BS Fourth Semester

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BS in Arabic

Course-I

Course: English IV: Academic Reading & Writing

Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficient readers armed with appropriate skills and strategies for reading and comprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation, and integration of knowledge
- Write well organized academic texts including examination answers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
   - Using appropriate strategies for extracting information and salient points according to a given purpose
   - Identifying the main points supporting details, conclusions in a text of intermediate level
   - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
   - Interpreting charts and diagrams
   - Making appropriate notes using strategies such as mind maps, tables, lists, graphs.
   - Reading and carrying out instructions for tasks, assignments and examination questions
2. Enhance academic vocabulary using skills learnt in Compulsory English I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
   1. Plan their writing: identify audience, purpose and message (content)
   2. Collect information in various forms such as mind maps, tables, charts, lists
   3. Order information such as:
      - Chronology for a narrative
      - Stages of a process
      - From general to specific and vice versa
      - From most important to least important
      - Advantages and disadvantages
      - Comparison and contrast
      - Problem solution pattern

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5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast, cause and effect, for and against
   - Write good topic and supporting sentences and effective conclusions
   - Use appropriate cohesive devices such as reference words and signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St. Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). Oxford English for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: Cambridge University Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge University Press.
- Yorky, R. Study Skills.

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BS in Arabic

Course-II

عنوان المقرر: الإعلام العربي
Course Title: Arabic Media

الساعات المعتمدة: 3ساعات

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

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل الثامن

رمز المقرر: عربي 01801 **CourseCode:ARB-01801**

الأهداف:

1. معرفة الإعلام العربي والصحافة العربية و تعريفها و أهميتها في العصر الحاضر.
2. معرفة أهم مصطلحات الصحافة المتداولة.
3. دراسة تاريخ الصحافة و الراديو و التلفاز و الإنترنت.
4. معرفة الإعلام العربي.
5. إكتساب المهارة و المعرفة للإستفادة من وسائل الإعلام العربي.
6. قدرة الطالب على إنشاء عمل صحفي و إستخدام الإعلام العربي.

مفردات المقرر -الموضوعات الدراسية

الصحافة النظرية:
تعريف موجز لمصطلحات صحفية الكترونية مثل صورة وصفية(Feature) عمود(Column) مقالة تحريرية(Editorial) أخبار(News) جريدة(Newspaper) مجلة(Journal) برنامج تلفازي راديو
الإعلام العربي الكتروني:

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أهمية الإعلام الالكتروني في العصرالحاضر
تاريخ الإعلام العربي
تاريخ موجز للتلفاز والراديو في الوطن العربي
دورالتلفاز والراديو في تقدم المجتمع العربي
دراسة نقدية للقنوات العربية غيرالحكومية (الأهلية)
دراسة نقدية للقنوات العربية غيرالحكومية
قنوت الأنباء العربية
الإعلام العربي خارج الوطن العربي
الإعلام العربي الصفحي:
تاريخ الصحافة العربية
دورالصحافة وأهمية
نظرية الصحافة الحرة وجهود الصحافة العربية لتحقيق هذاالهدف
الصحافة العربية في الوطن العربي
الجرائد العربية إلىومية
المجلات العربية الشهرية

وكالات الأنباء العربية
الصحافة العربية خارجا الوطن العربي
الجرائد العربية إلىومية خارج الوطن العربي
المجلات الإنجليزية التي لها نشرات باللغة العربية أيضاً

مصادر التعليم:

الكتب الرئيسية:

1. تاريخ الصحافة العربية،بيروت
2. المواقع الشبكية الشهيرة للجرائد والمجلات والقنوات والإذاعات العربية
3. موسوعةالمورد،منيرالبعلبكي،دارالعلم للملايين،بيروت،1983م
4. الصحافة بين التاريخ والأدب،الدكتور محمد سيد محمد،دارالفكر العربي، القاهرة،1985م

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BS in Arabic

Course-III

List of Arts and Humanities
Description of Courses
اردو

(الف)

۱۔ زبان کیا ہے؟ ۲۔ زبانوں کے خاندانوں کا تعارف ۳۔ اُردوزبان کے مختلف نام اور ان کی وجہ تسمیہ

(ب)

۱۔ زبان اور ادب، ادب اور سماج ۲۔ اصنافِ ادب کا تعارف ۳۔ شعری اصناف ادب

۴۔ شعری اصناف بہ لحاظِ موضوع(حمد، نعت، قصیدہ، مرثیہ، ہجو، شہرآشوب، واسوخت، ریختی، غزل)

۵۔ شعری اصناف بہ لحاظِ ہیئت(مثنوی، رباعی، قطعہ، مسمط، ترکیب بند، ترجیع بند، مستزاد، نظمِ معریٰ، آزاد نظم، نثری نظم)

Final Term:

(ج)

۱۔ نثری اصناف ادب کی شعریات ۲۔ نثری اصناف کے مزاج اور اسالیب ۳۔ نثری اصناف کا تعارف

۴۔ افسانوی نثر(داستان، ناول، افسانہ، ڈراما)

۵۔ غیر افسانوی نثر(سوانح عمری، آپ بیتی، خاکہ نگاری، سفرنامہ، رپورتاژ، انشائیہ، مضمون، کالم، مکتوب)

مجوزہ کتب:

۱۔زبان کیا ہے؟ پروفیسر خلیل صدیقی

۲۔اصنافِ ادب اردو ڈاکٹر خلیق انجم

۳۔اصنافِ نظم و نثر ڈاکٹر علی محمد خان، ڈاکٹر اشفاق ورک

۴۔اصنافِ ادب ڈاکٹر رفیع الدین ہاشمی

۵۔ادبی اصناف اور شعری ہئیتیں شمیم احمد

۶۔اصنافِ شاعری افتخار شفیع

۷۔اصنافِ نثر افتخار شفیع

۸۔فن اور فیصلے یحییٰ امجد

BS FC

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BS in Arabic

Course-IV

بسم الله الرحمن الرحيم

عنوان المقرر: العربية الوظيفية (III)
Course Title:Functional Arabic III.F4

الساعات المعتمدة: 3ساعات

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

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل الثاني

رمز المقرر: عربي 01404 **CourseCode:ARB-01404**

الأهداف:

1. أن يتمكن الطالب من تطبيق اللغة العربية.
2. أن يتعرف الطالب على الكتب الرئيسة لتعلم اللغة العربية.
3. أن يدرس الطالب اللغة العربية و يتمرن و يختبر و يستعمل اللغة العربية في حياته اليومية.

مفردات المقرر -الموضوعات الدراسية:

الوحدة الحادية عشر(الإسلام)
الوحدة الثانية عشرة(الشباب)
اختبر نفسك(الوحدتان 11-12)
الوحدة الثالثة عشرة(العالم الإسلامي)
الوحدة الرابعة عشرة(الأمن)
اختبر نفسك(الوحدتان 13-14)
الوحدة الخامسة عشرة(التلوث)
الوحدة السادسة عشرة(النظافة)
اختبر نفسك(الوحدتان 15-16)

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الحوار عن المكتبة والكتب المحادثة بين المسافر والمقيم الحوار بين الطلاب عن نتائج الامتحان .

مصادر الدراسة:

الكتب الرئيسية:

1- العربية بين يديك في تعليم اللغة العربية لغير الناطقين بها،الجزء الأول،لعبدالرحمٰن ومختارطاهر حسين ومحمد عبدالخالق،مشروع العربية للجميع،مؤسسة الوقف الإسلامي ، 2002م-

2- دروس اللغة العربية لغير الناطقين بها،للدكتور:ف عبدالرحيم مطابع الجامعة الإسلامية،المدينة المنورة 2000م

3- معلم الإنشاء (الجزء الرابع)مولانا عبدالماجد ندوي ومولانا محمد رابع حسني ندوي مجلس نشريات اسلام،كراتشي،1995م

BS Fourth Semester 2

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BS in Arabic

Course-V

Title: Applied Grammar F-5

الساعات المعتمدة: 3ساعات

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

المستوى التي سيتم تقديم هذا المقرر فيه: الفصل الرابع

CourseCode:ARB-01405 **رمز المقرر: 01405**

الأهداف:

أولاً:المعرفة:

1. تعرف الطالب على علم النحو و أساسياته.
2. القدرة على تمييز أقسام الكلمة، و أقسام الإسم، و أقسام الحروف.
3. الإلمام بعلامات المبني و المعرب.
4. معرفة أساسيات علم الصرف، و تقسيمات الفعل إلى الثلاثي المجرد و المزيد فيه و الرباعي و المزيد في الرباعي ة تصريفه.
5. ضبط الطالب لأركان الجملة الإسمية و الفعلية، و ما يتعلق بها من تعريف و تنكير و تقديم و تأخير، و مبتداء و خبر.
6. معرفة أدوات النصب و الجر و الأفعال الأخرى.
7. معرفة القواعد الأساسية للغة العربية.
8. معرفة قواعد الإعلال و الإبدال في اللأفعال.
9. معرفة المركبات في الجمل.
10. معرفة أبرز مصادر الدراسة العلمية للمقرر.

ثانياً: المهارات:

أن يكتسب الطالب المهارات الآتية:

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1. إكتساب مهارة النطق السليم للمبني و المعرب إعراباً فرعياً.
2. أن يميز الطالب بين المعرب و المبني، و الجامد و المتصرف، من الأسماء و الأفعال.
3. القدرة على تطبيق القواعد الذي دراسها في الكتابة و المحادثة.
4. إكتساب مهارة إعراب الكلمات و وضع الحركات في المكان المناسب.
5. القدرة على تصحيح الجمل و العبارات.
6. القدرة على تحديد الحروف و الكلمات و الأسماء و الأفعال.
7. إعداد بحوث و محاضرات من مفردات المقرر تحت إشراف الأستاذ.
8. إدراك الطالب للأخطاء فيما يكتب يقراء أو يسمع.

مفردات المقرر -الموضوعات الدراسية

مراجعة لما سبقت دراسته فى الفصل السابق
العلامات الإعرابية
المعرب و المبني
الأفعال المبنية
الأسماء المبنية
علامات الإعراب علامات البناء
تدريبات تطبيقية و إعرابية
الجامد والمشتق
المتصرف
الفعل الثلاثي المزيد و أبوابه مع جميع صيغ الزوائد مزيد بحرف
الإسم الممنوع من الصرف و علاماته
تدريبات تطبيقية و إعرابية
الفعل الثلاثي المزيد و أبوابه مزيد بحرفين
الأسماء الستة و إعرابها الأسماء الخمسة و إعرابها الأفعال الخمسة و إعرابها أسماء الزمان و المكان
تدريبات تطبيقية و إعرابية
الفعل الثلاثي المزيد و أبوابه مزيد بثلاثة أحرف

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إن و أخواتها (ذكرها، عملها، معانيها)
كان و أخواتها (ذكرها، عملها، معانيها)
تدريبات تطبيقية و إعرابية
الفعل الرباعي و أبوابه مصادر الأفعال الرباعية الرباعي المزيد المصادر الصريحة و المصادر المؤولة
لا النافية للجنس، معناها، شروط عملها
أدوات النصب
تدريبات تطبيقية و إعرابية
أدوات الجزم
تدريبات تطبيقية و إعرابية
أدوات الإستفهام
تدريبات تطبيقية و إعرابية
أنواع الخبر
تدريبات تطبيقية و إعرابية
أسماء التفضيل
أنواع الجمع (جمع تكسير و أقسامه) جمع منتهى الجموع جمع الجمع شبه الجمع
تدريبات تطبيقية و إعرابية

المركبات مركب جاري مركب توصيفي مركب إضافي مركب عددي
تدريبات تطبيقية و إعرابية
القلب و الإبدال قواعد القلب و الإبدال قلب الواو و الياء ألفاً قلب الواو ياء
تدريبات تطبيقية و إعرابية
قواعد القلب و الإبدال الأخرى
مراجعة ماسبقت دراسته
مراجعة ماسبقت دراسته من مواضيع النحو و الصرف في الفصل الأول

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مصادر الدراسة:

الكتب الرئيسية:

1. **قواعد اللغة العربية الميسرة**، د فهمي النجار، الطبعة الأولى 2007، النشر: مكتبة الملك فهد الوطنية، الرياض.

2. **القواعد العربية الصحيحة**،(ثلاثة أجزاء)، تإلف جماعة من الأساتذة. النشر: منشورات دار مكتبة الحياة- بيروت. 2000م

3. **التذكرة في قواعد اللغة العربية**، محمد خليل باشا، النشر: عالم الكتب،بيروت، الطبعة الثانية. 1998م

4. **الموجز في قواعد اللغة العربية**، سعيد الأفغاني، الناشر دار الفكر، بيروت. 1978م

5. **دروس اللغة العربية لغير الناطقين بها**، د. عبد الرحيم، النشر: مطابع الجامعة الإسلامية، المدينة المنورة.2001م.

6. **تطبيقات الوافي في النحو و الصرف** ، تإلف د. حبيب يوسف مغنية، النشر: منشورات دار مكتبة الهلال. 1998م

7. **قواعد الصرف بأسلوب العصر**، تإلف الدكتور محمد بكر إسماعيل، النشر: دار المنار.1999م

8. **التطبيق النحوي**، تإلف عبده الراجحي، النشر: مكتبة المعارف للنشر و التوزيع، الرياض. (الطبعة الثانية).1977م

BS Fourth Semester

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BS in Botany

Course-I

Instructor		Email:	
Course Title	Introduction to Psychology	Program	BS
Course Number	PYSC-01401	Credit Hours	3(3+0)

Lecture	……day: …. period (00:00a.m to 00: 00a.m), Room# 00

Course Objective:

The main objective is to familiarize students with history, main concepts, methods, and theoretical frameworks in psychology.

The course will help students to appreciate the human nature and its related concepts, thereby will gain insight into human behavior and human relationships.

Methods of Teaching

Assigned readings
Group activities & Discussion
Audiovisual aids lectures
Web-assisted instruction
Student-Directed Teaching

Resource Material

1. **Text Books**
   i. Atkinson R. C., & Smith, E.E (2000).Introduction to psychology (13th ed.).
   ii. Coon, D., & Mutterer,J. (2008).Introduction to psychology:Gateways to mind and behaviour (12th ed.). USA: Wadsworth Cengage Learning
   iii. Fernald, L. D., & Fernald, P.S (2005).Introduction to psychology.USA;WMC Brown Publishers.
   iv. Fredrickson, B., Nolen-Hoeksama, S., Loftus, G., & Wagenaar, .(2009).Atkinson & Hilgard's introduction to psychology(15th ed.).USA: Wadsworth.
   v.

2.Reference Books		3.Research Papers	
i		i	
Ii		ii	
4.Hot Research Papers		**5.Web Resources**	
i		i	
Ii		ii	

Office Help Hours	
Grading	Exam (Date to be announced) Mid- Exam (20%) Final Exam (70%) Problem Session/Assignments (10%)
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	Psychology: Scientific perspective, Historical perspective		
2	Schools of Psychology, Methods of psychology		
3	Ethical issues, Fields of Psychology and their application		
4	Neuron and its function		
5	Central nervous system		
6	Introduction to Sensation: All senses		
7	Introduction to perception, Gestalt principles		
8	Binoculars and monocular cues, Illusions and extra sensory perception		

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9	Learning, types of learning		
10	punishment and its effects, Latent and observational learning		
11	Defination and types of memory		
12	process and techniques of improving memory		
13	Forgetting: Nature and causes		
14	Student presentation and assessment		
15	Class discussion		
16	Class test and quiz		
	Mid Term Exam	Course/Discussion from session 1 to 16	
17	Concept of cognition, problem solving, judgmet and decision making		
18	Language development, Language and cognition, Language and culture		
19	Concept of intelligence, Theories of intellignce, Assessment of intellignce		
20	Mental retardation, Concept of creativity and its stages		
21	Introduction to motivation, Factors affecting motivation		
22	Introduction to emotions, types of emotions		
23	Physiology and emotion, Theories of emotion		
24	Defining personality, Theories of personality		
25	Personality assessment		-
26	Social facilitation, Attribution Theory		-
27	Conformity, Obedience		-
28	Crowd behavior, Helping behavior		-
29	Class presentation and assessment		-
30	Class discussion and Assessment		
31	Course discussion from session 1-32		
32	Class test and quiz		
	Final Term Exam	Course/Discussion from session 1- 32	

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BS in Botany

Course-II

Instructor		Email:	
Course Title	Laboratory Techniques in Plants	Program	BS Botany
Course Number	BOTA-01402	Credit Hours	4(2+2)
Lecture			
Lecture			

Course Objective:

To provide the students understanding about principles of microscopy and
To learn basic laboratory techniques to study fresh and preserved plant materials
To provide hands on practice on various laboratory techniques involved in plant investigations.

Course Outcomes:

Methods of Teaching

2. Assigned readings √
3. Group activities & Discussion √
4. Audiovisual aids lectures √
5. Web-assisted instruction √
6. Student-Directed Teaching √

Resource Material

Books Prescribed:

v. Campbell, M.K. and F. Shawn. 2008. Biochemistry 6th Edition.
vi. Heldt, H-W. 2008. Plant Biochemistry. 3rd Edition, Academic Press, U.K.
vii. Goodwin T. W. and Mercer, E. I. 1997. Introduction to Plant Biochemistry. Pergamon Press, Oxford.
viii. Dickison, W. C. 2000. Integrative plant anatomy. Academic Press, U. K.
ix. Fahn, A. 1990. Plant Anatomy. Pergamum Press, Oxford.
x. Esau, K. 1960. Anatomy of Seed Plants. John Wiley, New York.
xi. Metcalf, C. R. and Chalk, L. 1950. Anatomy of the Dicotyledons. Clerondon Press. Oxford.

2.Reference Book		3.Research Papers	
i	Schultz J.C. 2005. World of the Cell	i	
ii		ii	
4.Hot Research Papers		5.Web Resources	
i		i	Plant Physiology & Biochemistry
ii		ii	Annual Review of Plant sciences

Office Help Hours	
Grading	Exam (Date to be announced) Mid- Exam (20%) Final Exam (70%) Problem Session/Assignments (10%)
Problem Session	

SEQUENCE OF TOPICS TO BE COVERED

Session	Topics (outline of main topics and sub topics)	Chapter #	Tutorial /Laboratory
1	Introductory lecture to the subject		1. Preparation of anatomical and surface slides through hand and microtome sectioning.
2 & 3	General Laboratory Glassware and care, Laboratory safety measures.	**Lab. Safety**	
4 & 5	Elementary Microscopy and principals of optics: light microscopy, Magnification, Resolution, contrast.	**Microscopy**	
5 & 6	Types of microscopy: Phase contrast, Dark field and Electron microscopy.	**-do-**	
7& 8	Collection and handling of material- (Anatomy, Chromosomal study and mycorrhiza).	**Sample Handling**	2. Study of morphology and reproductive structures of the types mentioned in theory.
9&10	Principles and methods involved in the killing, fixing and storage of materials, Chemicals used and their properties.	**-do-**	
11&12	Recipes and preparations of important fixatives, Dyes and related reagents and solutions.	**Recipes**	
13&14	Histo-chemistry, plant crystallography, localization of various chemicals in plant tissues.	**Histo-chemistry**	

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15, 16	Introduction to Histology-1, histological studies in plant and animal tissues by fixation, decalcification of animal tissues, dehydration.	**Histology-1**	3. Handling and preparation of slides for staining of various plant tissues.
	Mid Term Exams		
17&18	Impregnation and Embedding techniques, Section cutting staining and mounting procedures. **Project Assignment**.	**Histology-2**	4. Study of morphology and reproductive structures of the types mentioned in theory.
19&20	Use of stage and Ocular micrometer, calibration of ocular micrometer. Size measurement of different microscopic objects.	**Micrometry**	
21&22	Procedures for whole mounts and smears, collection of algae and pond microorganisms and microscopy.	**Procedures**	
23 &24	Centrifugation, Ultra centrifugation, cell fractionation, Cell fractionation, filtration, Distillation.	**Extraction techniques**	5. Identification of various types mentioned from prepared slides and fresh collections.
25&26	Chromatography: principle, applications types, thin layer chromatography, column and ion exchange chromatography.	**Separation techniques**	
27&28	Principle and applications.	**Electrophoresis**	
29	Biological photography and importance.	**Photography**	
30	Presentations and work on the project	**Assignments**	6. Handling and preparation of slides for staining of Various plant tissues.
31	Course/Discussion from session 1- 28	**-do-**	
32	**Final Term Exam**		

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BS in Botany

Course-III

Class	BS 4th Semester	Session	
Instructor		Email	
Course Title	Plant Physiology and Ecology	Program	BS Botany
Course Code		Credit Hours	4(3+1)

Course Objectives:

Physiology is the study of function. In this course we will explore the link between form and function in plants. Approach will be primarily at the whole organism level. Laboratory experiments will reinforce the lecture topics. Students will be exposed to current research in plant physiology through lecture specific objectives of this course will be to understand the following topics: cell structure and function, water relations, conduction of water and organic matter, the role of mineral nutrients in growth and development, the metabolic processes of photosynthesis and respiration, hormonal regulation of growth and development, movement in plants.

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Method of Teaching:

- Assigned Reading
- Group activities and Discussions
- Audio visual aids lectures
- Web assisted instruction
- Student-Directed Teaching

Lecture	
Resource Material	**Reference Books**: Taiz, L. and Zeiger, E. 2006. Plant Physiology. 4th. Ed. Sinauers Publ. Co. Inc. Calif. Schultz, J.C. 2005. Plant Ecology. Springer-Verlag, Berlin. Ricklefs, R.E. 2000. Ecology. W.H. Freeman and Co., UK. Ricklefs, R.E. 2001. The Economy of Nature. W.H. Freeman and Co., UK.
	Journals / Periodicals:
Grading	

SEQUENCE OF TOPICS TO BE COVERED

Session#	Topics(Outline of main topics and Sub topics to be covered)	Chapter#	Tutorial/Laboratory
1.	Introductory lectures about Plant Physiology and Ecology		Preparation of specific Normality of acids, bases
2 & 3	Solutions, types. Water relations (water potential, osmotic potential, pressure potential, matric potential).		Molal and molar solutions And their standardization
4 & 5	Absorption and translocation of water. Passive and active transport of nutrients.		
6 & 7	Stomata regulation. Theories regarding Mechanism of opening and closing of stomata.		Measurement of leaf water Potential by tissue volume method
8 & 9	Photosynthesis: History of photosynthesis, Nature and units of Light, Ultrastructure of thylakoid vesicle. Various pigments and photosynthetic activity		Measurement of leaf water Potential by falling drop method
10 & 11	Electron and proton transport through thylakoid protein – pigment complexes, Photophosphorylation and its mechanism, CO_2 reduction (dark reactions)		

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			Chemical tests for following Cell constituents: Starch, Cellulose
12 & 13	Respiration: Definition and respiratory substrates. Respiratory Quotient. Glycolysis, Krebs cycle.		Chemical tests for following Cell constituents: Lignin Proteins
14 & 15	Electron transport chain and Anaerobic respiration		Extraction of chloeophyll from leaves
16	**Mid Term Examination**		
17 & 18	Phototropism: Definition, historical background, Classification of plants based on phototropic response,		Measurement of vegetation by quadrat method and line intercept method
19 & 20	Dormancy: Definition and causes of seed and bud dormancy; methods of breaking seed dormancy. Physiological processes during seed germination.		Field trips to ecologically diverse habitats
21 & 22	Introduction, aims and applications of ecology.		
23 & 24	Soil as an ecological factor and its importance.		
25 & 26	Light and Temperature. Quality of light, diurnal and seasonal variations. Ecophysiological responses. Water: Field capacity and soil water holding capacity.		
27 & 28	Water as an ecological factor and its water importance. Water cycle		
29 & 30	Characteristics of xerophytes and hydrophytes. Effect of precipitation on distribution of plants.		
31	Wind as an ecological factor and its importance		
32	Final Term Examination		

Student Evaluation Criteria

Attendance	10%
Workshops/Assignments/Case study	
Surprise Test/Sudden Test/Quizzes	
Class Participation	
Mid term Paper	20%
Final Term Paper	70%
Total	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-IV

Class	BS 4th Semester	Session	
Instructor		Email	
Course Title	Biodiversity & Conservation	Program	BS Botany
Course Code	BOTA-01404	Credit Hours	3(2+1)

Course Objectives:

- To familiarize the students with the diversity of nature. Importance of biodiversity for survival and proper functioning of ecosystems.

Method of Teaching:

- Assigned Reading
- Group activities and Discussions
- Audio visual aids lectures
- Web assisted instruction
- Student-Directed Teaching

Lecture	Mon, Tues, Wed: 12:20-01:20

Resource Material

Reference Books:

1. Abbasi, A. M., Khan, M. A., M. Ahmad and M. Zafar. 2012. Medicinal plant biodiversity of Lesser Himalaya Pakistan. Springer Publishers USA.
2. Hussain, F., 1991. Vegetation and ecology of lesser Himalaya. Department of Botany, Peshawar
3. Shinwari, M. I. and M. A. Khan. 1998. Ethnobotany of Margalla Hills. Department of Biological Sciences, Quaid-i-Azam University Islamabad Pakistan.
4. Shinwari, M. I., M. I. Shinwari and Shah, M. 2007. Medicinal Plants of Margalla Hills National Park Islamabad. Higher Education Commission Islamabad. Pp.218.
5. Provincial conservation strategies
6. Heywood, V. (ed.). 1995. Global Biodiversity Assessment. Published for the United Nations Environment Programme. Cambridge University Press, Cambridge, UK.
7. Falk, D. A. & Holsinger, K. E. 1991. Genetics and Conservation of Rare Plants. Center for Plant Conservation. Oxford University Press, Oxford, UK.
8. Frankel, O. H., Brown, A. H. D. & Burdon, J. J. 1995. *The Conservation of Plant Biodiversity*. Cambridge University Press, Cambridge, UK.
9. IUCN. 1994. *IUCN Red List Categories.* As Approved by the IUCN Council. IUCN.
10. Leadlay, E. and Jury, S. 2006 Taxonomy and Plant Conservation. CUP.
11. Bush, M. B. 1997 Ecology of a changing Planet. Prentice hall. New Jersy.
12. French, H. 2000 Vanishing Borders- protecting the Planet in the age of globalization. W. W. Norton & Co.
13. Swanson, T. 2005 Global Action for Biodiversity. Earth Scan Publication Ltd.
14. Taylor, P. 2005 Beyond Conservation. Earth Scan Publication Ltd.

Journals / Periodicals:
Systematics and Biodiversity, Biological Conservation.

Grading

Exam(Date to be announced)
Mid term Exam(20%) Final Exam(70%)
Problem Session/Assignment(10%)

SEQUENCE OF TOPICS TO BE COVERED

Session#	Topics(Outline of main topics and Sub topics to be covered)	Chapter#	Tutorial/Laboratory
1.	Biodiversity : Definition, types and threats		

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			1. Inventory of plant biodiversity in various habitats.
2 & 3	Threats to Biodiversity; deforestation, over grazing, erosion, desertification, ecosystem degradation, bio invasion, pollution and climate change		
4 & 5	Biodiversity of Pakistan		
6 & 7	Measuring biodiversity: Alpha, Beta and Gamma diversity; Systematic and functional diversity.		
8 & 9	Ecological services, indirect value of ecosystem by virtue of their ecological functions, direct value of ecosystem (i.e. Utility of Bio resources		
10 & 11	Sustainable and unsustainable use of biological resources		
12 & 13	Biodiversity Hot spots of Pakistan and the world		2. Field survey for baseline studies and Impact Assessment.
14 & 15	International treaties/agreements regarding Biodiversity and conservation; CBD, CITES, Ramsar		
16	Mid Term Examination	Course/ Discussion from 1 to 15	
17 & 18	Conservation strategies; *in situ, ex situ, in vitro* conservation		Identification of wild plant species used by local communities in different ecosystems.
19 & 20	Conservation *vs* preservation		
21 & 22	IUCN categorized protected areas in Pakistan; red listing		
23 & 24	Environmental Impact Assessment		
25 & 26	Use of herbarium and Botanical Garden in biodiversity and conservation.		
27 & 28	Concept of pastures and wild life management		
29 & 30	Global Biodiversity Information Facility (GBIF)		
31	Course/ Discussion from 10 to 16		
32	Final Term Examination		

Student Evaluation Criteria

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

Instructor		Email:	
Course Title	Animal Evolution	Program	BS
Course Number	BOTA-01405	Credit Hours	3(2+1)
Lecture	day: .... period (00:00a.m to00: 00p.m), Room# 00		

Course Objective:

Evolution is the process of change in all forms of life over generations, and evolutionary biology is the study of how evolution occurs. Biological populations evolve through genetic changes that correspond to changes in the organisms' observable traits. Genetic changes include mutations, which are caused by damage or replication errors in organisms' DNA. As the genetic variation of a population drifts randomly over generations, natural selection gradually leads traits to become more or less common based on the relative reproductive success of organisms with those traits. **Animal evolution** will deal: how long have animals existed on Earth? What were the earliest members of the animal kingdom, and what organism was their common ancestor? And modern concepts of natural selection?

