GEN-3201   Expository Writing   Credit Hours: 3(3-0)

Course Objectives: The course is developed with the aim to enable the students to meet their real life communication needs by
- Helping them learn and understand basic concepts of communication process
- Practically implementing theoretical aspects in the real life situations

Course Contents:

What is Communication?
- Process of communication, effective steps of communication, basic communication skills

Paragraph Writing;
- Practice in writing a good, unified and coherent paragraphs
- Paragraph writing leading towards the writing of five to seven paragraphs long essay
- Stages of writing (brain storming, researching, drafting and editing)
- Methods of writing (cause and effect, problem solutions, comparison and contrast)

Essay Writing;
- Basic structure of essay, topic sentence, supporting sentence, concluding sentence, thesis statement
- Unity and Coherence, Introduction and Conclusion

CV and Job Application;
- Preparing a Curriculum Vitae
- Writing a formal job application

Translation Skills;
- Urdu to English

(Practice at advanced level)

Study Skills;
- Skimming and scanning, intensive, extensive and speed reading
- Summary and precis writing
- Comprehension (at advanced level)
- (sQ3R and Sq4r methods)

Academic Writing;
- Letter/ Memo writing, Minutes of Meeting, use of Dictionary, Library and Internet

Presentation Skills;
- Personality development (emphasis on content, style and pronunciation)
- Preparation stage, audience analysis, handling and asking questions, managing time, handling non-verbal means, feedback

Academic Writing;
- How to write a research proposal for research paper/term paper?
- How to write a research paper/ term paper?
- (Emphasis on style, content, language, form, clarity , consistency)

Report Writing;
- Technical Report writing
- Progress report writing

- Preparation and planning

E-mail writing;

- Creating e-mail account
- Writing and sending e-mails

Preparing for Interview and Research proposal/ research paper defense

Note: Documentaries to be shown for discussion and review

Recommended Books:

Communication Skills

a)   Grammar

1.   Practical English Grammar by A. J. Thomson and A. V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.

b)   Writing

1.   Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 019 435405 7 Pages 45-53 (note taking).

2.   Writing. Upper-Intermediate by Rob Nolasco. Oxford Supplementary Skills. Fourth Impression 1992. ISBN 0 19 435406 5 (particularly good for writing memos, introduction to presentations, descriptive and argumentative writing).

c)   Reading

1.   Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.

2.   Reading and Study Skills by John Langan

3.   Study Skills by Richard York.

d)   Speaking

4.   Ellen, K. 2002. Maximize Your Presentation Skills: How to Speak, Look and Act on Your Way to the Top

5.   Hargie, O. (ed.) Hand book of Communications Skills

6.   Mandel, S. 2000. Effective Presentation Skills: A Practical Guide Better Speaking

7.   Mark, P. 1996. Presenting in English. Language Teaching Publications

GEN-3202   Arabic   Credit Hours: 2(2-0)

Objectives of the Course	۱۔ طلباء کو عربی زبان کی علوم اسلامیہ میں اہمیت سے آگاہ کرنا ۲۔ طلباء کو علم صرف اور نحو کے بنیادی قواعد سے آگاہ کرنا تاکہ اسلامی علوم سے کما حقہ استفادہ کیا جا سکے ۳۔ طلباء کو علم صَرف کے بنیادی اصولوں سے آگاہ کرنا ۳۔ قرآن مجید سے قواعد عربیہ کی عملی مشق کروانا۔

Week	Lecture No.	قواعد	عملی مشق	
Week 1	Lecture 1	• اسم کی پہچان	• تعوّذ اور سورۃ الفاتحۃ)	

Week	Lecture			
	Lecture 2	• هُوَ، هُمْ، ـهـ ضمائز منفصلـ	• سورة الفاتحة (5- 7)، تكبير، ثناء، تسبيحات	
Week 2	Lecture 3	• لِ، مِنْ، عَنْ، مَعَ ـحروف جار	• تشهد، درودِ، دعا	
	Lecture 4	• فعل ماضى: فَعَلَ	• سورة الإخلاص	
Week 3	Lecture 5	• فعل مضارع: يَفْعَلُ	• سورة الفلق	
	Lecture 6	• فعل امر، فاعل، مفعول، فعل	• سورة النّاس	**Quiz # 01**
Week 4	Lecture 7	• نَصَرَ، عَبَدَ	• سورة النصر	**Assignment# 01**
	Lecture 8	• ضَرَبَ، ظَلَمَ، سَمِعَ، عَلِمَ	• سورة الكافرون	
		•	•	
Week 5	Lecture 9	• كمزور أفعال: وَهَبَ، وَعَدَ	• سورة البقرة: 1-5	
	Lecture 10	• كمزور أفعال: قَالَ، زَادَ	• سورة البقرة: 6-١٠	
		•	•	
		• **Mid Term**		
Week 6	Lecture 11	• بمزه والے أفعال: أَمَرَ	• سورة البقرة:11-13	
	Lecture 12	• يكساں حروف والے أفعال: ظَنَّ، ظَلَّ	• سورة البقرة: 14-١٨	
		•		
Week 7	Lecture 13	• فعل مجهول: نُصِرَ، جُعِلَ	• سورة البقرة: 19-20	
	Lecture 14	• فعل مجهول: وُعِدَ، أُمِرَ	• سورة البقرة: 21-22	
		•	•	
Week 8	Lecture 15	• مزيد في: حَاسَبَ	• سورة البقرة:23-25	
	Lecture 16	• مزيد في: أَسْلَمَ، إخْتَلَفَ	• سورة البقرة: 26-٢٩	
		•	•	
Week 9	Lecture 17	• مزيد في: إسْتَغْفَرَ	• سورة البقرة: 30	**Quiz # 02**

			●		●	
	Lecture 18	مزید في: تَدَبَّرَ، تَدَارَسَ، إِنْقَلَبَ	●	سورة البقرة: 31- ٣٥	●	
			●		●	
Week 10	Lecture 19	مزید في: وَلَّى	●	سورة البقرة: 36- 37	●	Assignment# 02
	Lecture 20	مزید في: نَادَى، أَقَامَ	●	سورة البقرة: 38- ٤٢	●	
			●		●	
Week 11	Lecture 21	مزید في: اِتَّقَى،ءِسْتَقَامَ	●	سورة البقرة: 43-46	●	
	Lecture 22	مؤنث ضمائر	●	سورة البقرة: 47- ٥٠	●	
Week 12	Lecture 23	مؤنث فعل کا ٹیبل	●	سورة البقرة: 51-53	●	
	Lecture 24	مؤنث فعل کا ٹیبل، تثنیہ (دو ٹیبل	●	سورة البقرة: 54-٥٧	●	
			●		●	
Week 13	Lecture 25	فعل مجہول (مزید في) عُلِّمَ، أُنْزِلَ	●	سورة البقرة: 58- 59	●	
	Lecture 26	فعل: كَرُمَ،مَمْ اور فعل مضارع	●	سورة البقرة: 60-٦١	●	
			●		●	
Week 14	Lecture 27	لَمْ اور مضارع مزید في افعال	●	سورة البقرة: 62	●	
	Lecture 28	لَنْ اور فعل مضارع ,اسم مکان	●	سورة البقرة: 63-٦٦	●	
			●		●	
Week 15	Lecture 29	اسم مکان	●		●	
	Lecture 30	جمع تکسیر ، جملہ اسمیہ	●	سورة البقرة: 67- ٧٠	●	
			●		●	
Week16	Lecturer 31	جملہ فعلیہ	●	سورة البقرة: ٧١- 73	●	

	Lecturer 32	● مضاف، مضاف اليه، موصوف، صفت	● سورة البقرة: 74	
		●	●	
Week 17		**Terminal Examination**		

<div align="center">نصابی کتب</div>

نام کتاب	نام مصنف	نمبر شمار
عربی کا معلم (چاروں حصے)	عبدالستار خان	1
تمرین صرف	معین اللہ ندوی	2
تمرین النحو	محمد مصطفی ندوی	3
معلم الانشاء	مولانا عبدالماجد ندوی	4
مختار النحو	مولانا مختار احمد	5

<div align="center">حوالہ جاتی کتب</div>

نام کتاب	نام مصنف	نمبر شمار
النحو الواضح	علی جارم	1
اساس عربی	نعیم الرحمن	2
مبادئ العربیۃ فی الصرف و النحو	رشید الشرطوطی	3
کتاب النحو	عبدالرحمن امرتسری	4
تمرین النحو	محمد مصطفی ندوی	5
قواعد القرآن	عبدالرحمن طاہر	6
اللغۃ العربیۃ لغیر الناطقین بھا	جامعۃ الملک السعود، ریاض	7
قرآنی عریبک	ڈاکٹر ابراہیم سورتی	8

<div align="center">OR</div>

GEN-3202   Kashmir Studies   Credit Hours: 2(2-0)

Objectives: To impart the knowledge about the multicultural historical legacy, religious and cultural heritage.

