

CURRICULUM
OF
ARCHAEOLOGY
4-YEAR BS PROGRAMME



HIGHER EDUCATION COMMISSION
ISLAMABAD – PAKISTAN

CURRICULUM DIVISION, HEC

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PREFACE

The curriculum, with varying definitions, is a plan of the teaching-learning process that students of an academic programme are required to undergo. It includes objectives and learning outcomes, course contents, scheme of studies, teaching methodologies and methods of assessment of learning. Knowledge in all academic disciplines is expanding and even new disciplines are also emerging, it is imperative that curriculum are developed and revised regularly.

University Grants Commission (UGC) was designated as the competent authority to develop, review and revise curricula beyond Class-XII vide Section 3, Sub-Section 2 (ii), Act of Parliament No. X of 1976 titled “**Supervision of Curricula and Textbooks and Maintenance of Standard of Education**”. With the repeal of UGC Act, the same function was assigned to the Higher Education Commission (HEC) under its Ordinance of 2002, Section 10, Sub-Section 1 (v).

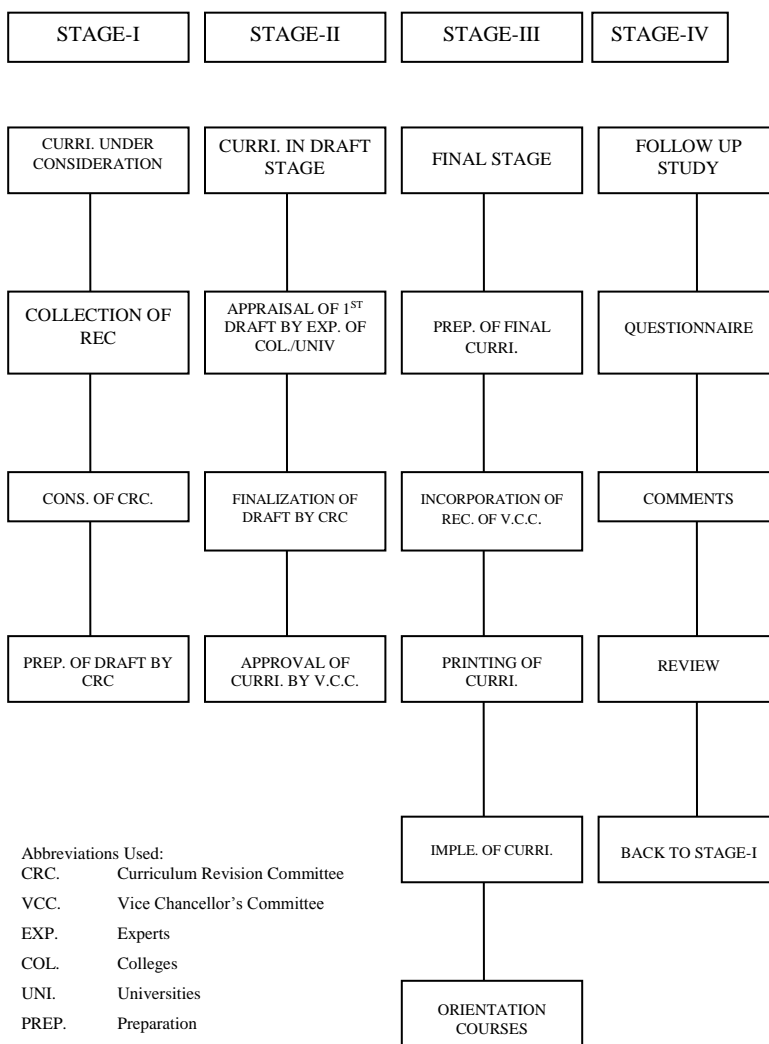
In compliance with the provisions, the Curriculum Division of HEC undertakes the revision of curricula after every three years through respective National Curriculum Revision Committees (NCRCs) which consist of eminent professors and researchers of relevant fields from public and private sector universities, R&D organizations, councils, industry and civil society nominated by their organizations.

In order to impart education at par with quality international standards, HEC NCRCs have developed unified templates as guidelines for the development and revision of curricula in the disciplines of Basic Sciences, Applied Sciences, Social Sciences, Agriculture and Engineering in 2007 and 2009.

It is hoped that this curriculum document, prepared by the respective NCRC's, would serve the purpose of meeting our national, social and economic needs, and it would also provide the level of competency specified in Pakistan Qualification Framework to make it compatible with international educational standards. The curriculum is also placed on the website of HEC (www.hec.gov.pk).

(Fida Hussain)
Director General (Academics)

CURRICULUM DEVELOPMENT PROCESS



MINUTES OF THE FINAL MEETING OF HEC NATIONAL CURRICULUM REVISION COMMITTEE IN ARCHAEOLOGY FROM MAY 23-25, 2016

The final meeting of the National Curriculum Revision Committee (NCRC) in the discipline of Archaeology was held at HEC Regional Centre, Peshawar from May 23-25, 2016 to review the changes made in the preliminary meeting and to finalize the draft curriculum of Archaeology for BS 4-Year Programme. The meeting started with recitation from the Holy Quran by Dr Ibrahim Shah. Ms Ghayyur Fatima, Director (Curriculum), Higher Education Commission (Islamabad), welcomed the participants and thanked members of the Committee for sparing precious time to participate in the meeting. She further added that their efforts will go long way in developing workable, useful and comprehensive degree programme in Archaeology. She briefed the participants on the aims and objectives of the meeting. The following members attended the meeting:

1. Prof Dr Ghulam Muhiuddin Veesar Convener
Chairman, Department of Archaeology
Shah Abdul Latif University, Khairpur (Sindh)
2. Dr Ibrahim Shah Member/Secretary
Associate Professor
Department of Archaeology
University of Peshawar, Peshawar
3. Dr Farzand Masih Member
Professor, Department of History
Forman Christian College
Ferozpur Road, Lahore
4. Dr Badshah Sardar Member
Associate Professor, Department of Pakistan Studies
Allama Iqbal Open University, Islamabad
5. Dr Tauqeer Ahmed Warraich Member
Assistant Professor and Head, Department of
Archaeology
University of the Punjab, Lahore
6. Dr Shakirullah Member
Assistant Professor and Head, Department
of Archaeology Hazara University, Mansehra
7. Dr Sadeed Arif Member
Assistant Professor, Taxila Institute of Asian Civilizations,
Quaid-i-Azam University, Islamabad
(In Place of Dr. Muhammad Ashraf Khan, Director)

- | | | |
|-----|--|--------|
| 8. | Mr Muhammad Hanif Laghari Lecturer, Department of Archaeology & Anthropology University of Sindh, Jamshoro (Sindh) | Member |
| 9. | Mr Asad Raza Assistant Professor and Head, Department of Tourism & Hospitality, Abdul Wali Khan University, Mardan (In Place of Dr. Ihsan Ali, Vice Chancellor) | Member |
| 10. | Mr Aatif Iqbal Lecturer and Head Institute of Cultural Heritage, Tourism & Hospitality Management. University of Swat, Swat | Member |
| 11. | Engr. Rashid Ahmer Assistant Archaeologist Engineer Department of Archaeology & Museums, Islamabad | Member |
| 5. | The following members of the NCRC could not attend the meeting due to their official/personal engagement:- | |

1. Dr. M. Nasim Khan
(Meritorious Professor)
Department of Archaeology, University
of Peshawar
2. Dr. Muhammad Arif
Director General
Department of Archaeology & Museums,
Islamabad
3. Prof. Dr. Asmat Naz
Department of History & Pakistan Studies
The Women University, Multan
4. Mr Irshad Hussain
Dy. Director, Sub Regional Office,
Taxila Museum, Taxila
Representative of Department of Archaeology
& Museum, Government of the Punjab, Lahore

All members took keen interest in putting forward precious ideas and shared their long experiences in the respective fields. This practice has been very fruitful in designing curriculum specifically of Archaeology. Long academic discussions on certain issues and problems pertaining to various aspects of the Curriculum and the future scope of the subject further made the business sessions quite interesting. During the

proceedings of meeting, the convener and the secretary considered the input given by the members and incorporated their suggestions, wherever necessary, in the draft curriculum. In the last business session, Ms Ghayyur Fatima requested all members to send the works assigned to them within two weeks' time to the Convener and the Secretary so that the draft could be finalized soon and sent for printing.

In the concluding session, the Director (Curriculum), on behalf of the Chairman, Higher Education Commission (Islamabad), appreciated the efforts made by all towards giving final shape to the Curriculum of BS (4-Year) Programme of Archaeology and thanked the members for their input. The Convener and the Secretary of the NCRC also applauded and thanked the worthy members for their hard work and fruitful academic deliberation in the entire duration of the meeting. They also thanked the Director (Curriculum) HEC (Islamabad) and the Director, HEC, Regional Centre (Peshawar) for their cooperation and hospitality in the greater national interest.

Ms. Ghayyur Fatima, Director Curriculum, HEC thanked the Convener, secretary and all other members of committee for their quality contribution towards the finalization of final Draft of curriculum in the discipline of Archaeology.

The Meeting adjourned with vote of thanks to the Chair and the participants.

**STANDARDIZED FORMAT / SCHEME OF STUDIES FOR
FOUR-YEAR INTEGRATED CURRICULA FOR
BACHELOR DEGREE IN BASIC, SOCIAL, NATURAL
AND APPLIED SCIENCES**

STRUCTURE

| Sr. No. | Categories | No. of courses Min – Max | Credit Hours Min – Max |
|---------|---|-----------------------------|---------------------------|
| 1. | Compulsory Requirement (No Choice) | 9 – 9 | 25 – 25 |
| 2. | General Courses to be chosen from other departments | 7 – 8 | 21 – 24 |
| 3. | Discipline Specific Foundation Courses | 9 – 10 | 30 – 33 |
| 4. | Major Courses including research project / Internship | 11 – 13 | 36 – 42 |
| 5. | Electives within the major | 4 – 4 | 12 – 12 |
| | Total | 40 – 44 | 124 – 136 |

- Total number of Credit hours 124-136
- Duration 4 years
- Semester duration 16-18 weeks
- Semesters 8
- Course Load per Semester 15-18 Cr hr
- Number of courses per semester 4-6 (not more than 3 lab /practical courses)

| |
|---------------------------------------|
| Title of the Course |
| Credit Hours: |
| Prerequisites: |
| Specific Objectives of course: |
| Course Outline: |
| Lab Outline: |
| Recommended Books: |
| Journals / Periodicals: |
| World Wide Web: |

LAYOUT

| Compulsory Requirements (the student has no choice) | | General Courses to be chosen from other departments | | Discipline Specific Foundation Courses | |
|---|--------|---|--------|--|--------|
| 9 courses | | 7-8 courses | | 9-10 courses | |
| 25 Credit hours | | 21-24 Cr. Hours | | 30-33 Credit hours | |
| Subject | Cr. hr | Subject | Cr. hr | Subject | Cr. hr |
| 1. ENGLISH I | 3 | 1. Introduction to Anthropology | 3 | 1. Introduction to Archaeology | 3 |
| 2. ENGLISH II | 3 | 2. Fundamentals of Geography | 3 | 2. Ancient History of South Asia | 3-4 |
| 3. ENGLISH III | 3 | 3. Basic Geology | 3 | 3. Archaeological Heritage of Pakistan | 3-4 |
| 4. ENGLISH IV/ UNIV. OPTIONAL * | 2 | 4. Introduction to Zoology | 3 | 4. Stone age Cultures of Pakistan | 3 |
| 5. PAKISTAN STUDIES | 2 | 5. Fundamentals of Botany | 3 | 5. Bronze Age Cultures of Pakistan | 3 |
| 6. ISLAMIC STUDIES / ETHICS | 3 | 6. Basic Chemistry | 3 | 6. Ancient Religions of Pakistan and India | 3 |
| 7. MATHEMATICS I | 3 | 7. Computer Applications | 3 | 7. Field Archaeology | 3 |
| 8. MATHEMATICS II / UNIV. OPTIONAL ** | 3 | 8. Introduction to History | 3 | 8. Museum Studies | 3 |
| 9. INTRODUCTION TO COMPUTER | 3 | | | 9. Cultural Tourism in Pakistan | 3 |
| | | | | 10. Growth of Archaeology in South Asia | 3 |

| Major courses including research project/internship | | Elective Courses within the major | |
|--|------------|---|-----------|
| 11-13 courses | | 4 courses | |
| 36-42 Credit hours | | 12 Credit Hours | |
| Subject | Cr : hr | Subject | Cr. hr |
| 1. Physical Anthropology 2. Ancient Civilizations 3. Indus Civilization 4. Muslim History of South Asia 5. Cultural Anthropology 6. Archaeological Conservation 7. Muslim Art: Calligraphy, Painting and Minor Arts & Crafts 8. Muslim Architecture of Pakistan and India 9. Research Methodology 10. Numismatics of Pakistan and India. 11. Research Project/Internship – I 12. Research Project/Internship – II 13. Palaeography and Epigraphy of Pakistan and India | | 1. Gandhara Civilization 2. Provincial Cultural Heritage 3. Rock Art of Pakistan 4. Ancient Art and Architecture of Pakistan and India | |