Methods of Teaching

1. Assigned readings
2. Group activities & Discussion
3. Audiovisual aids lectures
4. Web-assisted instruction
5. Student-Directed Teaching

Resource Material

1. Text Books

i. Ridley, M. Evolution. 1993. Blackwell Scientific Publication.
ii. Dobzhansky, T., Ayala, F.J., Stebbins, G.L. and Valentine, J.W. Evolution. 1973. W.H. Freeman and Company.
iii. Dobzhansky, T. Genetics and the Origin of Species, 1951. Columbia University Press, New York.
iv. Mayer, E. Population, Species and Evolution, 1965. Harvard University Press.
v. Moody, P.A. Intoduction to Evolution, 1989. Harper and Row Publishers, New York.
Strickberger, M.W. Evolution. 2000. Jones and Barrett Publishers.

2.Reference Books		3.Research Papers	
i		i	
Ii		ii	
4.Hot Research Papers		**5.Web Resources**	
i		i	
Ii		ii	

Office Help Hours

Grading

Exam (Date to be announced)
Mid- Exam (20%) Final Exam (70%)
Problem Session/Assignments (10%)

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	Course introductory lecture.		
2&3	The nature and origin to life. Evidences of evolution. (Molecular, embryological & paleontological).		Study of preserved invertebrate species.
4&5	Theories to explain the diversity of life. Modern synthetic theory.		Classification of invertebrates' upto class level.
6&7	Factors initiating elementary changes (microevolution) by changing gene frequencies, mutation pressure, selection pressure, immigration genetic drift and cross breeding		Collection of common species.
8&9	Role of isolation in evolutiok.		
10&11	Factors of large evolutionary changes (macro/mega evolution).		
12&13	Allometry, Orthogenesis, Adaptive radiation.		
14&15	Class discussion		
16	Class test and quiz.		

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	Mid Term Exam		
17&18	Modern concept of Natural selection. Level of selection, selection patterns.		
19&20	Laboratory and field examples regarding action of Natural selection.		Preservation and identification of common species with the help of keys
21&22	Action of Natural selection leading to convergence, radiation, regression and extinction.		Preparation of keys for the identification of specimens.
23&24	Batesian mimicry, Mullerian mimicry.		
25&26	Sexual selection. Darwin concept, Fisher views, Zahavi handicap theory.		
27&28	Recapitulation theory.		
29&30	Trends and rates in evolution.		
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

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BS in Chemistry

Course-I

Course: English IV: Academic Reading & Writing

Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficientreaders armed with appropriate skills and strategies for reading andcomprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation,and integration of knowledge
- Write well organized academic texts including examination answers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
    - Using appropriate strategies for extracting information and salient points according to a given purpose
    - Identifying the main points supporting details, conclusions ina text of intermediate level
    - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
    - Interpreting charts and diagrams
    - Making appropriate notes using strategies such as mind maps, tables, lists, graphs.
    - Reading and carrying out instructions for tasks, assignmentsand examination questions
2. Enhance academic vocabulary using skills learnt in Compulsory English I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
    1. Plan their writing: identify audience, purpose and message (content)
    2. Collect information in various forms such as mind maps, tables, charts, lists
    3. Order information such as:
        - Chronology for a narrative
        - Stages of a process
        - From general to specific and vice versa
        - From most important to least important
        - Advantages and disadvantages
        - Comparison and contrast
        - Problem solution pattern

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5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast,cause and effect, for and against
   - Write good topic and supporting sentences and effective conclusions
   - Use appropriate cohesive devices such as reference wordsand signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St. Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). Oxford English for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: Cambridge University Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge University Press.
- Yorky, R. Study Skills.

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BS in Chemistry

Course-II

Course Title: Fundamentals of Analytical Chemistry
Course Code:
CHEM1411
Credit Hours: 3+1

Course Objectives:
The main objectives of this course are to introduce the students to introduce the sampling, analysis, data collection.

Introduction to Analytical Chemistry, Importance of Analytical Chemistry

Statistics and chemometrics: statistical calculations, confidence limits, tests of significance, correlation coefficient, propagation of error; sampling methods: representative samples, automation of sampling and sample treatment; experimental design; quality control and assurance, inter laboratory testing; Fourier transformation methods in data analysis. Method of analysis: working curve, standard addition and internal standard methods; volumetric and gravimetric methods; quantitative aspects of colorimetry; theory of different types of titrations: acid-base, precipitation, redox, complexometric, nonaqueous, etc.; use of analytical and quality control methods
acid Base equilibrium, types of acid , indicators, synthesis of Buffer, Buffer action, Buffer Capacity, Ionization of Water, pH.,

Experiments in advance analytical Chemistry/ Lab work

11. Standardization of given Acids & Bases.
12. Determine the A/L of $NaNO_2$
13. Determine the A/L of Ascorbic Acid / Benzoic Acid.
14. Determine the A/L of Aspirin
15. Determine the A/L of Boric Acid.
16. Determine the A/L of Ni (II) by Homogeneous Precipitation.
17. Determine the A/L of sulfate by gravimetric.
18. Determine the A/L of Ca and Mg by complxometric titration.
19. Determine the A/L of copper (II) by complexometry
20. Spot test of Ni, Fe, Cu, Mn, Cr, Co (II).

Recommended Books:

1. Skoog, D. A., West, P. M., Holler, F. J., Crouch, S. R., *Fundamentals of Analytical Chemistry*, 9th ed., Brooks Cole Publishing Company, (2013).
2. Christian, G. D., *Analytical Chemistry*. 6th ed., John-Wiley & Sons, New York, (2006).
3. Harris, D. C., *Quantitative Chemical Analysis*, 8th ed., W. H. Freeman and Company, New York,USA, (2011).

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BS in Chemistry

Course-III

CourseTitle: Foundation–V Biochemistry
Course Code: CHEM-01421
Credit Hours: 3+1

Course Contents:
Introduction to enzymes, Co-enzymes. Discovery, history and biological significance. Nature of the enzymes. Properties of enzyme: Substrate specificity, Coenzymes. Enzyme as versatile and exceptional catalysts. Classification of enzymes. The classical and the Enzyme Commission recommended methods of classification and nomenclature. Factors affecting the rate of enzymatic reaction: pH, Specificity. Enzyme kinetics. Basic principles and parameters of kinetic. Enzyme kinetics: activation energy, rate of enzymatic reaction. Enzyme kinetics: Michaelis-Menten kinetics. Deriving the M.M. equation and its modifications. Kinetics of bi-substrate enzyme-catalyzed reactions. Enzyme inhibition. Basic concepts. Reversible and irreversible inhibition. Competitive, non-competitive and uncompetitive inhibition. Allosteric Enzymes. Regulatory enzymes: Covalent and noncovalent regulatory enzymes. Multiple forms of enzymes, Zymogen, Lysozymes, Ribozymes (nature, structure and mechanism of action). Mechanistic models (Lock and Key and Induced Fit Models) of enzyme-catalyzed reactions. Mechanism of action of Chymotrypsin and Pancreatic Ribonuclease. Co-enzymes and vitamins. Applications of enzymes. Immobilized enzymes. Genetic mutation in enzymes and disease due to dysfunction of enzymes. Applications of enzymes (Industrial, Clinical, Environmental etc.). Concept of bioreactors. Biotechnology and enzymes.

Recommended Books:

1. Principles of Biochemistry by A.L. Lehninger, 1982, Worth Publish. Inc. USA.
2. Textbook of medical biochemistry. M.N. Chatterjea and Rana Shinde. 6th Edition.
3. Biochemistry by L. Stryer 2ed
4. Harper's Illustrated Biochemistry by R.K. Murray, D.K. Granner and V.W. Rodwell. 27th Edition. 2006.
5. Lippincott's illustrated reviews. Biochemistry. 3rd Edition. Series editors: R.A. Harvey and P.C. Champe. 2005. Lippincott Williams and Wilkins, USA
6. Singh, S. 2009. Textbook of Biochemistry. 4th Edition
7. Voet, D., Voet, J.G., Pratt, C.W. 2008. Principles of Biochemistry. Hoboken, John Wiley & Sons, Inc. 3rd Edition

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BS in Chemistry

Course-IV

Course Title: General (Life: Molecular Perspective)
Course Code: BIOL – 03401
Credit Hours: 3

Purpose of the Course and Approach to the Subject:
Prerequisite course is ―Cell Biology‖ or any related course. Progress in various branches of Life Sciences, particularly in Genetics, Microbiology and Biochemistry, has led to many fascinating discoveries made in the past few decades. Advances made in these fields have culminated into the development of a number of exciting new fields of knowledge like Molecular Biology, recombinant DNA technology, Gene Cloning, Biotechnology, Bioinformatics etc. This course focuses on introducing the undergraduate students to the basics of this fascinating world. Starting from Mendel's classical experiments and conclusions and traveling through the discovery of DNA structure by Watson and Crick the course will lead the students to the doorsteps of the modern day concepts in Molecular Biology. Special focus will be on the development and formulation of the Central Dogma, gene expression and the related issues.

Course Contents:
Introduction to molecular biology. History and development. Mandelian inheritance and DNA as a carrier of genetic information. Structure of DNA. Double helix. DNA fractionation and sequencing. Genes. Genome. Genetic information. Central dogma – the flow of genetic information. DNA Replication. Mechanisms of Prokaryotic and eukaryotic DNA replications. Mutations. Mutagenesis. DNA repair processes. Plasmids. Cosmids. Vectors. Restriction endonucleases. DNA polymerases. Ligase. RNAs. Types, structures and functions. Transcription. RNA polymerase(s) and mechanisms of transcription. RNA maturation. Post-transcriptional processing. Capping. Splicing. Tailing. Editing. Modification. Alternative messages. mRNAs, ribosome and translation. Genetic code. Aminoacyl tRNA synthetases. Translation. Post-translational processing. Maturation and folding. An outline of recombinant DNA methodology; potentials of recombinant DNA technology; future developments. DNA cloning methods; cloning vectors including plasmids, bacteriophages, cosmids, YAC vectors, shuttle and expression vectors; gene splicing, genomic libraries, screening methods for gene libraries. DNA cloning restriction enzymes; DNA ligase; tumor inducing (Ti) plasmids; Southern and Northern blotting; chromosome walking; PCR; site specific mutagenesis; production of proteins. Potentials of recombinant DNA technology; gene therapies; restriction fragment length polymorphisms and disease detection (e.g. cystic fibrosis); human genome project; somatic cell cloning, stem cell research, other future prospects; social and commercial considerations.

Recommended Books:

1. Freifelder, D. (1987). Molecular Biology. Boston, Jones and Bartlett Publishers, Inc.
2. Paolella, P. (1998). Introduction to Molecular Biology. New York, The McGraw Hill Companies, Inc.

3. Voet, D., J. G. Voet, et al. (2008). Principles of Biochemistry Hoboken, John Wiley & Sons, Inc.

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BS in Chemistry

Course-V

Entrepreneurship

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BS in Commerce

Course-I

Course	INTRODUCTION TO SOCIOLOGY	Credit Hours	3
Pre-Requisite	NONE	Semester	IV
Objectives	This course has been formulated to: • Build a confidence for Social Interaction and Relationship • Learn how they behave in Social Groups, Community, Social Institutions and with different Personalities.		

COURSE OUTLINE

1. **INTRODUCTION**

Basics:
Nature, scope and subject matter of Sociology; Brief historical development of Sociology; Introduction to Qura'nic Sociology; Society and community; Relationship with other social Sciences

Evolution and Recent Thoughts:
Social Interaction Processes: The study of social life; Exploring the global village; Sociology as a science; The Sociological imagination; The development of Sociology; Pioneers of Sociology

2. **SOCIAL GROUPS AND INSTITUTIONS**

Groups:
Definition and functions; Types of social groups

Institutions:
Definition; Structure and function of social institutions; Inter-relationships among various social institutions

3. **CULTURE, SOCIALIZATION, SOCIAL CONTROL AND STRATIFICATION**

Culture and related concepts

Meaning/Definition and aspects of culture; Elements of culture; Organization of culture; Other concepts, cultural relativism, sub cultures, ethnocentrism, cultural lag

Socialization and personality
Role and status; Socialization; Culture and personality

Deviance and social control
Definition and types of deviance; Juvenile delinquency; Formal and Informal method of social control

Social stratification
Approach to study social stratification; Caste class and race as basics of social stratification

4. **SOCIAL MOVEMENT, SOCIAL & CULTURAL CHANGE**

Concept of social movement
Definition; Theories of social movement; Social and cultural change; Collective

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behavior; Characteristics; Causes; Types; Social movements; Mob and crowd behavior

Social and cultural change
Definition of social change; Dynamics of social change; Impact of globalization on society and culture; Resistance to Change

Recommended Texts:

1. Horton and Hungt, Sociology, Latest Edition, McGraw Hill
2. Tischler, Hnry L, Introduction to Sociology, Latest Edition, Horcourt
3. Macionis, John J and Plummer, Ken, Sociology, A Global International, Latest Edition, Prentice Hall.

Pre-Note:
The University will opt either:
(1) English-IV (any appropriate course as per their discretion) or
(2) Information Technology in Business

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BS in Commerce

Course-II

Course: English IV: Academic Reading & Writing

Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficientreaders armed with appropriate skills and strategies for reading andcomprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation,and integration of knowledge
- Write well organized academic texts including examinationanswers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
   - Using appropriate strategies for extracting information andsalient points according to a given purpose
   - Identifying the main points supporting details, conclusions ina text of intermediate level
   - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
   - Interpreting charts and diagrams
   - Making appropriate notes using strategies such as mindmaps, tables, lists, graphs.
   - Reading and carrying out instructions for tasks, assignmentsand examination questions
2. Enhance academic vocabulary using skills learnt in CompulsoryEnglish I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
   1. Plan their writing: identify audience, purpose and message(content)
   2. Collect information in various forms such as mind maps,tables, charts, lists
   3. Order information such as:
      - Chronology for a narrative
      - Stages of a process
      - From general to specific and vice versa
      - From most important to least important
      - Advantages and disadvantages
      - Comparison and contrast
      - Problem solution pattern

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5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast, cause and effect, for and against
   - Write good topic and supporting sentences and effective conclusions
   - Use appropriate cohesive devices such as reference words and signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St.Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). Oxford English for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: Cambridge University Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge University Press.
- Yorky, R. Study Skills.

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BS in Commerce

Course-II

Course	INFORMATION TECHNOLOGY IN BUSINESS	Credit Hours	3
Pre-Requisite	NONE	Semester	III
Objectives	• This course introduces students to information and communication technology in a business environment and builds a foundation of digital literacy skills necessary for success in a technologically driven society. • Students will develop word processing, spreadsheet, database, desktop publishing, presentation software, and also, website design skills to some extent. • Throughout the course, there is an emphasis on digital literacy, effective electronic research and communication skills, and current issues related to the impact of information and communication technology.		

COURSE OUTLINE

1. INFORMATION TECHNOLOGY GROUNDWORK

In this unit students will create an electronic information technology reference manual of terms, and explain the key infrastructures related to information technology. Through investigation, students will develop an understanding of key information technology infrastructures, explore legal and ethical issues related to technology, understand the importance of ergonomics, navigate through the desktop, and have their data entry skills assessed.

The Challenges of Managing Information Systems and Technology

Understand how IT can add value; Determine the many components of IT management; Realization of the many stakeholders responsible to create IT success.

Information Technology Planning Process. Interview an organization for the purpose of documenting their I.T. planning process who what, where, why, when, how? If possible determine links to the organization's strategic plan.

2. APPLICATION SOFTWARE IN BUSINESS

In this unit students will enhance and/or develop their basic softwareapplication skills using specific application software, investigate web-page design software and Internet search engines, and assess their data entry skills on an ongoing basis. Each student will track his/her development using Software Competencies Checklists. Document production will focus

on the creation of correctly-formatted business documents in a culminating project that will require students to plan, make decisions, and create documents integrating the software applications. Documentscreated will be stored in files and folders that are logical and useful.

3. ELECTRONIC COMMUNICATION

In this unit students will complete readiness and remedial exercises and use electronic tools to enhance and/or develop their communication skills, develop an understanding of what e-mail is and how it works, investigate avariety of topics related to electronic communication, and apply their new, electronic-communication skills to create an electronic presentation.

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4. **GATHERING ELECTRONIC INFORMATION**

In this unit students will enhance and/or develop their ability to gather information from a variety of electronic sources; develop evaluation criteriato evaluate the electronic information gathered with respect to validity, bias, usefulness, confidentiality, and the degree to which it is up to date; develop an understanding of Internet connections; investigate dangersthat are associated with transmission of information; apply research and critical thinking skills in researching the business and communication etiquette of a designated culture; and apply their research findings to a variety of formats to be shared with classmates.

5. **CHIEF INFORMATION OFFICER (CIO) AND THE INFORMATION SERVICES RESOURCE**

CIO Reporting Model and CIO, IT staffing, organizing IT and risk management Access

Determine key skills, traits, levels of experience enabling the CIO to be successful. Understand the support area skills of the IT department, staff retention and overall management requirements, and how the IT organization structure is designed based on the type of industry, business use of IT, and strategy deployed. Critical assessment of sourcing IT support and technology and related decision making and outsourcing management.

General Overview of Management Information System; ERP Systems,Oracle and SAP, and their Use and Application.

Recommended Books:

1. Information Technology for Module-D of Chartered Accountancy, PBP Publications.
2. Computer tools for information age, Prentice Hall Publishers, LatestEdition.

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BS in Commerce

Course-III

Course	COST ACCOUNTING	Credit Hours	3
Pre-Requisite	Principles of Accounting, and Financial Accounting	Semester	IV
Objectives	This course will enable students: • Understand Cost Concepts, Objectives, Scope, Cost Flow and Classification, Cost Behavior and other associated Concepts • Understand and explain Material, Labor, Factory Overhead Costing and Control, • Accounting for Joint- and By-Products • Prepare Job-order Cost Sheet and Cost of Production Report		

COURSE OUTLINE

1. **CONCEPTS, AND SCOPE OF COST ACCOUNTING:**

   Definition and concept of cost, Cost object, Cost elements, Sources and uses of cost data, Cost accounting v / s financial accounting, Costing department and its relationship with other departments, Role of cost accounting in a management information system, Uses of cost data.

2. **COST CLASSIFICATION, AND FLOWS:**

   Direct and Indirect cost, Product and Period cost, Controllable and Uncontrollable cost, Cost Behavior, Fixed and Variable cost, Semi- variable and Step Fixed Cost, Cost Accounting Cycle/Flow, Chart of account and coding for costing, Statement of Cost of Goodsmanufactured and sold.

3. **MATERIAL COSTING AND CONTROL:**

   Procedure of material procurement, application of IAS-2. Two-bin system, The use of FIFO, and Weighted Average for Material Valuation and the pricing for material issue, Stock taking periodic and perpetual inventory, Treatment of differences between physical and book stock, Economic order quantity, Effect of quantity discount on EOQ, Reorder level, safety stock and maximum stock, ABC Control.

4. **LABOUR COSTING AND CONTROL:**

   Objectives of payroll accounting. Calculations and recording ofpayroll, payroll taxes and deductions. Direct and Indirect Labour, Productivity and efficiency, Remuneration methods, Straight piece rate and differential piece rate, Incentive wage plan, Group bonus,Time sheet and job cards, Overtime and idle time; Labour turnoverrate.

5. **FACTORY OVERHEAD COSTING AND CONTROL:**

   Classification and collection of overhead, Predetermined overhead applied rate, Factory overhead cost: planned, applied and actual, Over and under applied factory overhead' and its disposal, Departmentalization of overhead, Allocation, apportionment and reapportionment of overhead costs, Repeated Distribution and Algebraic Method for reciprocal, service department costs.

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6. TYPES OF COSTING SYSTEMS:

Establishment of cost accounting system, Integrated cost accounts, Introduction to process costing, Incomplete process and concept of equivalent units, Format of Process Account and Format of 'Cost of Production' Report, Job-order Costing, Costing for Joint- and By- products, Operation / service costing.

Recommended Book:

1. Cost Accounting by F. Usry, H. Hammer & Adolph Matz
2. Cost and Management Accounting Latest Edition by Collin Drury
3. Cost Accounting for CA Intermediate Stage student-Latest Edition by PBP (Professional business Publications)

Reference Books:

1. Costing Latest Edition by Emile Woolf
2. Cost Accounting by T. Lucy DP Publications, Aldyne Place 142-144 Uxbridge Road, Shepherds Bush Green, London W128AW
3. General Journals/Periodicals: Journal of Management Accounting, ICMAP

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BS in Commerce

Course-IV

Course	ADVANCED ACCOUNTING - II	Credit Hours	3
Pre-Requisite	Advanced Accounting-I	Semester	IV
Objectives	• This course is designed to serve the needs of Modern Accounting Principles, Procedures and Methods that are applied in *preparation* and *presentation* of financial statements, and the proper uses that can be made of financial data. • This course will have different relationships with the requirements of the various Professional Accountancy Bodies like ICAP, ICMAP, PIPFA and other significant universities in Pakistan. • This course will enable students learn some advanced Accounting Treatments and Techniques pertaining to Corporate Sector including Banking Corporations and Specialized Ventures/Mechanisms including Construction Contracts and Leases		

COURSE OUTLINE

1. IASB FRAMEWORK, IFRS / IAS AND THEIR APPLICATION IN PAKISTAN

The IASB's framework and objectives of financial statements; International financial reporting standards (IFRS 1 First-Time Adoption on International Financial Reporting Standard) and related information; Format of Income statement; Reporting Irregular issues; and Special Reporting issues

2. COMPANY FINAL ACCOUNTS, AND SPECIAL TREATMENTS

Completion of accounting cycle – Process; Year-end Adjustments, and their Treatment in the Financial Statements; Closing Entries; Components of Financial Statements; Preparation and Presentation of Income Statement and Balance Sheet; 4th Schedule (Listed Companies) of Companies Ordinance 1984; Relevant Provisions pertaining to Accounting, Reporting and Audit; 5th Schedule (Non-listed Companies).

3. CASH FLOW STATEMENT, AND STATEMENT OF CHANGES IN EQUITY, AND NOTES

Comprehensive Analysis of IAS – 7; Major Segments / Components of a Cash Flow Statement; Preparation and Presentation of a Cash Flow Statement as per IAS using both Direct and Indirect Method; Rigorous Analysis of a Cash Flow Statement from the Financial Statements of a Listed Company; Meanings and Use of a Statement of Changes in Equity; Major Segments / Components of the Statement of Changes in Equity; Rigorous Analysis of the Statement of Changes in Equity from the Financial Statements of a Listed Company; Nature, Meaning and Use of Notes to the Financial Statements

4. ANALYSIS OF FINANCIAL STATEMENTS (RATIO ANALYSIS)

Meanings of Analysis of Financial Statements; Major Classification of Analysis of Financial Statements Technical VS Financial Analysis; Dimensions of

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Financial Analysis of Financial Statements;

- Profitability
- Liquidity
- Solvency / Debt
- Activity
- Market

5. **Calculating and Interpreting Ratios on the Data extracted from the Financial Statements of a Listed Company PARTNERSHIP ACCOUNTING (Selected Topics-Capital, Retirement, Death & Dissolution)**

   Briefing about previous Topics covered in Advanced Accounting-I; Fixed and Fluctuating Capital; Retirement of a Partner, and its Accounting; Death of a Partner, and its Accounting; Dissolution of Partnership, and its Accounting

6. **BASIC UNDERSTANDING ABOUT FINANCIAL STATEMENTS (REPORTING) OF A BANKING COMPANY**

   Reporting Framework of a Banking Company; Role of SBP in the Financial Reporting Framework of a Banking Company; Basic Know-how of Financial Statements of a Banking Company by use of an AnnualReport of a Listed Commercial Bank

7. **LONG TERM LIABILITIES**

   Nature, and Definition/Meaning of Long-term Liabilities; Nature and Forms/Classes of Long-term Liabilities; Description of Formal Procedure associated with the Issuance of Long-term Debts; Issue of Bonds at Par, Discount and Premium, and Associated Accounting; Amortization of Discount and Premium; Preparation of Loan Amortization Schedule; Journal Entries for Bonds, Long-term Notes and Bonds Payable; Determining Periodic Interest Expense, and its Reporting in Income Statement; Presentation (Reporting) in Financial Statements

8. **CONSTRUCTION CONTRACTS (w.r.t. IAS-11)**

   Scope, and Definitions; Contract Revenue and Contract Costs; Recognition of Contract Revenue and Costs; Recognition of ExpectedLosses; Changes in Estimates; and Disclosure Requirements; Practical/Numerical Illustrations to understand all the necessary provisionsassociated.

9. **LEASES (w.r.t. IAS-17)**

   Scope, and Definitions; Classification of Leases; Accounting Treatmentsin the Books of Lessor and Lessee; Disclosure Requirement; Practical/Numerical Illustrations to understand all the necessary provisionsassociated.

Recommended Books:

1. International Financial Reporting Standards (**IFRS**) and International Accounting Standards (**IAS**) Latest Edition by ICAP
2. Kieso, Weygandt, and Warfield, Intermediate Accounting, Latest EditionWiley higher education. An Insight into IFRS by Mohyuddin Tahir Latest Edition
3. Javed H. Zuberi , "*Advanced Accounting*", Latest Edition, *Petiwala Book Depot.*
4. Mukherjee A. Hanif, "Modern Accountancy", Volume I-II. Latest Edition

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Reference Books:

1. Gateway to IFRS Latest Edition
2. Past Papers by ICAP, ICMAP and PIPFA covering above-cited Topics.
3. Gupta, R.L. & Swamy, M. Radha, "*Advanced Accounting*", Latest Edition, Sultan Chand & Sons
4. Shukla M.C & Grewal, T. S , "*Advanced Accounts*" Volume 1 and 2, Latest Edition. Sultan Chand & Sons.
5.

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BS in Commerce

Course-V

Course	PRINCIPLES OF MANAGEMET	Credit Hours	3
Pre-Requisite	NONE	Semester	IV
Objectives	This course is intended to: • Expose students to the theories of management, organizational theory, and the practice of management in contemporary organizations from a conceptual, analytical, and pragmatic perspective. • Allow students to develop their own framework for analyzing and understanding management as well as exploring and developing their own personal philosophy of management. • Communicate effectively, develop people, solve problems and making decisions, organize themselves and also would be able to work in team.		

COURSE OUTLINE

1. **INTRODUCTION TO MANAGEMENT: CONCEPTS AND THEORIES / EVOLUTION**

   Basic Concepts and Definitions: Efficiency, Effectiveness, Skills, Rolesetc.; Foundation of Management Thinking and Evolution: Various Schools of Thought

2. **ENVIRONMENTAL SCANNING AND CONSIDERATIONS**

   Environment, National Culture and Management Practices

3. **MANAGEMENT FUNCTIONS: PLANNING, AND ORGANIZING**

   Planning and Planning Tools/Techniques; Strategic ManagementProcess; The Escalation of Commitment: Step Toward an Organizational

   theory; Decision Making; Organizational Structure, and Culture; Human Resource Management; Change Management

4. **MANAGEMENT FUNCTIONS: LEADING AND CONTROLLING**

   Motivation: Concept, Use and associated Theories; Leadership & Leader's styles: Concept, Use and associated Theories; Team and Teamwork Management; Management Skills and Competencies; Managing Organizational Conflict, Politics and Negotiation; Controlling – Meaning, Components/Process and Classification.

5. **CONTEMPORARY MANAGEMENT FUNCTIONS / ISSUES / CHALLENGES**

   Communicating effectively; Technology, The market, Competition and the External environment; Internationalization and Globalization; Entrepreneurship; Stress Management; Professional Ethics and Social Responsibility including CSR; Corporate Governance and Due Diligence; New Management Paradigms

   Role of Accountants in Management Process especially in Decision- making;

Recommended Books:

1. Robbins, Coulter, Langton, *Management*, Latest Edition
2. Koontz O, Donnel. Management, Latest Edition

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3. Introduction to Management by John R. Schermerhorn and John Wiley & Sons, Inc., UK
4. Accountants in Business F1 Paper of ACCA.

Reference Books:

1. Mejia, Balkin, Cardy., *Management*, Latest Edition, McGraw-Hill.
2. Morden Tony, *Principles of Management*, Latest Edition, Ashgate.
3. Bateman, Snell. Management Competing in new era, Latest Edition, McGraw-Hill.
4. Smith & Hitt A. Michael, *Great Minds in Management (The Process of Theory Development),* Oxford University Press.
5. Management by James A.F. Stoner, R. Edward Daniel R. Gilbert

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Course-VI

Course	INFERENTIAL STATISTICS	Credit Hours	3
Pre-Requisite	NONE	Semester	IV
Objectives	This course will enable students: • Understand the terminology related to Inferential Statistics, and to understand the role of sampling theory in estimation of population parameters and testing of hypotheses concerning parameters. • Provide with the background in different Estimation Methods of population Parameters on the basis of a sample. • Develop an understanding about the set of rules that lead to a decision culminating in the acceptance or rejection of some statement or hypothesis about the population. • Provide with the necessary skills and competencies in using computer statistical package to assist in performing different inferential procedures required in a statistical analysisthrough practical application.		