Course Contents:

Unit I: Geographic and Administrative Profile of divided State of Jammu & Kashmir
   a. Geographic and Administrative Profile of Azad Jammu & Kashmir and Gilgit Baltistan.
   b. Geographic and Administrative Profile of Indian Occupied Jammu and Kashmir.
 c. Geographic and Administrative Profile of Indian Occupied Jammu and Kashmir,
d. Current Political Status of divided regions of disputed state of Jammu and Kashmir,

Unit II: Sources of Kashmir History:
a. Famous ancient and Medieval historians
b. Famous books on ancient and Medieval history of Kashmir Ancient

Unit III: Ruling Dynasties in Kashmir
   a. Earlier inhabitants and Introduction to ancient ruling dynasties up to 1320 (selective Famous Ancient Rulers)
      b. Introduction to ancient Religions of Kashmir,
      c. Rise and fall of Buddhism in Kashmir
      d. Causes for decline of Hindu Rule in Kashmir

Unit IV: Muslim Rule in Kashmir

a. Advent of Islam in Kashmir

b. First Muslim Rule in Kashmir (1320-23)

Unit V: Shah Miri Dynasty

a) Rise of Muslims in Kashmir

b) Shahmir and his successors

c) Zainul-ul-Abidin

      a) Successors of Zainulabidin

      b) Rule and development of Kashmir

Unit VI: Development of Art and Culture during Shahmiri dynasty

      a- Development of Art and Culture during Shahmiri dynasty

      b- Development of Industries

      c- Causes for the decline of Shahmiri dynasty

Unit VII: Role of Sufi Saints for spread of Islam in Kashmir

a. Role of Shah Hamdan for spread of Islam in Kashmir

b. Role of Shah other Saints for spread of Islam in Kashmir

c. Development of Islamic Culture in Kashmir and role of Sufi Saints

Unit VIII: Chak Rule in Kashmir

      a- Causes for decline of Chak Rule in Kashmir and Mughals' occupation of Kashmir

      b- Ruling Era of Mughals and governing methods

      c- Condition of Kashmir during Mughal Era

      d- Causes for decline of Mughal Rule in Kashmir

Unit IX : Kashmir under Afghans

a) Ruling Era of Afghans and governing methods

b) Condition of Kashmir during Mughal Era

c) Causes for decline of Afghan Rule in Kashmir

Unit X: Occupation of Kashmir by Sikhs

a. Ruling Era of Sikhs and governing methods

b. Condition of Kashmiris during Sikh Rule

c. Rise of Dogras' Treaty of Lahore and Treaty of Amritsar

Unit XI: Kashmir under Dogra rule in Kashmir

a. Successors of Gulab Singh in Kashmir

b. Condition of Kashmiris during Dogra Rule, Muslim Subjects of Kashmir and Dogra rulers and Resistance movements in Kashmir during Dogra Rule

Unit XII: Jammu and Kashmir in after 1947

a. Indian occupation

b. Kashmir issue: genesis

c. Kashmir issue in the United Nations

d. Human rights violations in Indian Occupied Kashmir

Unit XIII: Economic Resources of Jammu and Kashmir Cultural Heritages of Kashmir

Unit XIV: Languages Spoken in Kashmir

Recommended Books:

1. Kalhana Pandit.(1991),Rajatarangint, Mirpur Verinag Publishers AJ& K

2. GMD Sufi (1962), Kashir, Lahore: University of Punjab

3. Somnath Dhar. Jammu & Kashmir. India: National Book Trust, 2013.

4. Ram Chandra Kak. Ancient Monuments in Kashmir. London: 1993.
5. Dr. S.C. Ray Early History and Cultural of Kashmir. New Dehli: 1969.
6. Dr. A.N. Rania. Geography & Jammu & Kashmir. New Dehli 1972.
7. Walter Lawrence. The Valley of Kashmir. London 1895.
8. G.M Rabani. Kashmir Social and Cultural History: Srinagar Gulshan Books 2007.
9. Muhammad Yusuf Saraf, Kashmiris Fight for Freedom.

OR

GEN-3202   Introduction to History   Credit Hours: 2(2-0)

Course Objectives:
The purpose of this course is:
- To make students aware of the nature of historical knowledge and research.
- To introduce to the students, the basic concepts and controversies related to historical understanding.

Course Content:
Unit I: What is History?
Literal, terminological and conceptual meaning of history
History as Fact
History as Process
History as Narrative
Unit II: Memory, Record and History
Unit III: Nature of History:
Being and Becoming;
Continuity and Change; Evolution, Progress and Development Macrocosm & Microcosm: Time, Space, Causation, Facts and opinion/ objectivity & Subjectivity
Unit IV: Utility, Benefits & importance of History:
History as a corrective/cohesive force;
History as a repetitive force
Continuity of History from Past to Future
Lessons from Past
Historical determinism, etc.
History as Mother of All Sciences/Knowledge
Unit V: Epistemological nature of History:
Relationship of History with other forms of knowledge:
Natural Sciences
Social Sciences
Literature and Arts
Unit VI: Forms and Classification of History
Suggested Readings:
1. Burke, Varieties of Cultural History, Cornell University Press, 1977
2. Carlo, Ginzburg. Clues. Myths, and the Historical Method, John Hopkins: University Press, 1992
3. Carr, E. H., What is History? Harmondsworth: Penguin, 1961
4. Cohn, Bernard. An Anthropologist among Historians and Other Essay, Oxford University Press, 1988

5. Collingwood, R. G. The Idea of History. Oxford: Oxford University Press, 1978.

6. Daniels, Studying History: How and Why, New Jersey, 1981.

7. Gertrude Himmalfarb. The New History and the Old, Cambridge: Harvard University Press, 1987

8. Govranski. History Meaning and Methods, USA, 1969

9. Hegel. Elements of the Philosophy of Right. Cambridge University Press, 1991

10. Qadir, Khurram, Tarikh Nigari Nazriyat-o-Irtiqa, Lahore: Palgrave, 1994.

11. Qureshi, Muhammad Aslam. A Study of Historiography. Lahore: Pakistan Book Centre, Latest Edition.

12. Steedman. Caroline, Dust: The Archive and Cultural History, Manchester University Press, 2002

13. Stern Fritz, Varieties of History: from Voltaire to the Present, Vintage, 2nd Edition 1975

14. Tahir Kamran, The Idea of History Through Ages, Lahore: Progressive Publisher, 1993

15. Lemon, M. C., Philosophy of History, London: Routledge, 2003

16. Marwick, Arthur, The New Nature of History, London, 1989, pp.31-35.

17. Roberts, Geoffrey, ed., History and Narrative Reader, London: Routledge, 2001.

18. Shafique, Muhammad, British Historiography of South Asia: Aspects of Early Imperial Patterns and Perceptions, Islamabad, NIHCR, Quaid-i-Azam University, 2016

GEN-3203 Application of Information and Communication Technologies Credit Hours: 3(2-1)

APPLICATIONS OF INFORMATION AND COMMUNICATION TECHNOLOGIES

UGE Policy V 1.1 : General Education Course

Credits: 03 (Class Credits: 02; Lab Credits: 01)
Pre-Requisite: Nil
Offering: Undergraduate Degrees (including Associate Degrees)
Placement: 1 - 4 Semesters
Type: General Education
Fields: All

DESCRIPTION

This course is designed to provide students with an exploration of the practical applications of Information and Communication Technologies (ICT) and software tools in various domains. Students will gain hands-on experience with a range of software applications, learning how to leverage ICT to solve daily life problems, enhance productivity and innovate in different fields. Through individual and interactive exercises and discussions, students will develop proficiency in utilizing software for communication, creativity, and more.

COURSE LEARNING OUTCOMES

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

1. Explain the fundamental concepts, components, and scope of Information and Communication Technologies (ICT).
2. Identify uses of various ICT platforms and tools for different purposes.
3. Apply ICT platforms and tools for different purposes to address basic needs in different domains of daily, academic, and professional life.
4. Understand the ethical and legal considerations in use of ICT platforms and tools.

SYLLABUS

1. **Introduction to Information and Communication Technologies:**
   - Components of Information and Communication Technologies (basics of hardware, software, ICT platforms, networks, local and cloud data storage etc.).
   - Scope of Information and Communication Technologies (use of ICT in education, business, governance, healthcare, digital media and entertainment, etc.).
   - Emerging technologies and future trends.
2. **Basic ICT Productivity Tools:**
   - Effective use of popular search engines (e.g., Google, Bing, etc.) to explore World Wide Web.
   - Formal communication tools and etiquettes (Gmail, Microsoft Outlook, etc.).
   - Microsoft Office Suites (Word, Excel, PowerPoint).
   - Google Workspace (Google Docs, Sheets, Slides).
   - Dropbox (Cloud storage and file sharing), Google Drive (Cloud storage with Google Docs integration) and Microsoft OneDrive (Cloud storage with Microsoft Office integration).
   - Evernote (Note-taking and organization applications) and OneNote (Microsoft's digital notebook for capturing and organizing ideas).
   - Video conferencing (Google Meet, Microsoft Teams, Zoom, etc.).
   - Social media applications (LinkedIn, Facebook, Instagram, etc.).
3. **ICT in Education:**
   - Working with learning management systems (Moodle, Canvas, Google Classrooms, etc.).
   - Sources of online education courses (Coursera, edX, Udemy, Khan Academy, etc.).
   - Interactive multimedia and virtual classrooms.

4. **ICT in Health and Well-being:**
   - Health and fitness tracking devices and applications (Google Fit, Samsung Health, Apple Health, Xiaomi Mi Band, Runkeeper, etc.).
   - Telemedicine and online health consultations (OLADOC, Sehat Kahani, Marham, etc.).
5. **ICT in Personal Finance and Shopping:**
   - Online banking and financial management tools (JazzCash, Easypaisa, Zong PayMax, 1LINK and MNET, Keenu Wallet, etc.).
   - E-commerce platforms (Daraz.pk, Telemart, Shophive, etc.)
6. **Digital Citizenship and Online Etiquette:**
   - Digital identity and online reputation.
   - Netiquette and respectful online communication.
   - Cyberbullying and online harassment.
7. **Ethical Considerations in Use of ICT Platforms and Tools:**
   - Intellectual property and copyright issues.
   - Ensuring originality in content creation by avoiding plagiarism and unauthorized use of information sources.
   - Content accuracy and integrity (ensuring that the content shared through ICT platforms is free from misinformation, fake news, and manipulation).

