قرۃ العین، حجر اسود اشفاق احمد

مجوزہ کتب:

- ۱۔ اردو کی نثری داستانیں ڈاکٹر گیان چند جین
- ۲۔ اردو کی زندہ داستانیں ڈاکٹر مظفر عباس
- ۳۔ اردو زبان اور فن داستان گوئی کلیم الدین احمد
- ۴۔ برصغیر کا ڈراما ڈاکٹر اسلم قریشی
- ۵۔ فن ڈراما نگاری ڈاکٹر اسلم قریشی
- ۶۔ ڈرامے کا تاریخی اور تنقیدی پس منظر ڈاکٹر اسلم قریشی

- اردو زبان و ادب کی ابتدائی روایت
- بہمنی و گجراتی ادب کی روایت
- گول کنڈہ اور بیجاپور کی شعری روایت
- اردو نثر کے فروغ میں صوفیا کا کردار
- ولی اور ہم عصر شعری رویہ
- اٹھارویں صدی کے شمالی ہند کا سماجی، تہذیبی اور ادبی مطالعہ
- ایہام گوئی کی تحریک اور رد عمل
- اصلاح زبان کے زاویے
- میر و سودا کا دور: شعری رجحانات

مجوزہ کتب:

- ۱۔ تاریخ ادب اردو (تین جلدیں) ڈاکٹر جمیل جالبی
- ۲۔ اردو ادب کی تاریخ ڈاکٹر تبسم کاشمیری
- ۳۔ دکنی ادب ڈاکٹر محی الدین قادری زور
- ۴۔ دکن میں اردو نصیر الدین ہاشمی
- ۵۔ دہلی کا دبستان شاعری نور الحسن ہاشمی
- ۶۔ اردو شاعری میں ایہام گوئی کی تحریک ملک حسن اختر
- ۷۔ اردو میں تازہ گوئی کی روایت ملک حسن اختر
- ۸۔ دہلی میں اردو شاعری کا تہذیبی و فکری پس منظر ڈاکٹر محمد حسن
- ۹۔ اردو ادب کے فروغ اور ارتقا میں رجحانوں اور تحریکوں کا حصہ منظر اعظمی

- تنقید کیا ہے؟
- تنقید اور تخلیق کا باہمی ربط
- تنقیدی نظریات:
- ۱۔ جمالیاتی نظریہ: تعارف و روایت
- ۲۔ عمرانی نظریہ: تعارف و روایت
- ۳۔ نفسیاتی نظریہ: تعارف و روایت
- مغرب میں تنقید کی روایت
- مغربی ناقدین کا خصوصی مطالعہ:
- ۱۔ ارسطو تزکیہ نفس، اصنافی تنقید
- ۲۔ لان جانسن علویت
- ۳۔ کالرج فلسفہ، جمالیات، نفسیات، متخلیہ، متصورہ
- ۴۔ آرنلڈ ادب، سماج، ثقافت اور انتشار
- ۵۔ ٹی ایس ایلیٹ روایت، شاعری کی آوازیں

#### مجوزہ کتب:

- ۱۔ ادبی تنقید محمد حسن
- ۲۔ تنقیدی نظریات احتشام حسین
- ۳۔ تنقیدی نظریے ڈاکٹر ملک حسن اختر
- ۴۔ تنقیدی دبستان ڈاکٹر سلیم اختر
- ۵۔ ارسطو سے ایلیٹ تک ڈاکٹر جمیل جالبی
- ۶۔ افلاطون سے ایلیٹ تک ڈاکٹر عابد صدیق
- ۷۔ مغرب کے تنقیدی اصول ڈاکٹر سجاد باقر رضوی
- ۸۔ مشرق اور مغرب میں تنقیدی تصورات کی تاریخ ڈاکٹر محمد حسن

- ناول: مبادیات و مباحث
- اردو ناول کی روایت کا جائزہ
- خصوصی مطالعہ:
- ۱۔ توبتہ النصوح ڈپٹی نذیر احمد
- ۲۔ فسانہ آزاد (جلد اول) رتن ناتھ سرشار
- ۳۔ امراؤ جان ادا مرزا محمد ہادی رسوا
- ۴۔ فردوس بریں عبدالحلیم شرر
- ۵۔ گو دان پریم چند
- ۶۔ گریز عزیز احمد