COURSE OUTLINE

1. **REVIEW OF SAMPLING THEORY, SAMPLING DISTRIBUTIONS AND DATA DESCRIPTIONS:**

   Introduction to Sampling Theory; Types of Sampling; Random Sampling; Some Important Statistics; Data Displays and Graphical Methods; Sampling Error; Sampling Distribution of Sample Means and Variance; Properties of Sampling Distribution of Sample Means; Uses of CentralLimit Theorem; Uses of the Sampling Distribution of the Sample Mean; Sampling Distribution of Sample Proportion; Properties and Application; Software commands

2. **ONE AND TWO SAMPLE ESTIMATION PROBLEMS**

   Introduction to Statistical Inference; Branches of Statistical Inference (Estimation and Testing of Hypothesis); Need and Significance of Estimation and Type of Estimation (Point and Interval Estimation); Confidence Interval Estimation for single population Mean; Confidence Interval estimation for two population Means; Standard Error of a Point Estimate; Prediction Interval; Tolerance Limits; Interval Estimation for single population Proportion; Interval estimation for two population Proportions; Finite Population Correction Factor; Deciding the Sample Size; Software Commands.

1. **TESTING OF HYPOTHESIS**

   Introduction; Various types of Statistical Hypotheses; Type-I Error, Type-II Error; Probability of Type-I Error; One Tailed and Two Tailed Tests of Significance; Level of Significance and Concept of P-value; General Procedure for Testing Hypothesis

   One-Sample Tests of Significance
   Assumptions; Tests of Significance for Population Mean, Proportionand Variance; Testing Statistical Hypotheses; One Tailed and two tailed Tests of significances; The use of P-Values for Decision Making in Testing Hypotheses; Single Sample: Tests Concerning a single Mean (Variance Known); Relationship to Confidence Interval Estimation; Single Sample:

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Tests on a single Mean (VarianceUnknown); Choice of Sample Size for Testing Means; One Sample: Test on a Single Proportion; One Sample Test concerning Variances; Goodness-of-Fit Test; Test for Independence (Categorical Data); Software Commands

Two-Sample Tests of Significance

Assumptions; Statistical Hypotheses; Testing a Statistical Hypotheses; Two Tailed Tests; The use of P-Values for Decision Making in Testing Hypotheses; Two Samples: Test on two Means; Relationship to Confidence Interval Estimation; Choice of Sample Size for Testing Means; Tests of Significance for Two Population Means under various assumptions; Tests of Significance for Two Population Proportions under various assumptions; Tests of Significance for Two Population Variances; Graphical Methods for Comparing Means; Two Samples Test for population proportions; Two sample Test Concerning Variances; Goodness-of-Fit Test; Test for Independence (Categorical Data); Test for several Proportions; Software Commands

2. **CHI-SQUARE TESTS:**

   Tests for Association of Attributes; Chi-Square Procedure; Tests for Goodness of Fit (Uniform, Binomial, Poisson, Normal Distributions); Chi-Square Independence Tests

3. **ANALYSIS OF VARIANCE:**

   Introduction; Basic Concept as Testing Equality of More Than Two Means; One-Way Analysis of Variance; Two-Way Analysis of Variance; ANOVA Assumptions - One way ANOVA and Two way ANOVA; Inference about Pairs of treatment means; Software Commands

4. **COMPUTER COMPETENCY:**

   To achieve the practical proficiency, the computer package MINITAB and in some way the EXCEL will provide the computational assistance.

   More importantly, a general overview about SPSS, or any other latest Software will be provided to students

Recommended Books:

1. Lind, D.A., W.G. Marchal, S.A. Wathen, Latest Edition, "*Statistical Techniques in Business and Economics*".
2. Bowen, E.K., and M.K. Starr, Latest Edition, "*Basic Statistics Businessand Economics*".
3. Mclave, J.T., Benson P.G. and Snitch, T., Latest Edition, "Statistics for Business & Economics" Prentice Hall New Jersey.
4. SPSS Software and other Latest Software

Reference Books:

1. Spiegel, M.R., Schiller, J.L. and Sirinivasan, R.L., Latest Edition, "Probability and Statistics", Schuams Outlines Series. McGraw Hill. NY.
2. Clark, G.M. and Cooke, D. Latest Edition,, "A Basic Course in Statistics", Arnold, London.
3. Walpole, R.E., Myers, R.H. and Myers, S.L., "Probability and Statisticsfor Engineers and Scientist" Latest Edition,, Prentice Hall, NY.
4. Weiss, N.A., "Introductory Statistics" Latest Edition, Addison-Wesley Pub. Company, Inc.
5. Chaudhry, S.M. and Kamal, S. , "Introduction to Statistical Theory" Part I,II, Latest Edition, Ilmi Kitab Khana, Lahore, Pakistan.

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BS in Computer Science

Course-I

Database Systems					
Credit Hours:	3+1	**Course Code:**	COSC-2103	**Prerequisites:**	COSC-2101

Course Learning Outcomes(CLOs):

After the completion of this course the student should be able to:	Domain	BT Level
1. Understand the modelling of real-life information in a database system.	C	2
2. Use the languages designed for data access.	C	3
3. Design issues of an efficient and reliable database system.	C	4
4. Implement a practical application on a real database.	C	4

Course Contents:

Basic database concepts. Characteristics, advantages and implications of the database approach to information systems as contrasted with traditional integrated file systems. DBMS architecture. Roles involved with database systems. The database system environment including data models, schemas, database languages and interfaces. Three-schema architecture and data independence. Information analysis to identify query keys, candidate keys, entities, attributes, relationships and integrity constraints. ER modeling as a means of representing information concepts. Extended entity relationship modeling as it relates to specialization, generalization and inheritance. Relational model concepts. Referential integrity, entity integrity, and other constraints. Defining a relational schema from an ER diagram. Definition and use of relational algebra operations to query a relational database. Use of SQL to define a relational data model. Basic and complex queries in SQL. Insert, delete and update statements in SQL. Defining and using Views in SQL. Implement security with Grant/Revoke. Definition offunctional dependency, full functional dependency, transitive dependency and multi-valued dependency. Definition of the normal forms from un-normalized through 4th normal form and how to apply the normalization process to recognize normal forms. How to move a data model to a higher normal form and the issues of de-normalization as it applies to retrieval performance. Methods for extending database functionality to programming languages such as COBOL or Java. Description of pre-compliers, dynamic SQL, ODBC, and JDBC. Students will gain introductory experience with a programmatic interface to insert, update, delete and query data in a database.

Teaching Methodology:

Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations

Course Assessment:

Midterm Exam, Quizzes, Home Assignments, Case Study, Projects, Presentations, Final Exam

Reference Material:

1. Database Systems: Design, Implementation & Management by Thomas Connolly and Steven Morris, Cengage Learning, 13th Edition, 2018; ISBN-10: 1337627909
2. Modern database management by Jeffrey A. Hoffer, Ramesh Venkataraman and Heikki Topi, Pearson, 11th Edition, 2012; ISBN-10: 0132662256.
3. Database system concepts by Abraham Silberschatz, Henry Korth and S. Sudarshan, McGraw-Hill Education, 6th Edition, 2010; ISBN-10: 0073523321

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BS in Computer Science

Course-II

Operating Systems					
Credit Hours:	3 +1	**Course Code:**	COSC-2102	**Prerequisites:**	COSC-2101

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Describe how computing resources (such as CPU and memory) are managed by the operating system and the basic principles used in the design of modern operating systems.	C	2
2. Demonstrate competency in recognizing and using operating system features	C	2
3. Analyze the key trade-offs between multiple approaches to operating system design.	C	4
4. Evaluate the problems related to computer system, CPU scheduling and memory management.	C	5

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

Course Contents:

Introduction to Operating System, Computer-System Organization , Computer-System Architecture , Operating-System Structure , Process Management, Memory Management, Storage Management, Kernel Data Structures, Operating-System Services, User and Operating-System Interface ,Operating-System Design and Implementation, Operating-System Structure, System Boot, Process Concept, Process Scheduling, Operations on Processes,Threads, Multicore Programming, Multithreading Models , The Critical-Section Problem , Peterson's Solution, Semaphores , CPU Scheduling, Scheduling Criteria , Scheduling Algorithms, Thread Scheduling , Multiple- Processor Scheduling, CPU Scheduling, Deadlock, Deadlock Characterization, Methods for Handling Deadlock, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table, Disk Scheduling, Disk Management, File System Interface, Access Methods, Directory and Disk Structure, Virtual Machines, Distributed Systems, The Linux System, System Security and Protection, Virtualization.

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. Operating System Concepts by Abraham Silberszchats and Calvin, The MIT press, 9th Edition, 2013;ISBN-13: 9781118129388
2. Survey of Operating System by Jan and Charles Holcombe's , McGraw-Hill Science, 5th Edition, 2016; ISBN-13: 9781259618635
3. Principals of Operating Systems by Nearsh Chauhan, Oxford University Press, 1st Edition, 2014;ISBN-13: 9780198082873

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BS in Computer Science

Course-III

Computer Networks					
Credit Hours:	3+1	**Course Code:**	COSC-3101	**Prerequisites:**	None

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Understand the fundamental principles of communication and networking.	C	1
2. Explain the services and functions provided by each layer in the internet protocol stack.	C	2
3. Identify various internetworking devices and protocols, and their functions in a network.	C	3
4. Analyse working and performance of key technologies, algorithms and protocols.	C	4
5. Install network for small scale organizations.	C	5

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

Course Contents:

Introduction to Data Communications & Networks, Communication Components, Standards, Protocols, Network Topologies, Effectiveness of Communication, Types of Network, Layered Network Models (OSI Reference Model, TCP/IP Networking Architecture), Physical Layer Functionality, Data Link Layer Functionality, Network Layer Functionality, Transport Layer Functionality, Application Layer Functionality, Transmission Modes, Transmission Media, Transmission Impairments, Multiplexing Techniques, Multiple Access Techniques, Data Link Protocols, Layer 2 & Layer 3 Devices, Layer 2 & Layer 3 Addressing, Sub-netting, Super-netting/CIDR, Routing & Routed Protocols, Distance Vector Routing Protocols, Link State Routing Protocols, Network Address Translation, Circuit Switch Networks, Packet Switch Networks, Wireless Networks, Information Security, Network Security, Latest Trends in Computer Networks.

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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. Data Communications and Networking by Behrouz A. Forouzan, McGraw-Hill Science, 5th Edition, 2012;ISBN-10: 073376221
2. Data and Computer Communications by William Stallings, Prentice Hall, 9th Edition, 2010;ISBN-10: 0131392050
3. Computer Networks by Andrew S. Tanenbaum and David J. Wetherall, Prentice Hall, 5th Edition, 2010; ISBN-10: 0132126958

Computer Networks and Internets by Douglas E. Comer, Prentice Hall, 5th Edition, 2008;ISBN-10: 0136066984

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BS in Computer Science

Course-IV

Professional Ethics

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BS in Computer Science

Course-V

Differential equations

Differential Equations					
Credit Hours:	3	**Course Code:**	MATH-2122	**Prerequisites:**	None

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Identify, analyze and subsequently solve physical situations whose behavior can be described by ordinary differential equations.	C	1
2. Determine solutions to first order separable differential equations.	C	2
3. Determine solutions to first order linear differential equations.	C	3
4. Determine solutions to first order exact differential equations.	C	4

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

Course Contents:

Ordinary Differential Equations of the First Order: Geometrical Considerations, Isoclines, Separable Equations, Equations Reducible to Separable Form, Exact Differential Equations, Integrating Factors, Linear First-Order Differential Equations, variation of Parameters. Ordinary Linear Differential Equations; Homogeneous Linear Equations of the Second Order, Homogeneous Second-Order Equations with Constant Coefficients, General Solution, Real Roots, Complex Roots, Double Root of the Characteristic Equation, Differential Operators, Cauchy Equation, Homogeneous Linear Equations of Arbitrary Order, Homogeneous Linear Equations of Arbitrary Order with Constant Coefficients, Non- homogeneous Linear Equations. Modelling of Electrical Circuits. Systems of Differential Equations. Series Solutions of Differential Equations. Partial Differential Equations: Method of Separation of variables, wave, Heat & Laplace equations and their solutions by Fourier series method.

Lectures, Written Assignments, Practical labs, Semester Project, Presentations.

Course Assessment:

Sessional Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.

Reference Material:

1. Advanced Engineering Mathematics, Michael G. 1998, Prentice Hall Publishers. IBN-10:0133214311
2. Advanced Engineering Mathematics, 7th edition, Erwin, K. 1993, John Wiley & Sons Inc. ISBN 10 0471553808.
3. A First Course in Differential Equation Zill. Prindle. Weber. Schmidt. 1996. Brooks/Cole Publishing. ISBN 13 9780534931544.

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BS in Computer Science

Course-VI

Probability & Statistics					
Credit Hours:	3	**Course Code:**	STAT-2131	**Prerequisites:**	None

Course Learning Outcomes (CLOs):		
At the end of the course, the students will be able to:	**Domain**	**BT Level***
1. Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.	C	1
2. Explain the probability density function of transformations of random variables and use these techniques to generate data from various distributions.	C	2
3. Analyze probabilities, and derive the marginal and conditional distributions of bivariate random variables.	C	4
4. Evaluate the outline of a proof and be able to write a logical proof of a statement.	C	5
* BT= Bloom's Taxonomy, C=Cognitive Domain, P=Psychomotor Domain, A=Affective Domain		

Course Contents:

Introduction To Statistics And Data Analysis, Statistical Inference, Samples, Populations, And The Role Of Probability. Sampling Procedures. Discrete And Continuous Data. Statistical Modeling. Types Of Statistical Studies. Probability: Sample Space, Events, Counting Sample Points, Probability Of An Event, Additive Rules, Conditional Probability, Independence, And The Product Rule, Bayes' Rule. Random Variables And Probability Distributions. Mathematical Expectation: Mean Of A Random Variable, Variance And Covariance Of Random Variables, Means And Variances Of Linear Combinations Of Random Variables, And Chebyshev's Theorem. Discrete Probability Distributions. Continuous Probability Distributions. Fundamental Sampling Distributions And Data Descriptions: Random Sampling, Sampling Distributions, Sampling Distribution Of Means And The Central Limit Theorem. Sampling Distribution Of S2, T-Distribution, F-Quantile And Probability Plots. Single Sample & One- And Two-Sample Estimation Problems. Single Sample & One- And Two-Sample Tests Of Hypotheses. The Use Of P-Values For Decision Making In Testing Hypotheses (Single Sample & One- And Two- Sample Tests), Linear Regression And Correlation. Least Squares And The Fitted Model, Multiple Linear RegressionAnd Certain, Nonlinear Regression Models, Linear Regression Model Using Matrices, Properties Of The Least Squares Estimators.

Teaching Methodology:

Lecturing, Written Assignments, Presentation, Final Exam

Course Assessment:

Sessional Exam, Home Assignments, Quizzes, Report Writing, Presentation, Final Exam

Reference Material:

1. Probability & Statistics for Engineers & Scientists, MyLab Statistics Update by Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers and Keying E. Ye, Pearson; 9 Edition, (March 17, 2016). ISBN-10: 0134115856
2. Probability and Statistics for Engineers and Scientists by Anthony J. Hayter, Duxbury Press; 3rd Edition (February 3, 2006), ISBN-10:0495107573
3. Schaum's Outline of Probability and Statistics, by John Schiller, R. Alu Srinivasan and Murray Spiegel, McGraw-Hill; 3rd Edition (2008). ISBN-10:0071544259

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BS in Economics

Course-I

ECON 11401: ELEMENTARY MATHEMATICAL ECONOMICS

The Nature of Mathematical Economics

Pure and applied mathematics, the use of mathematical tools in social sciences, particularly in economics, Economic theory (logical argument) as description of relationship between variables, mathematical support: expression of theory in functional form, explaining properties of economic parameters like elasticity, propensity to consume etc., verification of hypotheses and the use of mathematical models, parameters and variables (dependent and independent), linear and non-linear functions: quadratic, polynomial, circular, types of function: constant, rational, non-algebraic, logarithms & exponential, rules of logarithms and exponents, functions of more than two independent variables, graph of various functions, the importance and limitation of mathematical models.

Equilibrium Analysis in Economics

Equation of straight line: intercept and slopes parameters and the economic interpretation, partial and general equilibrium analysis, single and simultaneous equation models, example from market models, demand and supply equations, determination of price quantity, calculation of elasticities at equilibrium, the effect of an exercise tax of market equilibrium, national income determination: closed economy with goods and money markets.

Linear Models and Matrix Algebra

Simultaneous equations models and the use of matrices, types of matrices: square, identity, null, idempotent, diagonal, transpose and the properties, laws of matrix operations: addition/subtraction, scalar and vector multiplication, conditions for non-singularity of a matrix, determinants & its properties, minors and cofactors, Ad-joint and inverse matrix of a matrix, properties of inverse of a matrix, solution of linear equations, the Gaussian method, the Cramer's rule and inverse matrix method, economic implications, solution of market models, national income models, and the normal equations of the least-squares econometric model via matrix approach.

Differentiation

The concept of derivation, functions of one variable and rules of differentiation: sum-differences, product and quotient rules, chain rules, power function rule, inverse function rule, implicit functions rule, combinations of rules, differentiation of logarithmic & exponential functions, higher order derivatives, concept of maxima & minima, first and second derivatives tests, point of inflection , free and constrained optimization, partial differentiation & its rules, Hessian and Jacobian determinants, higher order & cross partial derivatives (Young's theorem), total differentials & total derivatives, optimizing cubic functions.

Recommended Material:

1. Chiang, A. C. (1984), Fundamental Methods of Mathematical Economics- 3rd Edition, McGraw Hill Publishing Company.
2. Frank, B. (1993), Applied Mathematics for business economics and Social Sciences – 4th Edition or latest – McGraw Hill Publishing Company.
3. Dowling, E. T.(2001), Mathematics for Economists, Schaum's Outline Series- 3rd Edition.
4. George, Alvery et al (1995)., - Essentials of Mathematics with Business Applications – 5th 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.

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BS in Economics

Course-II

ECON 11402: ECONOMICS OF PAKISTAN

Overview of Pakistan Economy

Development Experience, Approaches, Policies and Outcomes. Identification of Issues: The era of 1950's, 1960's, 1970's, 1980's 1990's and 2000's. Structural Change and Sources of Growth. Human Resource Development, Unemployment, Poverty, Income Distribution, Debt, Deficit etc. Growth with limited development in Pakistan.

Development Planning and Resource Mobilization

Agricultural Development Policies and Priorities, Major Targets of Develop Plans and Emerging Issues; Neglects and Successes: Mobilization of Domestic Resources; Shortages, Deficits and Role of Foreign Aid.

Agriculture and Industrial Development: Emerging Issues

Pattern of Agricultural and Industrial Development, Land Reforms and Its Impacts, the Role of Green Revolution and its Impacts: Present Status. Agricultural Price Policy and Income Tax. Sectoral Terms of Trade. Industrial Development Policies and Strategies. Development of Large and Small Industries. Value Added: Manufacturing Goods Vs. Primary Goods Production.

Employment Pattern and Unemployment

Population Growth, Labor Force Participation Rate and Employment Pattern, Unemployment and Underemployment, Forecasting Manpower Needs and Employment. Strategies to combat unemployment. Criteria to Measure Unemployment / Underemployment: Time Criterion, Productivity Criterion and New Index of Unemployment: Application to Pakistan and Empirical Evidences. Good Governance, Social Action Plan and its Impact. Social Sectors development Vs. High Return Sectors: Growth trade off.

International Debt and Dependency

Concepts of Foreign Aid and Debt. Borrowing vs. Domestic Reserve Mobilization (failure). Size of Foreign Debt, Debt Saving and its Impacts. Strategies to combat with High Debt: Saving Policy, Foreign Trade Promotion, Cutting non-development Expenditures, Rescheduling and its Impacts. Debt Management in Pakistan and Its Impacts.

Poverty and Income Distribution

Pattern of Income Distribution: Rural and Urban. Definitions and Approaches to Measure Poverty: Income Approach, Expenditure Approach, Basic Needs Approach, Poverty of Participatory Index (POPI). How to Combat Poverty; Growth Strategy, Basic Needs, Strategies to Combat Poverty and Improving Income Distribution: Critical Evaluation. Child Labor.

Inflation, Foreign Trade Deficit and Emerging Issues

Sources of Inflation in Pakistan. Policies to Combat Inflation and their Impacts. Trade Performance, Instability and its Impacts. Policies to Combat Deficit and Trade Instability. WTO and Its Impacts. Expected Impacts of WTO and Challenges. Market Access and Health Related Rates.

Recommended Material:

1. Chaudhary, M. Aslam, (2001-2002), Perspective on Development Planning In Pakistan, Allied Book Centre, Lahore.
2. Chaudhary, M. Aslam and Eatzaz Ahmed, (2004), Globalization, WTO and Trade Liberalization in Pakistan, FerozSons, Lahore.
3. Chaudhary, M. Aslam, (1989), Human Resource Development and Management in Pakistan, Ferozsons, Lahore.
4. Khan, Shahrukh R., (2000), 50 Years of Pakistan's Economy; Traditional Topics and Contemporary Concerns, Oxford Univ. Press, Karachi.
5. Mahbool-ul-Haq Centre for Human Development (MHCHD), (1989), Poverty Profile of Pakistan, Oxford University Press.
6. Human Development in South Asia, Annual Report.
7. Saeed, K. A. (2004/Latest edition), The Economy of Pakistan, Oxford University Press, Karachi.
8. Zaidi, Akbar, (1999/Latest edition), Issues in Pakistan Economy, Oxford University, Press, Karachi.

World Development Reports, World Bank

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BS in Economics

Course-III

ECON 11403: STATISTICS

Introduction to Statistics

Descriptive and inferential statistics; population and sample, parameter and statistic; The four basic activities in statistics: Designing a plan for data collection, Exploring the data, Estimating an unknown quantity, Hypothesis testing; Type of measurement scales: Nominal, Ordinal, Interval and Ratio; Types of data: Univariate, Bivariate and Multivariate data, Primary and secondary data, Quantitative data and qualitative data, Time series, Cross-sectional and pooled data; Significant digits and rounding off numbers. Numerical examples and questions relating to all contents given in this topic.

Presentation of Data and Measures of Central Tendency

Introduction; Classification; Tabulating numerical data: The frequency distribution, the cumulative frequency distribution, the relative frequency distribution, the percentage frequency distribution; Graphic and diagrammatic representation: Bar chart, Pi chart, Histograms, Frequency curves and Histograms;' Histograms by Hand: Stem-and-Leaf. Measure of central tendency; Introduction; Types of Averages: Mean: Arithmetic mean, Geometric mean, Harmonic mean, Trimmed and Winsorized means; Quintiles: Median, Quartiles, Deciles, Percentiles; The mode; Box plot and detailed box plot; Empirical relation between Mean, Median and Mode; The cumulative distribution function.

Measures of Dispersion, Skewness and Kurtosis

Absolute and relative measures of dispersion; Different measures of dispersion: The Range, Quartile deviation, Mean deviation, Variance and standard deviation: Definition and interpretation of variance and standard deviation, Computation of

Variance .and standard deviation, Step deviation method or coding method, Coefficient of variation, Standardized variable, Properties of standard deviation and variance; Skewness: Karl Pearson's coefficient of Skewness, Bowley's coefficient of Skewness; Kurtosis.

Simple Linear Regression and Correlation Analysis

Scatter diagram; Standard methods for obtaining regression line: (i) Inspection, (ii) .Semi average, (iii) Least squares principle; Assumptions underlying linear regression and its properties; Measures of variations: Standard error of the estimate, Coefficient of determination; Prediction in Regression Analysis; Interpolation verses extrapolation; Correlation analysis; Scatter diagram; The coefficient of correlation: Properties/characteristics of coefficient of correlation, Correlation and causation; The relationship among the correlation coefficient, the coefficient of determination and the standard error of estimate; Inference about the correlation coefficient; t-test for correlation coefficient; Rank correlation coefficient; Some Economic Applications.

Index Numbers

Index Numbers, Un-weighted index numbers; Simple aggregative index; Weighted indexes; Laspeyre's price index, Paaseche's price index; MarshalEdgeworth price index; Fisher's ideal index; Consumer Price Index (CPI), Producer Price Index (PPI), CPI versus GDP Deflator; Issues in constructing and using index numbers; Application of index numbers to business and economics.

Time Series

An overview of time series analysis; Component Factors of the classical multiplication time series model and their estimation: Secular trend; Cyclical variation, Seasonal variation, Irregular variation; Smoothing the annual time series and using it in forecasting: Moving averages, Weighted moving averages, Exponential smoothing; Using trend and seasonal component in forecasting; Time series and forecasting; Some Economic Applications.

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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 10th 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 Theory1 & 2,* Lahore: lImi 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* (5th edition). Boston: Duxbury Thomson Learning, 2000.

Stephan and Spegal, *Statistics*, latest Edition, Schum's Outline Series.

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BS in Economics

Course-IV

ECON 11404: INTERMIDATE MICROECONOMICS II

Introduction

Scope of micro economics and area of its concern, economic agents and decision making, brief account of the theory of value, the relationship between production and consumption, the role of markets and importance of price signals in efficient allocation of resources, economic models as abstraction from the reality, introduction to mathematical functions used in economics: utility, demand, supply and production function etc.

Theory of Consumer Behavior

Axioms of Rationality, The utility function and its Arguments, Law of diminishing marginal and equi marginal utility, Indifference curves and their properties, concepts of imperfect substitutes and complements, Marginal Rate of (commodity) substitution (MRCS). Convexity of Indifference curve and diminishing MRS, the budget constraint, consumer equilibrium and law of equi-marginal utility, income and substitution effects of price change: diagrammatic representation, normal, inferior and giffen goods Gross substitutes and net substitutes, The indirect utility function, Non homothetic preferences, introduction to the revealed preference theory.

Demand and Elasticity

Derivation of demand functions using indifference curves, ordinary and compensated demand functions, Engle's law and classification of goods, market demand as horizontal summation of individual demands, elasticity of demand, importance and types: own price, cross- price and income elasticity, relationships among different demand elasticities.

Production Functions

Definition, classification and problems of firms, production and value added functions, fixed and variable coefficient functions, some commonly used production functions, Cobb Douglas and CES etc., average and marginal products of variable factors and their interrelationship, iso-quant maps, marginal rate of technical substitution (MRTS), the cost line and equilibrium of the firm, output maximization subject to given cost/budget, demand for variable factors, elasticity of substitution, return to scale and economies of scale.

Cost of Production

Types of costs: Economic and Accounting costs, Opportunity costs, Fixed and Sunk costs, Total and variable costs, average and marginal costs, Short run and Long run cost functions, Decreasing, Constant and increasing cost industries, Cost minimization subject to given predetermined level of output, Input cost and demand for factors production.

Behavior of the Firm

Profit maximization (loss minimization) as the sole objective of all firms Equilibrium of the firm when it faces the market, Total, Average and Marginal Revenues, Equality of marginal revenue and marginal costs, Economic profit and rent, Short run and Long run position of a price taking and price seeking firm. The controversy over the profit maximization hypothesis.

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Market Structure and Price Determination

(1) The Perfectly Competitive Market

Assumptions of the model, Pure and Perfect Competition, Short-run and Long run equilibrium of competitive firms, Supply functions in the short and long run, Constant cost and increasing cost industries, Derivation of equilibrium Prices and Quantity using simple equations.

(II) Monopoly and Monopsony

The market power of a firm, Sources of monopoly power: why do monopolies exist, Decreasing cost industries and natural monopolies, Comparison between monopoly and monopsony Short run and Long run Equilibrium of a firm with monopoly power Price discrimination, Bi lateral monopoly, Multi plant monopoly, The social costs of monopolies, Public utilities and marginal cost pricing Market regulation and antitrust policies, Market equilibrium with monopoly power.

1. Koutsoyiannis, A., (1979), Modern Microeconomics, Macmillan, London.
2. Pindyck and Rubinfled with Mehta (2005), Microeconomics- 6th Edition
3. Nicholson, W., (6th edition), Microeconomic Theory: Basic Principles and Extensions, South-Western.
4. Varian, Hall R.,(2002) Intermediate Microeconomics –Modern approach-6th edition, Norton publishing Company, New York.
5. Leftwich, e. (1988). The Price System and Recourse Allocation- The Dryden Press, New York.
6. Dowling, E. (1980). Mathematics for Economist- MacGraw Hill Inc.
7. Ferguson, C.E & J.P.Gould, (Latest Edition), Microeconomic Theory, Macmillan.
8. Henderson, J.M & R.E. Quandt, Microeconomic Theory, Melliwra H A Book Co., N.Y.
9. Layard, P.R.G and A. A. Walters, (Latest Edition), Microeconomic Theory, McGraw Hill Publishing Company.
10. Baumol, W.J., (Last Edition), Economic Theory and Operations Analysis, Prentice Hall.
11. Bilas, R. A., (1983), Microeconomic Theory, Mc Graw-Hill International Book Company, Boston.
12. Kameischon, D.T.R., (last Edition), Readings in Microeconomics, The world publishing co., N.Y.
13. Stiglor, G.T., (Last Edition), The Theory of price, Macmillan, London.
14. Silberberg, E., (Latest edition),The Structure of Economics; A Mathematical Analysis, McGraw. Hill

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BS in Economics

Course-V

International Relations / Business Finance

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BS in English

Course-I

Course Title: Human Rights & CitizenshipLevel: BS 4th
Course Code: GC203

Course Description

This particular course deals with good citizenship values and human rights components. Although the course does not strictly or necessarily fall under the category of English curriculum and syllabi, the contents/ topics designed for this course must be studied and used by the teachersof English language and literature to offer a comparative study with the textbooks they use for their classes.