PRACTICAL REQUIREMENTS

As part of the overall learning requirements, the course will include:

1. Guided tutorials and exercises to ensure that students are proficient in commonly used software applications such as word processing software (e.g., Microsoft Word), presentation software (e.g., Microsoft PowerPoint), spreadsheet software (e.g., Microsoft Excel) among such other tools. Students may be assigned practical tasks that require them to create documents, presentations, and spreadsheets etc.
2. Assigning of tasks that involve creating, managing, and organizing files and folders on both local and cloud storage systems. Students will practice file naming conventions, creating directories, and using cloud storage solutions (e.g., Google Drive, OneDrive).
3. The use of online learning management systems (LMS) where students can access course materials, submit assignments, participate in discussion forums, and take quizzes or tests. This will provide students with the practical experience with online platforms commonly used in education and the workplace.

SUGGESTED INSTRUCTIONAL / READING MATERIALS

1. "Discovering Computers" by Vermaat, Shaffer, and Freund.
2. "GO! with Microsoft Office" Series by Gaskin, Vargas, and McLellan.
3. "Exploring Microsoft Office" Series by Grauer and Poatsy.
4. "Computing Essentials" by Morley and Parker.
5. "Technology in Action" by Evans, Martin, and Poatsy.

Botany

BOT-3204   Diversity of Plants   Credit Hours: 3(2-1)

Aims and Objectives

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

Course Contents

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

a. Viruses (RNA and DNA types) with special reference to TMV.

b. Bacteria and Cyanobacteria (Nostoc, Anabaena, Oscillatoria) with specific reference to

biofertilizers, pathogenicity and industrial importance.

c. Algae (Chlamydomonas, Spirogyra, Chara, Vaucheria, Pinnularia, Ectocarpus, Polysiphonia)

d. Fungi (Mucor, Penicillium, Phyllactinia, Ustilago, Puccinia, Agaricus), their implication on crop

production and industrial applications.

e. Lichens (Physcia)

f. Bryophytes (Riccia, Anthoceros and Funaria)

g. Pteridophytes (Fossils and fossilization, Psilopsida (Psilotum), Lycopsida (Selaginella)

Sphenopsida (Equisetum), Pteropsida (Marsilea) and Seed Habit)

h) Gymnosperms (Cycas, Pinus and Ephedra)

Practical:

1. Culturing, maintenance, preservation and staining of microorganisms.

2. Study of morphology and reproductive structures of the types mentioned in theory.

3. Identification of various types mentioned from prepared slides and fresh collections.

Recommended Books:

1. Lee, R.E. 1999. Phycology. Cambridge University Press, UK

2. Prescott, L.M., Harley, J.P. and Klein, A.D. 2004. Microbiology, 3 rd ed. WM. C. Brown Publishers.

3. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology. 4th ed. John Wiley

and Sons Publishers.

4. Agrios, G.N. 2004. Plant pathology. 8th ed. Academic press London.

5. Vashishta, B.R. 1991. Botany for degree students (all volumes). S. Chand and Company. Ltd. New Delhi.

6. Andrew, H. N. 1961. Studies in Paleobotany. John Willey and Sons.

7. Ingrouille, M. 1992. Diversity and Evolution of Land Plants. Chapman & Hall.

8. Mauseth, J.D. 2003. Botany: An Introduction to Plant Biology 3rd ed., Jones and Bartlett Pub. UK

9. Marti.J.Ingrouille & Plant: Diversity and Evolution. 2006 CUP

Taylor, T.N. & Taylor, E.D. 2000. Biology and Evolution of Fossil Plants. Prentice Hall. N.Y.

Chemistry

CHM-3206   Inorganic Chemistry   Credit Hours: 4(3-1)

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

Course Contents:

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

2. **Theories of Chemical Bonding**: Nature and types of chemical bonding. Concept of valence bond theory (VBT) and molecular orbital theory (MOT), Valence shell electron pair repulsion (VSEPR) theory. Directed valence bond theory (hybridization) and their applications to homo and hetero di-atomic inorganic molecules. Metallic bonds.

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

4. **Essentials of Chemical Analysis**: Law of mass action and its applications, precipitation and solubility product, common ion effect and its application, co-precipitation, fractional precipitation.

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

(a) Boron and Aluminum: General characteristics, group anomalies, structure, bonding and properties of boron and aluminium hydrides.

(b) Carbon and Silicon: General characteristics, comparison of carbon and silicon, allotropic forms of carbon. Structure and industrial applications of carbides, silicates and silicones.

(c) Nitrogen and Phosphorus: General characteristics, group anomalies. Role of oxides of nitrogen in the environment, preparation of nitric acid and ortho phosphoric acid.

(d) Oxygen and Sulphur: General characteristics, group anomalies, role of oxides of sulphur in air pollution. Preparation of sulphuric acid. Preparation of hypo and its use in photography.

(e) Halogens: General characteristics, anomalous behaviour of fluorine, industrial preparation and uses of fluorine. Structure and properties of Interhalogens and pseudohalogens.

(f) Noble Gases: Discovery of noble gases, structure and properties of xenon fluorides, Industrial uses of noble gases and their compounds.

6. **Chemistry of d-Block Elements:**

Electronic configuration and general characteristics of d-block elements. Industrial applications of transition metals. Werner's concept and nomenclature of coordination compounds.

Inorganic Chemistry Practical

1. Laboratory Ethics and Safety Measures: Awareness about the toxic nature of chemicals and their handling, cleaning of glassware, safe laboratory operations

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

3. Quantitative Analysis

1. Determine the %age purity of NaCl (rock salt) by Mohr's method.

2. Determination of number of water molecules (x) in $CuSO_4.XH_2O$ iodometrically.

3. Determination of amount/dm3 of $FeSO_4.7H_2O$ with $K_2Cr_2O_7$ by both internal and external indicators.

4. Determination of %age of iron in Ferric alum $(NH_4)_2SO_4 Fe_2(SO_4)_3.24H_2O$ using $K_2Cr_2O_7$ by both internal and external indicators.

5. Standardization of EDTA solution by Magnesium Sulfate/Zinc Sulfate solution by complexometry.

6. Find out the amount of Ca^{2+} in the given sample of marble (lime stone) by complexometry.

<u>**Computer**</u>

CS- 3206   **Introduction to Data Science**   **Credit Hours: 3(3-0)**

Course Objectives:

1. Understand the key concepts and principles of data science.

2. Analyze and preprocess data to prepare it for analysis.

3. Perform data visualization to communicate findings effectively.

4. Apply statistical and machine learning techniques to solve data-driven problems.

5. Gain proficiency in programming languages used in data science, such as Python.

6. Work with real-world datasets and extract meaningful insights.

7. Interpret and communicate results and insights from data analysis.

Course Contents:

Module 1: Introduction to Data Science

- What is Data Science?

- The Data Science Workflow

- Tools and Technologies in Data Science

- Ethical Considerations in Data Science

Module 2: Data Collection and Preprocessing

- Data Acquisition

- Data Cleaning and Data Wrangling

- Handling Missing Data

- Data Transformation and Feature Engineering

Module 3: Data Visualization

- Introduction to Data Visualization

- Types of Charts and Graphs

- Data Visualization Tools (e.g., Matplotlib, Seaborn)

- Effective Data Communication through Visualization

Module 4: Statistical Analysis

- Descriptive Statistics

- Probability Distributions

- Hypothesis Testing

- Correlation and Regression Analysis

Module 5: Machine Learning Basics

- Introduction to Machine Learning

- Supervised, Unsupervised, and Semi-Supervised Learning

- Model Evaluation and Validation

- Overfitting and Underfitting

Module 6: Introduction to Python for Data Science

- Python Basics

- Libraries for Data Science (NumPy, pandas)

- Data Manipulation in Python

- Data Visualization in Python

Module 7: Data Analysis with Python

- Exploratory Data Analysis (EDA)

- Case Studies: Data Analysis Projects

Module 8: Introduction to Machine Learning with Python

- Scikit-Learn: A Machine Learning Library

- Classification and Regression Algorithms

- Model Selection and Hyperparameter Tuning

Module 9: Real-World Applications

- Data Science in Various Industries (e.g., healthcare, finance, marketing)

- Guest Lectures or Case Studies from Data Scientists

Module 10: Final Project

- Students work on a data science project to apply the skills and concepts learned throughout the course.

Recommended Books:

1. "Python for Data Analysis" by Wes McKinney

2. "Introduction to Machine Learning with Python" by Andreas C. Müller & Sarah Guido

3. "Data Science for Business" by Foster Provost and Tom Fawcett

4. "Data Science for Dummies" by Lillian Pierson

5. "The Art of Data Science" by Roger D. Peng, Elizabeth Matsui, and Jeff Leek

English

ENG- 3204   **Introduction to Phonetics & Phonology**   **Credit Hours: 3 (3-1)**

Course Objectives

This course aims to:

● assist students learn a number of technical terms related to the course

● familiarize students with sounds and sound patterning, particularly in English Language

● develop knowledge of segmental and suprasegmental speech

● help students understand the features of connected speech

Course Contents

1. Basic definitions

　　● Phonetics

　　● Articulatory, Auditory & Acoustic Phonetics

　　● Phonology

　　● Phoneme

　　● Vowels

　　● Consonants

　　● Diphthongs

　　● Triphthongs

　　● Voicing

　　● Aspiration

　　● Minimal pairs

2. Organs of Speech

3. Phonemes

　　● Consonants (place and manner of articulation)

　　● Vowels (vowel trapezium/quadrilateral)

　　● Monophthongs

　　● Diphthongs

　　● Triphthongs

4. Rules

　　● Rules of Voicing

　　● Rules of /r/

　　● Rules of /ŋ/

5. Practice of phonemic transcription

6. Definitions
   - Homophones
   - Homographs
   - Homonyms
   - Homophenes

7. Fluency Devices
   - Assimilation
   - Elision
   - Weak forms/Strong forms
   - linking

8. Sound Values

9. Stress and Intonation

10. Practice of phonemic transcription

Recommended Readings

● Collins, B. and Mees, I. (2003) Practical Phonetics and Phonology: A Resource Book for Students. London & NY: Routledge (Taylor &Francis)

● Clark, J and Yallop, C. (1995).An Introduction to Phonetics and Phonology.2nd edition. Cambridge, Mass: Blackwell.