SCHEME OF STUDIES FOR 4-YEAR INTEGRATED BS

| Semester/Year | Name of Subject | Credits |
|---------------|--|-----------|
| First | ENGLISH-I | 3 |
| | PAKISTAN STUDIES | 2 |
| | MATH/STAT-1 | 3 |
| | GENERAL-I | 3 |
| | GENERAL-II | 3 |
| | FOUNDATION-I: Introduction to Archaeology | 3 |
| | | 17 |
| Second | ENGLISH-II | 3 |
| | ISLAMIC STUDIES / ETHICS | 2 |
| | MATH/STAT-II / UNIV. OPTIONAL | 3 |
| | GENERAL-III | 3 |
| | GENERAL-IV | 3 |
| | FOUNDATION-II: Ancient History of Pakistan and India | 3 |
| | | 17 |
| Third | ENGLISH-III | 3 |
| | INTRODUCTION TO COMPUTER | 3 |
| | GENERAL-V | 3 |
| | GENERAL-VI | 3 |
| | FOUNDATION-III: Archaeological Heritage of Pakistan. | 3 |
| | | 15 |
| Fourth | ENGLISH-IV / UNIV. OPTIONAL | 3 |
| | GENERAL-VII | 3 |
| | GENERAL-VIII | 3 |
| | FOUNDATION-IV: Stone Age Cultures of Pakistan | 4 (3+1) |
| | FOUNDATION-V: Bronze Age Cultures of Pakistan | 4 (3+1) |
| | | 17 |
| Fifth | FOUNDATION-VI: Ancient Religions of Pakistan and India | 3 |
| | FOUNDATION-VII: Field Archaeology | 4 (3+1) |
| | MAJOR-I: Physical Anthropology | 3 |
| | MAJOR-II: Ancient Civilizations | 3 |
| | MAJOR-III: Indus Civilization | 3 |
| | | 16 |

| | | |
|----------------|---|-----------|
| Sixth | FOUNDATION-VIII: Museum Studies | 3 |
| | FOUNDATION-IX: Cultural Tourism in Pakistan | 3 |
| | MAJOR-IV: Muslim History of South Asia | 3 |
| | MAJOR-V: Cultural Anthropology | 4 (3+1) |
| | MAJOR-VI: Provincial Cultural Heritage | 3 |
| | | 16 |
| Seventh | MAJOR-VII: Muslim Art: Calligraphy, Painting, Minor Arts & Crafts | 3 |
| | MAJOR-VIII: Muslim Architecture of Pakistan and India | 3 |
| | MAJOR- IX: Research Methodology | 3 |
| | MAJOR-X: Numismatics of Pakistan and India. | 3 |
| | MAJOR-XI: Palaeography and Epigraphy of Pakistan and India | 3 |
| | MAJOR-XII: RESEARCH PROJ / INTERNSHIP-I | 3 |
| | | 18 |
| Eight | MAJOR-XIII: RESEARCH PROJ / INTERNSHIP-II | 3 |
| | ELECTIVE-I (within MAJOR): Gandhara Civilization | 3 |
| | ELECTIVE-II (within MAJOR): Archaeological Conservation | 4 (3+1) |
| | ELECTIVE-III (within MAJOR): Rock Art of Pakistan | 3 |
| | ELECTIVE-III (within MAJOR): Ancient Art and Architecture of Pakistan and India | 3 |
| | TOTAL – 130 | 16 |

* 4 Cr Hr must include LAB/Practical

4-Year Integrated Programme of Study for Bachelor Degree

- a) The students will join the 4-years (8 Semesters; 124-136 credits hours) Bachelor Degree Programme at the University campus after 12 years of schooling. Each semester will be spread over 16-18 weeks including the examination period.
- b) One credit hour will be equal to 50 minutes student-teacher contact per week for 15-16 weeks and for laboratory/practical work its duration will be 3 hours.
- c) Students who qualify at least fourteen years of education at other institutions if wish to join the integrated four year programme may be allowed to do so for the last two years of the programme provided they complete required make-up courses offered by the university.

Semester – I

| Course No. | Course Title | Cr. Hrs. |
|------------|---|-----------|
| 111 | English | 3 |
| 112 | Pakistan Studies | 2 |
| 113 | Mathematics/Statistics-I | 3 |
| 114 | GENERAL I | 3 |
| 115 | GENERAL II | 3 |
| 116 | FOUNDATION-I: Introduction to Archaeology | 3 |
| | Total Cr. Hrs. | 17 |

DETAIL OF COURSES

Course 111: English
(Details to be obtained from approved curriculum)

Course 112: Pakistan Studies
(Details to be obtained from approved curriculum)

Course 113: Mathematics/Statistics-I
(Details to be obtained from approved curriculum)

Course 114: GENERAL-I (Details to be filled in by respective University)

Course 115: GENERAL II
(Details to be filled in by respective University)

Course 116: Introduction to Archaeology

Learning Outcomes

After completing this course, the student will get familiarized with basic concepts and techniques of Archaeology.

THEORY

- Definition and terminology of Archaeology
- Aims and objectives of Archaeology
- Brief history and development of Archaeology
- Relation of Archaeology with History, Anthropology, Geography, Geology, Zoology, Botany, Physics and Chemistry
- Basic Concept of Archaeology: artefacts, stratigraphy, archaeological sites, settlement-pattern, context
- Survey in Archaeology
- Excavation techniques
- Chronology
- Conservation

PRACTICAL

- Visit to local sites and museums
- Systematic surface collection
- Photographic documentation of archaeological sites
- Identification and drawing of artefacts
- Study of regional maps

- Location of sites/monuments on the maps
- Identification of key features of different periods

RECOMMENDED READINGS:

1. Agrawal, D. P. Ghosh, A. (eds.), *Radiocarbon and Indian Archaeology*, Bombay, 1973.
2. Aitkin, M. J. *Science-based Dating in Archaeology*, Longman, London, 1990.
3. Bowman, S. G. E. *Radiocarbon Dating*, The British Museum publication, London, 1990.
4. Fagan, B.M. *In the Beginning: An Introduction to Archaeology*, Harper Collins, 7th ed., 1991.
5. Fagan, B.M. *Archaeology: A brief introduction to Archaeology*, Harper Collins, 4th ed., 1991.
6. Feder K. *Linking to the Past: A Brief Introduction to Archaeology*, 2nd ed, London, 2008.
7. Catling, C. *Archaeology step by step: A practical guide to uncovered the past*, London, 2009.
8. Hole, F. and Heizer, R.F. *Prehistoric Archaeology: A Brief Introduction*, New York, 1977.
9. Hodder, I. *Theory and Practice in Archaeology*, London, 1992.
10. Joukowsky, M. *A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists*, Englewood Cliffs (NJ): Prentice-Hall, 1980.
11. Lesley and Adkins, R. *An Introduction to Archaeology*, London, 1998.
12. Orton, C. and Hughes, M. *Pottery in Archaeology*, London, 2nd ed. 2013.
13. Renfrew, C. and Bahn, P. *Archaeology: Theories, Methods and Practice*, Thames and Hudson, London, 1991.
14. Redman, C. L. *Archaeological Sampling Strategies*, New York, 1974.
15. Shanks, M.; Tilley, C. *Reconstructing Archaeology*, New York, 1987.
16. Wheeler, R. E. M. *Archaeology from the Earth*, London, 1961.
17. Yellen, J. *Archaeological Approaches to the Present*, New York, 1977.

Semester – II

| Course No. | Course Title | Cr. Hrs. |
|------------|--|-----------|
| 121 | English-II | 3 |
| 122 | Islamic Studies/Ethics | 2 |
| 123 | Mathematics-II/Univ. Optional | 3 |
| 124 | GENERAL III | 3 |
| 125 | GENERAL IV | 3 |
| 126 | FOUNDATION-II: Ancient History of Pakistan and India | 3 |
| | Total Cr. Hrs. = | 17 |

DETAIL OF COURSES

- Course 121: English II**
(Details to be obtained from approved curriculum)
- Course 122: Islamic Studies/Ethics**
(Details to be obtained from approved curriculum)
- Course 123: Mathematics II/Univ. Optional**
(Details to be obtained from approved Curriculum)
- Course 124: GENERAL III**
(Details to be filled in by respective University)
- Course 125: GENERAL IV**
(Details to be filled in by respective University)
- Course 126: Ancient History of Pakistan and India**

Learning Outcomes

On completion, the student will know about dynastic history and chronological framework of the areas now included in Pakistan and India.

Contents

- Introduction
- Sources of ancient history

- Aryans: their social, political, cultural, economic and religious life
- Achaemenian rule in Pakistan
- Alexander's invasion of Pakistan
- Mauryan dynasty: administration of Chandragupta Maurya
- Ashoka's contributions to Buddhism
- Indo-Greeks
- Indo-Scythians
- Indo-Parthians
- Kushans: Achievements of Kanishka
- Kushano-Sasanians
- Huns
- Hindu Shahis.

RECOMMENDED READINGS:

1. Abdur Rahman, *The Last two Dynasties of the Śāhis*, Islamabad, 1979.
2. Basham, A. L. *The Wonder that was India*, rpt. India, 1963.
3. Dani, A.H. *History of Northern Areas of Pakistan*, Lahore: Sang-e-Meel Publications, 1989.
4. Majumdar, R. C. *et.al. An Advanced History of India*, Part-I, London, 1960.
5. Nasim Khan, M. *Treasures from Kashmir Smast – The Earliest Shivaite Monastic Establishment*. Peshawar. 2006
6. Nasim Khan, M. *Kharoshthi Manuscripts from Gandhara* (Rprt.). Peshawar 2009.
7. Nasim Khan, M. *The Sacred and the Secular. Investigating the Stupa and Settlement Site of Aziz, Peshawar Valley, Khyber Pukhtoonkhwa* (3 vols). Peshawar. 2010.
8. Nasim Khan, M, Errington, E. and Cribb, J. *Coins from Kashmir Smast – New Numismatic Evidence*. Peshawar 2008.
9. Qureshi, I. H. (ed.), *A Short History of Pakistan*, Book One, Karachi, 1967.
10. *The Cambridge History of India*, Vol. I
11. Smith, V. A. *The Early History of India, from 600 BC to the Muhammad Conquest*, Oxford, 1967.
12. Thapar, R. *A History of India*, vol. 1, Penguin Books, New York, 1979.

Journals:

Ancient Pakistan XIV-XV

Journal of the Pakistan Historical Society, Vol. LI, No.3

Semester – III

| Course | Course Title | Cr. Hrs. |
|----------------|---|----------|
| 211 | English-III | 3 |
| 212 | Introduction to Computer | 3 |
| 213 | GENERAL- V | 3 |
| 214 | GENERAL-VI | 3 |
| 215 | FOUNDATION III: Archaeological Heritage of Pakistan | 3 |
| Total Cr. Hrs. | | 15 |

DETAIL OF COURSES

Course 211: English-III:
(Details to be obtained from approved curriculum)

Course 212: Introduction to Computer:
(Details to be obtained from approved curriculum)

Course 213: GENERAL-V
(Details to be filled in by respective University)

Course 214: GENERAL-VI
(Details to be filled in by respective University)

Course 215: FOUNDATION-III:

Archaeological Heritage of Pakistan

Learning Outcomes

After completion, the student would be able to analyze and explain administrative and cultural boundaries of the present-day Pakistan.

Contents

- 1) Introduction
Stone age to first agricultural communities
- 2) Urban revolutions
First Urbanism and its downfall (2600 to 5th century BC)
Second Urbanism 5th century BC
- 3) Religions and their socio-political Role
Buddhism, Hinduism, Jainism, etc
- 4) Establishment of Kingdoms/Empires: regional/ provincial perspective; focus must remain on cities, monuments etc.

- 5) Establishment of States: regional/provincial perspective; focus must remain on cities, monuments etc.

RECOMMENDED READINGS

1. Agrawal, D. P. and Chakrabarti, D. K., eds. *Essays in Indian Protohistory*, Delhi, 1979.
2. Agrawal, D. P. *Archaeology of India*, Great Britain, 1985.
3. Agrawal, D. P. *The Copper-Bronze Age in India*, Delhi, 1971.
4. Allchin, B. and Allchin, R. *The Birth of Indian Civilization*, London, 1968.
5. Allchin, B. and Allchin, R. *The Rise of Civilisation in India and Pakistan*, Cambridge University Press, 1982.
6. Allchin, F. R. *Lewan and the Bannu Basin*, Oxford, 1986.
7. Allchin, F. R. *Neolithic Cattle-Keepers of South India*, Cambridge, 1963.
8. Allchin, F.R., Allchin, B., Durrani, F. A. and Khan, F. *Lewan and the Bannu Basin*, Great Britain, 1986.
9. *Ancient Pakistan*, University of Peshawar, (relevant volumes.).
10. Asthana, S. *Pre-Harappan Cultures of India and the Borderlands*, New Delhi, 1985.
11. Chakrabarti, D. K. *The External Trade of the Indus Civilisation*, Delhi, 1990.
12. Dales, G. F. and Kenoyer, M. *Excavations at Moenjodaro, Pakistan: the Pottery*, Pennsylvania, 1986.
13. Dani, A. H. *Indus Civilization—New Perspective*, Islamabad, 1981.
14. Fairservis, W. A. *The Roots of Ancient India*, 2nd ed., Chicago, 1975.
15. Fairservis, W. A. *The Origin, Character and Decline of an Early Civilization*, 1967.
16. Gupta, S. P. *Archaeology of Soviet Central Asia and the Indian Borderland*, Vols. I & II, Delhi, 1979.
17. Jacobson, J., ed., *Studies in the Archaeology of India and Pakistan*, New Delhi, 1986.
18. Kenoyer, M. *Ancient Cities of the Indus Valley Civilization*, Oxford, 1998.
19. Khan, F. A. *The Glory that was Harappa*, Karachi, n.d.
20. Khan, F. A. *Preliminary Report on Kot Diji Excavations 1957-8*, Karachi, 1958.
21. Khan, F. A. *The Indus Civilization and Early Iran*, Karachi, 1964.
22. Khan, F. A. *The Kot Diji Culture*, Khairpur University, 2002.
23. Lal, B. B. *The Earliest Civilization of South Asia*, New Delhi, 1997.
24. Mackay, E.J. *Further Excavations at Mohenjo Daro*, Delhi, 1938.
25. Mackay, E.J. *Chanhudaro Excavation 1935-36*, New Haven, 1943
26. Masrshall, J. *Mohenjo Daro and the Indus Civiisation*, London, 1931.
27. Mughal, M. R. *Ancient Cholistan*, Lahore, 1998.