Course Objectives

- To promote human values, in particular religious tolerance forothers
- To promote HR, in particular those of the minorities and ethnicgroups
- To develop a cross-cultural understanding, to recognize the valueof difference
- To relate human progress through a sense of diversity, goodcitizenship & tolerance for social harmony.

Course Contents

- The Last address of the Holy Prophet (Peace be upon Him)
- The United Nations Human Rights Charter.

The above may be studied for the understanding of the following:

- What is Human Rights (HR)?
- Evolution of the Concept of HR
- Four Fundamentals in HR: freedom, equality, justice, and humandignity
- Universal Declaration of HR
- Three Key Principles in HR: inalienability, indivisibility anduniversality
- Are HR Universal? (debate/ discussion etc.)
- HR in South Asia: Issues
- Rights of Women
- Rights of Children (debate/ discussion on child labour, etc.)

Recommended Readings

1. Dean, B. Joldoshalieva, R. & Sayani, F. (2006). *Creating a Better World*. Karachi, Pakistan: Aga Khan University, Institute for Educational Development.
2. Ed. Williams, Isabel. (2008). *Teaching Human Rights through English Education*. Karachi: Oxford University Press.

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BS in English

Course-II

Course: English IV: Academic Reading & WritingLevel: BS 4th
Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficientreaders armed with appropriate skills and strategies for reading andcomprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation,and integration of knowledge
- Write well organized academic texts including examination answers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
   - Using appropriate strategies for extracting information and salient points according to a given purpose
   - Identifying the main points supporting details, conclusions in a text of intermediate level
   - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
   - Interpreting charts and diagrams
   - Making appropriate notes using strategies such as mindmaps, tables, lists, graphs.
   - Reading and carrying out instructions for tasks, assignmentsand examination questions
2. Enhance academic vocabulary using skills learnt in CompulsoryEnglish I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
   1. Plan their writing: identify audience, purpose and message(content)
   2. Collect information in various forms such as mind maps,tables, charts, lists
   3. Order information such as:
      - Chronology for a narrative
      - Stages of a process
      - From general to specific and vice versa
      - From most important to least important
      - Advantages and disadvantages
      - Comparison and contrast
      - Problem solution pattern
5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast,cause and effect, for and against
   - Write good topic and supporting sentences and effectiveconclusions
   - Use appropriate cohesive devices such as reference wordsand signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences

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- Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St.Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). OxfordEnglish for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: CambridgeUniversity Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge UniversityPress.
- Yorky, R. Study Skills.

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BS in English

Course-III

Course: Classical & Renaissance DramaLevel: BS 4th
Course Code: ELL206

Course Description

The purpose of this course is to explore the nature, function, and themes of Classical Greek, Roman and Elizabethan drama in their theatrical, historical and social contexts. Through a detailed study of the texts bythe selected dramatists such as Aeschylus, Sophocles, Euripides, Aristophanes, Seneca, Plautus, Shakespeare, Marlowe, and Webster thecourse traces the development of the key features of tragedy and comedy. Ancient opinions on drama, in particular, the views of Plato and Aristotle and their influence on classical drama will also be investigated.A comprehensive and critical background to mythology, drama and

society is given in the beginning of the course to prepare students to undertake close reading and analyses of the selected texts.

The first section of the course will focus on representative classical plays which have influenced the development of drama as a genre. It will introduce students to the history of Classical Greek and Roman drama and motivate them to explore how selected texts can be interpreted in a modern context. A comprehensive and critical background to Greek drama and society is given in the beginning of the course to prepare students to undertake a close reading and analysis of the selected texts. Special emphasis will be given in the seminars to examine the role and significance of mythology in Greek drama, the importance of festivals in Greek society, the structure of Greek tragedy, and the difference between tragedy and comedy.

The second section focuses on the selective plays of William Shakespeare, Christopher Marlowe, and John Webster. Through a critical scrutiny of the recommended plays, students will be made to appreciate the variety and imaginative exuberance of drama written in the age that popularized cultural profundity, humanist tendencies, philosophical excavations and artistic excellence. Qualities such as the poetic richness, absorbing plots, and vivid portrayal of characters will be highlighted to catch the true spirit of Renaissance. Through a selection ofplays, this section highlights the characteristic features of various dramatic forms like tragedy, comedy, and history, and their variations.

Course Objectives

Students will be taught to demonstrate:

- Knowledge of the myths, history, conventions, and major personages of classical theatre through readings of the plays and secondary sources.
- An insight into the culture, society and political events of theclassical periods under study.
- An understanding of the main objectives, themes and ideas underlying Classical Drama.
- Sound knowledge of the works of a range of classical dramatists and the ability to relate the primary texts to their socio-cultural and historical contexts.
- The ability to carry out close reading and literary commentaries onthe primary texts.
- Critically assess the inherent nature of the human condition - its paradoxes, complexities, and conflicts.

Course Contents

1. Aeschylus – Prometheus Bound
2. Sophocles – Oedipus Rex
3. Euripides – The Bacchae
4. Aristophanes – The Birds
5. Seneca – Hercules Furens (The Mad Hercules)
6. Plautus – The Pot of Gold
7. Shakespeare – King Lear; As You Like It
8. Marlowe – Tamburlaine the Great (Parts I and II)
9. Webster – The Duchess of Malfi

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Recommended Readings

1. Aeschylus. (1961).*Prometheus Bound, The Suppliants, Seven Against Thebes, The Persians*, translated by Philip Vellacott. Penguin Books.
2. Aristophanes. (1962).*The Complete Plays of Aristophanes*. Editedby Moses Hadas. A Bantam Skylark Book.
3. Bloom, Harold. (1987). *John Webster's The Duchess of Malfi*.Chelsea House Pub (L).
4. Bloom, Harold. (1999). *Shakespeare: The Invention of the Human.* London: Fourth Estate.
5. Cheney, Patrick. (2004). *The Cambridge Companion to Christopher Marlowe*. Cambridge: CUP.
6. Dover, K.J. (1972).*Aristophanic Comedy*. University of CaliforniaPress.
7. Eagleton, Terry. (1986). *William Shakespeare*. New York:Blackwell.
8. Erikson, Peter. (1991). *Rewriting Shakespeare, Rewriting Our-selves*. Berkley: University of California Press.
9. Frazer, James G. (1922).*The Golden Bough: A Study in Magic and Religion*. MacMillan.
10. Gregory, Justina. (2005).*A Companion to Greek Tragedy*.Blackwell.
11. Hackett, Helen. (2012). *A Short History of English Renaissance Drama*. I.B. Tauris & Co Ltd.
12. Herington. (1986). *Aeschylus*. Yale.
13. Kitto, H. D. F. (2005).*Greek Tragedy*. London and New York:Routledge.
14. Kuriyama, Constance B. (2002). *Christopher Marlowe: ARenaissance Life*. Ithaca: Cornell University Press.
15. Ley, G. (1991). *A Short Introduction to the Ancient Greek Theatre*.University of Chicago Press.

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BS in English

Course-IV

Course Title: Classical Poetry Level: BS 4th
Course Code: ELL207

Course Description

This course focuses on the study of poetry from Geoffrey Chaucer to Alexander Pope. The term 'classical' understandably refers to the lasting appeal and artistic pleasure of the poetical works selected for this course. Though belonging to different poetical genres, the poetry ofChaucer, Shakespeare, Donne, Milton, and Pope have stood the tests of time and no further study in this genre of literature is possible without studying these bench marks of English poetry. The teachers of classical poetry need to inculcate a spirit of studying the aesthetic concerns of the times of these poetical masterpieces along with giving a holistic understanding of different genres of poetry, namely epic, ballad, sonnet, lyric, and elegy etc. Offering a study of the congenial humor and gentle satire of Chaucer's *Prologue to Canterbury Tales* (*c.* 1389), the puritanical strain of Milton's epic *Paradise Lost* (1667), the fiery quality of Love and divine poetry of the metaphysical poet John Donne, some sonnets of William Shakespeare and famous mock epic of Alexander Pope, this course is designed to cover the classical aspects of English poetry. By teaching the fundamentals of poetry that this course entails, the teachers may introduce a diversity of poetic expressions that will helpthe students further their inquiry into this genre in the coming semesters.

Course Objectives

This course aims to:

1. Trace the generic specific historical development of classical poetry, but also to develop a keen awareness of poetic language and tone of the period.
2. Introduce various forms and styles of the genre of poetry forcreating an in-depth understanding of this genre.

Course Contents

William Shakespeare (1564-1616)

- Shall I compare thee to a summer's day? (Sonnet 18)
- Let me not to the marriage of true minds (Sonnet 116)

John Donne (1572-1631)

Love Poems:

- Song
- The Sun Rising
- Aire and Angels
- The Good Morrow
- Valediction: Forbidding Mourning

Holy Sonnets:

•Thou hast made me, and shall thy work decay?
•Death be not proud, though some have called thee

John Milton (1608-1674)

- *Paradise Lost*. Book I (1667)
- *Paradise Lost* Book 9 (The main contention and critical summary)

Alexander Pope (1688-1744)

- *Rape of the Lock* (1712)

Recommended Readings

- Abbs, P. & Richardson, J. *The Forms of Poetry*. Cambridge:Cambridge UP. 1995.
- Barnet, Sylvan. *A Short Guide to Writing about Literature* (7thEdition). New York: Harper and Collins. 1996.
- Boulton, Marjorie. *The Anatomy of Poetry*. London: Routledge andKegan Paul. 1977.

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- Kamran, Rubina and Syed Farrukh Zad. Ed. *A Quintessence of Classical Poetry.* National University of Modern Languages,Islamabad.
- Kennedy, X. J. Gioia, D. *An Introduction to Poetry:* (8th Edition).New York: Harper Collins College Publishers. 1994.

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BS in English

Course-V

Course Title: SemanticsLevel: BS 4th
Course Code: ELL208

Course Description

This course introduces students to the basic concepts of semantics and pragmatics with the aim to help them conceptualize the relationshipbetween words and their meanings, and to understand the factors that govern choice of language in social interaction and the effects of these choices.

Course Objectives

The objectives of the course are to:

- Enable students to differentiate between semantic and pragmaticmeaning.
- Introduce the theoretical concepts related to Semantics andPragmatics.
- Help students internalize sense relation and Lexical relations alongwith types of meaning.
- Enable students to understand Deixis, Speech Act theory,Cooperative Principle and Politeness.

Course Contents

- Theories of Semantic and Pragmatics
- Types of meaning
- Semantic field
- Sense Relations and Lexical Relations (Hyponymy; Synonymy;Antonymy; Homonymy and Polysemy)
- Syntactic Semantics (Contradiction, Ambiguity, Semantic anomaly,Entailment, Presupposition)
- Speech act theory
- Conversational Implicature
- The Cooperative Principle
- Politeness
- Deixis

Recommended Readings

- Burton-Roberts, N. (Ed.), (2007). *Pragmatics*. Palgrave Macmillan.
- Cruse, A. (2011). *Meaning in Language: An Introduction to Semantics and Pragmatics.* (Third edition). Oxford Textbooks in Linguistics.
- Cutting, J. (2002). *Pragmatics and Discourse: a resource book forstudents.* Routledge.
- Davis, S. & Gillon, S. B. (2004). *Semantics: A Reader*. OxfordUniversity Press.
- Davis, S. (Ed.), (1991). *Pragmatics: a reader*. Oxford UniversityPress.
- Frawley,W. (2002). *LinguisticSemantics*.Cambridge:Cambridge UniversityPress.
- Griffiths, P. (2006). *An Introduction to English Semantics andPragmatics.* Edinburgh University Press Ltd.
- Grundy, P. (2000). *Doing Pragmatics*. Arnold.
- Howard, G. (2000). *Semantics: Language Workbooks*. Routledge.
- Hurford, R. J., Heasley, B. & Smith, B. M. (2007). *Semantics: acourse book.* (Second edition) Cambridge: CUP.
- Kearns, K. (2000). *Semantics.* Palgrave Modern Linguistics. GreatBritain.
- Lyons, J (1996). *Linguistic Semantics:An Introduction*.Cambridge: UniversityofCambridge.
- Riemer, N. (2010). *Introducing Semantics.* CambridgeIntroductions to Language and Linguistics.
- Saeed, I. J. (2009). *Semantics*. (Third edition). Wiley-Blackwell.
- Horn. R. L., & Ward, L. G. (Eds.), (2005). *The handbookof pragmatics*. Wilsey-Blackwell.

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BS in English

Course-VI

Course Title: Rise of the Novel (18th to 19th century)Level: BS 4th
Course Code: ELL209

Course Description

This course aims to introduce the students to the origin and developmentof relatively late-emerging genre of novel. It has been designed with a view to developing their understanding how novel is different from other genres of literature, poetry and drama. The students are given an in- depth understanding of the making and mechanics of a novel, the role of narrator, narrative styles and techniques, and the art of characterization. The teacher is also expected to explain how a full-length fictional prose narrative is different from flash fiction, short story and novella. Discussing the emergence of novel since eighteenth century, this course brings out the significance of this genre as discussed, for example, in great detail inIan Watt's seminal book, *Rise of the Novel* (1955). While teaching novel, teachers are supposed to consult and have a sound understanding of some of the ground breaking books as *Rise of the Novel* (1955) by Ian Watt, *Aspects of the Novel* (1927) by E M Forster, and *The English Novel* (1953) by Walter Allen. With a deeper understanding of the elements of fiction, the teachers will be able to impart a holistic definition of this genre starting from the basic "long fictional prose narrative" to a relatively complex definition of novel as can be extracted from, say, Ian Watt's book. An understanding of ingredient elements that constitute a novel will enable the students to develop an all-round understanding of this genre and equip them to grasp the complexities of modern fiction course in the coming semesters.

Course Objectives

This course will enable the students

1. To have a full understanding of 18th and 19th century novel whichis rich in diversity as well as creativity.
2. To closely study the English society of these centuries and its impact upon human lives, and its complex psychological phenomena.
3. To develop an insight into various factors responsible for the appeal of the subject matter of these novels which was not only enjoyed by readers of the centuries in which they were written but by Victorian readers or even for modern readers of contemporary times.

Course Contents

- Henry Fielding *Joseph Andrews* (1742)
- Jane Austen *Pride and Prejudice* (1813)
- Charles Dickens *Hard Times* (1854)
- George Eliot *The Mill on the Floss* (1860)
- Thomas Hardy *The Return of the Native* (1878)

Recommended Readings

- Bloom, Harold. (1988) *George Eliot's the Mill on the Floss (Bloom's 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 ofJoseph 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 CambridgeCompanion to Jane Austen,* 1997

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- 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 theCritics (Literary Criticism in Perspective). Ca*mden 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)

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BS in Geography

Course-I

Course: English IV: Academic Reading & WritingLevel: BS 4th
Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficientreaders armed with appropriate skills and strategies for reading andcomprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation,and integration of knowledge
- Write well organized academic texts including examination answers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
   - Using appropriate strategies for extracting information and salient points according to a given purpose
   - Identifying the main points supporting details, conclusions in a text of intermediate level
   - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
   - Interpreting charts and diagrams
   - Making appropriate notes using strategies such as mindmaps, tables, lists, graphs.
   - Reading and carrying out instructions for tasks, assignmentsand examination questions
2. Enhance academic vocabulary using skills learnt in CompulsoryEnglish I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
   1. Plan their writing: identify audience, purpose and message(content)
   2. Collect information in various forms such as mind maps,tables, charts, lists
   3. Order information such as:
      - Chronology for a narrative
      - Stages of a process
      - From general to specific and vice versa
      - From most important to least important
      - Advantages and disadvantages
      - Comparison and contrast
      - Problem solution pattern
5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast,cause and effect, for and against
   - Write good topic and supporting sentences and effectiveconclusions
   - Use appropriate cohesive devices such as reference wordsand signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

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Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St.Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). OxfordEnglish for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: CambridgeUniversity Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge UniversityPress.
- Yorky, R. Study Skills.

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BS in Geography

Course-II

GENERAL-VII (Environmental Geography)
Course Code: **GEOG03402 CH 3(2+1)**

Objective:

To familiarize the students with the significance and nature of environment.

Course Outline:

- **Introduction and historical perspective**
  - Scope and significance, Nature of environment
- **The structure of ecosystems,**
  - Principles of Ecosystems
  - Ecosystems function,
  - Problems and Principles of Ecology
- **Material Cycles:**
  - The hydrologic cycle,
  - Natural purification cycle,
- **Energy: Sources and Uses**
  - Energy Sources,
  - Major Categories of energy Users
- **Resources**
  - Soil resources
  - Mineral and Water resources;
  - Land as a resource
- **Pollution,**
  - Air, water and noise
- **Waste Management**

Books Recommended

1. Stokstad, E. (2005). Taking the pulse of Earth's life support systems, Science 308, 41 – 43.
2. Lackey, R.T. 2005. Economic growth and salmon recovery: an irreconcilable conflict, Fisheries 30(3): 30-32.
3. Slocombe, S. 2004. Applying an Ecosystem Approach' in B. Mitchell: Resource and Environmental Management in Canada: Addressing Conflict and Uncertainty, 3rd edition, Oxford University press: Toronto , pages 420 – 441
4. McRae, D. M. and Pearse, P. H. 2004. Treaties and transition: towards a sustainable fishery on Canada's Pacific Coast, Federal-Provincial Joint Task Group Report: 58pp.
5. Pauly, D., V. Christensen, S. Guénette, T. Pritcher, U. Sumaila, C. Walters, R. Watson, D. Zeller. 2002. Towards Sustainability in World Fisheries, Nature 418, 8 August, pages 689 – 695.
6. Gleick, P. 2000. The Changing Water Paradigm: A look at twenty-first century water resources development, Water International 25(1), 127 – 138
7. Freedman, B. 1998. Environmental Science: A Canadian perspective, Scarborough Prentice Hall: Canada, pp. 182 – 199
8. Ludwig, D., Hilborn, R. and Walters, C. 1993. Uncertainty, resource exploitation, and conservation: Peter Science 260: 36.
9. Arms, Karen. 1991. Envernmental Science, Asunders College Publishing: Philadelphia.
10. Bennet, Robert and Estall, Robert. 1991. Global Change and Challenge: Geography for the 1990s, Routledge: London.
11. Pakistan Geographical Review (Lahore)
12. Pakistan Journal of Geography (Peshawar)
13. Journal Geography (Karachi)
14. HEC Digital Library

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BS in Geography

Course-III

GENERAL-VIII (Regional Concepts)
Course Code: **GEOG03403 CH 3(2+1)**

Objective:

This course is framed to impart knowledge of the principles underlying the division of the world into geographic regions & to transfer knowledge of the characteristics of regions at global level.

Course Outline:

- **Introduction to Regional Concepts**
  - o Scope, Status, and the significance of the regional approach
  - o Regional approach and its evolution
  - o Criteria for dividing world into regions
- **Physical Attributes: Location, Physiography, Climate, Soils, Hydrology and Natural Vegetation**
- **Economic attributes: Human Resources, Mineral and Power resources, Agriculture, Industry, Communication and Trade**
- **Types of Regions**
  - o Physical Regions
  - o Economic Regions
  - o Political Regions
  - o Cultural Regions
  - o Special Purpose Regions
- **Major Regions of the world**
  - o Distinguishing characteristics
  - o South Asia
  - o South West Asia
  - o Far-eastern regions
  - o Western Europe
  - o Russia and Central Asia
  - o North Africa and Anglo-America
  - o Other Regions
- **Role of the Region in Global Development**

Lab. Work:
Identification and delimitation of different types of regions on maps.

Recommended Books:

1. Bradshaw, M. & White, G. W. (2007) Contemporary World Regional Geography: Global connections, local voices, McGraw-Hill Higher Education. Boston.
2. Deblij, H. J. D & Muller, P. O. (2011) The world Today: Concepts and Regions in Geography John Wiley & sons Inc., New York.
3. Hobbs, J. (2010) Fundamentals of World Regional 2nd edition, Cole Cengage learning: Australia.
4. Knox, P. L. & Marston, S. A. (2003) Places and Regions in Global Context: Human Geography, Prentice Hall, New Jersey.
5. James. & Preston, E. (1974) One World Divided Prentice Hall, New Jersey.
6. James. & Jones. (1965) American Geography; Inventory and Prospects. Association of American Geographers. USA
7. Singh, R. L. (2008) Fundamentals of Human Geography, Sharada Pustak Bhawan, Allahabad.
8. Swawy, M. C. K., Bhaskara, R. & Hegde, V. M. (eds.) (2008) Urban Planning and Development at Cross Roads, BC books for Change, Bangalore.

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BS in Geography

Course-IV

FOUNDATION-IV (Geography of Pakistan / Field Tour)
Course Code: **GEOG01404 CH 4(3+1)**

Objective

This course attempts to impart knowledge about the relationship between man and physical, socio-economic and cultural environment with special reference to Pakistan, including land, population, human settlement, resources and related human activities.

Course Outlines

- The Making of Pakistan
  - Location and Geopolitical importance: Relations with neighbouring states
  - The Genesis of Pakistan
  - The Borders of Pakistan and related problems
  - Administrative setup
- The Land:
  - Physiography
  - Climate and climatic regions
  - Soil and vegetation
- The People
  - Population structure, composition and distribution
  - Population Change
  - Urbanization
- Economy
  - Agriculture (crops and livestock)
  - Irrigation
  - Power and mineral resources
  - Industries
  - Tourism
  - Trade
- Transport and Communication

Lab outline

Survey, data collection and presentation on different thematic maps

Field visits

To identify various physical regions and study at least one region's land use, urban structure, mining area, national parks, industrial areas and various rural and urban settlements and other natural resources to be decided by the respective college/university keeping in view the availability of resources.

Books Recommended

1. Abdul Hameed. (1972), Historical and descriptive geography of water development in West Pakistan: A case study of the Middle Indus Basin., San Francisco State College
2. Ahmad, Q. S. (1964), Geography of Pakistan, Oxford University Press
3. Burkey, J.S. (1991), Pakistan the continuing search for Nationhood., Western Press, Oxford, UK
4. Davidson, A. P & Munir Ahmad , (2003), Privatization and the Crisis of Agricultural Extension: The Case of Pakistan (King's Soas Studies in Development Geography, Ashgate Publishing
5. Dichter, D. (1967), Geography of N-W.F.P, Oxford University Press
6. Imperial Gazetteer of India, (1901), North West Frontier Province, Government of NWFP Printing Press Peshawar.
7. Jonson B.L.C., (1969), South Asia: selective studies of the essential geography of India, Pakistan and Ceylon., Heinemann Educational
8. Khan F.K. (1991), Geography of Pakistan, Oxford University Press, Karachi

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9. Sahibzada, M.A, (1960), Land Use Survey of N-W.F.P., Part-I P & D Department Government of Pakistan
10. Spate, O.H.K. (1984), India and Pakistan, Munshiram Mohoarlal Publications Pvt. Ltd
11. Tayyeb, A. (1966), A Political Geography of Pakistan,, Oxford University Press
12. Pakistan Geographical Review (Lahore)
13. Pakistan Journal of Geography (Peshawar)
14. Journal Geography (Karachi)
15. HEC Digital Library

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BS in Geography
Course-V

FOUNDATION-V (Land Surveying)
Course Code: **GEOG01405 CH 3(1+2)**

Objective:

To train the students in map drawing, reading and its use for geographical analysis. After the successful completion of this course the students are expected to have a good knowledge of map reading and drawing.

Course Outlines

- 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: types, construction, characteristics, and uses
- Enlargement and reduction of maps
- A study of the Survey of Pakistan maps under the heads:
    - Physical and cultural features to be described and interpreted
- Interpretation of weather maps of Pakistan
- Instrumental survey and records
- Surveying using the following instruments:
    - Chain survey
    - Plane Table
    - Prismatic Compass
    - Determination of heights and slopes with Abney Level
    - Contouring by Indian Clinometer
    - Use of Dumpy level and Theodolite
    - Total station
    - Global Positioning System (GPS)
- Air photo and satellite imageries

Field Visits

Visit to Survey of Pakistan Offices.

(The students are required to record the exercises in practical notebook duly signed by the concerned teachers).

Books Recommended

1. Brinker, R.E. & W.C. Taylor, (1962), Elementary Surveying, The International Text Book Company
2. Carey, H. Helen. (1983), How to Use Maps and Globes, Franklin Watts, London New York.
3. Clendinning, J. (1960), Principles of Surveying. Blackie and Sons, Limited Glasgow
4. Dink, P. (1962), Map Work, Dehli
5. Guljan Mushtaq-Ur-Rehman, (1974), Map Projection, Oxford University Press.
6. Kanetkar, T.P. & Kulkarni, S.V. (latest edition), Surveying and Levelling part-I. Union Book Stall Karachi.
7. Maguire, D.J. (1991), Geographic Information System., Longman London
8. Rubey, H. et .al. (1958), Engineering Surveys., The Macmillan Company
9. Thomas W.N. (1942), Surveying, John Wiley and Sons.
10. Usil, G.W. & Hearn G. (1960), Practical Surveying, The Technical Press Ltd.
11. Pakistan Geographical Review (Lahore)
12. Pakistan Journal of Geography (Peshawar)
13. Journal Geography (Karachi)

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BS in Information Technology

Course-I

Operating Systems					
Credit Hours:	3 +1	**Course Code:**	COSC-2102	**Prerequisites:**	COSC-2101

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Describe how computing resources (such as CPU and memory) are managed by the operating system and the basic principles used in the design of modern operating systems.	C	2
2. Demonstrate competency in recognizing and using operating system features	C	2
3. Analyze the key trade-offs between multiple approaches to operating system design.	C	4
4. Evaluate the problems related to computer system, CPU scheduling and memory management.	C	5

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

Course Contents:

Introduction to Operating System, Computer-System Organization , Computer-System Architecture , Operating-System Structure , Process Management, Memory Management, Storage Management, Kernel Data Structures, Operating-System Services, User and Operating-System Interface ,Operating-System Design and Implementation, Operating-System Structure, System Boot, Process Concept, Process Scheduling, Operations on Processes,Threads, Multicore Programming, Multithreading Models , The Critical-Section Problem , Peterson's Solution, Semaphores , CPU Scheduling, Scheduling Criteria , Scheduling Algorithms, Thread Scheduling , Multiple- Processor Scheduling, CPU Scheduling, Deadlock, Deadlock Characterization, Methods for Handling Deadlock, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table, Disk Scheduling, Disk Management, File System Interface, Access Methods, Directory and Disk Structure, Virtual Machines, Distributed Systems, The Linux System, System Security and Protection, Virtualization.

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. Operating System Concepts by Abraham Silberszchats and Calvin, The MIT press, 9th Edition, 2013;ISBN-13: 9781118129388
2. Survey of Operating System by Jan and Charles Holcombe's , McGraw-Hill Science, 5th Edition, 2016; ISBN-13: 9781259618635
3. Principals of Operating Systems by Nearsh Chauhan, Oxford University Press, 1st Edition, 2014;ISBN-13: 9780198082873

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BS in Information Technology

Course-II

Database Systems					
Credit Hours:	3+1	**Course Code:**	COSC-2103	**Prerequisites:**	COSC-2101

Course Learning Outcomes(CLOs):

After the completion of this course the student should be able to:	Domain	BT Level
1. Understand the modelling of real-life information in a database system.	C	2
2. Use the languages designed for data access.	C	3
3. Design issues of an efficient and reliable database system.	C	4
4. Implement a practical application on a real database.	C	4

Course Contents:

Basic database concepts. Characteristics, advantages and implications of the database approach to information systems as contrasted with traditional integrated file systems. DBMS architecture. Roles involved with database systems. The database system environment including data models, schemas, database languages and interfaces. Three-schema architecture and data independence. Information analysis to identify query keys, candidate keys, entities, attributes, relationships and integrity constraints. ER modeling as a means of representing information concepts. Extended entity relationship modeling as it relates to specialization, generalization and inheritance. Relational model concepts. Referential integrity, entity integrity, and other constraints. Defining a relational schema from an ER diagram. Definition and use of relational algebra operations to query a relational database. Use of SQL to define a relational data model. Basic and complex queries in SQL. Insert, delete and update statements in SQL. Defining and using Views in SQL. Implement security with Grant/Revoke. Definition offunctional dependency, full functional dependency, transitive dependency and multi-valued dependency. Definition of the normal forms from un-normalized through 4th normal form and how to apply the normalization process to recognize normal forms. How to move a data model to a higher normal form and the issues of de-normalization as it applies to retrieval performance. Methods for extending database functionality to programming languages such as COBOL or Java. Description of pre-compliers, dynamic SQL, ODBC, and JDBC. Students will gain introductory experience with a programmatic interface to insert, update, delete and query data in a database.