● Davenport, Mike & S. J. Hannahs.(2010). Introducing Phonetics &Phonology, 3rd edition.Hodder Education

● Roach, Peter. (2009). English Phonetics and Phonology: A Practical Course. 4th Edition. Cambridge.

<u>**Economics**</u>

ECO-3206   *PRINCIPLES OF MACROECONOMICS*   *Credit Hours:3(3-0)*

COURSE CONTENTS

1. **Introduction:**
   - What is macroeconomics and how economist thinks?
   - The economy in aggregate,
   - Complexities of the world of business,
   - Scope of macroeconomics,
   - Brief account of classical and the development of macro-economicafter

the World War-II,
- Concept of business cycles: Boom and Depression,
- Three concerns of macroeconomics, Inflation, GDP growth andunemployment,
- Macroeconomic variables and their mutual relationship,
- Macro-models as abstraction from the real economy.

2. National Income Accounting:
- Definition and concept of national income,
- Measures of national income: Gross Domestic Product (GDP) and Gross National Product (GNP), GDP at factor cost and at market prices, GDP deflator
- Computation of national income: Product, Income and Expenditure approaches,
- Circular flow of income,
- Nominal versus Real income,
- Per capita income and the standard of living.
- Measuring the cost of living: the consumer price index, CPI versusGDP deflator
- Measuring Unemployment rate

3. Components of Aggregate Demand:
- The Concept of Open and closed economy models,
- Concept of aggregate markets: Product, Money, Labor and Capital markets,
- Components of aggregate demand: Consumption, Investment and Government spending, Income and expenditure identities.
- Money and Monterey policy,
- Fiscal Policy

REFERENCE BOOKS:
- N. Gregory Mankiw. *Principles of Macroeconomics*, (latest edition)
- Samulson and Nordrons. *Economics*, 18th Edition, (or latest available
- Parkin, Michael. *Macroeconomics*, Edition Wesley International Inc. (latestedition)

Geography

GEO-3204   **Physical Geography**   **Credit Hours:3(2-1)**

Objectives: To create understanding about the physical characteristics of the earth

Course Contents:

➢ **Introduction**

   Definition, scope and major branches

   Realms of the physical environment

- ➤ **Lithosphere**

  Internal structure of earth

  Rocks–origin, formation and types: Igneous, Sedimentary and Metamorphic Rocks

  Plate tectonics, mountain building forces

  Geomorphic processes – endogenic and exogenic processes and their resultant landforms

  Earthquakes and volcanic activity, folding and faulting

  Weathering, mass wasting, cycle of erosion, erosion and deposition

  Landforms produced by running water, ground water, wind and glaciers

- ➤ **Atmosphere**
  Composition and structure of atmosphere
  Atmospheric temperature and pressure, global circulation
  Atmospheric moisture and precipitation
  Air masses and fronts
  Cyclones and other disturbances
- ➤ **Hydrosphere**
  Hydrological cycle
  Ocean composition, temperature and salinity of ocean water
  Movements of the ocean water; waves, currents and tides
- ➤ **Biosphere**
  Eco-systems
  Formation and types of soils

Lab. Work:

Identification of rocks and minerals, study and identification of landform using Satellite imageries and Topographic Sheets. Construction and applications of models showing various types of landforms. Observation and recording of weather data from a mini weather station.

Field visits: Ground truthing and identification of various types of rocks, fluvial, glacial, desert landform, type of soils. Visit to any suitable area to observe and appreciate the characteristics of physical features (recommended areas: Mountainous, Plains, Plateaus, deserts and coastal areas). Visit to any national park/biosphere reserves; Soil Survey of Pakistan, Geological survey of Pakistan,

Meteorological station/observatory and National Institute of Oceanography (NIO) and SUPARCO. Observations about the clouds and identification of their types

Recommended Books:

1. King, C. A. M. (1980) Physical Geography, Basil Blackwell, Oxford
2. .Mcliveen, J. F. R. (1992) Fundamentals of Weather and climate, Prentice Hall, New Jersey.
3. Monkhouse, F. J. (1996) Principles of Physical Geography, Hodder & Stoughton, London.
4. Peterson, J. F., Sack, D. & Gabler, R. E. (2011) Physical Geography, Brooks Cole.
5. Scott, R. C. (1996) Introduction to physical geography, West Publishing Co, New York.

6. Small, R. J. (1989) Geomorphology and Hydrology, Longman, London.
7. Strahler, A. (2013) Introduction to Physical Geography, John Wiley & Sons, New Jersey.
8. Strahlar, A. N., Strahlar, A. H. (2004) Physical Environment, John Wiley, New York.
9. Stringer, E. T. (2004) Modern Physical Geography, John Wiley, New York.
10. Taylor, J. (1993) Integral Physical Geography, Longman, London. Thornbury,
11. W. D. (2004) Principles of Geomorphology, John Willy & Sons, New York.
12. Thurman, H. V. & Trujillo, A. P. (2013) Essentials of Oceanography, Prentice-Hall, Inc, New York.

History

HIS- 3206   Islamic History (Pre-Prophet [PBUH] to the Pious Caliphate)   Credit Hours: 3(3-0)

Course Objectives:

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

Course Contents:

Pre-Islamic Arabia

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

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

Administrative, financial and judicial systems under the Pious Caliphs,

➢ Concept of Islamic State
➢ Status of the Dhimmis and the Mawalis,
➢ Social life of the Muslims, and an overview of the Khalifat-i-Rashida.

Readings:

1. Abdul Hakim, Khalifah, the Prophet and his Message, Lahore: Institute of Islamic Culture, 1972.

2. Ali, Syed Ameer, and History of the Saracens, Lahore: Sang-i- Meel Publishers, 1985.

3. Ali, Syed Ameer, and The Spirit of Islam, Lahore: Sang-i- Meel Publishers, 1985.

4. Haq, Mazhur-ul, a short History of Islam, Lahore: Bookland, 1977.

5. Hamidullah, Muhammad, the Muslim Conduct of State, Lahore: 1977.

6. Hitti, Philip K., History of the Arabs, London, 1974.

7. Ibn-i-Hisham, Sirat-un-Nabi Kamil, tr. Abdul Jalil Siddiqi, Lahore, 1979.

8. Ibn Jarir, Abi Jaffar Muhammad, Tarikh-i-Tibri, tr. Muhammad Ibrahim Nadwi, Karachi, 1982.

9. Ibn-i-Ishaq, Sirat-ul-Nabi,

10. Lings, Martin, and Muhammad: HST Life based on the earliest sources, Lahore, 1983.

11. Lings, Martin. The Caliphate, Its Rise, Decline and fall. Beirut, 1963.

12. Nadwi, Shah Moin-ud-Din Ahmad .Tarikh-i-Islam. Vol. I, Islamabad, 1975.

13. Nu'mani Shibli, Sirat al-Nabi. Lahore, Vol. I, 1975.

14. Shah, Pir Muhammad Karam, Ziaul Nabi, 7 Vols. Lahore: Ziaul Quran Publications. n. d.

15. Siddiqui, Abdul Hameed, The Life of Muhammad (SAW), Lahore, 1981.

16. Siddiqi, Amir Hassan, the Origin and Development of Muslim Institutions, Karachi: 1969.

17. Siddiqui, Mazharuddin, Development of Islamic State and Society, Lahore, 1956. 22

18. Siddiqui, Naeem, Muhsin i Insaniat,

19. Watt, Montgomery, Muhammad at Mecca, Karachi, 1969.

20. Watt, Montgomery. Muhammad at Madina, Karachi,

Islamic Studies

ISL-3204   تاریخ و تدوین حدیث **History and Compilation of Hadith Credit Hours 3(3-0)**

Title	Description
Semester	3rd
Course code	414
No. of C.Hrs.	03
Total Teaching Weeks	18
Objectives of the Course	۱حدیث و سنت کی حجیت و اہمیت سے آگاہ کرنا ۲حفاظت و تدوین حدیث کے مختلف طریقوں اور ادوار کا مطالعہ کرنا ۳۔ عہدِ خلافت راشدہ اور صحابہ کرامؓ میں تاریخ حدیث کی نوعیت و اضح کرنا ۴محدثین کی مساعی کا مطالعہ کرنا