28. Mughal, R. *Present Stage of Research on the Indus Valley Civilisation*, Karachi, 1973.

Pakistan Archaeology (relevant volumes).

29. Possehl, G., ed., *Ancient Cities of the Indus*, 1979.
 30. Possehl, G., ed., *Harappan Civilisation*, New Delhi, 1982.
 31. Possehl, G., ed *Ancient Cities of Indus*, New Delhi, 1979.
 32. Possehl, G., ed *Harappan Civilization: Contemporary Perspective*.
 33. Possehl, G., ed *The Indus Civilisation in Saurashtra*, New Delhi, 1980.
 34. Basham, A. L. *History and Doctrines of the Ajivikas*, London, 1951.
 35. Bhandarkar, R.G. *Vaishnavism, Saivism and Minor Religious Sects*, Strassburg, 1915.
 36. Conze, E. *Buddhism, Its Essence and Development* 2nd ed. Oxford, 1953.
 37. Davids, R. T. W. *Buddhism, Its History and Literature*, 2nd ed. London. 1926.
 38. Dowson, J. *A Classical Dictionary of Hindu Mythology and Religion*, 7th ed. London, 1950.
 39. Farquhar, J. N. *A Primer of Hinduism*, London, 1912.
 40. Keith, A. B. *Buddhist Philosophy in India and Ceylon*, Oxford 1923.
 41. McGovern, W. N. *Manual of Buddhist Philosophy*, London, 1923.
 42. Stevenson, S. *The Heart of Jainism*, Oxford, 1915.
 43. Thomas, E. J. *History of Buddhist Thought*, London, 1933.
 44. Thomas, E. J. *The life of the Buddha as Legend and History*, London, 1975.
 45. Thomas, E. J. *History of Buddhist Thought* 2nd ed., London, 1951.

Semester – IV

| Course No. | Course Title | Cr. Hrs. |
|-----------------------|--------------------------------------|-----------|
| 2 | English-IV | 3 |
| 2 | GENERAL-VII | 3 |
| 2 | GENERAL-VIII | 3 |
| 2 | FOUNDATION IV: Stone Age Cultures of | 4 (3+1) |
| 2 | FOUNDATION V: Bronze Age Cultures of | 4 (3+1) |
| Total Cr. Hrs. | | 17 |

DETAIL OF COURSES

Course-221: English-IV:
(Details to be obtained from approved curriculum)

Course-222: GENERAL-VII:
(Details to be filled in by respective University)

Course-223: GENERAL-VIII:
(Details to be filled in by respective University)

Course 224: Stone Age Cultures of Pakistan

Learning Outcomes

After having studied the course, the student would be able to understand cultural and technological development of the Stone Age people.

THEORY

- Introduction
- Palaeolithic (Lower, Middle and Late): Soan Valley, Sanghao Cave, Rohri Hills
- Mesolithic: Thar Desert, Khanpur Cave, Rohri Hills, Bannu, Karachi, Chilas, Jamal Garhi Cave, and Kirthar Range.
- Neolithic: Mehrgarh, Jhandi Babar, Kili Gul Muhammad, Gumla, Sheri Khan Tarakai, Sarai Kholra and Jalilpur.

PRACTICAL

- General Map of the region indicating physical features
- Location of prehistoric sites and monuments on the map
- Identification of characteristic features of various sites/periods
- Visit to sites and monuments in the area
- Report on the above

RECOMMENDED READINGS

1. Agrawal, D. P. *Archaeology of India*, Curzon Press Ltd., London, 1982.
2. Agrawal, D.P. & R.K. Sood, – 'Ecological factors and the Harappan Civilization', In Possehl, G.L. (ed.), *Harappan Civilization: A Contemporary Perspective*. Oxford & IBH Publishing Co., New Delhi, Bombay, Calcutta, 1982, pp 223-31.
3. Ahmad, K.S., 'Climatic Regions of West Pakistan', *Pakistan Geographical Review*, 6/1, 1951;pp. 1-35.
4. Allchin, R & B. *The Rise of Civilisation in India and Pakistan*,

- UK, 1982.
5. Allchin, B., 'The Discovery of Palaeolithic Sites in the Plains of Sindh and their Implications', *The Geographical Journal*, 142(3): 1976, pp.471-89.
 6. Allchin, B., 'Stone Blade Industries of Early Settlements in Sindh as Indicators of Geographical and Socioeconomical change', In *South Asian Archaeology 1977* (ed.) M. Taddei, Naples, 1979, pp.173-212.
 7. Khan, F., Knox, J. R. & Thomas, K. D. *Explorations and Excavations in Bannu District of North West Frontier Province of Pakistan*, 1985-1988, London, 1991.
 8. Khan, F., Knox, J. R., Thomas, K. D., Petrie, C. A. & Morris, J.C. *Sheri Khan Tarakai and early village life in the borderlands of north-west Pakistan*, Petrie, C. A. (ed.). Bannu Archaeological Project Monographs - Volume 1, Oxbow Books, Oxford. 2010.
 9. Paterson, T. T., and Drummond, H. J. H. *Soan the Palaeolithic of Pakistan*, Karachi, 1962.
 10. Rendell, H. M., Dennell, R. W. & Halim, M. A. *Pleistocene and Palaeolithic Investigations in the Soan Valley, Northern Pakistan*, Oxford, 1989.
 11. Salim, M., *The Middle Stone Age Cultures of Northern Pakistan*, Islamabad, 1986.
 12. De Terra, H. and Paterson, T. T. *Studies on the Ice Age in India and Associated Human Cultures*, Washington, 1939
 13. Dennell, R.W., Rendell, H. and Halim, M.A. New Perspectives on the Palaeolithic or Northern Pakistan, In *South Asian Archaeology 1983* (eds.) J Schotsmans, M. Taddei, Naples, 1985, pp.9-20

Journals:

Ancient Pakistan
 Ancient Sindh
 Frontier Archaeology
 Pakistan Archaeology
 Lahore Museum Bulletin
 Journal of Asian Civilizations
 Pakistan Heritage

Course-225: Bronze Age Cultures of Pakistan

Learning outcome

After completion of this course, the student would be able to analyze origin and evolution of Bronze Age Cultures of Pakistan.

THEORY:

- Introduction

- Indus Urbanization (Early, Mature and Late Period): Mehrgarh, Jhandi Babar, Amri, Kot Diji, Rahman Dheri, Gandhi Umar Khan, Maru, Nausharo, Harappa, Mohenjo Daro
- Post Indus Period (Pirak, Jhukar, Jhangar, Cemetery-H).
- Gandhara Grave Sites in Taxila, Swat, Dir, Chitral, the Peshawar valley and the emergence of Iron Age.

PRACTICAL:

- General Map of the region indicating physical features
- Location of sites and monuments on the map
- Identification of characteristic features of various sites/periods
- Identification of architectural and artefactual features of various periods
- Visit to historical sites and monuments in the area

RECOMMENDED READINGS:

1. Agrawal, D. P. and Chakrabarti, D. K., eds., *Essays in Indian Protohistory*, Delhi, 1979.
2. Agrawal, D. P. *Archaeology of India*, Great Britain, 1985.
3. Allchin, F. R. *Lewan and the Bannu Basin*, Oxford, 1986.
4. Allchin, F. R. *Neolithic Cattle-Keeper of South India*, Cambridge, 1963.
5. Allchin, R & B. *The Rise of Civilisation in India and Pakistan*, UK, 1982. Asthana, S. *Pre-Harappan Cultures of India and the Borderlands*, New Delhi, 1985.
6. Chakrabarti, D.K. *The External Trade of the Indus Civilisation*, Delhi, 1990.
7. Dales, G. F. and Kenoyer, M. *Excavations at Mohenjodaro, Pakistan: the Pottery*, Pennsylvania, 1986.
8. Dani, A. H. *Indus Civilization New Perspective*, Islamabad, 1981.
9. Dani, A. H. *Recent Archaeological Discoveries in Pakistan*, UNESCO, Tokyo. 1988.
10. Kusumar: *Pre-Historic Chronology and Radiocarbon. The Copper-Bronze Age in India*, Delhi, 1971.
11. Kenoyer, M. *Ancient Cities of the Indus Valley Civilization*, Oxford, 1998.
12. Khan, F., Knox, J. R. & Thomas, K. D. *Explorations and Excavations in Bannu District of North West Frontier Province of Pakistan*, 1985-1988, London, 1991.
13. Khan, F. A. *The Glory that was Harappa*, Karachi, n.d.
14. Khan, F. A. *Preliminary Report on Kot Diji Excavations 1957-8*, Karachi, 1958.
15. Khan, F. A. *The Indus Civilization and Early Iran*, Karachi, 1964.
16. Khan, F. A. *The Kot Diji Culture*, Khairpur University, 2002.
17. Lal, B. B. and Gupta, SP. *Frontiers of the Indus Civilisation*, New

- Delhi, 1984.
18. Lal, B. B. *The Earliest Civilization of South Asia*, New Delhi, 1997.
 19. Lal, B. B. *Sarasvati Flows On*, Delhi.
 20. Mackay, E. J. *Further excavations at Moenjodaro*, Delhi, 1938.
 21. Mackay, E. J. *Early Indus Civilization*, London, 1935.
 22. Mackay, E. J. *Chanhudaro excavation 1935-36*, New Haven, 1943
 23. Mughal, M. R. *Ancient Cholistan*, Lahore, 1997.
 24. Mughal, M. R. *Present State of Research on the Indus Valley Civilization*, Karachi, 1973.
 25. Possehl, G., ed., *Ancient Cities of the Indus*, 1979 ed., *Harappan Civilization*, New Delhi, 1982.
 26. Rao, S.R. *Lothal and the Indus Civilization*, Bombay, 1973.
 27. Sankalia, H.D. *Prehistory and Protohistory of India and Pakistan*, Poona, 1974.
 28. Settar, S and Korisetar, R. *Indian Archaeology in Retrospective: Protohistoric Archaeology of the Harappan Civilisation*, Vol. II, New Delhi, 2002.
 29. Shaffer, J. *Prehistoric Baluchistan*, New Delhi, 1979.
 30. Urban, G and M. Jansen, (eds.), *Forgotten Cities on the Indus*, Germany, 1991.
 31. Wheeler, S. M. *Civilizations of the Indus and Beyond*, London, 1966.

Journals:

Ancient Pakistan
 Ancient Sindh
 East and West
 Journal of Asian Civilizations
 Lahore Museum Bulletin
 South Asian Archaeology
 Pakistan Archaeology
 Pakistan Heritage.

Semester – V

| Course No. | Course Title | Cr. Hrs. |
|------------|--|-----------|
| 311 | FOUNDATION-VI: Ancient Religions of Pakistan and India | 3 |
| 312 | FOUNDATION-VII: Field Archaeology | 4 (3+1) |
| 313 | MAJOR-I: Physical Anthropology | 3 |
| 314 | MAJOR-II: Ancient Civilizations | 3 |
| 315 | MAJOR-III: Indus Civilization | 3 |
| | Total Cr. Hrs. | 16 |

DETAIL OF COURSES

Course-311: Ancient Religions of Pakistan and India

Learning Outcomes

On completion, the student would be able to know about philosophy, beliefs, rituals and practices of religions embraced in ancient times by people of Pakistan and India.

1. Introduction

2. Jainism

- Jain tradition regarding twenty-four *tirthankaras* (prophets)
- Parshva and Mahavira
- Mahavira's life sketch
- Importance of the Ardha Magadhi canon
- Mahavira's meeting with Goshala Mankhaliputta (head of the Ajivika sect)
- Vardhamana Mahavira and his doctrine
- Jainism after Mahavira
- Jain canon, philosophy and icons.

3. Buddhism

- Buddhist literature
- Origin and development of Buddhism
- Teachings of Gautama Buddha
- Hinayana and Mahayana sects
- Tripitakas (i.e. Vinaya, Sutta and Abhidhamma Pitakas)
- Sthaviravadin School
- Evolution of the Great Vehicle (Mahayana)
- Mahasanghika and Sarvastivadins
- Adi Buddhas
- Bodhisattvas
- Lalitavistara
- Buddhist ethics and morality.