Teaching Methodology:

Lectures, Power Point Slides, Interactive Sessions, Extra Material, Projects, Presentations

Course Assessment:

Midterm Exam, Quizzes, Home Assignments, Case Study, Projects, Presentations, Final Exam

Reference Material:

1. Database Systems: Design, Implementation & Management by Thomas Connolly and Steven Morris, Cengage Learning, 13th Edition, 2018; ISBN-10: 1337627909
2. Modern database management by Jeffrey A. Hoffer, Ramesh Venkataraman and Heikki Topi, Pearson, 11th Edition, 2012; ISBN-10: 0132662256.
3. Database system concepts by Abraham Silberschatz, Henry Korth and S. Sudarshan, McGraw-Hill Education, 6th Edition, 2010; ISBN-10: 0073523321

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BS in Information Technology

Course-III

Design Pattern

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BS in Information Technology

Course-IV

IT Project Management					
Credit Hours:	3	**Course Code:**	INFT-3102	**Prerequisites:**	None

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Understand information technology projects from a new perspective, in addition to their technical view.	C	2
2. Explain the impact of the current trends in information technology on project management.	C	2
3. Identify the Project Management Body of Knowledge, as agreed upon by established practitioners.	C	2
4. Apply management and technology skills to lead or participate in	C	3
successful information technology projects.		
5. Analyze the general issues and skills involved in information technology projects.	C	4

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

Course Contents:

Introduction To Project And Project Management, The Project Management And Information Technology Context, Program And Project Portfolio Management, Role Of The Project Manager, Project Management Profession, The Project Management Process Groups. Project Integration Management, Strategic Planning And Project Selection, Project Scope Management, Scope Definition, Creating The Work Breakdown Structure, ScopeVerification, Scope Control Project Time Management, Importance Of Project Schedules, Activity Definition, Activity Sequencing, Activity Resource Estimating, Activity Duration Estimating, Schedule Development, Schedule Control, Project Cost Management, Project Quality Management, Quality Planning, Quality Assurance, Quality Control, Tools And Techniques For Quality Control, Modern Quality Management, Project Execution, Monitoring And Controlling Project Work, Integrated Change Control, Project Human Resource Management, Keys To Managing People, Human Resource Planning, Acquiring The Project Team, Developing And Managing The Project Team, Project Communications Management, Information Distribution, Performance Reporting, Managing Stakeholders, Project Risk Management, Risk Identification, Qualitative And Quantitative Risk Analysis, Risk Response Planning , Project Procurement Management. Project Management Tools, Using Software To Assist In
Project Integration Management, Project Closure, Team Evaluations.

Teaching Methodology:

Lecturing, Written Assignments, Presentation, Final Exam.

Course Assessment:

Sessional Exam, Home Assignments, Quizzes, Report Writing, Presentation, Final Exam.

Reference Material:

1. Information Technology Project Management by Kathy Schwalbe, Course Technology, 6th Edition, 2010; ISBN-10: 1111221758
2. A Guide to the Project Management Body of Knowledge by Project Management Institute, Project Management Institute, 3rd Edition, 2004; ISBN-13: 978-1930699458
3. IT Project Management: On Track from Start to Finish by Joseph Phillips, McGraw-Hill Osborne Media, 3rd Edition, 2010; ISBN-10: 0071700439
4. Information Technology Project Management by Jack T. Marche, Wiley, 3rd Edition, 2009; ISBN-10: 0470371935

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BS in Information Technology

Course-V

Enterprise Systems					
Credit Hours:	3	**Course Code:**	INFT-2101	**Prerequisites:**	None

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Understand key issues related to the definition and management of	C	2
Business Processes.		
2. Explain key issues about the development, implementation, and management of Enterprise Systems.	C	2
3. Identify typical functionality in an ERP system.	C	2
4. Create process models that assist with process improvement and ERP implementation.	C	6

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

Course Contents:

Fundamentals Of An Enterprise And Industries Artifacts. Introduction To Enterprise Resource Planning (ERP). ERP Implementation Life Cycle Methodologies And Strategy. Business Processes, Architecture, User Interface Designs And Their Modeling. ERP Security, Workflows, Data Integration, Applications Migration And Data Migration.Study Of Business Modules Human Resource, Procurement, Sales And Distribution, Material Management, And Manufacturing. Concepts And Tools Of Designing And Implementing An ERP System. Emerging Trends In ERP And Special Topics Such As Supply Chain Management (SCM), Customer Relationship Management (CRM), Business Intelligence (BI).

Teaching Methodology:

Lecturing, Written Assignments, Project & Lab Work

Course Assessment:

Sessional Exam, Home Assignments, Quizzes, Project, Presentation, Final Exam

Reference Material:

1. Enterprise Resource Planning: Text and Cases by Rajesh Ray, Tata McGraw-Hill Education Pvt. Ltd.,1st Edition, 2010; ISBN-10: 0070700885
2. Design of Industrial Information Systems by Thomas Boucher and Ali Yalcin, Academic Press, 1st Edition, 2006;
   ISBN-10: 0123704928
3. Enterprise Application Integration by David S. Linthicum, Addison-Wesley Professional, 1st Edition, 1999; ISBN-10: 0201615835

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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, 10th Edition, 2016; ISBN-10-1305576241

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INTR-00401 English for Academic Purposes Semester 4 Cr.hr: 3

Course Description:

This course aims at enabling the students to: read the text for: a literal understanding, interpretation & the general assimilation & integration of knowledge. Write well organized academic texts including examination answers with topic/thesis statement & supporting details, write argumentative essays and course assignments.

Contents:

- **Reading and Critical Thinking:** Read academic texts effectively by; Using appropriate strategies for extracting information and salient points according to a given purpose, identifying the main points supporting details, conclusions in a text of intermediate level, identifying the writer's intent such as cause and effect, reasons, comparison and contrast, exemplification, Interpreting charts and diagrams, making appropriate notes using strategies such as mind maps, tables, lists, graphs. Reading and carrying out instructions for tasks, assignments and examination questions
- Enhance academic vocabulary using skills learnt in Compulsory English I course
- Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
- **Writing Academic Texts:** Plan writing; identify audience, purpose and message (content), Collect information in various forms such as mind maps, tables, charts, lists. Order information such as: Chronology for a narrative , Stages of a process, From general to specific and vice versa, From most important to least important, Advantages and disadvantages, Comparison and contrast, Problem solution pattern, Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast, cause and effect, for and against, Write good topic and supporting sentences and effective conclusions, Use appropriate cohesive devices such as reference words and signal markers, Redraft checking content, structure and language, Edit and proof read
- **Grammar in Context:** Phrase, clause and sentence structure, Combining sentences, Reported Speech

Core Books:

1. Eastwood, J. *English Practice Grammar* (New edition with tests and answers). Karachi: Oxford University Press, 2004.
2. Goatly, A. *Critical Reading and Writing: An Introductory Course*. London: Taylor & Francis, 2000.
3. Lyons, L. & Heasley, B. *Study writing: A course in written English for academic and professional purposes*. Cambridge: Cambridge University Press, 1987.

Recommended Books:

1. Smazler, W. R. *Write to be Read: Reading, Reflection and Writing*. Cambridge: Cambridge University Press, 1996.
2. Wallace, M. *Study Skills*. Cambridge: Cambridge University Press, 1992.
3. Hacker, D. *A Writer's Reference*. 2nd Ed. Boston: St. [illegible]
4. Murphy, R. [illegible]

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Course-II

INTR-03402 Introduction to Media Studies Semester 4

Course Description: Cr.hr: 3

The course introduces the students to the study of contemporary forms of mediated communication. The course surveys the main topics in the field and introduces students to a variety of analytical perspectives. Issues include the economics of media production; the impact of media on individual attitudes, values, and behaviors; the role of media professionals and the new media technologies.

Contents:

- **Communication:** Definitions, types and significance.
- **Process of Communication:** source; message; channel; noise; destination; encoding; decoding; and feedback.
- **Barriers in communication:** Essentials of effective communication.
- Role of mass media in agenda setting.
- Nature and Functions of mass communication. (Information, Education, Opinion Formation, Entertainment and Development.)
- **Media of Mass Communication:** Print Media: newspapers, magazines, periodicals, books, pamphlets, etc. Broadcast media: radio, TV, film. New Media: (Internet) – On-line journalism. Traditional/Folk-Media. Comparative study of mass media, their components, functions and effects.

Core Books:

1. Ott, B. L., & Mack, R.L. *Critical Media Studies: An Introduction*, 2nd ed. Malden, MA: Wiley-Blackwell, 2013.
2. Dominick, J. R. *Dynamics of Mass Communication*, 8th ed. New York:McGraw-Hill, 2006.
3. Straubhaar, R. *Media Now: Communication Media in the Information Age*, 3rd ed. USA; Wadsworth, 2002.

Recommended Books:

1. Whetmore, E. J. *Introduction to Mass Communication*. California:Wadsworth Publishing Co., 1995.
2. Hassan, M., and Khurshid, A.S. *Journalism for All*, 6th ed. Lahore: Aziz Book Depot, 1997.
3. Gambol, W.M. *Introducing Mass Communication*, McGraw Hill, 1996.
4. Vivian, J. *Media of mass communication*. 5th ed. London: Allyn and Bacon, 2000.

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Course-III

INTR-01403 Islam & International Relations Semester 4 **Cr.hr: 3**

Course Description:

The course identifies the compatibility between the concepts of International Relation and Islam. Aiming at enabling students to relate, compare and contrast the contemporary global socio-political and economic system with the system advised by the divine religion, this course helps the students to inter-link these systems and evaluate through comparative approach.

Contents:

- **Introduction:**
- **Concept of State:** Statehood in Islam, Nation and Nationalism is Islam vs. concept of Ummah, Nation State vs. Caliphate
- **Revolutions:** Islamic vs. Western Revolutions i.e. French Revolution, Bolshevik Revolution, Iranian Revolution etc
- **Concept of Peace and Conflict in Islam:** Peace Treaties in Islamic era vs peace treaties in contemporary times, Conduct of War in Islam,
- **Human Rights and Islam:** Last Sermon and UDHR, Women Rights, Children Rights, Rights of Slaves, Workers, and Refugees.
- **Democracy is Islamic world:** Islam and Democratic principles, responsibilities of democratic leaders etc.
- **OIC and Its role and scope:** structure, function and role in curbing the conflicts
- **Political Islam:** Legitimacy through belief system, ISIS
- **Global War against Terrorism and Islam:** Jihad vs Terrorism

Core Books:

1. Donohue, J., and Esposito, J., eds. *Islam in Transition: Muslim Perspectives*. 2nd ed. New York: Oxford University Press, 2006.
2. Mandaville, P. *Global Political Islam*. London and New York: Routledge, 2007.
3. Esposito, J. *Islam: The Straight Path*. Oxford: Oxford University Press, 1998.

Recommended Books:

1. Mirbagheri, F. *War and Peace in Islam: A Critique of Islamic/ist Political Discourses*. Basingstoke: Palgrave Macmillan, 2012.
2. Moaddel, M. *Islamic Modernism, Nationalism and Fundamentalism: Episode and Discourse*. Chicago: The University of Chicago Press, 2005.
3. Zubaida, S. *Islam, the People & the State: Political Ideas & Movements in the Middle East*. London: I.B. Tauris & Co., 1993.
4. Sheikh, F. *Islam and International Relations: Exploring Community and the Limits of Universalism*. England: Rowman & littelfield, 2016

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Course-IV

INTR-01404 Defense and Strategic Studies Semester 4 **Cr.hr: 3**

Course Description:

The objectives of the course are to familiarize the students with the basic concepts and terminologies of the discipline. Purpose is to understand the ideas and views of strategic thinkers relating to evolution and development in the field of Defense and Strategic Studies as an academic discipline, and make them capable to critically analyze strategic trends and contemporary security issues around the globe. The use of military force and the phenomena of warfare, its kinds – low intensity conflict are discussed here

Contents:

- Definition, Importance, Scope and basic assumptions of Defense and Strategic Studies
- **Evolution and development of strategic thought:** Major Thinkers: Sun TZU, Karl Von Clausewitz, Henry Jomoni, Alfred T. Mahan, Mackinder, Galio Douhet, Mao Tse-Tung, Lidell Hart, Thomas Schilling, Henry Kissinger
- **Evolution and Development of Modern Warfare:** War as an instrument of national policy, Nuclear Parity / deterrence, Low Intensity Conflict, Mutual Assured Destruction, Massive Retaliation and Flexible Response, Countervailing Strategies
- **Impact of Technology on Strategic Thinking:** War Avoidance and Strategy of Prevention, Confidence and Security-Building Measures, Conflict and Crisis Management, Non-Proliferation and Arms Control Strategies
- **Non-Kinetic Warfare:** Media, Propaganda and Cyber Warfare, Psychological Warfare
- **Asymmetric Warfare**
- **Contemporary Issues and Emerging Trends** in Defense Strategic Studies

Core Books:

1. Patrick, M. C., ed. *The Evolution of Strategic Thought*, 2nd ed. Abingdon: Adelphi Papers Classics Routledge, 2008.
2. Adelman, K. L. *The Defence Revolution, Strategy for the Brave New World*, San Francisco: Institute of Contemporary Studies, 1990.
3. Buzan, B. *An Introduction to Strategic Studies*, London: Faber & Faber 1967.

Recommended Books:

1. Steossinger, J. G. *Why Nations Go to War*, New York: St. Martin Publishers, 2001.
2. Clausewitz, K. V. *On War* (Translated ed). Princeton: Princeton University Press, 1986.
3. Kissinger, Henry A., (1983) *Nuclear Weapons and Foreign Policy*. New York: Doubleday Anchor Books.
4. Schelling, Thomas. C. *The Strategy of Conflict*. Oxford: Oxford University Press, 1963.

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Course-V

INTR-01405 International Relations since 1945 Semester 4 **Cr.hr: 3**

Course Description:

The objective of this course is to acquaint the students with evolution of the world politics since the end of the 2nd World War, to get knowledge about historical background of the existing power politics at international level and to understand the present international scenario by tracing its roots from the historical developments.

Contents:

- **East-West Relations:** Impact of World War II on global politics, Emergence of Cold War, Bipolarity, and containment, Third World Developments-South Asia, Middle East, Afghanistan, Decolonization, Emergence of Non-aligned Movement, Sino-Soviet split and Sino-American rapprochement, Détente: East-West Cooperation and Peaceful Co-existence, Disintegration of the Soviet Union: Causes and consequences
- **Post-Cold War Era/New World Order:** United Nations in the post Cold War Era, Russia in the Post-Soviet setting, Changing role of NATO, Emerging Regionalism and Economic Organizations
- **New Poles of International Power and Influence:** Rise of China as a Major Power, Emergence of Japan and Germany as Economic Powers, Unification of the Germany, Rise of the Asia-Pacific region

Core Books:

1. Kegley, C. W. Jr. *World Politics: Trend and Transformation*. 4th ed. New York: St. Martin's Press, 1993.
2. Leaver, R.B., and Richardson, J. L. *Charting the Post-Cold Order*. Boulder: Westview, 1993.
3. Spiegel, S. L. *World Politics in New Era*, Harcort: Brace College & Wehling, Fred L., 1999.

Recommended Books:

1. Ahmad, I. *New Nuclear Order: From Chagai & Pokhran*. Islamabad: Institute of Regional Studies, 1998.
2. Ahmer, M. *The Arab – Israeli Peace Process: Lesson for India and Pakistan*. Oxford: Oxford University Press, 2001.
3. Anderson, J. *The International Politics of Central Asia*. Manchester: Manchester University Press, 1997.
4. Bidwal, P., and Vaniel, A. *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament*. Oxford: Oxford University Press, 1999.

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English-IV(IV-انگلش)

Course Code	ENG-01401
Nature of Course	University Optional
Number of Credit Hours	03
Semester	4th
Objectives of the Course	Enhance language Skill and develop critical thinking

Course Description/Outlines

Sr. No	Title	Description
1	Letter Writing	Good News Letters
2		Bad News Letters
3		Letters of Congratulations
4		Letters about Reservations
5		Letters of Invitation
6		Letters of Condolence
7	Professional Skills	CV Writing & Job Application
8		Interview Skill
9	Analysis of Islamic Literature (Topics to be chosen at the discretion of the teachera)	Prose and Essays Analysis
10		Prose and Essays Analysis
11		Prose and Essays Analysis
12		Prose and Essays Analysis
13		Prose and Essays Analysis
14		Prose and Essays Analysis
15		Prose and Essays Analysis

Recommended Books

Sr. No	Name of Author	Name of Book
1	D.H. Howe	English for Undergraduates
2	D.Queen	Configurations
3	Oxford University	English for Undergraduates

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History of Muslims in Sub-Continent(برصغیر میں مسلم تاریخ)

Course Code	GEN-01402
Nature of Course	General
Number of Credit Hours	03
Semester	4th
Objectives of the Course	1۔ طلباء کو برصغیر کے حالات اور مسلمانوں کی تاریخ سے آگاہ کرنا 2۔ طلباء کو برصغیر میں مسلمانوں و دیگر اہل مذاہب کے درمیان تعلقات سے روشناس کرانا۔ 3۔ طلباء کو برصغیر کے پس منظر میں مذہبی رواداری سے متعارف کرانا

Course Description/Outlines

Sr. No	Title	Description
1	برصغیر میں اسلام کی آمد	برصغیر میں مسلم دور حکومت کا آغاز
2	برصغیر میں عرب حکومتوں کا دور	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
3	برصغیر میں عربوں کا نظام حکومت	نظام حکومت کا جائزہ
4	عرب دور میں غیر مسلموں سے تعلقات	عرب دور میں غیر مسلموں سے تعلقات کی نوعیت اور اس کا جائزہ
5	غزنوی دور حکومت(976تا1186)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
6	غوری دور حکومت(1173تا1206)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
7	خاندان غلاماں(1206تا1298)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
8	غیر مسلموں سے تعلقات	مذکورہ بالا ادوار میں غیر مسلموں سے تعلقات کی نوعیت اور اس کا جائزہ
9	خلجی دور حکومت(1290تا1320)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
10	تغلق دور حکومت(1320تا1414)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف

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11	سادات دور حکومت(1414 تا1451)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
12	غیر مسلموں سے تعلقات	مذکورہ ادوار میں غیر مسلموں سے تعلقات اور اس کا جائزہ
13	لودھی دور حکومت(1451 تا1526)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
14	سوری دور حکومت(1540 تا1556)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف
15	مغلیہ دور حکومت(1556 تا1857)کا تعارف	نظام حکومت کا جائزہ معروف حکمرانوں کا تعارف مذکورہ بالا ادوار میں غیر مسلموں سے تعلقات اور اس کا جائزہ

Recommended Books

Sr. No	Name of Author	Name of Book
1	سید سلیمان ندوی	عرب وہند کے تعلقات
2	شیخ محمد اکرام	آب کوثر، رود کوثر، موج کوثر
3	سید ہاشمی فرید آبادی	محمد بن قاسم سے اورنگزیب عالمگیر تک
4	ثروت صولت	ملت اسلامیہ کی مختصر تاریخ
5	ابن اثیر	الکامل فی التاریخ
6	یحیٰ بن احمد سرہندی	تاریخ مبارک شاہی
7	ضیاء الدین برنی	تاریخ فیروز شاہی
8	خواجہ نظام الدین احمد	طبقات اکبری
9	محمد قاسم فرشتہ	تاریخ فرشتہ
10	خلیق احمد نظام	سلاطین دہلی کے مذہبی رجحانات
11	قاضی محمد اطہر مبارک پوری	ہندوستان میں عربوں کی حکومتیں
12	قاضی محمد اطہر مبارک پوری	اسلامی ہند کی عظمت رفتہ
13	محمد اسحاق بھٹی	برصغیر میں اسلام کے اولین نقوش

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14	مظہر الدین صدیقی	اسلام کا نظریہ تاریخ
15	سید صباح الدین عبد الرحمن	مقالات سلیمان
16	سید امیر علی	روح اسلام
17	اشتیاق حسین قریشی	سلطنت دہلی کا نظم حکومت
18	اشتیاق حسین قریشی	برعظیم پاک وہند کی ملت اسلامیہ
19	قاضی جاوید	برصغیر میں مسلم فکر کا ارتقاء
20	عزیز احمد	برصغیر میں اسلامی کلچر
21	تاراچند	ہندوستانی ثقافت پر اسلام کے اثرات

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International Relations-(بین الاقومی تعلقات)

Course Code	GEN-01403
Nature of Course	General
Number of Credit Hours	03
Semester	4th
Objectives of the Course	To introduce the students with the origin, growth, nature, scope, purpose and importance of international relation

Course Description/Outlines

Sr. No	Title	Description
1	Basic Concepts	Origin and growth of International Relations Nature, Scope and Purpose of International Relations Basic Theories(Idealism, Realism, Behaviouralism, Post Behaviouralism)
2	Actors & Power	Actors in International Relations Power Balance of Power
3	Imperialism & Nationalism	Imperialism, Colonialism, New colonialism Nationalism National Interest
4	Arm Race	Disarmament and Arms Control Nuclear Deterrence with special reference to South Asia
5	Cold War	Cold War New Cold War
6	Diplomacy & Conflict	Diplomacy Conflict
7	Regionalism	Concept of Regionalism
8	Globalization	Globalization Globalization VS. Civilization North South Gap
9	New Order	New International Economic Order New World Order after the Cold War
10	Role of Environment	Role of Environment Interdependency
11	9/11	9/11 and its Impacts on World with special reference to Muslim World
12	Energy Security	Energy Security with special reference to USA
13	World Scenario	Change World Scenario and New Patter of International Relations
14	Feminist Theory	Feminist Theory and International Relations

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15	Current Issues	Atom Bomb, CPEC, Terrorism

Recommended Books

Sr. No	Name of Author	Name of Book
1	Robert Jackson & George Sorensen	Introduction to International Relations
2	John Baylis & Steve Smith	The Globalization of World Politics: An Introduction to International Relations
3	John Gorge	Discourses of Global Politics: A Critical Introduction to International Relations
4	W. Charles, Jr. Kegley & R. Eugene	World Politics: Trend and Transformations
5	K. Booth & S. Smith	International Relations Theory Today
6	Brown, Seymon	International Relations in a Changing Global System
7	Robertm Cox	Approaches to the World Order
8.	K.W. Deutsch	The Analysis of International Relations
9	David Fransworth	International Relations: An Introduction

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History andCompilation of Hadithتاریخ وتدوین حدیث

Title	Description
Semester	4th
Nature of Course	Foundation (F-4)
Course Code	ISL 01404
No. of C.Hrs.	03
Total Teaching Weeks	18
Objectives of the Course	۱۔ حدیث وسنت کی حجیت واہمیت سے آگاہ کرنا ۲۔ حفاظت وتدوین حدیث کے مختلف طریقوں اور ادوار کا مطالعہ کرنا ۳۔ عہدِ خلافت راشدہ اور صحابہ کرامؓ میں تاریخ حدیث کی نوعیت واضح کرنا ۴۔ محدثین کی مساعی کا مطالعہ کرنا

Course Descriptions

S.No.	Topic	Descriptions
1	حدیث وسنت کا تعارف	۱۔ حدیث کا لغوی واصطلاحی مفہوم ۲۔ سنت کا مفہوم ۳۔ حدیث وسنت میں فرق
2	حدیث وسنت کی تشریعی حیثیت	۱۔ حجیت حدیث وسنت ۲۔ حدیث وسنت شریعت اسلامیہ کا بنیادی ماخذ ۳۔ حجیت حدیث پر اعتراضات کے جوابات
3	حفاظت حدیث کا پہلا دور (عہد رسالت)	۱۔ آغاز اسلام میں حفاظت حدیث کے طریقے ۲۔ عہدِ نبوی کے تحریری وثائق
4	حفاظت حدیث کا دوسرا دور (عہد خلفائے راشدین اور صحابہ کرام)	۱۔ عہدِ ابو بکر میں حدیث ۲۔ عہدِ فاروقی میں حدیث ۳۔ عہدِ عثمانی میں حدیث ۴۔ عہدِ علی میں حدیث ۵۔ صحف صحابہ

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۱۔مکہ، مدینہ، کوفہ کے مراکز حدیث ۲۔بصرہ، شام، مصر کے مراکز حدیث	حفاظت حدیث کا تیسرا دور (تابعین و تبع تابعین)	5
۱۔حضرت عمر بن عبد العزیز کے دور میں تدوین حدیث کے محرکات ۲۔اس دور کے اہم محدثین	حضرت عمر بن عبد العزیز کے دور میں حفاظت و تدوین حدیث	6
۱۔دوسری صدی ہجری کی اہم تالیفات ۲۔دوسری صدی ہجری کے کبار محدثین	تدوین حدیث (۱)	7
۱۔فتنہ انکار حدیث کی ابتداء ۲۔فتنہ وضع حدیث کے اسباب و محرکات ۳۔فتنہ انکار حدیث اور وضع حدیث کا تدارک	تدوین حدیث (۲)	8
۱۔کتب ستہ کے مؤلفین کا تعارف ۲۔کتب ستہ کا تعارف اور اسالیب	تدوین حدیث (۳)	9
۱۔علی بن المدینی، یحی بن معین، ابو بکر بن ابی شیبہ ۲۔ابوزرعہ رازی، ابو حاتم رازی، محمد بن جریر الطبری ۳۔امام ابن خزیمہ، اسحاق بن راہویہ، احمد بن حنبل	تیسری صدی کے اہم محدثین (۱)	10
۱۔محمد بن سعد، واقدی، امام دارمی ۲۔امام ابن قتیبہ دینوری ۳۔تیسری صدی کی اہم تالیفات	تیسری صدی ہجری کے اہم محدثین (۲)	11
۱۔امام حاکم نیشاپوری، دار قطنی، امام ابن حبان ۲۔امام طبرانی، امام قاسم بن اصبغ، امام ابن السکن ۳۔امام طحاوی، امام ابو عوانہ، حافظ ابن مندہ	چوتھی صدی ہجری کے اہم محدثین (۱)	12
۱۔حافظ ابن السنی، حافظ ابن رام ہرمزی، حافظ ابن عدی ۲۔قاضی المحاملی	چوتھی صدی ہجری کے اہم محدثین (۲)	13
۱۔مجد الدین ابن اثیر الجزری، عز الدین ابو الحسن ابن اثیر الجزری، حافظ ابن الصلاح ۲۔امام نووی، حافظ ابن دقیق العید ۳۔جمال الدین مزّی، ابن تیمیہ، حافظ ذھبی	تدوین حدیث کا پانچواں دور	14

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نصابی کتب

نمبر شمار	نام مصنف	نام کتاب
1	ڈاکٹر صبحی صالح	علوم الحدیث
2	ڈاکٹر خالد علوی	حفاظتِ حدیث
3	محمد ابوزہرہ	الحدیث والمحدثون
4	مفتی رفیع عثمانی	تاریخ کتابت حدیث
5	ڈاکٹر مصطفی سباعی	السنۃ ومکانتھا في التشریع الإسلامي
6	مولانا ضیاء الدین اصلاحی	تذکرۃ المحدثین (تین جلدیں)
7	ڈاکٹر محمد مصطفی الاعظمی	دراسات في الحدیث النبوي وتاریخ تدوینہ

حوالہ جاتی کتب

نمبر شمار	نام مصنف	نام کتاب
1	امام حاکم	معرفۃ علوم الحدیث
2	پیر محمد کرم شاہ الازہری	سنت خیر الانام
3	سید ابوالاعلی مودودی	سنت کی آئینی حیثیت
4	علامہ ناصر الدین البانی	حجیت حدیث
5	علامہ غلام رسول سعیدی	تذکرۃ المحدثین
6	ڈاکٹر سراج الاسلام حنیف	تاریخ علوم حدیث

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Arabic Language-II (عربی زبان II)

Course Code	ISL-01405
Nature of Course	Foundation
Number of Credit Hours	03
Semester	4th
Objectives of the Course	1۔ عربی زبان کو صحیح استعمال کرنے کے لیے صرف ونحو کی مہارت پیدا کرنا 2۔ طلباء میں عام عربی نصوص کو سمجھنے کی صلاحیت بہتر کرنا

Course Description/Outlines

Sr. No	Title	Description
1	علم النحو	علم النحو کا تعارف علم النحو کی اہمیت علم النحو کی مبادیات
2		علم النحو کے اہم متعلقہ قواعد جملہ کی اقسام (جملہ اسمیہ اور فعلیہ) جملہ کی اقسام (نواسخ جملہ اسمیہ اور فعلیہ)
3	مبنی کلمات	مبنی کلمات کا تعارف مبنی کلمات کی اقسام مبنی کلمات سے متعلق قواعد
4	اسماء	اسماء موصولہ اسماء اشارہ اسماء افعال
5	معرب کلمات	معرب کلمات کا تعارف معرب کلمات کی اقسام معرب کلمات کے متعلقہ قواعد
6	مرفوعات	مرفوعات
7	منصوبات	منصوبات
8	مجرورات	مجرورات