Course Descriptions

S.No.	Topic	Descriptions

1	حدیث و سنت کا تعارف	۱حدیث کا لغوی و اصطلاحی مفہوم ۲سنت کا مفہوم ۳حدیث و سنت میں فرق
2	حدیث و سنت کی تشریعی حیثیت	۱۔ حجیت حدیث و سنت ۲حدیث و سنت شریعت اسلامیہ کا بنیادی ماخذ ۳حجیت 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 کادوسرا دور(عہدخلفائے راشدین اور صحابہ کرام)	۱۔ عہدِ ابوبکر میں حدیث ۲۔ عہدِ فاروقی میں حدیث ۳۔ عہدِ عثمانی میں حدیث ۴۔ عہدِ علی میں حدیث ۵۔ صحف صحابہ
5	حفاظت حدیث کا تیسرادور(تابعین و تبع تابعین)	۱مکہ، مدینہ، کوفہ کے مراکز حدیث ۲بصرہ، شام، مصرکے مراکز حدیث
6	حضرت عمر بن عبدالعزیز کے دور میں حفاظت وتدوین حدیث	۱۔ حضرت عمر بن عبدالعزیز کے دور میں تدوین حدیث کے محرکات ۲۔ اس دور کے اہم محدثین
7	تدوین حدیث (۱)	۱۔ دوسری صدی ہجری کی اہم تالیفات
8	تدوین حدیث (۲)	۱۔ فتنہ انکار حدیث کی ابتداء ۲۔ فتنہ وضع حدیث کے اسباب و محرکات ۳فتنہ انکار حدیث اور وضع حدیث کا تدارک
9	تدوین حدیث (۳)	۱۔ کتب ستہ کے مؤلفین کا تعارف ۲۔ کتب ستہ کا تعارف اور اسالیب
10	اصول حدیث مبادیات ، اقسام حدیث	تعریف ، غرض و غایت ،موضوع خبر واحد ، خبر متواتر

11	منتہیٰ کے اعتبار سے اقسام حدیث رواۃ کے اعتبار سے اقسام حدیث	مرفوع، موقوف، مقطوع مشہور ،عزیز ، غریب
12	راویوں کے صفات کے اعتبار سے اقسام حدیث	صحیح ، حسن ، ضعیف ،متروک ، شاذ،محفوظ ، منکر ،معروف، معلل، مضطرب، مقلوب،مصحف،مدرج
13	صیغ ادا اقسام کتب حدیث	حدثنی ، اخبرنی و غیرہ جامع ، سنن ، مسند ،معجم ،جزُ، مفرد ،غریب ، مستخرج،مستدرک
14	جرح و تعدیل کا بیان	معنی ، مفہوم اصول ، الفاظ تعدیل ، الفاظ جرح

نصابی کتب

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

حوالہ جاتی کتب

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

Math

MATH-3204   **Calculus-II**   **Credit Hrs. 3(3-0)**

Course Objective:

This course extends the study of calculus to multivariable functions, including partial differentiation, multiple integration, and vector calculus.

Course Contents:

An Overview of the Area Problem, The Indefinite Integral, Integration by Substitution, The Definition of Area as a Limit, Sigma Notation, The Definite Integral, The Fundamental Theorem of Calculus, Rectilinear Motion Revisited Using Integration, Average Value of a Function and its Applications, Evaluating Definite Integrals by Substitution, Logarithmic and Other Functions Defined by Integrals, Area Between Two Curves, Length of a Plane Curve, Area of a Surface of Revolution, An Overview of Integration Methods, Integration by Parts, Integrating Trigonometric Functions, Trigonometric Substitutions, Integrating Rational Functions by Partial Fractions.

Recommended books:

1. Calculus: Early Transcendentals" by Howard Anton, Irl Bivens and Stephen Davis
2. Calculus: Concepts and Contexts" by James Stewart
3. Calculus Volume 2" by Edwin Herman and Gilbert Strang
4.

MATH-3205   Introduction to Linear Algebra   Credit Hr. 3(3-0)

Course Objective:

Basic understanding of matrices, vector space, and linear transformations.

Course Contents:

Vectors and Linear Combinations, Lengths and Dot Products, Matrices, Vectors and Linear Equations, The Idea of Elimination, Elimination Using Matrices, Rules for Matrix Operations, Inverse Matrices, Elimination, Transposes and Permutations, Spaces of Vectors, The Null space, The Rank and the Row Reduced Form, The Complete Solution to $Ax = b$, Independence, Basis and Dimension, Dimensions of the Subspaces, Orthogonality of the Subspaces, Projections, Orthogonal Bases and Gram-Schmidt, The Properties of Determinants, Permutations and Cofactors, Cramer's Rule, Inverses, and Volumes, Introduction to Eigenvalues, Diagonalizing a Matrix, Symmetric Matrices, Positive Definite Matrices, Similar Matrices, Singular Value Decomposition, The Idea of a Linear Transformation, The Matrix of a Linear Transformation.

Recommended Books:

1. Introduction to Linear Algebra" by Gilbert Strang, 5th Edition
2. Linear Algebra for Everyone" by Gilbert Strang, September 2020
3. Linear Algebra and Learning from Data" by Gilbert Strang, 2019

Political Science

POL- 3205   **Political Science –II**   **Credit Hours: 3(3-0)**

Course Objectives :

➢ To equip the knowledge about the structures and various forms of states;
➢ To enabled the students to understand the various forms of governments
➢ To impart the knowledge on political ideologies, political parties, elections,

Course Contents:

1. Definition, Kinds of States, Unitary, Federation, Confederation,

2. Democracy; Kinds, Characteristics, Western Concept of Democracy, Islamic concept of democracy.

3. Authoritarian, definition, kinds, merits and demerits,

4. Presidential System, Merits and demerits, Dictatorship, definition, kinds, merits and demerits.

5. Constitution:

6. Definition, sources, kinds and amendments.

7. Laws, duties and responsibilities of citizens.

8. Political System

9. Definition, Characteristics and Functions

10. Political Parties:

11. Kinds, Structures, Functions,

12. Interest Groups: Kinds, Functions, Relationship with Political Parties.

13. Public Opinion: Definition, Formulation, Assessment.

14. Electoral Process: Mechanism, Kinds of representation, requirements of impartial elections.

15. Political Ideologies: Liberalism, Fascism, Nazism, Socialism, Marxism, Nationalism. Teaching

Recommended Books:

1. Choudhry Ahmad Shafi, Usul-e-Siyasiat (Urdu), Lahore Standard Book Depot, 1996.

2. Ian Mackenzi (Ed.), Political Concepts: A Reader and Guide, Edinburgh, University Press, 2005.

3. Mazher ul Haq, Theory and Practice in Political Science, Lahore Bookland, 1996.

4. Michael G. Roskin, Political Science: An Introduction, London: Prentice Hall, 1997.

5. Mohammad Sarwar, Introduction to Political Science, Lahore Ilmi Kutub Khana, 1996.

6. R. C. Agarwal, Political Theory (Principles of Pol. Science), New Delhi, S. Chand & Co., 2006.

7. Robert Jackson and Doreen Jackson, A Comparative Introduction to Political Science (New Jersey, Prentice

8. Rodee Anderson etc. Introduction to Political Science, Islamabad, National Book Foundation, Latest Edition.

9. Sheikh Bashir Ahmad, Riyasat Jo Ilm (Sindhi meaning Science of State), Jamshoro, Institute of Sindhalogy, University of Sindh, 1985.

10. V. D. Mahajan, Political Theory (Principles of Pol. Science), New Delhi, S. Chand & Co., 2006.

Physics

PHY-3204   Electricity and Magnetism   Credit Hours. 3(3-0)

Course Objectives

1. To give the concept of the electric field, electrical potential, and dielectrics
2. To understand the DC circuits
3. To know the effect of magnetic field and basic magnetic properties of materials

Course Contents:

Electric Field:

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

Electric Potential:

Potential due to point charge, potential due to collection of point charges, potential due to dipole. The electric potential of continuous charge distribution. Field as the gradient or derivative of potential. Potential and field inside and outside an isolated conductor.

Capacitors and dielectrics:

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

Magnetic Field Effects and Magnetic Properties of Matter:

Magnetic force on a charged particle, magnetic force on a current, Recall the previous results. Do not derive. Torque on a current loop. Magnetic dipole: Energy of magnetic dipole in the field, Lorentz Force, Biot-Savart Law: Analytical treatment and applications to a current loop, force on two parallel current changing conductors. Ampere's Law, Integral and differential forms, applications to solenoids and toroids. (Integral form).

Inductance:

Faraday's Law of Electromagnetic Induction, Review of emf, Faraday Law and Lenz's Law, Induced electric fields, Calculation and application using differential and integral form, Inductance, "Basic definition". Inductance of a Solenoid; Toroid.

Alternating Current Circuits:

Alternating current, AC current in resistive, inductive, and capacitative elements. Single loop RLC circuit, Series and parallel circuits, Analytical expression for time-dependent solution. Graphical analysis, phase angles, Power in A.C circuits: phase angles, RMS values, power factor.

Recommended Books:

1. F. J. Keller, W. E. Gettys, M. J. Skove *Physics Classical and Modern (2nd edition)*, McGraw-Hill, Inc., 1993.
2. A. F. Kip Fundamentals of Electricity and Magnetism (2nd Ed.), McGraw-Hill Book Co., 1969.
3. D. Halliday, R. Resnick, K. S. Krane Physics (Vol-II), John Willey & Sons, Inc., 1992.
4. D. N. Vasudeva Magnetism and Electricity, S. Chand & Co., 1959.
5. J. A. Edminister Schaum's Outline Series; Theory and Problems of Electromagnetism, McGraw-Hill Book Co., 1986.

PHY-3207   Physics Lab-II   Credit Hrs. 1(0-1)

Course Objectives:

To understand electrical circuits and the use of CRO, one must know the electrical circuit elements and their experimental measurements.