#### مجوزہ کتب:

- ۱۔ ناول کا فن ابوالکلام قاسمی (مترجم)
- ۲۔ ناول: نظریہ اور فن ڈاکٹر محمد یسین
- ۳۔ اردو ناول نگاری ڈاکٹر سہیل بخاری
- ۴۔ اردو ناول کی تنقیدی تاریخ ڈاکٹر احسن فاروقی
- ۵۔ اردو ناول بیسویں صدی میں ڈاکٹر عبدالسلام
- ۶۔ بیسویں صدی میں اردو ناول ڈاکٹر یوسف سرمست
- ۷۔ برصغیر میں اردو ناول ڈاکٹر خالد اشرف
- ۸۔ اردو ناول کے بدلتے تناظر ڈاکٹر ممتاز احمد خان
- ۹۔ اردو ناول کا نگار خانہ کے۔ کے۔ کھلر
- ۱۰۔ رسوا: ایک مطالعہ ڈاکٹر میمونہ انصاری

**حصہ اول:**

- ترجمہ نگاری کا فن اور اس کے بنیادی مباحث
- ترجمہ نگاری میں لفظ، خیال، کلچر کا پرتو اور معنی کا اخراج و حصول
- اردو میں ترجمہ نگاری کی روایت

**حصہ دوم:**

- مکالمہ نویسی۔ افسانے اور ڈرامے کے مکالمے کا فرق (عملی مشق)
- اردو کے نمائندہ ڈراموں کے مناظر کی تشکیل نو
- اردو کے نمائندہ افسانوں کے آغاز اور انجام میں تبدیلی کے بعد ان کی تشکیل نو
- ریڈیائی فچر، ریڈیو ڈراما اور ٹیلی ڈراما کی تکنیک کا فرق اور عملی مشقیں
- فلم، دستاویزی فلم، اشتہار سازی

**مجوزہ کتب:**

- ۱۔ ترجمے کا فن
- ۲۔ ترجمہ فن اور روایت
- ۳۔ اردو زبان میں ترجمے کے مسائل
- ۴۔ پاکستانی ادب (افسانہ) جلد دوم
- ۵۔ پاکستانی ادب (ڈراما) جلد ششم
- ۶۔ فن اور فنکار
- ۷۔ فن افسانہ نگاری
- ۸۔ اردو تھیٹر
- ۹۔ برصغیر کا ڈراما
- ۱۰۔ اردو نثر کا فنی ارتقاء

11. How to Study Modern Drama/ Keneth Pickering
12. Short Stories for Creative Language Class Rooms / Joanne Collie

- مزاح کی تعریف: بنیادی عناصر اور محرکات
- مزاح کے فنی مباحث
- طنز کی تعریف اور مقاصد
- طنز کے حربے
- طنز کے فنی مباحث
- اردو میں طنز و مزاح کی روایت (ما قبل اودھ پنچ)
- اودھ پنچ کے زیر اثر طنز و مزاح
- اردو ادب میں مزاحیہ کردار:

- |                                      |                   |               |
|--------------------------------------|-------------------|---------------|
| ۱۔ خوبی                              | ۲۔ حاجی بغلول     | ۳۔ چچا چھکن   |
| ۴۔ مرزا عبدالودود                    | ۵۔ چچا عبدالباقی  |               |
| ○ اردو میں طنز و مزاح: تخصیصی مطالعہ |                   |               |
| <b>شاعری:</b>                        |                   |               |
| ۱۔ جعفر زٹلی                         | ۲۔ اکبر الہ آبادی | ۳۔ ضمیر جعفری |
| ۴۔ سید محمد جعفری                    | ۵۔ انور مسعود     |               |
| <b>نثر:</b>                          |                   |               |
| ۱۔ فرحت اللہ بیگ                     | ۲۔ پطرس بخاری     | ۳۔ ابن انشاء  |
| ۴۔ مشتاق احمد یوسفی                  |                   |               |

**مجوزہ کتب:**

- ۱۔ اردو نثر میں طنز و مزاح
- ۲۔ اردو ادب میں طنز و مزاح
- ۳۔ اردو ادب کی تحریکیں
- ۴۔ نقوش (طنز و مزاح نمبر)
- ۵۔ اردو صحافت میں طنز و مزاح
- ۶۔ اردو کی ظریفانہ شاعری میں مزاحی عناصر
- ۷۔ اردو نثر میں طنز و مزاح کا تہذیبی و سیاسی پس منظر

# BS in Zoology

## Course-I

**Zool-02501**

**Desert Zoology**

**2(1+1)**

### Objectives:

The course aims to impart the knowledge majoring in biology and environmental sciences related to the desert organisms and the ecological processes of desert biomes.