4. Vedism, Brahmanism and Hinduism

- Vedas
- Upanishads and freedom of religious speculation
- Vaishnavism: Origin and evolution
- Vasudeva-Krishna and the Bhagavat sect
- The *Bhagavad-Gita*
- Vishnu's *avatars* (incarnations)
- The doctrine of four *vyuhas* (phases of conditioned spirit)
- Images and their emblems of identification
- Shaivism
- The Pasupata sect and its teachings

- Shaivism as a popular cult
- Maheshvara and Mahadeva
- Shaiva images
- Important gods and goddesses and their characteristic iconographic features.

RECOMMENDED READINGS:

1. Basham, A. L. *History and Doctrines of the Ajivikas*, London, 1951.
2. Bhandarkar, R. G. *Vaishnavism, Saivism and Minor Religious Sects*, Strassburg, 1915.
3. Conze, E. *Buddhism, Its Essence and Development*, 2nd ed. Oxford, 1953.
4. Davids, R. T. W. *Buddhism, Its History and Literature*, 2nd ed. London, 1926.
5. Dowson, J. A. *Classical Dictionary of Hindu Mythology and Religion*, 7th ed. London, 1950.
6. Farquhar, J. N. *A Primer of Hinduism*, London, 1912.
7. Nasim Khan, M. *Treasures from Kashmir Smast – The Earliest Shivaite Monastic Establishment*. Peshawar. 2006
8. Nasim Khan, M. *Kharoshthi Manuscripts from Gamdhara* (Rprt.). Peshawar. 2009.
9. Nasim Khan, M. *The Sacred and the Secular. Investigating the Stupa and Settlement Site of Aziz Dheri, Peshawar Valley, Khyber Pukhtoonkhwa* (3 vols). Peshawar. 2010.
10. Nasim Khan, M, Errington, E and Cribb, J. *Coins from Kashmir Smast – New Numismatic Evidence*. Peshawar. 2008.
11. Keith, A. B. *Buddhist Philosophy in India and Ceylon*, Oxford 1923.
12. McGovern, W. N. *Manual of Buddhist Philosophy*, London, 1923.
13. Shah, Ibrahim (2007) *Hindu Art in Pakistan: a Study Based on Museums Collection*, (PhD thesis, unpublished), Peshawar: Department of Archaeology, University of Peshawar
14. Stevenson, S. *The Heart of Jainism*, Oxford, 1915.
15. Thomas, E.J. *The life of the Buddha as Legend and History*, London, 1975.
16. Thomas, E. J. *History of Buddhist Thought*, 2nd ed., London, 1951.
17. Hopkins, E. W. *Epic Mythology*, Strassburg, 1915.

Course-312: Field Archaeology

Learning Outcomes

It will enable the student to comprehend methods and techniques of archaeological survey, excavation, chronology, analysis of artefacts, etc.

THEORY

1. Introduction

- Concept, definition and scope of Archaeology
 - The New Archaeology
 - History of archaeological research in South Asia to the present
 - The role of Archaeology in national development
 - Archaeology as a scientific discipline.
2. **Discovery**
- How the ancient sites got buried
 - Avenues leading to the discovery of a site
 - Chance discoveries
 - Aerial reconnaissance: satellite imagery, aerial photography.
3. **Survey**
- Geographical Information System (GIS)
 - Global Positioning System (GPS)
 - Map reading
 - Interpretation of aerial photographs
 - Photogrammetry
 - Survey at ground level
 - Chain survey
 - Contour map
 - Use of compass and theodolite
 - Electron Distance Measurer (EDM) /Total Station, 3D Scanner
 - Electrical resistivity survey
 - Proton magnetometer
 - Sound-wave survey
4. **Excavation**
- Organization of an archaeological excavation
 - Excavation tools
 - Lay-out of an excavation
 - Excavation methods: sondages, grid-strip, quadrant, etc.
 - Types of Excavation: vertical, horizontal, rescue, etc.
 - Sampling
 - Trial trench
 - Demarcation of layers
 - Sample collection: soil, pollen, wood, charcoal, bones, etc.
5. **Excavation Problems**
- Open hunting camps
 - Caves and rock-shelters
 - Villages and towns
 - Religious buildings: monastery, Hindu temple, mosque, etc.
 - Stupa
 - Burials

- Mud-brick structures
 - Wooden structures
 - Pit excavation.
- 6. Recording**
- Three dimensional measurements (=context)
 - Graph plotting
 - Record card
 - Computer recording
 - Field diary
 - Archaeological photography
 - Archaeological drawing.
 - Artefact distribution map
- 7. Pottery yard**
- Layout of pottery-yard
 - Washing/cleaning and registration
 - Classification
 - Typology
 - Pottery tabulation
- 8. Registration, Cataloguing**
- Accession register
 - Cataloguing of antiquities
 - Antiquity distribution map.
- 9. Time**
- The “Three age system”
 - Relative and absolute chronology
 - Stratigraphy and law of superimposition
 - Pleistocene geochronology
 - Pollen analysis
 - Varve analysis
 - Ordering of artefacts
 - Cross-dating with objects of known age
 - Dendrochronology
 - Thermoluminescence dating
 - Radiocarbon dating
 - Potassium-Argon dating
 - Obsidian-hydration dating
 - Fission-track method
 - Archaeomagnetic dating.
- 10. Reconstruction of Environment, Subsistence and Economic Patterns**
- Reconstructing ancient environments
 - Palynology
 - Subsistence patterns

- Animal bones
- Vegetal remains
- Agriculture
- Domestic and wild animals
- Birds, fish, and molluscs
- Rock art
- Ancient dietary patterns
- Interaction network system.

11. Ordering and Interpretation

- Seriation
- Typology
- Ethnographic analogy and comparative method
- Probability theory, statistical techniques
- Culture change: invention, migration and diffusion.

12. Computer Application in the Analysis of Archaeological Data

13. Report Writing and Publication

PRACTICAL

- Pre-excavation exploration
- Archaeological surveying
- Use of survey equipment
- Site documentation: photographic, linear, visual
- Pre-excavation planning
- Excavation and documentation of archaeological features
- Three dimensional documentation of structures, artefacts, sections
- Handling, classification and tabulation of pottery in pottery-yard
- Application of basic conservation techniques to artefacts in the field
- Maintenance of field diaries
- Artefact drawing
- Use of computer-based techniques for seriation, cluster-analysis.

RECOMMENDED READINGS:

1. Alexander, J. *The Directing of Archaeological Excavations*, London, New York, 1970.
2. Atkinson, R. J. C. *Field Archaeology*, 2nd ed., London, 1953.
3. Barker, P. *The Technique of Archaeological Excavation*, London, 1983.
4. Binford L. R. and Binford S. R., eds., *New Perspective in Archaeology*, Chicago, 1968.
5. Bowman, S. *Radiocarbon Dating*, British Museum, London, 1990.
6. Butzer, K. W. *Environment and Archaeology: An Introduction to Pleistocene Geography*, 2nd ed., Chicago, 1971.

7. Coles, J. M. *Archaeology by Experiment*, London, 1973.
8. Daniel, G. E. *150 Years of Archaeology*, Cambridge, 1976.
9. Doran, J. E. & Hodson, F. R. *Mathematics and Computers in Archaeology*, Edinburgh University Press, 1975.
10. Fleming, S. *Dating in Archaeology*, London, 1977.
11. Harris, E. C. *Principles of Archaeological Stratigraphy*, 2nd ed., London, 1989.
12. Harris, E. C., *Principle of archaeological stratigraphy*, New York: Academic Press, 1979, (downloadable for free at:<http://www.harrismatrix.com>).
13. Joukowsky, Martha. *A Complete Manual of Field Archaeology*, New York: Prentice Hall, 1980
14. Parkes, P. A. *Current Scientific Techniques in Archaeology*, London, 1986.
15. Renfrew, C. and Bahn, P. *Archaeology: Theories, Methods and Practices*, London, 1991.
16. Renfrew, C. (2000) *Loot, Legitimacy and Ownership: the ethical crisis in Archaeology*, London: Bristol Classical Press
17. Wheeler, R.E.M (1954), *Archaeology from the Earth*, Oxford: Clarendon Press
18. White, G.G. and T.F. King (2007), *The Archaeological Survey Manual*, Walnut Creek: Left Coast Press

Course-313: Physical Anthropology

Learning Outcomes

After completing this course, the student will comprehend different theories and stages of evolution, their physical features and environmental changes with respect to time and space. It will enable the student to analyze the development of lithic technology authored by the respective species of early man.

THEORY:

1. Introduction

- Concept, definition, main features and scope of Anthropology
- Main divisions of Anthropology: physical, cultural and social
- Relation of Anthropology with biological and social sciences
- Application of Anthropology in today's world.

2. Life on Earth

- Life on earth
- Animal-kingdom
- Mammals, characteristic features of mammals
- Primate group, behaviour of primate group
- Apes, characteristic features of apes.

3. **Evolution Theories**
 - Scientific theories.
 - Darwin Theory
 - Elaine Morgan Theory
 - Killer Ape Theory of Human Evolution
 - Religious Theories
4. **Early Ancestors of Man**
 - Ramapithecus
 - Bipedalism
 - Early hominid foot prints
5. **Australopithecines**
 - Australopithecus Afarensis
 - Australopithecus Africanus
 - Australopithecus Robustus
 - Australopithecus Boisei
 - Zinjanthropus.
6. **Homo**
 - Homo Habilis
 - Homo Erectus: Pithecanthropus, Sinanthropus.
7. **Neanderthal man**
8. **Homo Sapien**
9. **Homo Sapien Sapien** (Modern man)
10. **Human genetics and Racial groups**

RECOMMENDED READINGS

1. Ahmad, K.S. Climatic Regions of West Pakistan, *Pakistan Geographical Review*, 6(1): 1-35, 1951.
2. Allchin, B. The Discovery of Palaeolithic Sites in the Plains of Sindh and their Implications, *The Geographical Journal*, 142(3): pp. 471-89, 1976.
3. Allchin, B. *Stone Blade Industries of Early Settlements in Sindh as Indicators of Geographical and Socioeconomical change*, In *South Asian Archaeology 1977* (eds.) M. Taddei, Naples, 1979, pp.173-212, 1979.
4. Agrawal, D.P. & R.K. Sood, Ecological factors and the Harappan Civilization. In Possehl, G.L. (ed.), *Harappan Civilization: A Contemporary Perspective*. Oxford & IBH Publishing Co., New Delhi-Bombay-Calcutta: pp 223-231, 1982
5. Barnouw, V. *An Introduction to Anthropology*, (2 vols.), vol. 2, Ontario, 1971.
6. Beals, R. L. and Hoijer, H. *Anthropology Introduction to Anthropology*, 4th ed., New York, 1972.
7. Dennell, R.W., Rendell, H.M. and Halim, M.A. New Perspectives on the Palaeolithic or Northern Pakistan, In *South Asian Archaeology*

- 1983 (eds.) J Schotsmans, M. Taddei, pp.9-20, Naples, 1985.
8. Farb, P. *Humankind: A History of the Development of Man*, London, 1978.
 9. Gowlett, J. W. *Ascent to Civilization*, London, 1984.
 10. Hoebel, E. A. *Anthropology: The Study of Man*
 11. Jacobs and Stern. *General Anthropology-A Brief Survey of Physical, Cultural and Social Anthropology*.
 12. Kottak, C. P. *Cultural Anthropology*, New York, 1975.
 13. Leakey, L. S. B. *Olduvai Gorge: 1951-61: A Preliminary report on the Geology and Fauna, Vol. 1*, Cambridge, 1964.
 14. Oakley, K. P. *Framework for Dating Fossil Man*, London, 1964.
 15. Oakley, K. P. *Man the Toolmaker*, 3rd ed., 1956.
 16. Leakey, R. E., Leakey, M. G. and Walker, A. C. 1988 'Morphology of *Afropithecus Turkensis* from Kenya', *Nature* 76, pp. 289-307.
 17. Pilbeam, D. (1982) 'New hominoid skull material from the Miocene of Pakistan', *Nature*: 295, pp. 232-234.
 18. Pilbeam, D., Rose, M. D., Barry, J. C., and Shah, S. M. I. (1990) 'New *Sivapithecus humeri* from Pakistan and the relationship of *Sivapithecus* and *Pongo*', *Nature* 348, pp. 237-239.
 19. Pilbeam, D. (1996) 'Genetic and Morphological Records of the Hominoidea and Hominid Origins: A Synthesis', *Molecular Phylogenetics and Evolution*, Vol. 5, No. 1, February, pp. 155-168..
 20. Sankalia, H.D. The Early and Middle Palaeolithic Cultures in India and Pakistan, In *Le Paleolithique Inferieur et Moyen en Indie, en Asie Centrale, en chine et dans le sud-est Asiatique*. Colloque VII UISPP (Nice): 7-30, 1976.

Course-314: Ancient Civilizations

Learning outcomes

After completion of this course, the student will be able to analyze different aspects of various ancient world civilizations.

THEORY:

1. Introduction

- Concept of culture and civilization
- Elements of civilization
- Basic conditions of civilization.

2. Mesopotamian Civilization

- Environmental background
- Early cultures of Mesopotamia
- Socio-political set-up of the Sumerians, Akkadians,
- Babylonians, Assyrians and Chaldeans
- Various aspects of civilization: art, architecture, writing, seals, religion and economy.