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مرکب ناقص اور اقسام مرکب تام (جملہ اسمیہ اور فعلیہ)	مرکبات	9
حروف استفہام حروف ناصبہ حروف جازمہ	حروف عاملہ	10
معلم الانشاء (الجزء الاول) میں سے منتخب مطالعہ	مطالعہ نص	11
معلم الانشاء (الجزء الاول) میں سے منتخب مطالعہ		12
قصص النبیین از مولانا ابو الحسن علی ندوی		13
قصص النبیین از مولانا ابو الحسن علی ندوی		14
قصص النبیین از مولانا ابو الحسن علی ندوی		15

Recommended Books

Sr. No	Name of Author	Name of Book
1	عبد الستار خان	عربی کا معلم
2	معین اللہ ندوی	تمرین صرف
3	محمد مصطفیٰ ندوی	تمرین النحو
4	مولان عبد الماجد ندوی	معلم الانشاء
5	مولانا مختار احمد	مختار النحو
6	علی جارم	النحو الواضح
7	نعیم الرحمن	اساس عربی
8	عبد الرحمن امرتسری	کتاب النحو
9	عبد الرحمن طاہر	قواعد القرآن
10	رشید الشرطوتی	مبادی العربیۃ فی الصرف والنحو
11	ڈاکٹر ابراہیم سورتی	قرآنی عربیک
12	جامعۃ الملک السعود	اللغۃ العربیۃ لغیر الناطقین بھا

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History of Fiqhتاریخ فقہ

Title	Description
Semester	4th
Nature of Course	Foundation (F-10)
Course Code	ISL- 01406
No. of C.Hrs.	03
Total Teaching weeks	18
Objectives of the Course	۱۔ طلباء کو فقہ اسلامی کے مفہوم اور ارتقائی مراحل سے آگاہ کرنا ۲۔ فقہ کی تدوین میں فقہاء کرام کی خدمات کو واضح کرنا ۳۔موجودہ دور میں فقہ کی اہمیت کی وضاحت کرنا

Course Description

S.No.	Title	Description
1	فقہ: مفہوم اور خصوصیات	۱۔ لغوی اور عمومی مفہوم ۲۔ بطور اصطلاح مفہوم کا ارتقاء ۳۔ خصوصیات
2	فقہ سے متعلقہ بنیادی اصطلاحات	۱۔ شریعہ، اصول الفقہ، قواعد فقہیہ، فروق، سیاسہ شرعیہ، خلاف
3	ما قبل اسلامی دور، قانون کا جائزہ	رومن اور اسلامی قوانین کا تقابلی
4	فقہ اسلامی کا پہلا دور (عہد نبوی) اور اسکی خصوصیات	۱۔ قرآن: فقہی تعریف، احکام ۲۔ سنۃ: فقہی حیثیت ۳۔ اجتہاد: مفہوم، حیثیت
5	فقہ اسلامی کا دوسرا دور (عہد خلافت راشدہ) اور اسکی خصوصیات	۱۔ قرآن: تدوین ۲۔ سنۃ: روایت، استدلال ۳۔ اجتہاد: انفرادی واجتماعی
6	فقہ اسلامی کا تیسرا دور (عہدِ بنی امیہ) اور اسکی خصوصیات	۱۔ سنۃ: روایت، اقسام ۲۔ مکاتب فقہ کا ظہور

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7	فقہ اسلامی کا چوتھا دور (عہد بنی عباس) اور اسکی خصوصیات	۱۔ تدوین، علوم ۲۔ مکاتب فقہ کا ارتقاء
8	حنفی مکتب فقہ کا تعارف	۱۔ بانی، معروف فقہاء، کتب ۲۔ نظریہ قانون اور اصول
9	مالکی مکتب فقہ کا تعارف	۱۔ بانی، معروف فقہاء، کتب ۲۔ نظریہ قانون اور اصول
10	شافعی مکتب فقہ کا تعارف	۱۔ بانی، معروف فقہاء، کتب ۲۔ نظریہ قانون اور اصول
11	حنبلی مکتب فقہ کا تعارف	۱۔ بانی، معروف فقہاء، کتب ۲۔ نظریہ قانون اور اصول
12	جعفری اور زیدی مکاتب فقہ کا تعارف	۱۔ بانی، معروف فقہاء، کتب ۲۔ نظریہ ہائے قانون اور اصول
13	غیر مروجہ مکاتب فقہ کا تعارف	۱۔ اوزاعی، ثوری، طبری
14	فقہ اسلامی کے بقیہ ادوار	۱۔ قانونی نظام کا استحکام ۲۔ تدوین قوانین ۳۔ مابعد نو آبادیاتی نظام
15	پاکستان میں اسلامی قانون سازی کی تاریخ	۱۔ قرارداد مقاصد ۲۔ دستور 1973ء مع متعلقہ ترامیم ۳۔ وفاقی شرعی عدالت، اسلامی نظریاتی کونسل کا تعارف

نصابی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	محمد تقی امینی	فقہ اسلامی کا تاریخی پس منظر
2	محمد الخضری	تاریخ التشریع الاسلامي
3	عبد الکریم زیدان	المدخل لدراسة التشریع الإسلامي
4	احمد حسن	The Early Development of Islamic Jurisprudence
5	حسن الخطیب	فقه الاسلام

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حوالہ جاتی کتب

نمبر شمار	نام مؤلف	نام کتاب
1	صبحی محمصانی	فلسفة التشريع الإسلامي
2	مناظر احسن گیلانی	مقدمہ تدوین فقہ
3	محمد علی السائس	تاريخ الفقه الإسلامي
4	صوفی حسن ابو طالب	بين التشريع الإسلامي والقانون الروماني
5	ابوزھرہ	ا۔ ابو حنیفہ ۲۔ مالک ۳۔ الشافعی ۴۔ احمد بن حنبل ۵۔ جعفر الصادق ۶۔ زید بن علی
6	قاری محمد طیب	اجتہاد و تقلید

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BS in Mathematics

Couse-I

Psy-01401, Psychology

Credit Hours: 03

Course Outlines:

Introduction to Psychology: Nature and Application of Psychology with special reference to Pakistan, Historical Background and Schools of Psychology (A Brief Survey) Methods of Psychology: Observation, Case History Method Experimental Method, Survey Method, Interviewing Techniques Biological Basis of Behavior: Neuron, Structure and Functions, Central Nervous System and Peripheral Nervous System, Endocrine Glands Sensation, Perception and Attention: Sensation, Characteristics and Major Functions of Different Sensations, Vision: Structure and functions of the Eye. Audition: Structure and functions of the Ear. Perception, Nature of Perception, Factors of Perception: Subjective, Objective and Social, Kinds of Perception: Spatial Perception (Perception of Depth and Distance), Temporal Perception; Auditory Perception. Attention: Factors, Subjective and Objective, Span of Attention, Fluctuation of Attention, Distraction of Attention (Causes and Control) Motives: Definition and Nature, Classification Primary: (Biogenic) Motives: Hunger, Thirst, Defection and Urination, Fatigue, Sleep, Pain, Temperature, Regulation, Maternal Behavior, Sex Secondary: (Sociogenic) Motives: Play and Manipulation, Exploration and Curiosity, Affiliation, Achievement and Power, Competition, Cooperation, Social Approval and Self Actualization. Emotions: Definition and Nature, Physiological changes during Emotions (Neural, Cardial, Visceral, Glandular), Galvanic Skin Response; Pupilliometrics, Theories of Emotion, James Lange Theory; Cannon-Bard Theory, Schachter -Singer Theory Learning: Definition of Learning, Types of Learning: Classical and Operant Conditioning Methods of Learning: Trial and Error; Learning by Insight; Observational Learning, Memory: Definition and Nature, Memory Processes: Retention, Recall and Recognition, Forgetting: Nature and Causes Thinking: Definition and Nature, Tools of Thinking: Imagery; Language; Concepts, Kinds of Thinking, Problem Solving; Decision Making; Reasoning Individual differences: Definition concepts of; Intelligence, personality, aptitude, achievement

Prescribed Books:

1) R. C. Atkinson, & E. E. Smith, (2000). Introduction to Psychology (13th Ed.). Harcourt Brace College Publishers.
2) L. D. Fernald, & P. S. Fernald, (2005). Introduction to Psychology. USA: WMC Brown Publishers.
3) W. E. Glassman, (2000). Approaches to Psychology. Open University Press. N. Hayes, (2000). Foundation of psychology (3rd Ed.). Thomson Learning. Lahey, B. B. (2004). Psychology: An Introduction (8th Ed.). McGraw-Hill Companies, Inc.

J. E. Ormord, (1995). Educational Psychology: Developing learners. Prentice- Hall, Inc

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BS in Mathematics

Couse-II

Math-01401, Vector and Tensor Analysis

Credit Hours: 03

Course Outlines:

3-D vectors, summation convention, Kronecker delta, Levi-Civita symbol, vectors as quantities transforming under rotations with $\in_{ijk}$ notation, scalar- and vector-triple products, scalar- and vector-point functions, differentiation and integration of vectors, line integrals, path independence, surface integrals, volume integrals, gradient, divergence and curl with physical significance and applications, vector identities, Green's theorem in a plane, divergence theorem, Stokes' theorem, coordinate systems and their bases: the spherical, cylindrical and curvilinear coordinate meshes, alternating symbol, relation between alternating symbol and Kronecker delta, tensors of first, second and higher orders, algebra of tensors, contraction of tensor, quotient theorem, symmetric and skew-symmetric tensors, Covariant and Contravariant tensors, invariance property, isotropic tensors, differentiation of tensors, application of tensors in modeling anisotropic systems, study of physical tensors (moment of inertia, index of refraction, etc.), diagonalization of inertia tensor as aligning coordinate frame with natural symmetries of the system

Prescribed Books:

1) D. E. Bourne, P. C. Kendall, Vector Analysis and Cartesian Tensors (2nd Edition), Thomas Nelson UK - 1977
2) N. A. Shah, Vector and Tensor Analysis, 2005, A-One Publishers, Lahore.
3) G. D. Smith, Vector Analysis, Oxford University Press, Oxford.
4) M. R. Spiegel, Vector Analysis, 1974, McGraw Hill, New York 1967.

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BS in Mathematics

Couse-III

Math-01402, Basic Statistics

Credit Hours: 03

Course Outlines:

Interpretations of Probability, Experiments and events, Definition of probability, Finite sample spaces, Counting methods, The probability of a union of events, Independent events, Definition of conditional probability, Baye's' theorem, Random variables and discrete distributions, Continuous distributions, Probability function and probability density function, The distribution function, Bivariate distributions, Marginal distributions, Conditional distributions, Multivariate distributions, Functions of random variables, The expectation of a random variable, Properties of expectations, Variance, Moments, The mean and the median, Covariance and correlation., Conditional expectation, The sample mean and associated inequalities, The multivariate normal distribution.

Prescribed Books:

1) A.M. Mood, F.A. Graybill, and D.C. Boes, Introduction to the Theory of Statistics, 3rd Edition, McGraw-Hill Book Company New York, 1974.
2) M. H. Degroot, Probability and Statistics, 2nd Edition, Addison-Wesley Publishing Company, USA, 1986.
3) K.V. Mardia, J.T. Kent, and J.M. Bibby, Multivariate Analysis, Academic Press, New York, 1979.

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BS in Mathematics

Couse-IV

Math-01403, Discrete Structures

Credit Hours: 03

Course Outlines:

Set and Relations: Basic notions, set operations, Venn diagrams, extended-set operations, indexed family of sets, countable and uncountable sets, relations, cardinality, equivalence relations, congruence, partitions, partial order, representation of relations, mathematical induction. Elementary Logic: Logics of order zero and one, Propositions and connectives, truth tables, conditionals and biconditionals, quantifiers, methods of proof, proofs involving quantifiers.

Prescribed Books:

1) K. H. Rosen, Elementary Number Theory and its Applications (12th edition), 2000, Addison-Wesley, Reading, Ma, USA.

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BS in Mathematics

Couse-V

Math-01404, Basic Algebra

Credit Hours: 03

Course Outlines:

Group Theory: basic axioms of a group with examples, subgroups, order of a group, subgroups generated by subset of a group, system of generators, cyclic groups, cosets, Lagrange's theorem, introduction to permutations, even and odd permutations, cycles, lengths of cycles, transpositions, symmetric group, alternating groups, rings, fields (definitions and examples), vector spaces, subspaces, linear dependence and independence, linear span of a subset of a vector space, bases and dimensions of a vector space. Linear Algebra: Algebra of matrices, determinants, matrix of a linear transformation, row and column operations, rank, inverse of matrices, solution of homogeneous and non-homogeneous equations, orthogonal transformation, eigenvalue problem with physical significance

Prescribed Books:

1) H. Anton, Linear Algebra with Applications (8th edition), John Wiley, New York.
2) I. N Herstein, Topics in Algebra (2nd edition), 1975, John Wiley, New York
3) R. O. Hill, Elementary Linear Algebra with Application (3rd edition), 1995, Brooks/Cole
4) R. Larson, D. C. Falv, Elementary Linear Algebra, (6th edition), 2009, Houghton Mifflin Harcourt Publishing Company, New York.

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BS in Physics

Couse-I

Phy-01401 Classical Electrodynamics 3 Credit Hrs.

Fundamental Concepts: The coulomb's law, The electric field, the electrostatic potential, Gauss's law, application of Gauss's law, the electric dipole, multipole expansion of electric fields, Solution of electrostatics problems: Poisson's equation and coordinate system, Laplace's equation in one independent variable, solution of Laplace's equation in spherical coordinates (zonal harmonics), solution of Laplace's equation in cylindrical coordinates (cylindrical harmonics), The Laplace's equation in rectangular coordinates, Laplace's equation in two dimensions: General solution, solutions of Poisson's equation; Electrostatics in dielectric media: Polarization, the field outside a dielectric medium, The electric fields inside a dielectric medium, Gauss's law in dielectrics(the electric displacement), electric susceptibility and dielectric constant, point charge in a dielectric fluid, boundary conditions on the field vectors, Boundary-value problems involving dielectrics, force on a point charge embedded in a dielectric. Microscopic view of dielectrics: Molecular field in dielectric, Induced dipoles, the polar molecule: the Langevin-Debye Formula, permanent polarization: Ferroelectricity, Electrostatic Energy: Potential energy of a group of point charges, electrostatic energy of a charge distribution, energy density of an electrostatic field, energy of a system of charged conductors: coefficient of potential, coefficient of capacitance and induction, capacitors, Forces and torques.

Recommended Books:

1. J. R. Reitz, F. J. Milford & R. W. Christy. Foundations of electromagnetic Theory. 4th Edition, Pearson Publishing Compan 2013.
2. D. Corson and P. Lorrain. Introduction to Electromagnetic Fields and Waves. Literary Licensing, LLC, 2013.

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

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BS in Physics

Couse-II

Phy-01402 Electronic Devices and Circuits (3+1) Credit Hrs.

Theory: 3 Credit Hrs.

Semiconductor and P-N junction: Energy bands and energy gaps in solids. Conduction in pure semiconductors, Doping, p-type, n-type semiconductor, p-n junction diode, its structure, characteristics and application as rectifiers, Capacitor filters, Diode limiting and clamping circuits, Voltage multiplier circuits.

Special Diodes: Light emitting LASER and photo diodes, Varactor diodes, Schottky diodes, Tunnel diodes and Zener diodes.

Bipolar Junction Field Effect Transistor (BJFET): Thevenin and Norton equivalence, Bipolar junction transistors, Biasing and stability, Common emitter, Common base and Common collector amplifiers, h-parameter model and performance, Multistage amplifiers, Frequency response, Negative feedback, Power amplifiers, Class A, B and C amplifiers.

Junction Field Effect Transistor (FET): Junction FET, MOSFET, construction, operation and characteristics, biasing, common source and common drain amplifiers, frequency response.

Operational Amplifiers: Ideal op-amps, simple op-amp arrangements, Differential amplifiers, op-amp applications: Inverting and non-inverting circuits, comparators, summing, integrator and differentiator.

Electronics Instruments: Galvanometer, Ammeter, Voltmeter, Multimeter, and Cathode ray oscilloscope (CRO), Signal generator.

Recommended Books:

1. Del S. Sedra, Kenneth C. Smith - Microelectronic Circuits, 6th Edition, Oxford University Press, 2009.
2. Ben G. Streetman, Sanjay Kumar Banerjee, Solid State Devices, PHI Learning, 2009.
3. Donald A. Neamen - Electronic Circuit Analysis and Design, McGraw Hill, 1996.
4. Donald A. Neamen - Microelectronics Circuit Analysis and Design, McGraw Hill, 2009.
5. Thomas L. Floyd - Electronic Devices, 9th Ed, Prentice Hall, 2013.
6. Behzad Razavi, Fundamentals of Microelectronics, 2nd Edition, Wiley, 2013.
7. Thomas F. Schubert, Jr., Ernes tM. Kim, Fundamentals of Electronics: Book1 Electronic Devices and Circuit Applications, M&C, 2015.

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

Lab. 1 Credit Hr.

1. To develop understanding and uses of electronic devices including GATS, Transistors.
2. Characteristics of a semiconductor diode (Compare Si with Ge diode).
3. Setting up of half & full wave rectifier & study of following factors:
   i. Smoothing effect of a capacitor.
   ii. Ripple factor & its variation with load.
   iii. Study of regulation of output voltage with load.
4. To set up a single stage amplifier & measure its voltage gain and bandwidth.
5. To set up transistor oscillator circuit and measure its frequency by an oscilloscope.
6. To set up and study various logic gates (AND, OR, NAND etc.) using diode and to develop their truth table.
7. To set up an electronic switching circuit using transistor LDR and demonstrate its use as a NOT Gate.
8. Characteristics of a transistor.
9. Use of computer in the learning of knowledge of GATE and other experiments.

Note: Minimum number of practical to be performed is six. Teachers are required to emphasize on graphical analysis, error calculations and on system of S.I. units in the beginning of semester.

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BS in Physics

Couse-III

Phy-01403 Mathematics-IV (Calculus-II) 3 Credit Hrs.

Riemann integrals and their applications, Fundamental theorems of calculus, Area under the curve, Integration of rational, irrational, trigonometric, exponential and logarithmic functions, Improper integrals, Beta and gamma integrals. Real functions of several variables, Directional derivatives, Partial derivatives, Local maxima and minima, Gradient, chain rule, Stationery points, Mean value theorems, Total differentials, Implicit functions, Curve tracing, Tangents, One parameter family of curves, Envelops of a family of curves, Volumes of solids of revolution, Area of a surface of revolution, Moments and center of gravity, Multiple integrals and applications, Infinite series, Test for its convergence, Root and ratio tests, Gauss and integral tests.

Recommended Books:

1. *Calculus* by J. Stewart, Books/Cole Publishing Co. USA, 1999.
2. *Calculus and Analytic Geometry* by G.B. Thomas and R.L. Finney, Addison-Wesley Publishing Company, 1996.

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BS in Physics

Couse-IV

Phy-01404 Fundamentals of Materials 3 Credit Hrs.

Introduction to materials; Properties of materials; Types of Materials: (i) metallic materials, (ii) nonmetallic materials; Selection of materials; Bonds in solids; ionic bonding; covalent bonding; metallic bonding; Vander Waals bonding; secondary bonding and mix bonding; effect of bond type on structure and properties such as density; stability; melting point; stiffness and electrical properties; crystal structure; lattice; crystal systems; Bravais lattice; atom position in cubic unit cell; directions in unit cubic unit cell; Miller indices for crystallographic planes in cubic unit cell; planes and directions in hexagonal unit cells; comparison of FCC; BCC and HCP crystal structure; polymorphism and allotropy; composite materials; ceramic materials; polymer materials; semiconductor materials; electronic materials.

Recommended Books:

1. Introduction to Physical metallurgy by S. H. Avner, McGraw-Hill Book Comp. New York, 1999.
2. Materials Science and Engineering and Introduction by W. D. Cluster, John Wiley & Sons (USA), 1999.
3. Principles of Materials Science and Engineering by W. F. Smith, McGraw-Hill Book Comp. New York, 1999.
4. Material Science & Metallurgy by O. P. Khana, DhanpatRai & Sons Delhi, 1994.

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

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BS in Physics

Couse-V

Phy-01405 Thermal and Statistical Physics 3 Credit Hrs.

Basic postulates: Fundamental equations and equations of state; Response functions; Maxwell's relations; Reduction of derivatives; Probabilities; Phase space description of physical system; Distribution functions; Statistical interpretation of entropy; Boltzmann H-theorem; Ensembles; Counting of states (in classical and quantum mechanical systems, examples); Partition function; Boltzmann distribution; Formation of micro-canonical; canonical and grand canonical partition functions; Relations of partition function with thermodynamic variables; examples (collection of simple harmonic oscillators, Pauli and Van Vleck paramagnetics, Theorem of equipartition of energy; Maxwell-Boltzmann; Bose-Einstein; Fermi-Dirac statistical systems Examples of thermodynamics of these systems; black body radiations; gas of electrons in solids; Lattice vibrations in solids; Van der Waals gas; Mean field calculation; ferromagnets in mean field approximation; Fluctuations; Bose-Einstein condensation; Introduction to statistical density matrix approach.

Recommended Books:

1. F. Mandl. Statistical Physics. ELBS/John Willey, 2nd Ed. 1988.
2. F. Reif. Fundamentals of Statistical and Thermal Physics. McGraw Hill London, 1965.
3. A.J. Pointon. Introduction to Statistical Physics. Longman 1967.
4. C. Kittel. Elements of Statistical Physics. John Wiley 1958.
5. Roy, S K, Thermal physics and statistical mechanics, New Age International (New Delhi), 2011.

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

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Couse-VI

Phy-01406 Principles of Management 2 Credit Hrs.

Introduction to Management and Organizations; Organizational Vision; Mission and Strategies; Organizational Culture; Socially Responsible Organizations Foundations of Planning; Planning Tools and Techniques; Organizational Structure and Design; Human Resource Management; Foundations of Behavior; Leadership and Motivation; Operations and Value Chain Management;

Performance Management Project Portfolio Management System; Project Networks; Scheduling; Resource Allocation and Resource Leveling; Project Execution and Controlling; Introduction to PMBOK.

Recommended Books:

1. C. F. Gray, E. W. Larson, Project Management: The Managerial Process, Boston: McGraw-Hill/Irwin, 2008
2. S. P. Robbins, M. Coulter, Management, 9th Edition, Prentice Hall, 2007.
3. A Guide to the Project Management Body of Knowledge. PMBOK Guide 6th Edition, Project Management Institute, 2016.

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

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Course Code PEDU-00431, Introduction to Social Work / Univ. Optional (Compulsory 9) (Theory) (3+0 Cr. Hr.) 4th Semester

OBJECTIVES:

The objective of this course is to acquaint and familiarize students with the basic concepts and, scope of Social work.

CONTENTS:

I. Introduction:

a. Definition of social work
b. Philosophical base of social work
c. Generic principles of social work
d. Professional and voluntary social work
e. Islamic concept of social work
f. Modern concept of social work
   - Preventive
   - Curative
   - Rehabilitative

II. Social Work methods

a. Primary methods
   - Social Case work;
   - Social group work
   - Community organization

b. Secondary methods
   - Social Welfare Administration
   - Social Research
   - Social Action

III. Important fields of social work practice

a. Health
b. Education
c. Minorities
d. Begging

RECOMMENDED BOOKS:

1. Adams, R.(2003). *Social work and empowerment*. London: Palgrave Macmillan.
2. Bogo, M. (2007). *Social work practice*. New Dehli: Rawat Publications.
3. Catherine N. D. & Karen M.S. (2012). *Social Work Fields of Practice*. Canada: John Wiley &Sons.
4. Gautam, P.R. & Singh, R.S. (2011). *Principles and practices of Social Work*. New Delhi: Balaji Offset.
5. Healy, K. (2012). *Social work methods and skills: The essential foundations of practice*. New York: Palgrave Macmillan.
6. Hepworth, D. H. & Rooney, R. (2010). *The Direct Social Work Practice: Theory and skills*. Belmont: Brook cole.
7. Jane M. & Ronnie, E. (2006). *Practice Skills in Social Work & Welfare*. Chennai(India): Allen & Unwin.

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Course Code PEDU-03432, Theory of Games (General 3) (Theory) (3+0 Cr. Hr.) 4th Semester

OBJECTIVES OF COURSE

This course is aimed at developing the knowledge of students about rules of the sports & games along with the coaching skills of different sports among the students. The course will enhance the organizational skills in the students and knowledge regarding organization and conduct of tournament at school, college, university and National levels. It will also help the students to develop and polish their leadership qualities and sports-man spirit.

COURSE CONTENTS

I. INTRODUCTION

a. Definition of Games and Sports
b. Types of Games and Sports
c. Values of Games and Sports

II. SYSTEMS OF TOURNAMENT

a. Single elimination or knockout system
b. Round robin or league system
c. Combination system
d. Challenge system
- Ladder system
- Pyramid system

III. ORGANIZATION AND CONDUCT OF TOURNAMENTS

a. Board level
b. University level
c. Provincial level
d. National level

IV. HISTORY, RULES AND TECHNIQUES OF GAMES (RACKET)

a. Badminton
b. Tennis
c. Squash
d. Table Tennis

V. HISTORY, RULES AND TECHNIQUES OF GAMES (BALL GAMES)

a. Basket Ball

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b. Net Ball
c. Volleyball
d. Handball

VI. HISTORY, RULES AND TECHNIQUES OF GAMES (FIELD GAMES)

a. Foot Ball
b. Hockey
c. Cricket

RECOMMENDED BOOKS

1. Salen, K., Tekinbaş, K. S., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT press.
2. Bass, T. L. (2012). *Football skills & drills*. Human Kinetics.
3. Anders, E., & Myers, S. (2008). *Field hockey: Steps to success*. Human Kinetics.
4. Lenberg, K. (Ed.). (2006). *Volleyball skills & drills*. Human Kinetics.
5. Smith, T. (2011). *Tom Smith's Cricket Umpiring & Scoring*. Weidenfeld & Nicolson.
6. McAfee, R. E. (2009). *Table tennis: Steps to success*. Human Kinetics.
7. Bartlett, R. (2007). *Introduction to sports biomechanics: Analysing human movement patterns*. Routledge.

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Course Code PEDU-03433, Economics (General 3) (Theory) (2+0 Cr. Hr.) 4th Semester

Course Objective:

The course is designed for the beginners with either no formal background or very little Acquaintance with Economics. The objective is to teach the students about the basic Concepts and terminologies used both in micro and macro-economics to understand the Economic activities. The course will also deal with the major issues in Pakistan economy. After completion of this course, the students are supposed to understand Different economic activities and their impact on economy

Course Contents

I. **Introduction to Economics**
   a. The problem of scarcity
   b. Resources and production
   c. Applying graphs to Economics

II. **Production possibilities and opportunity cost**
   a. The three fundamental economic questions
   b. The opportunity costs
   c. The modern possibilities
   d. Marginal analysis
   e. Gains from trade

III. **Market demand and supply**
   a. The law of demand and supply
   b. Changes in quantity demanded/supplied and changes in demand/supply
   c. Non-price determinants of demand and supply
   d. Market demand and supply analysis

IV. **Elasticity of demand and supply**
   a. Price elasticity of demand and its determination
   b. Price elasticity variation along a straight-line demand curve
   c. Other elasticity measures

V. **Measuring the size of economy**
   a. Gross domestic product
   b. The expenditure approach, GOP shortcomings as a measure of economic welfare
   c. Other national accounts
   d. Meaning, measurement and consequences of inflation

VI. **Inflation and unemployment**
   a. Demand-pull and cost-push inflation
   b. Unemployment and its types
   c. Criticism of unemployment rate
   d. The goal of full employment

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VII. Income Inequalities

a. The basic and major issues
b. b. Economics and social aspects
c. Measurement of income inequalities

VIII. The monetary system

a. What makes money "money"?
b. b. Properties of money. What stands behind money?
c. c. The demand for money
d. The goals of monetary policy

IX. Agriculture

a. Is Pakistan a feudal State? What is the popular perception of feudalism?
b. The Green Revolution
   Land Reforms
c. Agricultural pricing policy
d. Mechanization
e. Agricultural income tax

X. Poverty: Trends, Causes and Solutions

a. What does poverty mean? Who is a poor?
b. b. Poverty and bonded labor
c. Can poverty be eliminated in Pakistan?

Reference Book

1. Boccia, F., & Leonardi, R. (Eds.). (2017). *The Challenge of the Digital Economy: Markets. Taxation and Appropriate Economic Models*. Springer.
2. Miranda, M. J., & Fackler, P. L. (2004). *Applied computational economics and finance*. MIT press.
3. Gillespie, J., & Nicholson, P. (Eds.). (2012). *Law and development and the global discourses of legal transfers*. Cambridge University Press.
4. Gwartney, J. D., Stroup, R. L., & Lee, D. R. (2016). *Common sense economics: what everyone should know about wealth and prosperity*. Macmillan.

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Course Code PEDU-01434, Administration and Management in Sports (Foundation 4) (Theory) (3+0 Cr. Hr.) 4th Semester

OBJECTIVES OF COURSE

Good administration and better management can produce best results. Physical Education and Sports are the fields that require most excellent administration for converting the efforts into real success. This particular course will help the physical educators and sports managers to understand the soul of administrative routines and become aware of the qualities and the qualifications of good administration, in addition to understanding the need of public relations and use of these relations for the promotion of physical education and sports.