### Course Contents:

**Origin of desert life:** Exhibited features including soil, water, temperature, atmospheric pressure and oceanic role.

**Desert Ecology:** Introduction to local habitats, identification of local animals. Morphological and physiological adaptations of desert organisms. Principles of classifying and naming species.

**Desert biomes:** (Hot and Dry, semiarid, Costal and Cold). Desertification its Causes and impacts on animals. Deserts of Pakistan.

**Conservation of Animals:** Advantages and disadvantages of Deserts, Major threats/risk factors and management strategies to conserve the animals in deserts.

### Practical:

- Field trips of deserts
- Visits of National Parks
- Identification of indigenous fauna

### Recommended Books:

- Murphy, J. (2011). Desert animal adaptations. Capstone.
- Jaeger, E. C. (1922). Denizens of the Desert: A Book of Southwestern Mammals, Birds, and Reptiles, by Edmund C. Jaeger... Houghton Mifflin.
- Hibbitts, T. D., & Hibbitts, T. J. (2015). Texas Lizards: A Field Guide. University of Texas Press.
- Irwin, R. (2010). Camel. Reaktion Books.
- Ward, D. (2016). The biology of deserts. Oxford University Press.
- Nelson, R. J., Denlinger, D. L., & Somers, D. E. (Eds.). (2010). Photoperiodism: the biological calendar. Oxford University Press.
- Kloc, M., & Kubiak, J. Z. (2014). Xenopus Development. John Wiley & Sons.

# **BS in Zoology**

## **Course-II**

**Zool-02502**

**Taxonomy**

**4(3+1)**

Contribution of systematics to biology: History of taxonomy (downward classification, upward classification, impact of the origin of species, population systematics and current trends); Microtaxonomy, phenon, taxon; Taxonomic categories, Infra specific category, higher categories, species concept (typological concept, nominalistic concept, biological concept, evolutionary concept, species-mate recognition concept, cohesion species concept); non dimensional species concept; multidimensional species concept. Difficulties in the application of the species concepts, polytypic species , sub species, super species, sibling species; study of variations within a single population. Macrotaxonomy; different kinds of taxonomic characters. Taxonomic collection and identification; definition of synonym, homonym, keys; Evolution of the theory of nomenclature; interpretation and application of code (stability, priority, first revisor principle), range of authority of code; concept of availability, type method, formation of specific names, brief concept of cladistics

### **Practical**

Study of preserved specimens of invertebrates and their classification up to class level. Collection, preservation and identification of common species (Fishes/butterflies) with the help of keys. Methods of statistical analysis of sampled data. Preparation of keys for the identification of specimens.

### **Recommended Books:**

1. Kapoor, V.C. 2005. Theory and Practice of Animal Taxonomy. (5<sup>th</sup> ed.) Oxford and IBH Publishing Co. Pvt. Ltd.
2. Thompson, J.N., 1994. The Evolutionary Process. Univ. Chicago Press, Chicago.
3. Harvey, P.H. and Pagel, M.D. 1991. The Comparative Methods in Evolutionary Biology. Oxford Univ. Press, UK.
4. Mayer, E. and Asblock, P.D., 1991. Principles of Systematic Zoology. McGraw Hill, N.York.

# BS in Zoology

## Course-III

Zool-02503

Bio-Chemistry –I

3(2+1)

**Amino acids**, peptides and proteins: standard amino acids, their structure and classification; acid/base properties of amino acids and their titration curves; peptides, their ionic behavior and amino acid composition, cytochrome c; Proteins: level of structural organization, example of structural and functional proteins.

**Enzymes**: Introduction; important characteristics of enzymes; immobilized enzymes; how enzymes work; example of enzymatic reaction; enzyme kinetics, enzyme rate of reaction and substrate concentration, how pH and temperature effect on enzyme activity.

**Carbohydrates**: Classification, types, important characteristics and structure of carbohydrates; cyclic structure of monosaccharides; cyanohydrin formation; disaccharides their types structure and function; polysaccharides, storage and structural types; structure and major functions of polysaccharides.

**Lipids**: fatty acids, their types and major characteristics; storage lipids, acylglycerols; waxes; structural lipids in membranes; major functions of lipids; lipoproteins, their types and major functions.

**Nucleic Acids**: General introduction. Purine and pyrimidine bases, nucleosides, nucleotides. Structure and properties of DNA and RNA. Types and functions of RNA. Chemical synthesis of oligonucleotides and DNA sequencing, DNA restriction enzymes, Properties of DNA polymerase I, II and III.