List of Experiments:

1. Calibration of an Ammeter and a Voltmeter by potentiometer
2. Comparison of capacities by ballistic galvanometer.
3. Measurement of self/mutual inductance.
4. To convert a Western-type galvanometer into an ammeter reading up to 1 ampere (0-1amp range)
5. To convert a moving coil (Western type) galvanometer into a voltmeter reading up to 3

volts (0-3Volt range)

6. Setup of an RLC series circuit. Draw its frequency response curve and find the values of resonance frequency bandwidth and quality factor.
7. Setup of a RLC parallel circuit. Draw its frequency response curve and find the values of resonance frequency bandwidth and quality factor.
8. To determine thermal Emf and plot temperature diagram.
9. Calibration of the thermocouple by the potentiometer.
10. To study the network theorems (Superposition, Thevenin, Norton).

Recommended Books:

1. G L Squires, Practical Physics, 3rd Edition, Cambridge University Press

2. Nolan and Bigliani, Experiments in Physics, Surjeet Pub Ind.

Physical Education & Sports

PES-3205   **RULES AND TECHNIQUES OF GAMES**   **Credit Hours: (2-1)**

COURSE OBJECTIVES

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

COURSE CONTENTS

1. INTRODUCTION

   a. Definition of Games and Sports

   b. Types of Games and Sports

   c. Values of Games and Sports

2. SYSTEMS OF TOURNAMENT

   a. Single elimination or knockout system

   b. Round robin or league system

   c. Combination system

   d. Challenge system

      i. Ladder system

      ii. Pyramid system

3. ORGANIZATION AND CONDUCT OF TOURNAMENTS

a. Board level

    b. University level

    c. Provincial level

    d. National level

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

    a. Badminton

    b. Tennis

    c. Squash

    d. Table Tennis

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

    a. Basket Ball

    b. Net Ball

    c. Volleyball

    d. Handball

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

    a. Foot Ball

    b. Hockey

    c. Cricket

RECOMMENDED BOOKS

1. Dr. A. Waheed Mughal Rules and Techniques of Games, Islamabad2012.

2. Malik Asif, Rules of Games, 2007, Iqra Publisher Nowshera, K-P, Pakistan.

3. Marshal Cavendish, Encyclopedia of Sports

4. Rules of Games by Nora Roberts, Green Earth Books USA 2014.ISBN-139881480588103

5. Rules of the Game by Neil Strauss2013 6. Law of Game 2013-14 by FIFA International

Physiology

PSY-3205   **History & Perspectives of Psychology**   **Credit Hours: 3(3-0)**

Course Title: History and Perspectives of Psychology

Course Code: PSY-311

Course Objectives

To develop a basic understanding of the various processes of scientific development and change and to become familiar with the chronological history of ideas which contribute to the field of psychology. To examine the historical context within which that historical development took place and the schools of psychology. To be able to place current psychological thought within that historical development and context.

Course Contents

1) **Introduction**
   a. Why study the history of psychology? Revisions in the traditional views of science Persistent questions in psychology
   b. Early Greek Philosophy.
   c. The first philosophers: Thales, Alaxinander, Heraclites, Parmenides, Pythagoras, Empedocles, and Democritus
   d. Early Greek Medicine
   e. The relativity of Truth; Protagoras, Gorgas, Xenophobes, Socrates, Plato, Aristotle; After Aristotle
   f. Skepticism & Cynicism
   g. Epicureanism and Stoicism Neo-Platonism and Emphasis on spirit Contribution of Muslim Philosopher
   h. Scholasticism

2) **The Beginning of Modern Science and Philosophy**
   a. Renaissance Humanism; Challenges to Church authority; Rene Descartes
   b. Empiricism, Sensationalism, and positivism
   c. British Empiricism; French Sensationalism; Positivism
   d. Rationalism
   e. Spinoza; Immanuel Kant; Johann Friedrich Herbert; Friedrich Hegel
   f. Romanticism and Existentialism
   g. Early developments in physiology and the rise of experimental psychology; Individual differences; Early Research on brain functioning Voluntarism, Structuralism and other early approaches to psychology Voluntarism.

2.

3) **Psychobiology**
   a. Karl and Lashley; New connectionism; Behavioral genetics
   b. Contemporary Psychology
   c. The Diversity in contemporary psychology
   d. The tension between pure, scientific and applied psychology
   e. Psychology's status as a science; Post modernism

4) **Systems and Schools of Thought**
   a. Structuralism Functionalism Behaviorism
   b. Gestalt psychology and Field Theory
   c. Psychodynamics Humanistic Psychology Cognitive Psychology
   d. New trends in Psychology
   e. Psychology in Pakistan

RECOMMENDED BOOKS:

1. Hergenhahn, B. R. (2013). *An introduction to the history of psychology*. New York: Wadsworth. 7th edition.
2. Sharma, N., & Sharma, R. (2003). *History and schools of psychology*. New Delhi: Atlantic Publishers.
3. Ajmal, M. (1986). *Muslim contribution to psychotherapy and other essays*. Islamabad: National Institute of Psychology, Quaid-i-Azam University.
4. Boring, E. G. (1957). *A history of psychology*. New Jersey: Prentice-Hall.
5. Leahey, T. H. (2003). *A history of psychology*. New Jersey: Prentice-Hall Inc.
6. Murphy, G. (2017). *Historical introduction to modern psychology*. London: Routledge & Kegan Paul.
7. Shultz, D. *(2015). A history of modern psychology*. Florida: Academic Press.
8. Wolmen, B. B. (1979). *Contemporary theories and systems in psychology*. New York: Harper & Row.

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SOC- 3206   **BASICS OF SOCIAL RESEARCH**   **Credit Hours: 3(3-0)**

Course Objectives:

The course aims to learn about the basic concepts of social research, various components of research and the usage of various methodologies while conducting research on different issues.

Course Contents:

1. Introduction

    a. Definition, significance of social research

    b. Characteristics of scientific social research

    c. Types of research

    d. Quantitative and qualitative approach in social research

2. Research Problem

    a. Selections and formulation of research problems

    b. Determinates of significant problems

    c. Components of a problems

3. Research Design

    a. Components of a research design

    b. Types of research design

    c. Scope and utility of research design

4. Hypothesis and Operationalization

    a. Meaning and definition of operationalization

    b. The process of operationalization.

    c. Reliability and validity

    d. Meaning and forms of hypothesis

    e. Function of hypothesis

    f. Sources and logic of deriving hypothesis

5. Sampling

    a. Nature and importance

    b. Forms: probability and non – probability

6. Methods, Instruments and Techniques of Data Collection

   a. Sources of data

   b. Methods of data collection

   c. Survey method

   d. Experimental method

   e. Questionnaire

   f. Interview schedule / guide

   g. Observation – participant, non – participant

7. Measurement and Scaling

   a. Indexes and scores

   b. Types of scales

8. Analysis and Interpretation of Data

   a. Coding and tabulation

   b. Manual and computer operations

   9. Presentation of Data and Report Writing

   a. Graphic and pictorial presentations

   b. Report writing

   c. Format of the report

   d. Bibliography, foot notes and references

Recommended Books:

   1. Alwin, Duene F. 2007. Margins of Error; A Study of Reliability in Survey Measurements.U.S.A.: John Wiley and Sons, Inc.

   2. Babbie, Earl. 2004. The Practice of Social Research. 10 th Edition. Belmont: CA Words Worth Publishing.

   3. Bridge Semekh and Culhy. 2005. Research Methods in the Social Science. New Delhi: Vistaar Publisher.

   4. Christopher Winship, 2003, Sociological Methods and Research. London: Sage Publications.

   5. Monette, Duane R., Sullivan, Thomas J. and Dejong, Cornell R. 1998 Applied Social Research: Tool for the Human Services (4 th Edition) New York: Harcout Brace College Publishers.

   6. Nachimas, Chava Frankfort and David Nachmias (1997) Research Methods in the Social Sciences (5 th Edition) New York: St. Martin's Press Inc.

7. Neuman William Lawrence. (2000) Social Research Methods 4 th ed. Allyn and Eacon.,Boston.

8. Somekh and Lewin, 2005, Research methods in Social Sciences, Vistaar, Publication, New Delhi.

9. Neuman, W. Lawrence (2000). "Social Research Methods". New York: Allyn and Bacon.

10. Baker, Therese L. (1989). "Doing Social Research". McGraw-Hill.

11. Babbie, Earl (2005). "The Practice of Social Research". Belmont, California:Wordsworth.

12. Juliet Corbin and Anselm C Strauss, Basics of Qualitative Research (Third Edition) (2008) Sage Publications New Delhi

Statistics

STA-3204   **INTRODUCTION TO PROBABILITY**   **Credit Hours: 3(3-0)**

Course Contents

Probability Concepts, Addition and Multiplication rules, Bayes theorem and its applications, Joint and marginal probabilities, Conditional probability and independence, Random Variable, Probability Distribution, Expected value of Random Variable, Discrete Random Variables, Probability Distribution, Mean and Variance of a discrete random variable. Bernoulli trials. Properties, applications and fitting of Binomial, Poisson, Hypergeometric, Negative Binomial and Geometric distributions. Continuous Random Variable, probability density function and its properties. Normal Distribution and its properties, Application of the Normal Distribution, Standard Normal Distribution.

Books Recommended

1. Weiss, N. A "Introductory Statistics" 9th Edition Addison- Wesley Pub. Company, Inc (2012).

2. Clark, G. M. and Cooke, D. (1998), "A Basic Course in Statistics" 4th Edition, Arnold, London.

3. LeBlanc, D. C. Statistics: concepts and applications for science. Jones & Bartlett Learning (2004).

4. Chaudhry, S. M. and Kamal, S. "*Introduction to Statistical Theory*" Parts I & II, 8th Edition, IlmiKitabKhana, Lahore, Pakistan (2009).