COURSE CONTENTS

I. INTRODUCTION

a. Meaning and Definition of Administration
b. Need and importance of Administration in Physical Education
c. Types of Administration
d. Qualifications and traits of the Administrator
e. Duties of Administrator

II. ADMINISTRATIVE SETUP IN PHYSICAL EDUCATION

a. Administrative organization and structure
b. Private and Public organizations
c. Objectives of the organization
d. Physical Education at various levels of education in Pakistan
e. Administrative setup of Sports and Physical Education in Pakistan

III. PERSONNEL ADMINISTRATION IN PHYSICAL EDUCATION

a. Principles of personnel Administration
b. Facilities for staff and staff moral
c. Teaching load, In-service training
d. Qualification of staff
e. Evaluation and Supervision
f. Conduct of Sports Meeting

IV. CLASS MANAGEMENT

a. Getting acquainted with the class
b. Establishing rules for maintaining discipline
c. Management of time and establishing the class routines
d. Assignments and learning pace for students
e. Stimulating students' interest in Sports
f. Class environment
g. Parents involvement and communication

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V. PUBLIC RELATION

a. Definition of Public Relation
b. Objectives
c. Need and importance of Public Relation in Physical Education
d. Principles of Public Relation

VI. PUBLIC RELATION IN PRACTICE

a. Teacher Student Relation
b. Public Relation in various competitions
c. Community relations
d. Relations with parents and with general public
e. Relation with Administration and Inter Departmental Relations

RECOMMENDED BOOKS

1. Masterman, G. (2014). *Strategic sports event management*. Routledge.
2. Watt, D. C. (2003). *Sports management and administration*. Psychology Press.
3. asan, C. O. (2000). *Introduction to sports administration*. Lagos: Beulah Publishers.
4. Parkhouse, B. L. (Ed.). (2001). *The management of sport: Its foundation and application*. McGraw-Hill Companies.
5. Bloyce, D., & Smith, A. (2009). *Sport policy and development: An introduction*. Routledge.

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Course Code PEDU-02435, Games Practical-IV (Badminton) (0+2 Cr. Hr.) 4th Semester

OBJECTIVES OF COURSE

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

1. BADMINTON (Skills, Coaching and Officiating)

a. Stance (Standing Position & Grip)
b. Service
c. Strokes
d. Footwork

RECOMMENDED BOOKS

1. Paup, D. (2017). *Skills, drills & strategies for badminton*. Routledge.
2. Wang, J. E. (2004). *Developmental trends for badminton game play across skill levels: An exploratory study*. University of South Carolina.
3. Sheu, F. R. (2011). *Understanding expertise from elite badminton coaches*. Indiana University.
4. Salen, K., Tekinbaş, K. S., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT press.
5. Van Nieuwerburgh, C. (2017). *An introduction to coaching skills: A practical guide*. Sage.
6. Dawson, P., & Guare, R. (2012). *Coaching students with executive skills deficits*. Guilford Press.

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Course Code PEDU-02436, Athletics Practical-IV (Jumps) (0+2 Cr. Hr.) 4th Semester

OBJECTIVES OF COURSE

The outline of this practical course is prepared with the purpose to provide basic knowledge to the students with modern approach for developing their skills in Track and Field events. Furthermore, this course will enable them to develop courage, determination, speed, endurance and self-reliance.

1. **JUMPS (Horizontal and Vertical) (Skills, Coaching and Officiating)**
   a. Start
   b. Run-up
   c. Jumping style at Takeoff board
   d. Style of crossing bar
   e. Landing

RECOMMENDED BOOKS

1. James, E. (2018). *Practical Training for Running, Walking, Rowing, Wrestling, Boxing, Jumping, and All Kinds of Athletic Feats*. BoD–Books on Demand.
2. Wrisberg, C. A. (2007). *Sport skill instruction for coaches*. Human Kinetics.
3. Chu, D. A. (1998). *Jumping into plyometrics*. Human Kinetics.
4. Hargreaves, A. (2009). *Skills & Strategies for coaching soccer*. Human Kinetics.

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BS in Political Science

Couse-I

Course: English IV: Academic Reading & Writing

Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficientreaders armed with appropriate skills and strategies for reading and comprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation,and integration of knowledge
- Write well organized academic texts including examinationanswers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
    - Using appropriate strategies for extracting information andsalient points according to a given purpose
    - Identifying the main points supporting details, conclusions ina text of intermediate level
    - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
    - Interpreting charts and diagrams
    - Making appropriate notes using strategies such as mindmaps, tables, lists, graphs.
    - Reading and carrying out instructions for tasks, assignmentsand examination questions
2. Enhance academic vocabulary using skills learnt in CompulsoryEnglish I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
    1. Plan their writing: identify audience, purpose and message(content)
    2. Collect information in various forms such as mind maps,tables, charts, lists
    3. Order information such as:
        - Chronology for a narrative
        - Stages of a process
        - From general to specific and vice versa
        - From most important to least important
        - Advantages and disadvantages
        - Comparison and contrast
        - Problem solution pattern

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5. Write argumentative and descriptive forms of writing using differentmethods of developing ideas like listing, comparison, and contrast,cause and effect, for and against
   - Write good topic and supporting sentences and effectiveconclusions
   - Use appropriate cohesive devices such as reference wordsand signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition withtests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An IntroductoryCourse. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St.Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). OxfordEnglish for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: CambridgeUniversity Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection andWriting. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge UniversityPress.
- Yorky, R. Study Skills.

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PS-419: *TERRORISM*

"Terrorism", a term not comprehensively defined: yet having such great impact on current world politics that most major contemporaries' issues revolve around it. May it be the concept of Unilateralism, Doctrine of pre-emption or the war on terror itself they all revolve around it. The course focuses on some of these issues and highlights different aspects related to it.

1. Terrorism conceptual framework, explanation of the concept, importance and kinds
2. As a threat to national and global security interests.
3. The cataclysm of 9/11
4. War on terrorism

Recommended Books:

1. Akhtar, Shaheen, Terror in Indian Held Kashmir Massive Violation of Human Rights, Islamabad, Institute of Regional Studies, 1993.
2. Amin, Tahir, Mass Resistance in Kashmir: Origins, Evolution and Options Islamabad, Book Promoters, 1995.
3. Cameron, Gavin, Nuclear Terrorism: A threat Assessment for 21st Century, New York: St. Martin Press, 1999.
4. Combs, Cindy C. Terrorism in the 21st Century, Ner Jersey Prentice Hall, 1998.
5. Werberg, Ceonard B. and Davis, Paul B. Introduction to Political Terrorism, New York, McGraw Hill Inc. 1989.
6. Ken Booth, World in Cellision, Terror and the future of global order.
7. K. Bushan, Nuclear, Biological and Chemical warfare.

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BS in Political Science

Couse-III

PS-420: ***ETHNICITY AND CONFLICTS***

The course is designed to give understanding to the students about this issue in detail and try to observe it in various societies. For this purpose case studies are to be done. It will cover only ethnic problem in Pakistan, India and USA.

1. Definition of Ethnicity ,Growth and its Significance
2. Theories of Ethnicity

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-Insaniat, Lahore.
2. Meken Kanp, Monique, Searching For Peace in Central and South Asia, Lynne Reinner Publisher, 2002.

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BS in Political Science

Couse-IV

PS-414: ***PRINCIPLES OF PUBLIC ADMINISTRATION***

Definition, Scope, Relationship with other Social Sciences, Public and Private Administration.
Approaches – Traditional, Modern, and Behavioral.
Rise of Big Government: Contributory Factors, Public – Private Collaboration, and the growth of N.G.Os.
Bureaucracy – Concept, Nature and Functions, Max Weber's Ideal type, Criticism and the Changing view of Bureaucracy.
Functional elements of administration:

(a) Organization, its types, principles and theories;
(b) Planning, Rationale and Principles;
(c) Personnel Administration-Its techniques and functions.
(d) Communication – Types, and Channel.

Decision Making – Process, Barriers to Rational Choice;
Administrative Accountability – the role of Legislature, Judiciary, Ombudsman and the Media;
Financial Administration – Budgeting, Auditing and problems of financial discipline
Public Policy Making with reference to the policy making machinery in Pakistan.
Administrative Structure of Pakistan: Nature, Organization & Management Process in the Centre & Provinces.

Books Recommended:

1. Dimock and Dimock, Public Administration.
2. Neigro and Niegro Public Administration.
3. Pfifner, J.M. Public Administration, New York: 1986.
4. Rizvi, S.A. Nazmiat E.Aams, (Urdu) Maktaba-e-Farid, Karachi: 1982.
5. Shaikh, H. Public Administration, Kifayat Academy, Karachi 1982.
6. Shela Kazmi Naziat –e-Aama.

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BS in Political Science

Couse-V

Psychology

Course Contents: Understanding psychology; scientific and historical perspectives; schools of psychology; methods of psychology; ethical issues; fields of psychology and their application; biological basis of behavior; neuron and its function; central nervous system; peripheral nervous system; endocrine system; sensation and perception; senses: vision, audition, smell, taste and kinesthetic; introduction to perception; gestalt principles; binocular and monocular cues; illusions and extra sensory perception; states of consciousness; sleep cycle, dreams and psychoactive drugs;

Final Term: Learning: definition and types of learning; classical and operant conditioning; punishment and its effects; latent and observational learning; memory: definition and types of memory; processes and techniques of improving memory; forgetting: nature and causes; cognition and language; concept of cognition; problem solving; judgment and decision making; language development; language and cognition; language and culture; motivation and emotion; introduction to motivation; factors affecting motivation; introduction to emotions; types of emotions; physiology and emotion; theories of emotion.

Recommended Books

- Feldman, R. S. (2015). Essentials of understanding psychology. 12th edition.
- McGrawHill. Weiten, W. (2017). Psychology: Themes and variations. 10th edition. Cengage Learning.
- James W. K. (2016). Introduction to Psychology. (11th Ed.) Cengage Learning.
- Coon, D., & Mitterer, J. O. (2018). Introduction to psychology: gateways to mind and behavior. 12th edition. Cengage Learning.

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BS in Political Science

Couse-V

Fine Arts

Course Description: This Course is designed to give students an opportunity to learn about the Fine Arts and develop a sense of visual literacy. This course offers an overview of the subject for those with little or no art background as well as for beginning art majors. It is also designed to awaken the creativity, as well as giving you a strong intellectual grounding in visual thinking, and the form, meaning and content of visual art.

Course Contents: Study of formal elements; study of formal elements in two dimensional; surfaces; Perspective; principles of Arts.

Final Term: Understanding and awareness of the various art media; major historical movements in art.

Recommended Books

- The Great Masters Series (Syed Amjad Ali) Feroz Sons Pakistan
- Still Life Step by Step (Mary Mclean, CDA)North Light Books
- Artists Painters (Angel, Nunez) Nova Galicia Editions, S.L Carlos Del Pulgar Sabin.
- The Impressionist Print (Micheel Melot) Yale University Press New Haven and London

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BS in Psychology

Couse-I

ARABIC LANGUAGE

قائمة المحتويات للمقرر الدراسى (اللغة العربية) لطلاب برنامج الشهادات المتبادلة فى الكليات الملحقة بالجامعة الاسلامية ، بهاول بور. باكستان

ملحوظة: يدرس هذا المقرر فى الفصول الاولى لجميع الاقسام و العلوم من حيث المادة الاختيارية من اللغات و هى العربية و الفارسية والاردية و السرائيكية. و يكون تقسيم الدرجات كما يلى:

اختبار نصف الفصل: ٣٠ الاختبار النهائ : ٥٠ ، الدرجات الاضافية: ٢٠

مجموع الدرجات: ١٠٠ الساعات المعتمدة : ٠٣

الاهداف العامة: توسع فى استخدام الكلمات اليومية العامة

تعارف الكلمات و المصطلحات الحديثة المستخدمة بالعربية

المهارة فى النطق مع اعراب كامل و تلفظ صواب

مهارة الترجمة

الهدف الخاص: قراه النصوص الشاملة فى المقرر ، ترجمتها و حفظ القواعد النحوية و تدريبها

الاسبوع الاول:

قراة و تحفيظ السور التالية مع تدريس تراجمها الى الاردية

(العصر، الفيل، الماعون)

(الكوثر، الكافرون، النصر)

(الاخلاص، الفلق، الناس)

الاسبوع الثانى:

قراة و ترجمة (الى الاردية) الاحاديث النبوية ﷺ التالية

(اركان الاسلام، البدعة فى الاسلام،النصيحة)

(مسئولية المسلم، الانسان الكامل، حرمة دم المسلم)

(النهى عن الغضب، حسن الخلق، الايمان و الاستقامة، اتباع الرسول ﷺ)

الاسبوع الثالث:

قراة النصوص النثرية التالية باعراب كامل و ترجمتها الى الاردية

الصادق الامين، الضيف الاكول، سيدنا عمر بن الخطاب، طفل امين

الاسبوع الرابع:

امنة ام الرسول ﷺ، بين الازهار

... لا شئ يعدل الوطن، الاسد و الارنب ، غلام قوى الحاجة

الاسبوع الخامس

قراة النصوص الشعرية التالية باعراب كامل و ترجمتها الى الاردية

باسمک اللهم ، البستانى ،الصحابى، الصباح

الاسبوع السادس:

الطائر، متنزل الرحمات، الجدة

الاسبوع الثامن:

ام تغنى طفلها عند النوم، الرفق بالحيوان، اليمامة و الصياد

28/5/2021

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الاسبوع التاسع:

اختبار نصف الفصل (٣٠)

الاسبوع العاشر:

قراة النصوص التالية من الحوارات باعراب كامل و ترجمتها الى الاردية و الارجح ان يدربها الإستاذ تدريبا شفويا حتى يحفظها

الطلاب و يطلقها فى المناسبات المتعلقة بها

تحيات، تعارف ، استخدام هل ، نعم و لا

الاسبوع الحادى عشر:

الحوار بين الاستاذ و الطلاب (ا) ، الحوار بين الاستاذ و الطلاب (ب) ، فى مكتب الطيران

الاسبوع الثانى عشر:

الرحلة الدولية ، مع ضابط الجوازات ، مع مفتش الجمرک

الاسبوع الثالث عشر:

استقبال، فى المطعم، فى الفندق ـ السوال عن الطريق

الاسبوع الرابع عشر:

اجهزة الاعلام، المكالمات التليفونية ، فى دكان الملابس

الاسبوع الخامس عشر:

الكلمة و انواعها ، الاسم و انواعها

(ترجمة وحفظ القواعد مع تعريفات والامثلة)

الاسبوع السادس عشر :

واحد، تثنية ، جمع (ترجمة و حفظ القواعد مع التعريفات و الامثلة)

الاسبوع الثامن عشر:

الجملة و انواعه (ترجمة و حفظ القواعد مع التعريفات و الامثلة)

الاسبوع التاسع عشر:

الاختبار النهائى (٥٠)

(ويدرس هذه المادة من اللغة العربية بالترجمة الىٰ الاردية)

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BS in Psychology

Couse-II

Critical Thinking and Reasoning

(ADP)

	Weekly Breakdown/Plan
1	Introduction and Definition of Critical Thinking
2	Traits, Skills and value of Critical Thinking
3	Defining Logic, Defining Arguments with their Role
4	Defining Deduction
5	Defining Induction
6	Understanding Fallacies with their types (formal and informal)
7	Bad Reasons fallacy, Masked man fallacy
8	Mid-term Examination
9	Fallacies of Quantitative Logic and Accident Fallacy
10	Ad Hominem, Begging the Question Fallacy
11	Fallacies of Ambiguity and Appeal
12	Fallacies of Division and Composition
13	Black and White Fallacy, Non-Casua and Pro-Causa
14	Red Herring Fallacy, Slippery Slope Fallacy
15	Fallacy of Week Analogy
16	Final Examination

28/5/2021

Controller of Examinations
The Islamia University of
Bahawalpur

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BS in Psychology

Couse-III

Course Title: Cross Cultural Psychology
Credit Hours: 3

Course Objectives

- The course will cover social and cultural aspects of human behavior; differentiation between area studies, cross-cultural studies, and intercultural studies and aims to familiarize students with cross-cultural research.

Course Outcome

At the completion of the course the student will be able to:

• have complete awareness about cultural diversity
• engage with people from different cultures and understand

and analyze cultural practices and customs.
• it will also enable students conduct cross cultural research

Course Contents

Understanding Cross Cultural psychology
Defining and understanding culture
Historical and theoretical foundations
Nature and scope of cross cultural psychology
Acculturation and multiculturalism

Cross-Cultural Research
Methodological issues in cross cultural research
Considerations for conducting cross cultural research
Translation, adaptation and application of psychological tests across cultures
Indigenous research and current issues across cultures

Human Development and Socialization:
Culture and developmental processes
Culture and social behaviors
Parenting practices across cultures
Social perception and social cognition
Social interaction: Conformity, social influence, social loafing
Intergroup and intergenerational relations across cultures
Emotional development and regulation processes across cultures
Ethnocentrism, prejudice, stereotyping, and discrimination
Gender and sex trait stereotypes
Culture and identity
Culture, language, and communication
Application of Cross Cultural Psychology
Mental health, Intelligence
Individual and Community
Happiness, success and well being
Spirituality and religion
Human rights and law
Global Community
Immigration

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Recommended Books

Berry, J. W., Dasen, P. R., &Saraswathi, T. S. (Eds.).(1997). *Handbook of cross-cultural psychology*.(Vol. I). Boston: Alyn& Bacon.

Berry, J. W., Poortinga, Y. H., &Pandeyn, J. (Eds.). (1997). *Handbook of cross-cultural psychology*.(Vol. I). Boston: Alyn& Bacon.

Kagitcibasi, C. (1996). *Familyandhumandevelopmentacrosscultures*.NewJersy: Lawrence Erllbaum Associates, Publishers.

Keith, K. D. (2010). *Cross-cultural psychology: Contemporary themes and perspectives*. UK: Wiley Blackwell.

Laungani, P. D. (2007). *Understanding cross cultural psychology*. India: Sage Publications Ltd.

Matsumoto, D. &Juang, L. (2004).*Cure and psychology*. Sydney: Thomson's Wadsworth.

Rohner, R. P. (1986). *The warmth dimension: Foundation of parental acceptance rejection theory*. Beverly Hills, CA: Sage Publication, Inc.

Rohner, R. P. (1999). *Handbook for the study of parental acceptance and rejection*.Stress.CT:University of Connecticut.

Shireav, E.B. & Levy, D.A. (2012).*Cross-cultural psychology: Critical thinking and contemporary applications* (5th ed.). India: New Delhi

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BS in Psychology

Couse-IV

Course Title: Ethical Issues in Psychology
Credit Hours: 3

Course Objectives

The objective of this course is to introduce students with:

- Knowledge of Ethical guidelines devised by APA and other International bodies for Psychologists, both as researcher and professionals.
- the intent, organization, procedural consideration, and application of Code of ethics to guide them to towards attaining professional credibility and integrity as a researchers and practicing psychologist.

Course Outcome

At the completion of the course the student will be able to:

- understand the ethical guidelines for conducting research in Psychology and professional ethics
- will have a sense of code of conduct both as a researcher and a professional psychologist.

Course Contents

Introduction and Applicability of Ethical Issues
Historical development
Code of Ethics provided by APA, BPS, and other international bodies
General Principles

Ethical Standards
Resolving ethical issues
Competence
Human relations: Respecting Diversity, Dual role
Privacy and confidentiality
Advertising and other public statements
Record keeping and fees
Education and training
Research and publication: Plagiarism
Assessment
Therapy and counseling: Professional ethics

Recommended Books

Alderson, P. (2011). *The ethics of research with children and young people* (2nd ed.). Sage: Los Angeles.

Anderson, S. K. (2010). *Ethics for psychotherapists and counselors.* UK: Wiley-Blackwell.

American Educational Research Association, American Psychological Association &National Council of Measurement in Educational (1985).*Standard for educational and psychological testing*. Washington, DC: American Psychological Association.

American Psychiatric Association (1994).*Diagnostic and statistical manual-IV-TR(2000).* USA: Author

American Psychological Association (2002).*Publication manual of the American psychological association*(5thed.). USA: Author.

APA Code of Ethics (1999).Ethical principles of psychologists and code of conduct. *American Psychologists,* 47, 1597-1611. Banyard, P. (2011). *Ethical issues in psychology.* UK: Routledge.

British Psychological Society (2009).*Ethical guidelines and support.*Author

Canadian Psychological Association.(2000). *Canadian code of ethics for psychologists* (3rded.).Author.

Kimmel, A.J. (2007). *Ethical issues in behaviouralresearch : Basic and applied perspectives.*UK: Wiley-Blackwell.

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BS in Psychology

Couse-V

Course Title: Gender Issues in Psychology
Credit Hours: 3

Course Objectives

- To give an introduction to Psychology of gender differences and related research evidence
- To acquaint students with the contemporary gender related debates and issues particularly in the Pakistani context.

Course Outcome

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

- Differentiate facts from myths about gender differences
- Examine and criticize the validity of claims about sex and gender differences in the context of personality, cognition, mental health, morality, achievement, empathy and aggression
- Contemplate about gender issues faced particularly in the Pakistani context such as abuse, harassment, ownership of property, gender discrimination across different levels

Course Contents

Introduction
Why study psychology of Gender
Scope of Psychology of Gender

History of Psychology of Gender
1894-1936: Gender differences in intelligence
1936-1954: M/M as a global personality trait
1954-1982: Sex typing & androgyny
1982-present: Gender as a social category

Gender & Related Paradigms
Sex differences and physiology
Sex differences in brain architecture
Theories of gender
Sociobiology and evolutionary psychology
Research evidence in sex differences

Gender: Role Attitudes
Attitudes towards men's & women's roles
Affective component: Sexism
Cognitive component: Genderrole typing
Behavioral component: Sex discrimination

Gender and Aggression
Aggression /violence
Theories of aggression
Biological, sociallearning, gender-role theory
Cognitive theories
Rape and other form of sexual coercion: Prevalence and incidence
Characteristics of perpetrator &victims
Domestic abuse
Characteristics of perpetrator &victims
Sexual harassment
Characteristics of perpetrator &victims

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Psychology of Women: Issues

Emergence and history of psychology of women in the west and in Pakistan
Women and law(PPC &Shariah)
Women and psychopathologies

Psychology of Men: Issues

Emergence and history of psychology of men in the west and in Pakistan
Men and law(PPC &Shariah)
Men and psychopathologies

New Men, NewWomen, New Relationships

Changes in values, economics and employment
New men, new women & new relationships

Gender Issues in the Pakistani Context

Contemporary issues
Current Issues

Recommended Books

Brannon, L. (2011, 2008, 2005). *Gender: Psychological perspectives* .USA: Allyn and Bacon.

Brettell, C. B. & Sargent, C. F. (2009).*Gender in cross-cultural perspective* (5th ed.). New Delhi, India: PHI Learning.

Lindsey, L. L. (2011). *Gender roles: A sociological perspective*. (5th ed.). New Delhi, India: PHI Learning.

McCracken, J.(1997, 2009).*Thinking about gender*: *A historical anthology*. USA:Harcourt Brace &Company.

Hassan,I. N. (1990).*The psychology of women*.Pakistan: AllamaIqbal Open University

Helgeson,V. S. (2005). *Psychology of gender,* (2nd ed.). UK: Pearson and Education

Ussher,J.M.&Paula,N.(1992).*Gender issues in clinical psychology*(Eds.). NewYork:Rutledge Champion and Hall.

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BS in Statistics

Couse-I

STAT-01401 Introduction to Regression Analysis and Experimental Designs

Concepts of Regression and Correlation, Simple Linear regression, Inference regarding regression parameters, Linear correlation: simple, partial and multiple correlation. Inference regarding correlation coefficient. Coefficient of determination. One-Way and Two-Way Analysis of Variance Design of Experiments, Basic Principles of Design of Experiments, Description, Layout and Analysis of Completely Randomized Design, Randomized Complete Block Design and Latin Square Design. Multiple Comparisons (LSD and Duncan's test).

Pre-Requisite: STAT-01101

Books Recommended

1. Clark, G. M. and Kempson, R. E. (1997), "*Introduction to the Design & Analysis of Experiment*" Arnold London.
2. Walpole, P.E., Myers R.H., Myers S.L. (1998), "*Probability and Statistics for Engineers and Scientists*", 7th ed.Prentice Hall.
3. Weiss, N.A, (1997), "*Introductory Statistics*" 4th ed. Addison-Wesley Pub. Company, Inc.
4. Chaudhry, S.M., and Kamal, S., (1996), "*Introduction to Statistical Theory*" Part I, II, 6th ed, Ilmi Kitab Khana, Lahore, Pakistan.

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BS in Statistics

Couse-II

STAT-01402 Applied Statistics

Sampling: Need of sampling, Sample versus population, Random and nonrandom sampling, concepts of statistic and population parameter. Sampling techniques: Simple Random, Stratified and Systematic random sampling. Census and survey problem, raming of questionnaire. Sampling and Non-Sampling Errors. Index numbers: construction and uses of index numbers, un-weighted index numbers (simple aggregative index, average of relative price index numbers). Weighted index numbers (Laspayers, Paaches and Fishers ideal index numbers). Consumer price index (CPI) and Sensitive Price Indicators. Time Series Analysis: Components of time series and their isolation. Vital Statistics: Meaning of vital statistics, registrations of Birth and death in Pakistan. Uses of vital statistics, short comings of vital statistics, rates and ratios (Sex ratio, child women ratio, birth and death ratio, population growth rate, classification of natal rates, death rates or mortality rates, crude death rate, specific death rate, infant mortality rate, case fatality rate, fertility rates, crude birth rate, specific birth rate, standardized death rate, reproduction rates, gross reproduction rate, net reproduction rate, morbidity or sickness rates, marriage rates, divorce rates etc. general; fertility rate, total fertility rate.)

Pre-Requisite: STAT-01101

Books Recommended

1. Clark, G.M. and Cooke, D. (1998), "*A Basic Course in Statistics*" 4th ed, Arnold, London.
2. Mclave, J.T. Benson, P.G. and Snitch, T. (2005) "*Statistics for Business & Economics*" 9th Prentice Hall New Jersey.
3. Walpole, P.E. Myers, R.H., Myers S.L. (1998), "*Probability and Statistics for Engineers and Scientists*", Prentice Hall.
4. Chaudhry, S.M. and S. Kamal, (1996), "*Introduction to Statistical Theory*" Part I, II, 6th Ed, IImi Kitab Khana, Lahore, Pakistan.
5. Cochran, W.G. "*Sampling Techniques*".3rd Ed.
6. Pollard, A.H.. Yousuf, F. and Pollard G.M. (1982), "*Demographic Techniques*", Pergamon Press, Sydney.

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BS in Statistics

Couse-III

STAT-01609 Statistical Packages

Introduction to Minitab, data manipulation in Minitab, graphical representation in Minitab, Qualitatively and Quantitative data presentation and analyzing data in Minitab, Programming in Minitab Introduction of SPSS, data manipulation in SPSS, simple arithmetic in SPSS, SPSS function related to probability distributions, SPSS modules, simple graphing in SPSS. Analysis using SPSS syntax programming. (Use of SPSS, Minitab, Matlab, Statistica is based upon the availability of Software)

Pre-Requisite: STAT - _____

Books Recommended

1. Ryan, Barbara F.; Joiner, Brian L. and Cryer, Jonathan D.(2005) MINITAB Handbook, 5th Edition, Duxbury Press, California.
2. Delwiche, Lora D. and Slaughter Susan J. (1998) The Little SAS Book : A Primer, Second Edition, SA institute, North Carolina.
3. Norusis, Marija(2006) SPSS 14.0 Guide to Data Analysis, Prentice Hall, New Jersey.
4. SPSS (2006) SPSS 14.0 Base User's Guide, , Prentice Hall, New Jersey.
5. Marques de Sá, Joaquim P.(2003) Applied **Statistics using SPSS,** STATISTICA and MATLAB

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BS in Statistics

Couse-IV

STAT-204 Linear Algebra

Course Objectives:

- To develop the ability to solve problems using the techniques of linear algebra
- To Understand Euclidean vector spaces, their inherent arithmetic and algebraic structure, and the accompanying geometry that arise
- Acquire facility working with general vector spaces, linear transformations, coordinate vectors, and the changing of bases.
- To analyze the structure of real-world problems and plan solution strategies. Solve the problems using appropriate tools.

Learning Outcomes:

- Interpret the Use of vector equations and linear transformations and its application in image processing and Control theory, etc
- Apply mathematical concepts in problem-solving through integration of new material and modeling
- Analyze/interpret quantitative data verbally, graphically, symbolically and numerically.