3. **Egyptian Civilization**
 - Egypt geophysical history and its impact on local cultures
 - Art and architecture
 - Religion
 - Writing system
 - Contribution in literature, science, philosophy, medicine.
4. **Chinese Civilization**
 - Shang Dynasty
 - Chou Dynasty
 - Chen Dynasty
 - Han Dynasty
 - Art and architecture
 - Contributions in philosophy.
5. **Iranian Civilization**
 - Origin of Iranian Civilization
 - Achaemenians: history and formation of their empire
 - Provincial administration system
 - Zoroastrian Religion
 - Art and architecture
 - Cyrus
 - Darius I and Darius II
 - Sasanians.
6. **Greek Civilization**
 - Origin and development of the Greek Civilization
 - Origin of city states
 - Hellenic and Hellenistic phases
 - Art and architecture
 - Literature
 - Philosophy
 - Science.
7. **Roman Civilization**
 - Origin and development of Roman Empire
 - General characteristics of Roman Culture
 - Art and architecture
 - Philosophy and science
 - Roman law.

RECOMMENDED READINGS: (Dr Tauqeer to update the list)

1. Durant, W. *Our Oriental Heritage*, New York, 1954.
2. Ralph and Burns, *World Civilization*, New York, 1974.
3. Roaf, M. *Cultural Atlas of Mesopotamia and the Ancient Near East*
4. Smith, W. S. *The Art and Architecture of Ancient Egypt*, London, 1958.
5. Watson, W. *Early Civilization of China*, London, 1966.

6. Wenke, Rober. *Pattern in Prehistory: Human Kinds First Three Million Years*, (4th edn), Oxford,

Course-315: Indus Valley Civilization

Learning outcomes

After completion of this course, the student will be able to analyze different aspects of the Indus civilizations.

THEORY:

1. Introduction

- Terminology of the Indus Civilization
- Environmental background
- Discovery of the Indus Civilization
- Present state of research on the Indus Civilization.

2. Early Indus Period (from Mehrgarh to the Rise of Mature Indus Period)

- Distribution of Settlements (Tochi-Gomal/Hakra/Amrian/Kot Dijian / Harappan)
- Development of art and architecture
- Major settlements of Early-Indus Civilization.

3. Mature Indus Period

- Settlement pattern
- Art and architecture
- Town planning
- Seals
- Major crafts
- The Indus script
- Trade relations
- Decline of the Indus Civilization.

4. Late Indus Period

- Settlement pattern
- Late Indus Cultures in Sindh, Punjab, Balochistan, and Gujarat.

RECOMMENDED READINGS:

1. Agrawal, D. P. and Chakrabarti, D. K., eds. *Essays in Indian Protohistory*, Delhi, 1979.
2. Agrawal, D. P. *Archaeology of India*, Great Britain, 1985.
3. Agrawal, D. P. *The Copper-Bronze Age in India*, Delhi, 1971.
4. Agrawal, D.P. & R.K. Sood, 'Ecological factors and the Harappan Civilization'. In Possehl, G.L. (ed.), *Harappan Civilization: A Contemporary Perspective*, Oxford & IBH Publishing Co., New Delhi, Bombay, Calcutta, 1982, pp 223-31

5. Allchin, B. and Allchin, R. *The Birth of Indian Civilization*, London, 1968.
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7. Allchin, F. R. *Lewan and the Bannu Basin*, Oxford, 1986.
8. Allchin, F. R. *Neolithic Cattle-Keepers of South India*, Cambridge, 1963.
9. Allchin, F. R., Allchin, B., Durrani, F.A. and Khan, F. *Lewan and the Bannu Basin*, Great Britain, 1986.
10. Asthana, S. *Pre-Harappan Cultures of India and the Borderlands*, New Delhi, 1985.
11. Chakrabarti, D. K. *The External Trade of the Indus Civilization*, Delhi, 1990.
12. Chakrabarti, D.K., *Indus Civilization Sites in India: New Discoveries*. Marg Publications Mumbai, 2003.
13. Cousens, H., *The Antiquities of Sindh*, 1929 (Repr. 1975)
14. Dales, G. F. and Kenoyer, M. *Excavations at Moenjodaro, Pakistan: the Pottery*, Pennsylvania, 1986.
15. Dani, A.H. *Indus Civilization, New Perspective*, Islamabad, 1981.
16. Fairservis, W. A. *The Roots of Ancient India*, 2nd ed., Chicago, 1975.
17. Fairservis, W. A. *The Origin, Character and Decline of an Early Civilization*, 1967.
18. Flam, Louis, *The Paleography and Prehistoric Settlement Patterns in Sindh, Pakistan (Ca.4000-2000 BC)*, Ph.D. Dissertation, University of Pennsylvania, Philadelphia, 1981.
19. Gupta, S. P. *Archaeology of Soviet Central Asia and the Indian Borderland*, Vols. I & II, Delhi, 1979.
20. Jacobson, J., ed., *Studies in the Archaeology of India and Pakistan*, New Delhi, 1986.
21. Kenoyer, M. *Ancient Cities of the Indus Valley Civilization*, Oxford, 1998.
22. Khan, F. A. *Preliminary Report on Kot Diji Excavations 1957-8*, Karachi, 1958.
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25. Mackay, E. J. *Further Excavations at Mohenjo Daro*, I Delhi, 1938.
26. Lal, B. B. *Chanhudaro Excavation 1935-36*, New Haven, 1943
27. Masrshall, J. *Mohenjo Daro and the Indus Civilization*, London, 1931.
28. Mughal, M.R. *Ancient Cholistan*, Lahore, 1998.
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30. Mackay, F. J, *Chanhu-Jo-Daro Excavation 1935*, Vol.20, American Oriental Society, American Oriental Series, New Holmen Connecticut, 1943.

31. Majumdar, N.G., 'Excavations at Jhukar', *Annual Report of the Archaeological Survey of India 1927-28*: 1931, pp.76-83.
32. Mughal, M. Rafique, 'Recent Archaeological research in the Cholistan Desert'. In Possehl, G.L. (ed.), *Harappa: A Contemporary Perspective*. Oxford & IBH Publishing Co., New Delhi, Bombay, Calcutta, 1982, pp.85-95.
33. Possehl, G., ed. *Ancient Cities of the Indus*, 1979.
34. Possehl, G., ed. *Harappan Civilization*, New Delhi, 1982.
35. Possehl, G. ed. *Ancient Cities of Indus*, New Delhi, 1979.
36. Possehl, Gregory L., *The Indus Civilization: A Contemporary Perspective*, Vistaar Publications, New Delhi, 2002.
37. Possehl, G. ed. *The Indus Civilization in Saurashtra*, New Delhi, 1980.
38. Rao, S. R. *Lothal and the Indus Civilization*, Bombay, 1973.
39. Sankalia, H. D. *Prehistory and Protohistory of India and Pakistan*, Poona, 1974.
40. Settar, S. and Korisetar, R. *Indian Archaeology in Retrospective: Protohistoric Archaeology of the Harappan Civilization*, Vol. II, New Delhi, 2002.
41. Shaffer, J. *Prehistoric Baluchistan*, New Delhi, 1979.
42. Various articles on preservation of Mohenjo Daro.
43. Vats, M. S. *Excavation at Harappa*, 2 Vols, New Delhi, 1940.

Semester-VI

| Course No. | Course Title | Cr. |
|------------|--|-----------|
| 321 | FOUNDATION-VIII: Museums Studies | 3 |
| 322 | FOUNDATION-IX: Cultural Tourism in Pakis | 3 |
| 323 | MAJOR-IV: Muslim History of South Asia | 3 |
| 324 | MAJOR-V: Cultural Anthropology | 4 (3+1) |
| 325 | MAJOR-VI: Provincial Cultural Heritage | 3 |
| | Total Cr. Hrs | 16 |

DETAILS OF COURSES

Course 321: Museums Studies

Learning Outcomes

On completion, the student would be able to know about the concept, origin, development, technical aspects, management and scope of the Museum.

1. **Introduction**
 - Definitions of UNESCO, ICOM, ICCROM, AAM Management etc.
2. **Museum and Its Function**
 - Definition and its scope
 - Origin and development of Museum
 - Functions: collection, recording, preservation, exhibition and education
 - Different types of museums
 - History of Museology in Pakistan
 - Problems and prospects of museums in Pakistan.
3. **Museum Administration/Management**
 - General organization
 - Staff and their functions: Curator, technical, public-relation, educational, clerical, and contingent
 - Collections: Primary documentation, study, research, storage and display.
 - Fund generating and Marketing
4. **Museum Security**
 - Walkthrough gates
 - CCTV cameras
 - Security staff and equipments
 - Digital scanners
 - Burglar alarm
 - Emergency alarm
 - Walky-talky
 - Other security essentials
5. **Documentation**
 - Record keeping: Registers/Computer punch cards
 - Temporary accession
 - Permanent accession
 - Record of storage
 - Gallery record.
6. **Care and Storage of Museum Objects**
 - Guidelines for handling of Museum objects
 - Objects on display
 - Objects in stores
 - Storage conditions
 - Accessibility
 - Record of movement of museum exhibits & reserve
 - Care against theft, dampness, dust, temperature, and light
 - Care and repair of museum objects.
7. **Museum Architecture**
 - Requirement of museum building

- Plan for a museum
 - Storage facilities
 - Display galleries
 - Service facilities: Library, photography, offices, workshops, Laboratories, etc.
 - Public facilities: Cafeteria, gift-shop, lavatories.
- 8. Museum Exhibition**
- Permanent exhibition
 - Planning and setting up an exhibition
 - Showcase designing
 - Labels
 - Lighting
 - Background of exhibits
 - Mounting objects
 - Temporary exhibition
 - Travelling exhibition.
- 9. Museum Education Research Programme**
- Educational programme of a museum: Lectures, seminars, film- shows and cultural-shows.
 - Research and publications
 - Research facilities in a museum
 - Museum library
 - Visit to different Museums

RECOMMENDED READINGS: (Dr Farzand to update the list)

1. Buck, R. A. and Jean Allman (eds.) (2010) *Museum Registration and Methods*, 5th edn., Gilmore: The AAM Press
2. Burn, N. J. *Field Manual for Museums*, Washington D. C., n.d.
3. Dani, A. H. *A Survey of Museums and Archaeology in Pakistan*, Peshawar, 1970.
4. Dar, S. R. *Archaeology and Museums in Pakistan*, Lahore, 1977.
5. Dar, S. R. *Museology and Museum Problems in Pakistan*, Lahore 1980.
6. Dar, S. R. *Repositories of our Cultural Heritage: A Handbook of Museums in Pakistan*, Lahore, 1979.
7. Dudley, Sandra and Kylie Message (eds.) *Museum Worlds*, 2013
8. UNESCO, *The Organization of Museums*; *Museums Association of Pakistan*; *Canadian Museums Association*; *Studies in Conservation*; *International Council of Museums*; *Journal of the American Group for Conservation*; *Technology and Conservation*.
9. Shakoor, M. A. *Museum Studies and Archaeology*, Peshawar, 1953.
10. Simmons, John E. *Things Great and Small, Collection Management Policies*, AAM 2006
11. Singh, A. P. *Conservation and Museum Techniques*.

12. Thomson, G. *The Museum Environment: Conservation in the Arts, Archaeology and Architecture Series*, London, 1978.
13. UNESCO, *Handbook of Museum Conservation*.

Course 322: Cultural Tourism in Pakistan

Learning outcomes

After completion of this course, the student would be able to analyze relationship between cultural heritage and tourism, identify, develop, manage and market the rich cultural heritage of Pakistan.

1. Introduction

- Definition of Culture, Tourism and Cultural Tourism
- Characteristics of Cultural Tourism
- Types and Scope of Cultural Tourism
- Cultural Profile of Pakistan
- Maps and Tourist Literature

2. Cultural Tourism Attractions (Resources) in Pakistan

- **Tangible Attractions:**
 - a) Archaeological Sites
 - b) World Heritage Sites
 - c) Museums
 - d) Monuments and Memorials, and
 - e) Arts and Crafts etc
- **Intangible Attractions:**
 - a) Fairs and Festivals
 - b) Gastronomy
 - c) Performing Art
 - d) Spiritual/Religious, and
 - e) Life Style etc

3. International Charter on Cultural Tourism

- International Cultural Tourism Charter, "Managing Tourism at Places of Heritage Significance" (ICOMOS)

4. Cultural Tourism Management

- Situational Analysis
- Market analysis
- Issues
- Impacts
- Framework for developing a cultural tourism product
- SWOT and PEST analysis

- Partnerships

5. Case Studies: Based on Field Work

RECOMMENDED READINGS

1. Richards, G. *Cultural Tourism: Global and Local Perspectives*. NY: Hayworth, 2007.
2. Reisinger, Y., & Turner, L. *Cross-Cultural Behavior in Tourism: Concepts and Analysis*. Oxford, U.K.: Butterworth Heinemann, 2003.
3. Sigala, M., & Leslie, D. *International Cultural Tourism Management: Implications and Cases*. Oxford, U.K.: Butterworth Heinemann, 2005.
4. Kennedy, C., McNeil, K., Ernst, C. & Gilmartin, D. *Pakistan at the Millennium*, Oxford University Press, 2003.
5. Halliday, T., Bell, B. *Insight Guides Pakistan, Discovery Channel*, Singapore, 2007.
6. Iqbal, Q., Nayyer, M. & Kohistani, R. *Pakistan Encyclopedia of Folklore*. Lok Virsa Publications.
7. Dani, A. H. *Thatta: Islamic Architecture*, Islamabad, 1982.
8. Dani, A. H. *Human Records on the Karakoram Highway*, Islamabad, 1983.
9. Dani, A. H. *History of Northern Areas of Pakistan*, Lahore, 2001.
10. Dani, A. H. *Chilas the City of Nangaparvat (Dyamar)*, Islamabad, 1983.
11. Dani, A. H. *The Historic City of Taxila, UNESCO, and Centre for East Asian Cultural Studies*, Tokyo, 1986.
12. Khan, F. A. *Banbhore*, Karachi, 4th ed., 1976.
13. Khan M. Ishtiaq. *World Heritage Sites in Pakistan*, Islamabad, 2000.
14. Khan M. Ishtiaq. *Lahore Fort*, Department of Archaeology, Karachi, n.d.
15. Khan M. Ishtiaq. *Shalamar: The Glory that Was*, Department of Archaeology, Karachi, n.d.
16. Khan M. Waliullah, *Lahore and its Important Monuments*, Karachi 1961.
17. Nadiem I. H. *Rohtas A Formidable Fort of Sher Shah*, Sang-e-Meel Lahore, n.d.