5. Walpole, R. E. Myers, R. H and Myers, S. L. "Probability and Statistics for Engineers and Scientist 8th Edition, Prentice Hall, New York (2007).

6. Spiegel, M. R. Schiller, J. L. and Sirinivasan, R. L. "Probability and *Statistics*" 3rd Edition. Schaums Outlines series. McGraw Hill. New York (2008).

7. Deep, R "Probability and Statistics" Academic Press, London (2007).

Zoology

ZOO-3205   Animal Diversity-I   Credit Hours: 3(2-1)

Course Objectives: 1. To provide the knowledge of evolutionary/ phylogenetic relationship (from simple to the complex organisms).

2. To impart the basic taxonomic characteristics and classification of all the invertebrate phyla.

3. To provide understanding of body organization, Feeding and Digestive system; Other Organ System;

4. To provide the description of mode of Reproduction and Development

5. To provide the information of their economic and ecological importance

Course Learning Outcomes:

This course will be based on following outcomes:

1. Acquire the basic concepts of invertebrates with explanation of evolutionary origin and diversification.

2. Understand invertebrate organismal concepts in laboratory and field.

3. Demonstrate major evolutionary innovations for invertebrates with functional importance.

4. Understand how reproduction and development occurred and able to breed animal in the laboratory/field

5. Analyze economic and ecological importance of invertebrates.

Course Contents:

Note: The minimum details of the titles in the content must be of the principal book Zoology by Miller and Harley. This must be kept in view in teaching and assessments.

Introduction

a. Classification of Organisms:

b. Evolutionary Relationships and Tree Diagrams: Patterns of organization.

Animal-like Protists: The Protozoa

c. Evolutionary perspective; Life within a single plasma Membrane;

d. Symbiotic Life-styles.

e. Protozoon Taxonomy; (up to Phyla, subphyla and super Classes, wherever applicable).

f. Pseudopodia and Amoeboid Locomotion; Cilia and other pellicular structure;

g. Nutrition; Genetic Control and Reproduction; Symbiotic ciliates;

h. Further Phylogenetic Consideration.

Multicellular and Tissue Levels of Organization

i. Evolutionary Perspective:

j. Origins of Multicellularity; Animal Origins.

Phylum Porifera

a. Characteristics and classification. Cell Types, Body Wall, and

Skeletons;

b. Water Current and Body Forms;

c. Maintenance Functions, Reproduction.

Phylum Cnidaria (Coelenterate)

a. Characteristics and classification. The body Wall and Nematocysts:

Alteration of Generations;

b. Maintenance Functions; Reproduction and

c. Classification up to Class.

Phylum Ctenophore;

a. Characteristics, body organization

The Triploblastic and with Acoelomate Body Plan Phylum Platyhelminthes

a. Evolutionary Perspective; Classification up to class;

b. The Free-Living Flatworms and the Tapeworms, adaptive modification for parasitic life style

Phylum Numerate; Characteristics, body organization

Phylum Gastrotrich; Characteristics, body organization

2. Pseudocoelomate Body Plan

Phylum Aschelminths

a. Evolutionary perspective; General Characteristics; Classification up to order with External

Features;

b. Feeding and Digestive system; Other Organ System; Reproduction and Development including

Phylum Rotifera, Phylum Nematoda and Phylum Kinorhyncha.

c. Some Important Nematode Parasites of Humans;

3. Phylum Mollusca

a. Evolutionary perspective; Relationship to other animals; Origin of the Coelom;

b. Molluscan Characteristics, Classification up to class. The Characteristics of Shell and Associated Structures,

c. Feeding, Digestion, Gas Exchange, Locomotion,

d. Reproduction and Development, Other maintenance Functions and Diversity in Gastropods, Bivalves and Cephalopods:

4. **Phylum Annelida**

a. The Metameric Body Form; Evolutionary perspective; Relationship to other animals,

b. Metamerism and Tag-matization, Classification up to Class. External

Structure and Locomotion,

c. Feeding and the Digestive system, Gas Exchange and Circulation,

d. Nervous and Sensory Functions, Excretion,

e. Regeneration, Reproduction and Development, in Polychaeta, Oligochaeta and Hirudinea, Further Phylogenetic Consideration.

5. Phylum Arthropoda:

a. Evolutionary Perspective: Classification and Relationship to other Animals;

b. Metamerism and Tagmatization;

c. The Exoskeleton; Metamorphosis;

d. Classification up to Class; Further Phylogenetic Consideration. The Hexapods and Myriapods:

a. Evolutionary Perspective: Classification up to class. External Structure and Locomotion,

b. Nutrition and the Digestive system, Gas Exchange, Circulation and Temperature Regulation,

c. Nervous and Sensory Functions, Excretion, Chemical Regulation,

d. Reproduction and Development in Hexapoda,

e. Insects Behavior, Insect and Human;

6. **Phylumechinoderms**

a. Evolutionary Perspective: Relationship to other Animals; Echinoderm Characteristics; Classification up to class.

b. Maintenance Functions, Regeneration,

c. Reproduction, and Development in Asteroida, Ophiuroidea, Echinoidea, Holothuridea and Crinoidea;

Some Lesser-Known Invertebrates;

a. The Lophophorates, Entoprocts, Cycliophores, and Cheatognaths.

Practical:

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

1.   Study of Euglena, Amoeba, Endameba, Plasmodium, Trypanosome, Paramecium as representative of animal like Protists.

2.   Study of prepared slides of sponges, spicules of songes, and their various body forms. Study of representatives of classes of Phylum Porifera.

3.   Study of principal representatives of classes of Phylum Coelenterate.

4.   Study of principal representatives of classes of Phylum Platyhelminthes.

5.   Study of representatives of phylum Rotifer, Phylum Nematode.

6.   Study of principal representatives of classes of Phylum Mollusca.

7.   Study of principal representatives of classes of Phylum Annelida.

8.   Study of principal representatives of classes of groups of Phylum Arthropoda

9.   Study of representatives of classes of phylum Echinodermta.

10.   Preparation of permanent mount of Leucosolenia, Obelia, Hydra, Proglottid of Tapeworm, Parapodia of Nereis and Daphnia. Drawing and labeling.

11.   Preparation of permanent slide of mouthpart of insects (after dissection). Drawing and labeling.

12.   How to make grade-wise series for preparation of temporary and permanent slides.

Teaching Methodology:

•   Lecturing
•   Written Assignments
•   Guest Speaker
•   Research project
•   Presentation

Assignments & Presentation (10%)

Recommended Principal Reference Book:

1.   Miller, A.S. and Harley, J.B. ; 1999 , 2002., 2007, 2009, 2012 & 2016 Zoology, 4th , 5th, 6th, 7th, 8th , 9th& 10th Edition (International), Singapore : McGraw Hill.

Additional Readings:

1.   Schierwater, B., &DeSalle, R. (2021). Invertebrate zoology: a tree of life approach. CRC Press.

2.   Hickman, C.P., Roberts, L.C/, AND Larson, A., 2018. INTEGRATED PRINCIPLES OF ZOOLOGY, 15th Edition (International), Singapore: McGRAW-Hill.

3.   Mandal, F. B. (2017). Biology of Non-chordates. PHI Learning Pvt. Ltd..

4.   Pechenik, J.A., 2015. BIOLOGY OF INVERTEBRATES, 7th Edition, (International), Singapore: McGraw-Hill.

5.   Hickman, C.P., Roberts, L.C/, AND Larson, A., 2007. INTEGRATED PRINCIPLES OF ZOOLOGy, 12th& 13th Edition (International). Singapore: McGraw-Hill.

6.   Sandhu, G. S. (2005). Textbook of invertebrate zoology (Vol. 1). Campus Books International.

7.   Campbell, N.A., 2002; BIOLOGY 6th Edition, Menlo Park, California; Benjamin Cummings Publishing Company, Inc.

8.   Kent, G. C. and Miller, S., 2001. COMPARATIVE ANATOMY OF VERTEBRATES New York: McGraw-Hill.

BOOKS FOR PRACTICAL

9.   Verma, P. S. (2010). A Manual of Practical Zoology: Invertebrates. S. Chand Publishing.

10.   Miller, S.A., 2002. GENERAL ZOOLOGY LABORATORY MANUAL. 5th Edition (International), Singapore : McGraw-Hill.

11.   Hickman, C.P. and Kats, H.L., 2000. Laboratory Studies in integrated principal of zoology. Singapore : McGraw-Hill.

AD Commerce

COM-3204   **Principles of Management**   Credit Hours: 3(3-0)

Course Objectives: The course aims to provide students with the basic managerial knowledge necessary for business students. The course focuses on providing students with analytical, developmental and technical skills that relate to managerial positions in organizations.