Course Contents:

Linear Equations: Introduction, Gaussian elimination and matrices, Gauss-Jordan method, Making Gaussian elimination work, Ill-conditioned systems. Echelon Forms: Row echelon form and rank, The reduced row echelon form, Consistency of linear systems, Homogeneous systems, Nonhomogeneous systems. Matrix Algebra: Addition, scalar multiplication and transposition, linearity, matrix multiplication, properties of matrix multiplication, matrix inversion, inverses of sums and sensitivity, elementary matrices and equivalence, The LU factorization. Vector spaces: spaces and subspaces, four fundamental subspaces, linear independence, basis and dimension, more about rank, classical least squares, linear transformations, change of basis and similarity, invariant subspaces. Norms, Inner products, and Orthogonality: Vector norms and inner products, orthogonal vectors, Gram-Schmidt procedure, Unitary and orthogonal matrices, orthogonal reduction, complementary subspaces, range-null space decomposition, orthogonal decomposition, singular value decomposition, orthogonal projection, angles between subspaces. Determinants and their properties. Eigenvalues and Eigenvectors.

Recommended Books:

1. Anton, H. (2013). *Elementary Linear Algebra, John Wisely publisher*, 10th edition,
2. David C. L. (2014). *Linear Algebra and its Applications,* 5th edition.
3. Leon, J. S. (2015). *Linear Algebra with Applications*, 9th edition.
4. Seymour, L and Marc, L. (2006), *Linear Algebra, Schaum's Outline Series*, McGraw-Hill.
5. Strang, G. (2016). *Introduction to Linear Algrebra* , 5th edition.

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BS in Statistics

Couse-V

Differential equation

Differential Equations					
Credit Hours:	3	**Course Code:**	MATH-2122	**Prerequisites:**	None

Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to:	Domain	BT Level*
1. Identify, analyze and subsequently solve physical situations whose behavior can be described by ordinary differential equations.	C	1
2. Determine solutions to first order separable differential equations.	C	2
3. Determine solutions to first order linear differential equations.	C	3
4. Determine solutions to first order exact differential equations.	C	4

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

Course Contents:

Ordinary Differential Equations of the First Order: Geometrical Considerations, Isoclines, Separable Equations, Equations Reducible to Separable Form, Exact Differential Equations, Integrating Factors, Linear First-Order Differential Equations, variation of Parameters. Ordinary Linear Differential Equations; Homogeneous Linear Equations of the Second Order, Homogeneous Second-Order Equations with Constant Coefficients, General Solution, Real Roots, Complex Roots, Double Root of the Characteristic Equation, Differential Operators, Cauchy Equation, Homogeneous Linear Equations of Arbitrary Order, Homogeneous Linear Equations of Arbitrary Order with Constant Coefficients, Non- homogeneous Linear Equations. Modelling of Electrical Circuits. Systems of Differential Equations. Series Solutions of Differential Equations. Partial Differential Equations: Method of Separation of variables, wave, Heat & Laplace equations and their solutions by Fourier series method.

Course Assessment:

Lectures, Written Assignments, Practical labs, Semester Project, Presentations.

Sessional Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam.

Reference Material:

1. Advanced Engineering Mathematics, Michael G. 1998, Prentice Hall Publishers. IBN-10:0133214311
2. Advanced Engineering Mathematics, 7th edition, Erwin, K. 1993, John Wiley & Sons Inc. ISBN 10 0471553808.
3. A First Course in Differential Equation Zill. Prindle. Weber. Schmidt. 1996. Brooks/Cole Publishing. ISBN 13 9780534931544.

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BS in Statistics

Couse-VI

Course: English IV: Academic Reading & Writing

Course Code: ELL205

Course Description

This course aims at inculcating proficiency in academic writing through research. It guides students to develop a well-argued and well- documented academic paper with a clear thesis statement, critical thinking, argumentation and synthesis of information. This course also teaches students how to use different systems of citations and bibliography. It allows students to become independent and efficient readers armed with appropriate skills and strategies for reading and comprehending texts at undergraduate level.

Course Objectives

To enable the students to:

- Improve literal understanding, interpretation & general assimilation, and integration of knowledge
- Write well organized academic texts including examination answers with topic/thesis statement and supporting details.
- Write argumentative essays and course assignments

Course Contents

Reading and Critical Thinking

1. Read academic texts effectively by:
    - Using appropriate strategies for extracting information and salient points according to a given purpose
    - Identifying the main points supporting details, conclusions in a text of intermediate level
    - Identifying the writer's intent such as cause and effect, reasons, comparison and contrast, and exemplification.
    - Interpreting charts and diagrams
    - Making appropriate notes using strategies such as mind maps, tables, lists, graphs.
    - Reading and carrying out instructions for tasks, assignments and examination questions
2. Enhance academic vocabulary using skills learnt in Compulsory English I course
3. Acquire efficient dictionary skills such as locating guide words, entry words, choosing appropriate definition, and identifying pronunciation through pronunciation key, identifying part of speech, identifying syllable division and stress patterns
4. Writing Academic Texts:
    1. Plan their writing: identify audience, purpose and message (content)
    2. Collect information in various forms such as mind maps, tables, charts, lists
    3. Order information such as:
        - Chronology for a narrative
        - Stages of a process
        - From general to specific and vice versa
        - From most important to least important
        - Advantages and disadvantages
        - Comparison and contrast
        - Problem solution pattern

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5. Write argumentative and descriptive forms of writing using different methods of developing ideas like listing, comparison, and contrast, cause and effect, for and against
   - Write good topic and supporting sentences and effective conclusions
   - Use appropriate cohesive devices such as reference words and signal markers
6. Redraft checking content, structure and language.
7. Edit and proof read
8. Grammar in Context
   - Phrase, clause and sentence structure
   - Combining sentences
   - Reported Speech

Recommended Readings

- Eastwood, J. (2004). English Practice Grammar (New edition with tests and answers). Karachi: Oxford University Press.
- Fisher, A. (2001). Critical Thinking. C UP
- Goatly, A. (2000). Critical Reading and Writing: An Introductory Course. London: Taylor & Francis
- Hacker, D. (1992). A Writer's Reference. 2nd Ed. Boston: St. Martin's
- Hamp-Lyons, L. & Heasley, B. (1987). Study writing: A course in written English for academic and professional purposes. Cambridge: Cambridge University Press.
- Howe, D. H, Kirkpatrick, T. A., & Kirkpatrick, D. L. (2004). Oxford English for Undergraduates. Karachi: Oxford University Press.
- Murphy, R. (2003?). Grammar in Use. Cambridge: Cambridge University Press.
- Smazler, W. R. (1996). Write to be Read: Reading, Reflection and Writing. Cambridge: Cambridge University Press.
- Wallace, M. (1992). Study Skills. Cambridge: Cambridge University Press.
- Yorky, R. Study Skills.

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چوتھا سمسٹر:

بنیادی کورس۔۷ کورس کوڈ:URDU-1401 کریڈٹ آورز : ۳

❀ اردو لسانیات ❀

- لسانیات کیا ہے؟
- لسانیات کی اہم شاخیں اور شعبے

۱۔صوتیات ۲۔صرفیات

۳۔نحویات ۴۔معنیات

- علمِ لسان کی تاریخ اور جدید لسانیات کا آغاز
- زبانوں کے مختلف خاندان: تعارفی مطالعہ
- ہند آریائی خاندان کی زبانوں کا تاریخ وار تسلسل اور اردو زبان کے آغاز کے نظریات:

سنس کرت، پراکرت، اپ بھرنش، ہندی، اردو

مجوزہ کتب:

۱۔لسانیات کیا ہے؟	ڈیوڈ کرسٹل (ترجمہ: نصیر احمد خان)
۲۔توضیحی لسانیات	ایچ اے گلیسن (ترجمہ: عتیق احمد صدیقی)
۳۔اُردو لسانیات	ڈاکٹر شوکت سبزواری
۴۔جدید اردو لسانیات	ڈاکٹر امیر اللہ خان شاہین
۵۔لسانیات پاکستان	ڈاکٹر میمن عبدالمجید سندھی
۶۔ہندوستانی لسانیات	ڈاکٹر محی الدین قادری زور
۸۔اُردو کا ابتدائی زمانہ	شمس الرحمان فاروقی
۹۔اردو زبان کی تاریخ	مرزا خلیل احمد بیگ
۱۰۔مقدمہ تاریخ زبان اُردو	ڈاکٹر مسعود حسین خان
۱۱۔اُردو زبان کی قدیم تاریخ	عین الحق فرید کوٹی
۱۲۔اُردو لسانیات کے زاویے	سید روح الامین (مرتب)

بنیادی کورس۔۸ کورس کوڈ:URDU-1402 کریڈٹ آورز : ۳

❀ عالمی کلاسیک ❀

- کلاسیک، ادبی کلاسیک، بنیادی مباحث
- شاعری:

ہومر، شیکسپیئر، گوئٹے، ٹی ایس ایلیٹ، رومی، پبلو نیرودا

- نثر:

سعدی شیرازی، موپساں، چیخوف، گبریل گارشیا مارکیز، دوستووسکی

مجوزہ کتب:

۱۔انگریزی ادب کی تاریخ	ڈاکٹر احسن فاروقی
۲۔فرانسیسی ادب کے آثار	فاخر حسین
۳۔روسی ادب کی تاریخ	محمد مجیب
۴۔مشاہیر ادب (یونانی)	محمد سلیم الرحمٰن
۵۔دنیا کا قدیم ترین ادب	ابنِ حنیف
۶۔آج	خصوصی شمارہ ''گیبرل گارشیا مارکیز''
۷۔سیر بین	ڈاکٹر سہیل احمد خان
۸۔طرفیں	ڈاکٹر سہیل احمد خان
۹۔سمتیں	ڈاکٹر سہیل احمد خان
۱۰۔جہاں گرد کی واپسی	مترجم: محمد سلیم الرحمٰن
۱۱۔یونان کا ادبی ورثہ	احمد عقیل روبی
۱۲۔ماضی کے مزار	سبطِ حسن
۱۳۔اردو دنیا میں ایلیٹ.....	مرزا حامد بیگ
۱۴۔تاریخ ادبیاتِ عالم (۷ جلدیں)	وہاب اشرفی

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❀ کمپیوٹر۔۱۱ ❀

1. Advance Topics of Computer

1. Operating System Basics

1.1 The Purpose of Operating System.
1.2 Types of Operating System.
1.3 Enhancing an OS with utility software.

2. The Internet

2.1 What is Internet?
2.2 Main Features of Internet.
2.3 Web Browser.
2.4 Search Engine.

3. Networking Basics

3.1. The Use of Network.
3.2. Common Types of Networks.
3.3. Network Topologies and Protocols.

4. Protecting Your Computer, Your Privacy and Your Data

4.1 Basic Security Concepts.
4.2 Threat to Users.
4.3 Threat to Hardware.
4.4 Threat to Data.

5. Taking Protective Measures

5.1 Protecting Yourself.
5.2 Protecting Your Privacy.
5.3 Keeping Your Data Secure.

II. Practical

1. Microsoft PowerPoint

1.1 How to make Slides.
1.2 Formatting Slides.
1.3 Adding Animations
1.4 Adding effects to Slides.
1.5 Adding Sound to Slides.

2. Word Processing for Urdu Language

2.1 Inpage 2000 2.4

3. Internet

3.1 Using Web Browser.
3.2 Navigating the Web.
3.3 Using Search Engine.
3.4 Creating E-Mail Address and Its Usage.

Recommended Books:

1. Peter Norton's (2000), Introduction to Computers
2. Long and long (1999), Introduction to Computers

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❀ فلسفہ ❀

Course Contents

1. Introduction to philosophy & its Branches/Types
2. Reality and Knowledge
3. Examination of significant philosophical terms.
4. Ancient Philosophers
5. Ancient China, Greece and India
6. Islamic and western philosophy
7. Industrialization and the Modern Era
8. Epistemology, Cosmology and ontology of Islamic and Western philosophy
9. Controversies, criticism to Islamic &Western philosophy, & its response
10. Contemporary political philosophy
11. Philosophy and Literature

Recommended Books:

1. Sher, George, Baruch A. Brody, Social and Political Philosophy. Fort Worth, TX:Harcourt Brace College Publishers, 1999.
2. Tannenbaum, Donald, and David A. Schultz. Inventors of Ideas:Introduction to Western Political Philosophy. New York:St. Martin's Press, 1998.
3. White, Michael. Political Philosophy:An Historical Introduction. Oxford:Oxford University Press, 2012.
4. Wolff, Jonathan. An Introduction to Political Philosophy. Oxford:Oxford University Press, 2006.
5. Samuel Enoch Stumpf. Socrates to Sartre:A History of Philosophy. fifth edition, Mcraw-Hill, 1993.
6. W. T. Jones, The Classical Mind:A History of Western Philosophy. Harcourt Brace Jovanovich College Publishers, 1970.

❀ عمرانیات ❀

❍ **Objective:**

The course is designed to introduce the students with sociological concepts and the discipline. The focus of the course shall be on significant concepts like social systems and structures, socio-economic changes and social processes. The course will provide due foundation for further studies in the field of sociology.

Course Outline

1. Introduction

- ❍ Definition, Scope, and subject matter
- ❍ Sociology as a science
- ❍ Historical back ground of Sociology

2. Basic Concepts

a. Group, Community, Society
b. Associations
   - ❍ Non-Voluntary ❍ Voluntary
c. Organization
   - ❍ Informal ❍ Formal
d. Social Interaction
   i. Levels of Social Interaction
   ii. Process of Social Interaction
      - ❍ Cooperation ❍ Competition
      - ❍ Conflict ❍ Accommodation
      - ❍ Acculturation and diffusion ❍ Amalgamation

3. Social Groups

a. Definition
b. Types of Social groups
   - ❍ In and out groups
   - ❍ Primary and Secondary group

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- Reference group
- Informal and Formal groups
- Pressure groups

4. Culture

a. Definition

- Material and non material culture
- Ideal and real culture

b. Elements of culture

- Beliefs
- Values
- Norms and social sanctions

c. Organizations of culture

- Traits
- Complexes
- Patterns
- Ethos
- Theme

d. Other related concepts

- Cultural concepts
- Sub cultures
- Ethnocentrism and Xenocentrism
- Cultural lag

5. Socialization & Personality

- Personality, Factors in Personality Formation
- Socialization, Agencies of Socialization
- Role & Status

6. Deviance and Social Control

- Deviance and its types
- Social control and its need
- Forms of social control
- Methods & Agencies of Social Control

7. Collective Behavior

- Collective behavior, its types
- Crowd behavior
- Public opinion
- Propaganda
- Leadership

Recommended Books:

1. Anderson, Margaret and Howard F. Taylor, 2001. Sociology the Essentials. Australia: Wadsworth
2. Brown, Ken 2004. Sociology. UK: Polity Press
3. Gidden, Anthony 2002. Introduction to Sociology UK: Polity Press
4. Macionis, John J. 2006. 10th Edition Sociology New Jersey: Prentice-Hall
5. Tischeler, Henry L. 2002. Introduction to Sociology 7th ed. New York: The Harcourt Press
6. Frank N. Magill. 2003. International Encyclopedia of Sociology. USA, Fitzroy Dearborn Publisher
7. Macionis, John J. 2005. Sociology 10th Ed. South Asia: Pearson Education
8. Kerbo, Harold R. 1989. Sociology: Social Structure and Social Conflict. New Yoark: Macmillan Publishing Company.

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❀ میڈیا سٹڈیز ❀

❍ **Objectives:**

This course is aimed at introducing the students with basic concept of communication and mass communication. This course further enables the students to under stand the communication process and distinguish among various mass media.

❍ **Course Contents (Communication)**

Definitions, types and significance. Process of communication source; message; Channel, noise, destination, encoding, decoding and feedback. Essentials of effective communication. Role of mass media in agenda setting.Nature and Functions of mass communication (information, education, Opinion Formation, Entertainment and Development)

Media of Mass Communication

- ❍ Print Media newspapers, magazines, periodicals, books, pamphlets, etc.
- ❍ Broadcast media, radio, TV, film.
- ❍ New Media, (internet) - On-line journalism.
- ❍ Traditional / Folk- Media.
- ❍ Comparative study of mass media, their components, functions and effects.

Recommended Books:

1. Dominick, J.R. (2006) Dynamics of Mass Communication (8th ed), New York, McGraw-Hill
2. Straubhaar, LaRose (2002). Media Now: Communication Media in the Information Age (3rd ed.), USA; Wadsworth
3. Understanding Mass Communication. Defleur Dennis, Houghton Mufflin Co. Bostan 2002

4. Introduction to Mass Communication, Edward J. Whetmore, Wadsworth Publishing Co., California 1995
5. Journalism for All, Mehdi Hassan and Abdus Salam Khurshid, Aziz Book Depot, Lahore 6th ed., 1997
6. Iblagh kay Nazriyat, Muqaddara Shamsuddin, M (National Language Authority, Islamabad 1990)
7. Dynamics of Mass Communication Roger Dominic 6th ed. McGraw Hill New York, London 1999
8. Ta'araf-e-Iblagh-e-Amma, Matin-ur-Rehman Murtaza, Department of Communication, University of Karachi, 2000
9. Introducing Mass Communication Michael W. Gambol, McGraw Hill, 1996
10. Media of mass communication, John Vivian 5th ed. Allyn and Bacon, London, 2000

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❀ سرائیکی ❀

۱۔ سرائیکی زبان کے ابتدائی خدّ وخال

- لسانیاتی گروہ اور سرائیکی زبان کی تشکیل
- سرائیکی زبان کے لہجے
- سرائیکی حروفِ تہجی اور رسم الخط
- سرائیکی کہاوتیں اور امثال

۲۔ شاعری: ارتقاء

- قدیم شعری اصناف (ڈوہڑہ، کافی، سی حرفی، منظوم داستانیں)
- جدید شعری اصناف (غزل، نظم)

۳۔ جدید اصنافِ نثر: ارتقاء

- افسانہ
- ڈراما
- ناول
- انشائیہ
- سفرنامہ
- خاکہ

۴۔ تحقیق وتنقید

- سرائیکی زبان اور اُس کا اُردو سے تعلق
- قدیم اُردو زبان وادب پر سرائیکی زبان کے اثرات
- قدیم اُردو لغت میں سرائیکی زبان کے الفاظ
- سرائیکی اور اُردو کے لسانی روابط

۵۔ سرائیکی ثقافت

- سرائیکی ثقافت کے مظاہر
- سرائیکی علاقے کی تمدنی خصوصیات
- سرائیکی ثقافت میں لوک گیتوں کا کردار
- سرائیکی ثقافت میں لوک قصّوں کا حصہ

۶۔ انتخاب

ا) نثر

- ہک ہا بادشاہ (قصہ)
- بُوتے (افسانہ)
- چانن (ڈراما)
- گوڑ (انشائیہ)
- سفیر لاشاری (خاکہ)
- پاندھی پچھاں واٹیں تکاں (سفرنامہ)

ب) شاعری

- منتخب کافیاں — خواجہ فریدؒ
- منتخب نظمیں — حسن رضا گردیزی، عزیز شاہد
- منتخب غزلیں — ممتاز حیدر ڈاہر، اقبال سوکڑی
- منتخب مرثیے — غلام سکندر خان غلام، عاشق ملتانی
- منتخب ہائیکو — حیدر گردیزی
- منتخب گیت — جانباز جتوئی

ج) تراجم

- سرائیکی مطالعے دے سو سال (ڈاکٹر کرسٹوفر شیکل)
- سعدی آکھیا (سعدی شیرازی)
- سرائیکی زبان (رشید لاشاری)
- نذیر احمد دی کہانی (فرحت اللہ بیگ)
- چونڑویاں نظماں (وزیر آغا)

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BS in Zoology

Course-I

Instructor		Email:	
Course Title	Introduction to Psychology	Program	BS
Course Number	PYSC-01401	Credit Hours	3(3+0)

Lecture	……day: …. period (00:00a.m to 00: 00a.m), Room# 00

Course Objective:

The main objective is to familiarize students with history, main concepts, methods, and theoretical frameworks in psychology.

The course will help students to appreciate the human nature and its related concepts, thereby will gain insight into human behavior and human relationships.

Methods of Teaching

Assigned readings
Group activities & Discussion
Audiovisual aids lectures
Web-assisted instruction
Student-Directed Teaching

Resource Material

1. **Text Books**
   i. Atkinson R. C., & Smith, E.E (2000).Introduction to psychology (13th ed.).
   ii. Coon, D., & Mutterer,J. (2008).Introduction to psychology:Gateways to mind and behaviour (12th ed.). USA: Wadsworth Cengage Learning
   iii. Fernald, L. D., & Fernald, P.S (2005).Introduction to psychology.USA;WMC Brown Publishers.
   iv. Fredrickson, B., Nolen-Hoeksama, S., Loftus, G., & Wagenaar, .(2009).Atkinson & Hilgard's introduction to psychology(15th ed.).USA: Wadsworth.
   v.

2.Reference Books		3.Research Papers	
i		i	
Ii		ii	
4.Hot Research Papers		**5.Web Resources**	
i		i	
Ii		ii	

Office Help Hours	
Grading	Exam (Date to be announced) Mid- Exam (20%) Final Exam (70%) Problem Session/Assignments (10%)
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	Psychology: Scientific perspective, Historical perspective		
2	Schools of Psychology, Methods of psychology		
3	Ethical issues, Fields of Psychology and their application		
4	Neuron and its function		
5	Central nervous system		
6	Introduction to Sensation: All senses		
7	Introduction to perception, Gestalt principles		
8	Binoculars and monocular cues, Illusions and extra sensory perception		
9	Learning, types of learning		
10	punishment and its effects, Latent and observational learning		

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11	Defination and types of memory		
12	process and techniques of improving memory		
13	Forgetting: Nature and causes		
14	Student presentation and assessment		
15	Class discussion		
16	Class test and quiz		
	Mid Term Exam	Course/Discussion from session 1 to 16	
17	Concept of cognition, problem solving, judgmet and decision making		
18	Language development, Language and cognition, Language and culture		
19	Concept of intelligence, Theories of intellignce, Assessment of intellignce		
20	Mental retardation, Concept of creativity and its stages		
21	Introduction to motivation, Factors affecting motivation		
22	Introduction to emotions, types of emotions		
23	Physiology and emotion, Theories of emotion		
24	Defining personality, Theories of personality		
25	Personality assessment		-
26	Social facilitation, Attribution Theory		-
27	Conformity, Obedience		-
28	Crowd behavior, Helping behavior		-
29	Class presentation and assessment		-
30	Class discussion and Assessment		
31	Course discussion from session 1-32		
32	Class test and quiz		
	Final Term Exam	Course/Discussion from session 1- 32	

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BS in Zoology
Couse-II
Animal form and function-I

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BS in Zoology

Course-III

Class	BS 4th Semester	Session	
Instructor		Email	
Course Title	Plant Physiology and Ecology	Program	BS Botany
Course Code		Credit Hours	4(3+1)

Course Objectives:

Physiology is the study of function. In this course we will explore the link between form and function in plants. Approach will be primarily at the whole organism level. Laboratory experiments will reinforce the lecture topics. Students will be exposed to current research in plant physiology through lecture specific objectives of this course will be to understand the following topics: cell structure and function, water relations, conduction of water and organic matter, the role of mineral nutrients in growth and development, the metabolic processes of photosynthesis and respiration, hormonal regulation of growth and development, movement in plants.

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Method of Teaching:

- Assigned Reading
- Group activities and Discussions
- Audio visual aids lectures
- Web assisted instruction
- Student-Directed Teaching

Lecture	
Resource Material	**Reference Books**: Taiz, L. and Zeiger, E. 2006. Plant Physiology. 4th. Ed. Sinauers Publ. Co. Inc. Calif. Schultz, J.C. 2005. Plant Ecology. Springer-Verlag, Berlin. Ricklefs, R.E. 2000. Ecology. W.H. Freeman and Co., UK. Ricklefs, R.E. 2001. The Economy of Nature. W.H. Freeman and Co., UK.
	Journals / Periodicals:
Grading	

SEQUENCE OF TOPICS TO BE COVERED

Session#	Topics(Outline of main topics and Sub topics to be covered)	Chapter#	Tutorial/Laboratory
1.	Introductory lectures about Plant Physiology and Ecology		Preparation of specific Normality of acids, bases
2 & 3	Solutions, types. Water relations (water potential, osmotic potential, pressure potential, matric potential).		Molal and molar solutions And their standardization
4 & 5	Absorption and translocation of water. Passive and active transport of nutrients.		
6 & 7	Stomata regulation. Theories regarding Mechanism of opening and closing of stomata.		Measurement of leaf water Potential by tissue volume method
8 & 9	Photosynthesis: History of photosynthesis, Nature and units of Light, Ultrastructure of thylakoid vesicle. Various pigments and photosynthetic activity		Measurement of leaf water Potential by falling drop method
10 & 11	Electron and proton transport through thylakoid protein – pigment complexes, Photophosphorylation and its mechanism, CO_2 reduction (dark reactions)		

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			Chemical tests for following Cell constituents: Starch, Cellulose
12 & 13	Respiration: Definition and respiratory substrates. Respiratory Quotient. Glycolysis, Krebs cycle.		Chemical tests for following Cell constituents: Lignin Proteins
14 & 15	Electron transport chain and Anaerobic respiration		Extraction of chloeophyll from leaves
16	**Mid Term Examination**		
17 & 18	Phototropism: Definition, historical background, Classification of plants based on phototropic response,		Measurement of vegetation by quadrat method and line intercept method
19 & 20	Dormancy: Definition and causes of seed and bud dormancy; methods of breaking seed dormancy. Physiological processes during seed germination.		Field trips to ecologically diverse habitats
21 & 22	Introduction, aims and applications of ecology.		
23 & 24	Soil as an ecological factor and its importance.		
25 & 26	Light and Temperature. Quality of light, diurnal and seasonal variations. Ecophysiological responses. Water: Field capacity and soil water holding capacity.		
27 & 28	Water as an ecological factor and its water importance. Water cycle		
29 & 30	Characteristics of xerophytes and hydrophytes. Effect of precipitation on distribution of plants.		
31	Wind as an ecological factor and its importance		
32	Final Term Examination		

Student Evaluation Criteria

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

Couse-IV

Zool-01404 Biodiversity and Conservation 3(2+1)

Course of Biodiversity and Conservation will be completed during 16 weeks with 2 Theory Lectures and 1 Lab (Practical) per week. Introduction and importance of biodiversity: Species diversity. Genetic diversity, social diversity Class test and assignment. Causes and depletion of biodiversity: Habitat loss, habitat fragmentation. Causes and depletion of biodiversity: Over exploitation, climatic changes. Causes and depletion of biodiversity: invasive species, seawater intrusion Assignment. The value of species. How species become endangered? Extinction of species, present rate. Theory of mass extinction. Inventory and monitoring of biodiversity. Importance of red data book. In situ and Ex Situ conservation of plants. Implementation of laws (protection and conservation of various taxa. Sustainable use of biodiversity. Protected areas of Pakistan. Criteria for determining different categories of protected areas. Baseline study, impact assessment, management plan for protected area. IUCN categories for threatened species, criteria for recognizing different categories of threatened species. Gene bank management and operation. Public awareness strategies. Population explosion. Biodiversity action plan for Pakistan.

Practical

Causes of local species extinction. Field excursion. Data collection. Preparation of an inventory of the fauna given region. To carry on base line study of any designated category.

Recommended Books:

1. Latest additions of books will be recommended from stock available in the main library of the university

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BS in Zoology

Couse-V

Zool-01405 **Animal Evolution** **3(2+1)**

Evolution: The nature and origin to life. Evidences of evolution. (molecular, embryological & paleontological). Theories to explain the diversity of life - Modern synthetic theory.

Factors initiating elementary evolutionary changes (micro-evolution) by changing gene frequencies, mutation pressure, selection pressure, immigration and crossbreeding, genetic drift. Role of isolation in evolution. Factors of large evolutionary changes (macro/mega evolution) - allometry, orthogenesis, adaptive radiation.

Modern concept of Natural Selection: Levels of selection, selection patterns, laboratory and field example regarding action of Natural Selection. Action of Natural Selection leading to convergence, radiation, regression and extinction, Batesian mimicry, Mullerian mimicry. Sexual selection: Darwin's concept, Fisher's view, Zahavi's handicap theory. Recapitulation theory, Trend and rates in evolution.

Practical

Study of preserved invertebrate species and their classification upto class level. Collection, preservation and identification of common species with the help of keys. Preparation of keys for the identification of specimens

Recommended Books:

1. Ridley, M. Evolution. 1993. Blackwell Scientific Publications.
2. Dobzhansky, T., Ayala, F.J., Stebbins, G.L. and Valentine, J.W. Evolution. 1973. W.H. Freeman and Company.
3. Dobzhansky, T. Genetics and the Origin of Species, 1951. Columbia University Press, New York.
4. Mayr, E. Populations, Species and Evolution, 1965. Harvard University Press.
5. Moody, P.A. Introduction to Evolution, 1989. Harper and Row Publishers, New York.
6. Strickberger. M.W. Evolution. 2000. Jones & Barrett Publishers

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20.	**BS-ZOOLOGY**	
	i. Introduction to Applied Psychology	**4146**
	ii. Animal Form & Function-I	**4148**
	iii. Plant Physiology and Ecology	**4149**
	iv. Biodiversity and Conservation	**4151**
	v. Animal Evolution	**4152**

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