Other Readings:

- UNESCO Publications
- UNWTO Publications
- WTTC Publications

Course 323: Muslim History of South Asia

Learning Outcomes

On completion, the student would be familiarized with the conquest of different parts of South Asia at the hands of various Muslim invaders, to analyze cultural, political, religious and social conditions of the present-day South Asia.

Contents

- 1. Introduction**
- 2. Arabs**
 - Early contact
 - Political condition and early dynasties of Sindh on the eve of Arab invasion
 - Conquests of Balochistan, Sindh, Multan and the Khyber Pakhtunkhwa
 - Muslim rule in Baluchistan and Sindh under the Arab Caliphate.
- 3. Turks**
 - Trans Khyber activities of Ghaznavids and the rise and fall of Lahore as a centre of Muslim State CE 997-1210
 - The rise of the Ghaurids and the establishment of Delhi as the capital of Muslim India
 - The Delhi Sultanate with Multan, Uchch and Lahore as centres in the west and Awadh and Bengal in the east CE 1150 to 1325.
 - Fragmentation and Turbulence CE 1325 to 1425.
- 4. Afghans**
 - Lodhis
 - Sikandar Lodhi, his administration and religious policy
 - Ibrahim Lodhi and his weaknesses
 - End of the Sultanate of Delhi
 - Suris
 - Sher Shah Suri
 - Early life, capture of the throne and conquests; Reforms, administration and Public welfare projects; achievements as a ruler; Successors of Sher Shah; End of Suri dynasty.
- 5. Mughals and Post Mughals**
 - Phases of establishment and transition from Sultanate to
 - Badshahat CE 1526 to 1576
 - Mughal society, culture and administration CE 1576 to 1707
 - Late Mughal phase CE 1707 to 1857.
- 6. Provincial Chapter**
 - Every province will develop its Muslim period history

accordingly

RECOMMENDED READINGS:

1. Ali, M. *The Court of the Great Mughals*, Lahore, 1986.
2. Amjid, Y. *Tareekh-e-Pakistan* (Urdu), Vols. I & II.
3. Babar, Zahiruddin. *Tuzuk-i Babari (The Memoirs of Babar)*, Eng. Trans. A. S. Beverige, Lahore: Sang-i Meel Publications.
4. Bakhshi, S. R. (ed.) *Advanced History of Medieval India* (3vols), New Delhi, Anmol Publishers, 2003.
5. Barani, Z. *Tarikh-i Feroz Shahi*, Urdu tr. Aftab Asghar, Lahore, 1986.
6. *Cambridge History of India*, Vols. II, III & IV.
7. Dani, A.H. *History of Pakistan: Pakistan through the Ages*, Lahore: Sang-e Meel Publications, 2008.
8. Elliot and Dowson, *The History of India as Told by Its Own Historians*, all Vols, Lahore, 1976 (1st pub. 1867-77).
9. Ikram, S. M. *Muslim rule in India & Pakistan: 711-1858 A.C.* 2nd ed. Star Book Depot, Lahore, 1966.
10. Ikram, S. M. *Aab-i Kausar* (Urdu), Lahore, 1994.
11. Ikram, S. M. *Mauj-i Kausar* (Urdu), Lahore, 1992.
12. Ikram, S. M. *Rud-i Kausar* (Urdu), Lahore, 1988.
13. Majumdar, R.C. (ed) *An Advanced History of India* (Volume 2), 3rd ed. The Mcmillan, Delhi, 1970.
14. Mirza Kalich Baig, *Chach Nama*, Sindhi Adbi Board, Jamshoro, 1957.
15. Naqvi, H. K. *History of Mughal Government & Administration*, Kanishka Publishing House, Delhi, 1990.
16. Nazim, M. *The Life and Times of Sultan Mahmud of Ghazna*, New Delhi, 1971.
17. Qani' Thatvi Mir Ali Sher. *Tuhfat-ul-Kiram*, Sindhi Adabi Board, Jamshoro, 1959.
18. Qureshi, I. H., (ed.) *A Short History of Pakistan*, 2nd ed, Karachi University Press, Karachi, 1992.

Course 324: Cultural Anthropology

Learning Outcomes

THEORY:

1. **Introduction**
 - Concept, definition and scope of Cultural Anthropology
 - Effects of physical environment on the growth of cultures
 - Geological strata and interpretation of associated finds
 - Chronological periods in the history of the earth
 - Pleistocene chronology

- Principal features of the Pleistocene and Holocene Periods.
2. **Concept of Culture**
 - Man, culture and society
 - The evolution of culture
 - Culture is learned
 - The concept and method of cultural ecology
 - Culture and language
 - Culture and personality.
 3. **Lower Palaeolithic Culture**
 - Characteristic features
 - Cultures of Lower Palaeolithic Period
 - Principal tool-types, their manufacturing techniques and probable functions.
 4. **Middle Palaeolithic Culture**
 - Characteristic features
 - Cultures of Middle Palaeolithic Period
 - Principal tool-types, their manufacturing techniques, and probable functions
 - Intellectual developments: art and religion.
 5. **Upper Palaeolithic Culture**
 - Characteristic features
 - Cultures of Upper Palaeolithic Period
 - Principal tool-types, their manufacturing techniques and probable functions
 - Intellectual developments: art and religion.
 6. **Mesolithic Culture**
 - Characteristic features
 - Cultures of Mesolithic Period
 - Principal tool types, their manufacturing techniques and probable functions
 - Intellectual developments: art and religion.
 7. **Neolithic Revolution**
 - Domestication of plants and animals
 - Evolution of stone-tool technology
 - Introduction of ceramics
 - Evolution of permanent settlements
 - Evolution of related arts and crafts
 - Early Neolithic Cultures.

RECOMMENDED READINGS:

1. Agrawal, D. P. *The Archaeology of India*, Scandinavian Institute of Asian Studies, Monograph No.46, London, 1985.
2. Allchin, B. and R. *Lewan and the Bannu Basin: Excavations and Survey of Sites in North West Pakistan*, Great Britain, 1986.

- Braidwood, R.J. *Prehistoric Man*, Chicago, 1975.
3. Clark, G. and Piggot, S. *Prehistoric Societies*, London, 1968.
 4. Clark, G. *The Stone Age Hunters*, London, 1975.
 5. Clark, G. and Piggot, S. *World Prehistory in New Perspective*, 2nd ed., Cambridge, 1977.
 6. Clark, J. D. *The Prehistory of Southern Africa*, Great Britain, 1959.
 7. Dales, G. F. *A Review of the Chronology of Afghanistan, Baluchistan and the Indus Valley*, In: *AJA* 72/4:305-307, 1968.
 8. De Terra, H. and Paterson, T. T. *Studies on the Ice Age in India and Associated Human Cultures*, Washington, 1939.
 9. Dennell, R. W. *Pakistan Prehistory: A Glimpse at the First Two Million Years*, Cambridge, 1991.
 10. Durrani, F. A. Rahman Dheri and the Birth of Civilization in Pakistan, *Bulletin of the Institute of Archaeology*, 18:191-207. London, 1981.
 11. Durrani, F. A. Some Early Harappan Sites in Gomal and Bannu Villages, in Gupta, S. P. Lal, B. B. eds. *Frontiers of Indus Civilisation*, 1984, pp. 505-510.
 12. Jarrige, J. F. Excavations at Mehrgarh, Pakistan in *South Asian Archaeology 1975*, Leiden. 1979, pp. 76-87.
 13. Jarrige, J. F. Excavations at Mehrgarh: Their Significance for Understanding the Background of the Harappan Civilization, in Possehl, G., ed., 1982, pp. 79-84.
 14. Leakey, L. S. B. *Olduvai Gorge: 1951-61: A Preliminary report on the Geology and Fauna*, vol. 1, Cambridge, 1964.
 15. Masson, V. M. Sarianidi, V.I. *Central Asia*, London 1972.
 16. Meadow, R. A Chronology for the Indo-Iranian Borderlands and Baluchistan: 4000-2000 B. C. in Agrawal, D. P. and Ghosh, A., eds, 1973, pp.190ff.
 17. Oakley, K. P. *Framework for Dating Fossil Man*, London, 1964.
 18. Oakley, K. P. *Man the Toolmaker*, 3rd ed., 1956.
 19. Paterson, T. T. and Drummond, J. H. J: *Soan the Palaeolithic of Pakistan*, Karachi, 1962.
 20. Quivron, G. Lechevallier, M. The Neolithic in Baluchistan: New Evidence from Mehrgarh, *South Asian Archaeology 1979*, Berlin, 1981, pp. 71-92.
 21. Rendell, H. M., Dennel, R. W. and Halim, M. A. *Pleistocene and Palaeolithic Investigations in the Soan Valley, Northern Pakistan*, ed. Allchin, F. R., Allchin, B. BAR International Series 544, Oxford, 1989.
 22. Salim, M. *The Middle Stone Age Cultures of Northern Pakistan*, Islamabad, 1986.
 23. Salim, M. The Palaeolithic Cultures of Potowar with Special Reference to the Lower Palaeolithic, *Central Asian Studies*, Quaid-e-Azam University, Islamabad, 1997.
 24. Sankalia, H. D. *Stone Age Tools, Their Techniques, Names and*

Probable Functions, Poona, 1964.

25. Sankalia, H.D. ed., *The Prehistory and Protohistory of India and Pakistan*, Bombay, 1962.
26. Shaffer, J. *Prehistoric Baluchistan*, New Delhi. 1978.
27. Sharma, G. R. and Clark, J. D. *Palaeoenvironment and Prehistory in the Middle Son Valley, India*, 1983.

Journals:

Ancient Pakistan
Ancient Sindh
Journal of Asian Civilizations
Pakistan Archaeology
Pakistan Heritage.

Course 325: Provincial Cultural Heritage

Learning Outcome

On completion, the course would provide a firm base to understand cultural heritage and identity of their respective provinces.

Contents

Every University will develop its own course for this paper. This course will include provincial archaeological heritage in different provinces of Pakistan. Each university will develop their respective course by concentrating on the respective provincial archaeological heritage and museums.

Semester VII

| Course | Course Title | Cr. Hrs |
|-----------------------|---|----------------|
| 411 | MAJOR-VII: Muslim Art (Calligraphy, Painting and Minor Arts & Crafts) | 3 |
| 412 | MAJOR-VIII: Muslim Architecture of Pakistan and India | 3 |
| 413 | MAJOR IX: Research Methodology | 3 |
| 414 | MAJOR X; Numismatics of Pakistan and India | 3 |
| 415 | MAJOR XI: Palaeography and Epigraphy of Pakistan | 3 |
| 416 | MAJOR-XII: RESEARCH PROJECT/INTERNSHIP | 3 |
| Total Cr. Hrs. | | 18 |

DETAIL OF COURSES

Course 411: Muslim Art: Calligraphy, Painting and Minor Arts & Crafts

Learning Outcomes

After completing the course, the student would be able to analyze different types of Muslim Arts as developed in various parts of the world.

Contents

Introduction

1. Calligraphy

- Origin and development of Arabic script
- Status or position of a calligrapher
- Significance of calligraphy in Islamic arts
- Origin and development of calligraphy
- Principal forms of calligraphy
- Sub styles of calligraphy
- Master calligraphers of Pakistan.

2. Schools of Painting

- Early Arab
- Mesopotamian
- Mongol
- Persian
- Mughal.

3. Minor Arts & Crafts

- Metalwork
- Glasswork
- Woodwork
- Book illumination
- Bookbinding
- Ceramics.