Course Contents:

Week No.	Lecture No	Topic	Assignments	Quiz
Week 01	Lecture 01	Introduction to Management.		
	Lecture 02	Organization, The management Process		
	Lecture 03	Managers skills and roles		
Week 02	Lecture 04	The History and evolution of Management		

	Lecture 05	Classical approaches, Behavioral approaches	**Assignment 01**	
	Lecture 06	Quantitative and contingency approaches		
Week 03	Lecture 07	The organizational Culture and the Manager		
	Lecture 08	The external environment and the Manager		
	Lecture 09	The internal environment and the manager		
Week 04	Lecture 10	Foundations and basic elements of Planning		
	Lecture 11	Process of planning and MBO		
	Lecture 12	Effective strategic planning		
Week 05	Lecture 13	Decision making process		**Quiz 01**
	Lecture 14	Decision making approaches and situations		
	Lecture 15	Decision making errors		
Week 06	Lecture 16	Strategic management process		
	Lecture 17	Types of strategies Corporate strategies Growth strategies		
	Lecture 18	Stability strategies Decline strategies Competitive strategies		
Week 07	Lecture 19	Organizational Structure Components		
	Lecture 20	Types of Organizational Structure Advantages/ disadvantages		
	Lecture 21	Types of Organizational Structure Advantages/ disadvantages		
Week 08 Lecture 22 Lecture 23 Lecture 24 **MID TERM EXAMS**				
Week 09	Lecture 25	Selection process		

	Lecture 26	Performance appraisal techniques		
	Lecture 27	Motivation and its theories Maslow hierarchy of needs, Two factor theory		
Week 10	Lecture 28	Three needs theory Goal setting theory.		
	Lecture 29	Expectancy theory Reinforcement theory.		
	Lecture 30	Equity theory Current issues in Motivation		
Week 11	Lecture 31	Group and stages of group development		
	Lecture 32	Important concepts related group and teams (group think, brainstorming etc)		
	Lecture 33	Team work and Group Behavior Attitude and its components		
Week 12	Lecture 34	Leadership and its characteristics		
	Lecture 35	Behavioral approaches of leadership		
	Lecture 36	Managerial grid		
Week 13	Lecture 37	LMX Theory		
	Lecture 38	Process of control		
	Lecture 39	Types of control		
Week 14	Lecture 40	The Control Standards		
	Lecture 41	Case of Controlling		
	Lecture 42	Presentation	**Assignment 02**	
Week 15	Lecture 43	Staffing		**Quiz 02**

Week No.	Lecture No	Topic		
	Lecture 44	Case study		
	Lecture 45	Project & Presentation		
Week 16	Lecture 46	Project & Presentation		
	Lecture 47	Project & Presentation		
	Lecture 48	Project & Presentation		
Week 17	**Terminal Exam**			

Recommended Textbook (Latest Available Edition)

- Management, Stephen P. Robbins and Mary Coulter, Latest edition
- Management, Peter Ferdinand Drucker , Latest edition

STA-3205 **Inferential Statistics** Credit Hours: 3(3-0)

Course Objectives: To enhance students" competency in application of statistics to solve business management problems and to improve their level of quantitative sophistication for further advanced business analysis

Course Contents:

Week No.	Lecture No	Topic	Assignments	Quiz
Week 01	Lecture 01	Introduction • Definitions		
	Lecture 02	Descriptive Statistics & Inferential Statistics		
	Lecture 03	Statistics Applications in Business		
Week 02	Lecture 04	Sampling background and importance		
	Lecture 05	Sampling distribution of mean with replacement	**Assignment 01**	
	Lecture 06	Sampling distribution of mean without replacement		**Quiz 01**
Week 03	Lecture 07	Estimation and its characteristics		
	Lecture 08	Point estimation		
	Lecture 09	Interval estimation		

Week 04	Lecture 10	Mean of Sample and Population and Measurement of Mean		
	Lecture 11	Proportion		
	Lecture 12	Difference of Mean of two population		
Week 05	Lecture 13	Difference of proportion of two population		
	Lecture 14	Variance of the population		
	Lecture 15	Ratio of Variances of two population		
Week 06	Lecture 16	Hypothesis testing		
	Lecture 17	Types of Hypotheses		
	Lecture 18	Hypothesis and Proposition		
Week 07	Lecture 19	Hypothesis testing of mean		
	Lecture 20	Hypothesis testing of proportion		
	Lecture 21	Hypothesis testing of difference of proportion and mean		
Week 08 Lecture 22 Lecture 23 Lecture 24 **MID TERM EXAMS**				
Week 09	Lecture 25	Variance		
	Lecture 26	Ratio of Variance		
	Lecture 27	Measurement of variance		
Week 10	Lecture 28	Descriptive Analysis		
	Lecture 29	How and why use descriptive analysis		
	Lecture 30	Descriptive measure manually and through software		
Week 11	Lecture 31	Demographic measures		
	Lecture 32	Why we use Demographic analysis		
	Lecture	Demographic measures and scales		

		33			
Week 12	Lecture 34	Correlation Analysis		
	Lecture 35	Types of correlation analysis		
	Lecture 36	Practice and numerical on correlation		
Week 13	Lecture 37	Regression Analysis		
	Lecture 38	Standard Deviation and measures		
	Lecture 39	Hypothesis testing		
Week 14	Lecture 40	Goodness-of-fit-tests	**Assignment 02**	
	Lecture 41	Chai square test		
	Lecture 42	2x2 Contingency table		
Week 15	Lecture 43	Higher order contingency table		**Quiz 02**
	Lecture 44	ANOVA • One way classification		
	Lecture 45	ANOVA • Two-way classification		
Week 16	Lecture 46	Project & Presentation		
	Lecture 47	Project & Presentation		
	Lecture 48	Project & Presentation		
Week 17	**Terminal Exam**			

Recommended Textbook (Latest Available Edition)

- David, S Moore et.al, Introduction to the Practice of Statistics, 6thEdition WH. Freeman.
- Levin I. Richard., Statistics for Management, 4th ed; McGraw Hill.
- Engle wood Cliffs, New Jersey, Prentice Hall International, 1987.

COM-3206   **Financial Accounting II**   **Credit Hours**: 3(3-0)

Course Objectives

1. Advanced Financial Statements: Analyze and interpret complex financial statements.
2. Income Recognition: Understand and apply advanced income recognition principles.
3. Asset Valuation: Evaluate and account for various types of assets, including intangible assets and investments.

Course Contents:

WEEK	LECTUR#	TOPICS		
Week 1	Lecture 1 Lecture 2 Lecture 3	Corporations; organization & shareholders' equity • Corporations • Advantages and disadvantages of Corporations • Formation of Corporations • Shareholders' equity • Cash dividend • Capital stock • Authorization & Issuance of Capital stock		

Week 2	Lecture 4
	 Lecture 5
	 Lecture 6
		• Types of Capital stock
		      Common stock
		      Preferred stock
		 • Characteristics of Preferred stock
		 • Market price of preferred stock and common stock
		 • Issuing capital stock
		 • Stock issued other than cash
		 • Subscriptions to capital stock
		 • Donated capital
		 • Exercise & problems practice		

Week 3	Lecture 7 Lecture 8 Lecture 9	**Company final Accounts and IAS 1** • IAS 1: Presentation of financial statements • Preparing Final Accounts o Profit & Loss Account		
Week 4	Lecture 10 Lecture 11 Lecture 12	o Appropriation Account o Balance Sheet • Published Annual Reports Exercise & problems practice		

Week 5	Lecture 13 Lecture 14 Lecture 15	**Preparation and Interpretation of Cash Flow: IAS 7** • IAS 7 introduction • Purpose of Cash Flow statement • Preparation of Cash Flow statement Operating Activities		
Week 6		Investing Activities Financing Activities Exercise & problems practice		
Week 7	Lecture 19 Lecture 20 Lecture21	**Analysis of Financial Statements** • Ratios	**Assigment #1**	
Week 8	Lecture 22 Lecture 23 Lecture 24	• Trend analysis Common size analysis		**Quiz#1**
Week 9	Lecture 25 Lecture 26 Lecture 27	**MID TERM** **Accounting for property, plant and equipment (IAS 16)** • Property, Plant and Equipment • Lump-sum Purchase • Subsequent Expenditure • Depreciation methods		
Week 10	Lecture 28 Lecture 29 Lecture 30	• Revaluation • Review of Useful life • Intangible Assets and Amortization • Wasting Assets and Depletion Exercise & problems practice		
Week 11	Lecture 31 Lecture 32 Lecture 33	**Account receivables & notes receivables** **Account receivables** • Uncollectable expense account • Allowance for doubtful accounts • Writing off Uncollectable Account receivables • Recovery of Account receivables previously written off • Estimating credit losses • Direct write off		

Week 12	Lecture 34 Lecture 35 Lecture 36	**Notes receivables** • Nature of Interest • Accounting for Notes receivables • Renewal of Notes receivables • Exercise & problems practice		
Week 13	Lecture 37 Lecture 38 Lecture39	**Investment in marketable securities** • Marketable securities • Book value and market value • Types of securities • Accounting for Marketable securities • Exercise & problems practice		

Week 14	Lecture 40 Lecture 41 Lecture 42	**Common types of liabilities**
		• Nature of liabilities
		• Current liabilities
		• Account payable
		• Note payable
		• Current portion of long term liabilities
		    Accrued liabilities
		    Interest payable
		    Income taxes payable
		    Payroll liabilities
		    Unearned revenues
		• Long term liabilities
		• Maturing obligations intended to be refinanced
		• Installment notes Payable
		• Amortization using
		• Using Amortization table
		• Exercise & problems practice		

Week 15	Lecture 43 Lecture 44 Lecture 45	**Important IAS and IFRS** • Inventories IAS-2 • Events after reporting period (IAS 10) • Revenue recognition (IFRS 15) • Impairment of Assets (IAS 36) • Intangible Assets (IAS 38)		
Week 16	Lecture 46 Lecture 47 Lecture 48	**Partnership accounts** • Exercise & problems practice **TERMINAL EXAM**	**Assigment #2**	**Quiz#2**

RECOMMENDED TEXT BOOKS

1. Meigs and Meigs, Accounting for Business Decision, 9th Edition/Latest Edition

REFERENCE MATERIAL: Students can use the following reference books for understanding the concepts

1. Williams, Haka, Bettner: Financial & Managerial Accounting, Latest Edition, Prentice Hall
2. Professor Muhammad Ammanullah Khan: Financial Accounting, Latest Edition
3. Frank Wood"s: Business Accounting 1, Eleventh Edition
4. SohailAfzal: Accounting, Latest Edition