### Practicals

1. Preparation of standard curve for glucose by *ortho*-Toluidine method.
2. Tests for detection of carbohydrates in alkaline and acidic medium.
3. Tests for detection of Disaccharides.
4. Detection of Non-Reducing sugars in the presence of Reducing sugars.
5. Demonstration of Acid Hydrolysis of Polysaccharide.
6. Separation and identification of various types of sugars, fatty acid and amino acid Thin Layer Chromatography (TLC).

### Books Recommended

1. Nelson, D. L., Cox, M. M. 2012. Lehninger Principles of Biochemistry. McMillan worth Publishers, New York.
2. Berg, J. M., Tymoczko, J. L., Lubert Stryer. 2010. Biochemistry. 7<sup>TH</sup> Ed.
3. Lodish, H., Berk, A., Zipursky, S. L., Paul. M., Baltimore D., Darnell, J. 2012. Molecular Cell Biology.
4. McKee, T., McKee, J.R. 2003. Biochemistry: The Molecular Basis of Life. 3rd Edition, McGraw Hill.
1. 5. Wilson, K., Walker, J. 1994. Practical Biochemistry: Principles and Techniques, 4th Ed., Cambridge University Press.

# BS in Zoology

## Course-IV

Zool-02504

Animal Physiology

3(2+1)

**Central themes in Physiology:** Structure-function relationship, Adaptations, Homeostasis, Conformity and Regulation.

**Movements and Muscles:** Structural basis of muscle contraction: molecular structures of contractile components and their interaction, sarcoplasmic reticulum, calcium and membrane mechanisms in regulation of contraction.

**Cardiovascular Mechanisms:** Electrical activity of heart: Automaticity, Rhythmicity, Electrocardiography, Kymography; Hemodynamics, Blood flow, pressures and resistance and their interrelationships. Control of cardiac activity (cardiac output) and peripheral circulation.

**Exchange of Gases:** Transport of O<sub>2</sub> and CO<sub>2</sub> between respiratory surface (the lungs) and body cells. Regulation of lungs respiration; Gas transfer in water (gills) and its regulation. Respiratory responses in extreme conditions as hypoxia; Hypercapnia in air breathing divers.

### Practical

**Muscle and Neuromuscular Activity:** Nerve muscle preparation, Muscle twitch, Comparison of muscle and nerve irritability, effect of stimulus strength, effect of stimulus frequency (tetany), effect of load or stretch, effect of prolonged activity (fatigue), neuromuscular fatigue, stimulation of motor points in human.

**Cardiovascular Activity:** Normal cardiac activity, effect of temperature, effect of drug, heart block, tetanization of heart. Measurement of blood pressure.

**Respiration and Exercise:** Oxygen consumption in fish and effect of temperature (by dissolved oxygen meter) and terrestrial animal (mouse). Oxygen consumption (by respirometer), heart rate, blood pressure glycemia altered by exercise.

### Recommended Books:

1. Randall, D., Burggren, W., French, K. and Fernald, R. Eckert Animal Physiology: Mechanisms and Adaptations, 5<sup>th</sup> Edition. 2002. W.H. Freeman and Company, New York
2. Bullock, J., Boyle, J. and Wang, M.B. Physiology, 4<sup>th</sup> Edition. 2001. Lippincott, Williams and Wilkins, Philadelphia.
3. Berne, R.M. and Levy, M.N. Principles of Physiology, 3<sup>rd</sup> Edition. 2000. St. Louis, Mosby.
4. Guyton, A.C. and Hall, J.E. Textbook of Medical Physiology, 10<sup>th</sup> Edition. 2000. W.B. Saunders Company, Philadelphia.
5. Withers, P.C. Comparative Animal Physiology. 1992. Saunders College Publishing, Philadelphia.
6. Schmidt-Nelsen, K. Animal Physiology, Adaptation and Environment, 5<sup>th</sup> Edition. 1997. Cambridge University Press, Cambridge.
7. Bullock, J., Boyle, J. and Wang, M.B. Physiology, 4<sup>th</sup> Edition. 2001. Lippincott, Williams and Wilkins, Philadelphia.