RECOMMENDED READINGS:

1. Binyon, Wilkinson and Gray. *Persian Miniature paintings*.
2. Brown, P. *Indian Painting*, Calcutta, 1917, 7th ed. 1960.
3. Brown, P. *Indian Paintings Under the Mughals*, Oxford, 1924.
4. Chughtai, M. A. *Fanoon-e-Latifa ba-'ahdi Aurangzeb* (Urdu) Coomaraswamy, A., *Mughal Paintings Craft and Textiles of Sindh and Baluchistan*, Institute of Sindhology, Jamshoro, 1982.
5. *Crafts of Punjab and Muree Hill*, Punjab Small Industry Corporation, 1986.
6. Critchlow, K. *Islamic Patterns: An Analytical and Cosmological*

- Approach*, Slovenia, 1976, rpt. 1992.
7. Das, A.K. *Splendour of Mughal Paintings*, Bombay, 1986.
 8. Dimand, M. A. *A hand book of Mohammedan Art Encyclopaedia of Arts*, London, 1966.
 9. Ettinghausen, R. *Arab Painting*, London, 1962.
 10. Gray, B. *Persian Painting*, London, 1961.
 11. Gray, B. *The Arts of India*, Oxford, 1981.
 12. Humbert, C. *Islamic Ornamental Design*, London, 1980.
 13. Kalter, J. and Thames H. *Arts and Craft of Swat Valley*, 1991.
 14. Khatibi, Abdelkabar, *The Splendour of Islamic Calligraphy*, rpt. London, 2001.
 15. Losos, L. *Painting Techniques*, London, 1987.
 16. Mortin, F. R. *The Miniature Painting and Painters of Persia, India and Turkey*, I, II, London, 1912-1917.
 17. Porter, V. *Islamic Tiles*, New York, 1995.
 18. Riaz-ud Din, A. *Traditional Arts and Crafts of India and Pakistan*, Rogers, J. M. *Mughal Miniatures*, London, 1993.
 19. Rice, D.T. *Islamic Art*:
 20. Ziauddin T. W. *Muslim Calligraphy*.

Course 412: Muslim Architecture of Pakistan and India

Learning outcomes

On completion of this course, the student would be able to identify sources and development of Muslim Architecture evolved under different ruling and community patrons.

Contents

Introduction

1. Arab Period

- Settlement pattern and architecture of Banbhore
- Settlement pattern and architecture of Mansurah.

2. Ghaznavid/Ghaurid Period

- Tomb of Abdullah bin Haroon in Lasbela
- Udigram Mosque
- Tomb of Khalid bin Walid
- Tomb of Sadan Shaheed
- Tombs at Lal Mahra.

3. Sultanate Period

- Monuments of Delhi and Ajmer: Quwwat-ul-Islam Mosque, Qutb Minar, Alai Darwaza, Tughlaqabad, Buildings of Feroz Shah Tughlaq, Tombs of Syeds and Lodhis, the Suri period buildings.

4. Mughal Period

- Monuments of Agra: Taj Mahal, Akbar's tomb
- Monuments of Delhi: Red Fort, Royal Mosque (or Shahi Masjid)
- Monuments of Fatehpur Sikri
- Monuments of Lahore: Badshahi Mosque, Wazir Khan Mosque, Shalimar Garden, Jahangir's tomb and Lahore Fort
- Monuments of Peshawar: Mahabat Khan Mosque, Palosi Piran complex
- Monuments of Thatta: Shah Jahan's Mosque and Dabagir Mosque, Makli Hill Monuments.

5. Regional Styles

- Monuments of the Kalhora and Talpur Rulers of Sindh
- Chaukandi type tombs of Sindh and Balochistan
- Monuments of the Punjab
- Monuments of the Khyber Pakhtunkhwa
- Wooden architecture of the Northern Areas of Pakistan.

RECOMMENDED READINGS: (Dr Farzand to update)

1. Abdur Rahman, *Islamic Architecture of Pakistan: An Introduction*, Peshawar, 1981.
2. Ali, T. *Anonymous Tombs in the Gomal Valley and the Beginning of Tomb Architecture in Pakistan*, Peshawar, 1988.
3. Arnold, T. et al, *Islamic Art and Architecture*, Goodword Books, 2001.
4. Brown, P. *Indian Architecture (The Islamic Period)*, Bombay, 1942.
5. Bunce, Fredrick W. (2004) *Islamic Tombs in India (Iconography and Genesis of their Design)*, New Delhi: D.K.Printworld.
6. Chughtai, M. A. *The Badshahi Masjid: History and Architecture*, Lahore, 1972.
7. Chughtai, M. A. *The Wazir Khan Mosque Lahore: History and Architecture*, Lahore, 1975.
8. Dani, A. H. *Thatta-Islamic Architecture*, Islamabad, 1982.
9. Ettinghausen, R. and Grabar, O. *The Art and Architecture of Islam 650-1250*, New Haven: Yale University Press, 1987.
10. Field, R. *Geometric Patterns from Islamic Art & Architecture*, Taurin Publications, 1998.
11. Guide Books on *Thatta, Lahore Fort, Shalimar Garden, Banbhore*, Department of Archaeology and Museums, Government of Pakistan.
12. Hasan, Shaikh Khurshid. *The Islamic Architectural Heritage of Pakistan*, Royal Book Company, Karachi, 2000.
13. Hillenbrand, R. *Islamic Architecture: Form, Function and Meaning*, New York: Columbia University Press, 1994.
14. Kak, R.C. (1991) *Ancient Monuments of Kashmir*, Mirpur: Verinag

Publishers

15. Khan, A. N. *Multan: History and Architecture*, Islamabad, 1983.
16. Khan, A. N. *Uchch: History and Architecture*, Islamabad, 1980.
17. Khan, A. N. *Development of Mosque Architecture in Pakistan*, Islamabad, 1991.
18. Khan, A. N. *Islamic Architecture in South Asia (Pakistan, India and Bangladesh)*, 2003.
19. Khan, A.N. (1997) *Studies in Islamic Archaeology*, Lahore: Sang-e-Meel
20. Masih, F. *Excavation at Sui Vihar and Archaeological Reconnaissance of South Punjab*, Lahore: University of the Punjab, 2013
21. Mookerjee, A., ed., *5000 Designs and Motifs from India*, Dover Publications, 1996.
22. Mumtaz, Kamil Khan. (1985) *Architecture in Pakistan*, Singapore: Koon Wah
23. Nath, R. *Architecture of Fatehpur Sikri*, Jaipur, 1988.
24. Nath, R. *The History of Sultanate Architecture*, New Delhi, 1978.
25. *Sultanate Period Architecture*, Anjumane M'amaran, Lahore, 1992.
26. Shah, Ibrahim. *The Mahabat Khan Mosque and its Decorative Beauty* (M.Phil thesis, unpublished), Department of Archaeology, University of Peshawar, 1996.

Course 413: Research Methodology

Definition, problems, types etc.

- Archaeological research design
- Archaeological research project
- Formulation of hypothesis
- Implementation of research
- Data collection, different methods/techniques, etc.
- Analysis of archaeological data
- Interpretation and synthesis of archaeological data
- Research report/Seminar/Oral examination

RECOMMENDED READINGS:

1. Hult, C. A. *Researching and Writing Across the Curriculum*, 2nd Ed., California, 1990.
2. Lester, J. D. *Writing Research Papers: A Complete Guide*, London, 1987.
3. Marius, R. *A Short Guide to Writing about History*, London, 1989.
4. Sharer, R. J. and Wendy A. *Fundamentals of Archaeology*, London, 1980.

5. Naz Arifullah, S. and Bhutti, K.M. *Research Process Simplified*, Peshawar.
6. Goode & Hatt, *Methods in Social Research*, National Book Foundation, Islamabad, 2000.
7. Mali, A. L. Pancholi Kundan, *The Fundamentals of Research Methodology*, Jaipur, 1988.
8. Bahr, C. & Albert, *Social Science Research Methods*, National Book Foundation, Islamabad, 2000.

Course 414: Ancient Art and Architecture of Pakistan and India

Learning Outcomes

After completion of this course, the student would get familiarized with architectural and artistic traditions of Pakistan and India of the pre-Muslim period.

Contents

1. Architecture

- Vedic Period architectural traditions
- Mauryan architecture
- Buddhist architecture: stupa, monastery, rock-cut sanctuaries, etc.
- Hindu and Jain architecture.

2. Art

- Mauryan art
- Shunga art
- Early Andhra art
- Later Andhra art
- Mathura art (Kushan Period)
- Gandhara art (Kushan Period)
- Origin of the Buddha image
- Gupta art
- Ajanta cave paintings
- Gandhara School of Painting
- Buddhist Art of Kashmir
- Iconography of Hindu Triad
- Rock Art of Pakistan.

RECOMMENDED READINGS:

1. Ackermann, H. C. *Narrative Stone Reliefs from Gandhara in the Victoria and Albert Museum in London, ISMEO Reports and Memoirs XVII*, Rome 1975.
2. Banerjea, J. N. *The Development of Hindu Iconography*, Calcutta 1956 (1st ed. 1941).
3. Bautze-Picron, C. (ed.) *Religion and Art: New Issues in Indian*

- Iconography and Iconology*, London 2008.
4. Behrendt, K. A. *The Buddhist Architecture of Gandhara*, Leiden 2004.
 5. Behrendt, K. A. *The Art of Gandhara in the Metropolitan Museum of Art*, New Haven/CT. 2007.
 6. Bhattacharyya, B. *The Indian Buddhist Iconography*, Calcutta, 1963.
 7. Blurton, T. R. *Hindu Art*, London, 1992.
 8. Brown, P. *Indian Architecture Buddhist and Hindu Periods*, 3rd ed., rev. and enl., Bombay, 1956.
 9. Chakrabarti, Mangala. *A Catalogue of Sculptures of Mathura School in the Indian Museum*, Indian Museum Calcutta 2006.
 10. Cunningham, Sir A. *Stupa of Bharhut*.
 11. Dani, A.H. *Gandhara Art of Pakistan*, Peshawar, 1968.
 12. Foucher, A. *The Beginnings of Buddhist Art*, London, 1914.
 13. Grunwedel, A. *Buddhist Art in India*, New Delhi, 1901, rev. & enl. Burgess, J., 1985.
 14. Harle, J. C. *The Art and Architecture of the Indian Subcontinent*, London, 1986.
 15. Harle, J. C. *Gupta Sculptures*, London, 1974.
 16. Huntington, S. L. and Huntington, J. C. *The Art of Ancient India Buddhist, Hindu, Jain*, New York, Tokyo, 1985.
 17. Ingholt, H. *Gandhara Art in Pakistan*, New York, 1957.
 18. Jaffar, S.M. *Peshawar: Past and Present*, Peshawar, 1946
 19. Karttunen, K. *India and the Hellenistic World*, Helsinki 1997.
 20. Khan, M. Ashraf. *A Catalogue of Gandhara Stone Sculptures in the Taxila Museum*, (2 volumes), 2005.
 21. Khan, Gul Rahim. *A Catalogue of Sculptures from Butkara III (Swat), Khyber Pakhtunkhwa in the SSAQ Museum of Archaeology and Ethnology*, University of Peshawar, Vol.I, Peshawar: Department of Archaeology, University of Peshawar, 2015.
 22. Knox, J. R. *Amaravati, Buddhist Sculpture from the Great Stupa*, British Museum, 1992.
 23. Kurita, I. *Gandhara Art* (2 Vols), Tokyo 1998 (rept. 2003).
 24. Marshall, J. *Taxila*, Cambridge, 1951.
 25. Marshall, J. *The Buddhist Art of Gandhara*, Cambridge 1960.
 26. Masih, F. *Temples of the Salt Range and North and South Kafirkot: A Detailed Analysis of Their Architecture and Decoration*, Lahore: University of the Punjab, 2015
 27. Nasim Khan, M., *Buddhist Paintings in Gandhara*, Peshawar, 2000.
 28. Nasim Khan, M. *Treasures from Kashmir Smast: The Earliest Śaiva Monastic Establishment*, Peshawar 2006.
 29. Nasim Khan, M. *The Sacred and the Secular. Investigating the Stupa and Settlement Site of Aziz Dheri*, Peshawar Valley, Khyber Pakhtunkhwa (3 Vols), Peshawar, 2010.

30. Nehru, L. *Origin of Gandharan Style A Study of Contributory Influences*, Delhi, 1989.
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Journals:

Archaeological Survey of India, Annual Report
 Ancient Pakistan
 Athariyyat (Archaeology)
 East and West
 Gandharan Studies
 Journal of the Asiatic Society of Bengal
 Journal of Asian Civilizations
 Lahore Museum Bulletin
 Pakistan Archaeology
 Pakistan Heritage.

Course 415: Numismatics of Pakistan and India

Learning outcomes

On completion, the student would be able to learn about the history and development of coinage, to reconstruct ancient history, to study sundry aspects of cultural, socio-economic, political and religious conditions, science of manufacturing coins, metallurgy, ores of different metals,

making alloys, etc.

Contents

This course is divided into two parts:

- a) Numismatics of Pre-Muslim period of Pakistan and India and
- b) Numismatics of Muslim period of Pakistan and India.

1. Introduction

- Numismatics: Definition, scope problems and significance
- Metallurgical studies
- Mints
- Cataloguing
- History of coins
- Techniques of manufacturing coins.

2. Numismatics: Pre-Muslim Period

- Antiquity of coinage in Pakistan and India
- Punch marked coins
- Indus-Greek coins
- Coins of the Indo-Scythians and Indo-Parthians
- Kushan coins
- Huna coins
- Hindu Shahi coins.