# **BS in Zoology**

## **Course-V**

**Zool-02505**

**Chordate**

**3(2+1)**

The First Amniotes: Temperature regulation, nervous and sensory functions, excretion and osmoregulation and reproduction. Evolutionary perspective: phylogenetic relationships; ancient birds and the evolution of flight; evolutionary pressures: adaptation in external structure and locomotion. Nutrition and the digestive system, circulation, gas exchange, temperature regulation, nervous and sensory systems. Birds, Feathers, Flight, and Endothermy: Excretion and osmoregulation, reproduction and development; migration and navigation. Mammals: Endothermy, Hair, and Viviparity: Evolutionary perspective: diversity of mammals; evolutionary pressures: adaptations in external structure. Nutrition and the digestive system, circulation, gas exchange, and temperature regulation. Nervous and sensory functions, excretion and osmoregulation, behavior, reproduction.

### **Practical**

Study of a representative of Hemichordate and Invertebrate Chordate. Study of representative groups of class Fishes. Study of representative groups of class Amphibia. Study of representative groups of class Reptilia. Study of representative groups of class Aves. Study of representative groups of class Mammalia. Field trips to study animal diversity in an eco-system.

### **Recommended Books:**

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts K. and Watson, J.D. Molecular Biology of the Cell, 1989. Garland Publishing Inc., New York.
2. Damell Jr., J., Lodisch, H. and Balimore, D. Molecular Cell Biology, 1990. Scientific American Inc. N.Y
3. De Robertis, E.D.P and De Robertis Jr.E.N.F. Cell and Molecular Biology, 1987. Lea and Febiger, New York
4. Karp, J. Cell and Molecular Biology, Concepts and Experiments, 2005, Jhon Wiley and Sons, Inc.
5. Geoffrey M.C Robert E.H The Cell: A Molecular Approch, 2007. Sinauer Associates, INC.

# BS in Zoology

## Course-VI

**Zool-02506**

**Invertebrates**

**3(2+1)**

Introduction: Classification of organisms; evolutionary relationships and tree diagrams; patterns of organization. Animal-Like Protists: The Protozoa: Evolutionary perspective. Multicellular and Tissue Levels of Organization: Evolutionary perspective: origins of multicellularity; animal origins. Phylum Porifera: cell types, body wall, water currents and body forms; reproduction. Phylum Cnidaria (coelenterata) the body wall and nematocysts; alternation of generations; reproduction and classification up to class. Phylum Platyhelminthes: classification up to class; the free-living flatworms and their organ systems. Aschelminths: Evolutionary perspective; general characteristics; classification up to phyla with external features. Molluscan Success: Evolutionary perspective: relationships to other animals; origin of the coelom; molluscan characteristics; classification up to class. Molluscan Success: Annelida: The Metameric Body Form: Evolutionary perspective: relationship to other animals, metamerism and tagmatization; classification up to class. Annelida: Arthropods: Blueprint for Success: Evolutionary perspective: classification and relationships to other animals; metamerism and tagmatization; metamorphosis. Hexapods and Myriadpods: Insect behaviour; insects and human. Echinoderms: Evolutionary perspective: relationships to other animals; echinoderm characteristics; classification up to class.

### Practical

Study of *Euglena*, *Amoeba*, *Entamoeba*, *Plasmodium*, *Trypanosoma*, *Paramecium* as representative of animal like protists. (Prepared slides). Study of sponges and their various body forms. Study of principal representative classes of phylum Coelenterata. Study of principal representative classes of phylum Platyhelminthes. Study of representative of phylum Rotifera, phylum Nematoda. Study of principal representative classes of phylum Mollusca. Study of principal representative classes of phylum Annelida. Study of principal representative classes of groups of phylum Arthropoda. Brief notes on medical/economic importance of the following: *Plasmodium*, *Entamoeba histolitica*, *Leishmania*, Liverfluke, Tapeworm, Earthworm, Silkworm, Citrus butterfly. Preparation of permanent stained slides of the following: *Obelia*, *Daphnia*, Cestode, Parapodia of *Nereis*.

### Recommended Books:

1. Hickman, C.P., Roberts, L.S. and Larson, A. Integrated Principles of Zoology, 11<sup>th</sup> Edition (International), 2004. Singapore: McGraw Hill.
2. Miller, S.A. and Harley, J.B. Zoology, 5<sup>th</sup> Edition (International), 2002. Singapore: McGraw Hill.
3. Pechenik, J.A. Biology of Invertebrates, 4<sup>th</sup> Edition (International), 2000. Singapore: McGraw Hill.
4. Kent, G.C. and Miller, S. Comparative Anatomy of Vertebrates. 2001. New York: McGraw Hill.
5. Campbell, N.A. Biology, 6<sup>th</sup> Edition. 2002. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.