3. Numismatics: Muslim Period

- Arab period Coins in Pakistan
- Coins of the Ghaznavid and Ghaurid rulers
- Coins of the early Sultanate period (the Khaljis, Tughlaqs, Syeds, Lodhis, Suris)
- Coins of the Mughal rulers
- Coins of the Durranis and the Sikhs
- Coins of the Colonial period.

RECOMMENDED READINGS:

1. Abdur Rahman, *The Last Two Dynasties of the Shahis*, Islamabad, 1979. Allan, J.
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4. Bopearachchi, O. *Indo-Greek, Indo-Scythian and Indo-Parthian Coins in the Smithsonian Institute*, Washington, 1993.
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6. Cooper, R. D. *The Art and Craft of Coin Making: A History of Minting Technology*, London, 1988.

7. Cribb, J. *Money: from Cowrie Shell to Credit Cards*, London, 1986.
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15. Nasim Khan, M. *The Sacred and the Secular. Investigating the Unique Stupa and Settlement Site of Aziz, Peshawar Valley, Khyber Pakhtunkhwa* (3 Vols). Peshawar. 2010.
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25. Wilson, H. H. *Ariana Antiqua A descriptive Account of the Antiquities and Coins of Afghanistan*, London, 1841, rpt. Delhi, 1971.
26. Wright, N. H. *The Coinage and Metrology of the Sultans of Delhi*, rpt. Delhi, 1974.

Journals:

Ancient Pakistan
 Archaeological Survey of India, Annual Reports
 East and West
 Frontier Archaeology

Gandharan Studies
 Journal of the Asiatic Society of Bengal
 Journal of Asian Civilizations
 Numismatics Digest
 Pakistan Archaeology

Course 416: Research Project/Internship

Semester-VIII

| Course No | Course Title | Cr. Hrs |
|-----------------------|--|-----------|
| 421 | MAJOR-XIII:RESEARCH PROJECT/INTERNSHIP | 3 |
| 422 | ELECTIVE I (within MAJOR): Gandhara Civilization and India | 3 |
| 423 | ELECTIVE-II (within MAJOR): Archaeological Conservation | 4 (3+1) |
| 424 | ELECTIVE-III (within MAJOR): Rock Art of Pakistan | 3 |
| 425 | ELECTIVE – IV (within MAJOR): Ancient Art and Architecture of Pakistan and India | 3 |
| Total Cr. Hrs. | | 16 |

DETAIL OF COURSES

Course 421: Research Project / Internship

Course 422: Palaeography and Epigraphy of Pakistan and India

Learning Outcomes

After completing this course, the student would be able to know about the origin and development of ancient scripts, styles, use of ancient languages in epigraphs, techniques of engraving on hard surfaces of rocks, slabs, metal plates, etc. The major outcome of this course would be to know about valuable historical data contained within these epigraphs.

Contents

- 1. Introduction to different ancient Indian scripts**
- 2. Origin of writing in Pakistan and India (South Asia)**

3. **Indus Script**
 - History of discovery
 - Area
 - Period
 - Materials
 - Origin
 - Decipherment.
4. **Brahmi Script**
 - Area
 - Materials
 - Characters and symbols
 - Origin
 - Decipherment
 - Development
 - Mauryan or Early style
 - Provincial style
 - Regional style
 - Proto-Sharada
 - Sharada
 - Devanagari.
 - Tibetan
5. **Kharoshthi Script**
 - Area
 - Materials
 - Characters and symbols
 - Origin
 - Decipherment
 - Development
 - Ashokan style
 - Scytho-Parthian style or transitional phase of writing
 - Kushan style or cursive form of writing
 - Decline
6. **Pushkarasari Script**
 - History of discovery
 - Area
 - Period
 - Materials
 - Origin
 - Decipherment
 - Characters and symbols
 - Development
7. **Epigraphy**
 - Importance of Epigraphic research in Archaeology

- History of Epigraphic research in Archaeology
- Survey of the Epigraphic records
- Epigraphy as a source of ancient history of Pakistan and India.

RECOMMENDED READINGS

1. Agrawala, P. K. *Imperial Gupta Epigraphs*, Varanasi, 1983.
2. Bhandarkar, D. R. *A List of Inscriptions of Northern Indian in Brahmi and Its Derivative Scripts, from about 200 A.C.*, Appendix to *Epigraphia Indica*, Vols. 19-23, Calcutta, 1932-38.
3. Buhler, G. *Indian Palaeography*, Appendix to *The Indian Antiquary*, Calcutta, 1904, rpt. 1959.
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Journals:

Ancient Pakistan
 Athariyyat
 Epigraphia Indica
 Journal of Asian Civilizations
 Journal of Humanities and Social Sciences
 Journal of the Royal Asiatic Society
 Indian Archaeological Studies

Gandharan Studies
Pakistan Archaeology
Silk Road Art and Archaeology
South Asian Studies

Course 423: Gandhara Civilization

Learning outcomes

After completion, the students would be able to know the history and salient features of the ancient cultures and civilization that evolved in ancient Gandhara.

Contents

- 1. Introduction**
 - Nomenclature
 - Historical geography of Gandhara.
- 2. The Origin of Second Urbanization in Pakistan**
 - Pushkalavati: Bala Hissar, Shaikhan Dheri, Aziz Dheri
 - Taxila: Bhir Mound, Sirkap, Sirsukh.
- 3. Major Religions of Gandhara**
 - Buddhism
 - Hinduism.
- 4. Synthesis of Cross-Cultural Currents and the Emergence of Gandhara Civilization**
- 5. Arts**
 - Sculptural Art
 - Paintings
 - Rock Art: Carvings and Engravings.
- 6. Architecture**
 - Religious Architecture: Stupa, Temple, Monastery,
 - Secular Architecture: Settlements and Forts.
- 7. Numismatics and Palaeography**
- 8. Interaction Zone**
 - Influences from the East and West.
- 9. Silk Road**
 - Trade along the Silk Road.
- 10. Decline**
 - Causes: Cultural, Environmental, Military and Spiritual.
- 11. Legacy of the Gandharan Civilization**

RECOMMENDED READINGS

1. Ackermann, H. C. Narrative Stone Reliefs from Gandhara in the Victoria and Albert Museum in London, *IsMEO Reports and Memoirs XVII*, Rome, 1975.
2. Barger, E. and Wright, P. Excavations in the Swat and Explorations in the Oxus Territories of Afghanistan, *Memoirs of Archaeological Survey of India*, No. 64, Delhi, 1941.
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14. Grunwedel, A. *Buddhist Art in India*, New Delhi, 1901, rev. & enl. Burgess, J., 1985.
15. Hall, J. *Illustrated Dictionary of Symbols in Eastern and Western Art*, London, 1994, rpt. 1995.
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17. Harle, J.C. *The Art and Architecture of the Indian Subcontinent*, England, 1986.
18. Harle, J.C. *Gupta Sculptures*, London, 1974.
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21. Ingholt, H. *Gandhar Art in Pakistan*, New York, 1957.
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24. Marshall, J. *Taxila*, 3 vols., Cambridge, 1951.
25. Marshall, J. *The Buddhist Art of Gandhara*, Cambridge 1960.
26. Mitra, D. *Buddhist Monuments*, Calcutta, 1971, rpt. 1980.
27. Mollet, J.W. *Dictionary of Art and Archaeology*, London, 1883, rpt. 1994.

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37. Schlumberger, D. The Excavations at Surkh Kotal and the Problem of Hellenism in Bactria and India, *Proceedings of the British Academy*, Vol. XLVII, 1961, pp. 77-95.
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Journals:

Ancient Pakistan
 Athariyyat (Archaeology)
 Pakistan Archaeology
 Pakistan Heritage
 East and West
 Silk Road Art and Archaeology
 South Asian Studies
 South Asian Archaeology.

Course 424: Archaeological Conservation

Learning outcomes

After completing this course, the student would get familiarized with the basic techniques, principles of conservation, ancient materials, and conservation problems faced by the moveable and immovable archaeological heritage.

Contents

THEORY:

- **Introduction**

(Conservation, Restoration, Preservation, Rehabilitation, Terminology, Development, Adaptation, Reconstruction and Anastylis)

- **Ethics of Conservation.**
- **Principles of Conservation.**
- **International Charters of Conservation for the Conservation and Restoration of Archaeological Sites and Monuments:**
 - i. The Venice Charter 1964.
 - ii. The Florence Charter 1981.
 - iii. The Washington Charter 1987.
 - iv. Charter for the protection and Management of the Archaeological Heritage 1996.
 - v. The Burra Charter (The Australian National Committee of ICOMOS, 1999)

A. ARTEFACTS

Introduction

- Pre-excavation considerations
- Field laboratory
- First-aid treatment to archaeological objects
- Environmental control of excavated artefacts
- Different types of materials used for the conservation and restoration of archaeological artefacts
- Conservation in practice: a collaborative exercise.

Simple Chemistry: Definition of Basic Terms

- Acid, Base, Alkali, pH
- Humidity: relative humidity, micro-organisms
- Temperature
- Light and its units
- Conductivity
- Atmospheric pollution.

Agents of Deterioration and Preservation

- Introduction
- Organisms/Micro-organisms
- Animals and plants
- Archaeological environments
- Agents of decay
- Water, Oxygen, acidity and alkalinity, redox potential, salts
- Temperature
- Conditions in archaeological environments for preservation.

General Techniques of Conservation

- Siliceous and related materials
- Metals
- Organic materials
- Preservation of archival materials: paper conservation.

B. BUILT HERITAGE

- **Documentation of Archaeological Sites and Monuments.**
 - i. Photographic Documentation.
 - ii. Plane Table Survey.
 - iii. Triangulation.
 - iv. Theodolite.
 - v. Total Station.
 - vi. Maps and plans.
- **Materials:**
 - i. Study of different materials like Baked Brick, Unbaked Brick, Lime, Stone, Mud and Wood.
 - ii. Chemical Analysis of different mortars used by the builders in the construction of old buildings.
- **Factor Contributing to the Deterioration of Monuments and Sites:**
 - I. Man Made Damages:
Exhaust of vehicles, Fire, Encroachment, Faulty services like water supply and sewer lines, Traffic vibration. Industrial pollution and defective conservation work.
 - II. Natural Damages:
Sun light, Thunderstorm, Winds, Windblown sand, Floods, Snow, Salinity, Rising of water table, Rains, Plants, animals and Earthquakes.
 - III. The study of degradation and deterioration by biological and environmental factors
- **Steps for Conservation:**
 - I. Study of Symptoms.
 - II. Identification of Problems.
 - III. Treatment.
- **Conservation of Structural members of the monuments:**
Arches, vaulting, walls, door openings, foundation, beams, columns. Domes, Drainage System.
- **Conservation of decorative elements of monuments:**
Fresco Painting, Stucco Tracery work, Pietra Dura work, Inlay Work, Stone Carving, Mirror Work, Tessellated Flooring and Tile Mosaic work.

- **Use of Modern Techniques in Conservation of Site/Monuments.**
- **Organization and Administration in Conservation and Restoration**

PRACTICAL

- Documentation of a Monumental building.
- Study and Identification of the conservation problems faced by the site/monument and their treatment in accordance with prevailing conservation principles.
- Preparation of Development Plan of the Site/ Monument with special reference to boosting safe tourism.
- Study of environment of the Monument.

RECOMMENDED READINGS

1. Agrawal, O.P. *Care and Preservation of Museum Objects, National Research.*
2. Biswas, S.S. *Conservation and Restoration of Brick Architecture, India, 2008.*
3. Chandra, Satish. *History of Architecture and Ancient Building Materials in India, India 2003.*
4. Cronyn, J. M. *Elements of Archaeological Conservation, London, 1989.*
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16. Teutonico, Jane Marie. *A Laboratory Manual for Architectural Conservation*. ICCROM, Rome 1988
17. Thomson, G. *The Museum Environment: Conservation in the Arts, Archaeology and Architecture Series*, London, 1978.
18. Timar, K. H. *Chemical Principles of Textile Conservation*,
19. UNESCO, *Master Plan for the Preservation of Mohenjo Daro*, 1972

Course 425: Rock Art of Pakistan

Learning outcomes

On completion, the student would be able to know about historical, socio-cultural, religious, economic, political, environmental conditions, flora, fauna and exchange of ideas of different people living in ancient times in diverse parts of the country.

Contents

Introduction

- Definition, types, scope and importance
- Evolution, terminology
- Brief History of rock art research

Recording

- Survey and recording
- Topography and documentation
- Regionalization and functions

Prehistoric Period

- Middle Paleolithic
- Upper Palaeolithic
- Neolithic

Protohistoric Period

- Chalcolithic
- Bronze Age
- Iron Age

Historic Period

- Buddhist
- Hindu
- Inscriptions
- Symbols and interpretation

Rock Paintings

- Techniques and nature of rock painting tradition
- Investigation and environment of rock painting sites
- Components of Paintings
- Upper Paleolithic Paintings
- Neolithic Paintings
- Historic Paintings

Dating

- Dating techniques for petroglyphs / paintings
- Weathering and patina
- Superimposition
- Comparative and stylistic analysis

Rock Art Sites

- Azad Jammu & Kashmir
- Gilgit Baltistan
- Khyber Pakhtunkhwa
- Punjab
- Sindh

Management and Conservation

- Conservation techniques
- Conservation policy
- Equipments for treatment
- Water impact management of treatment
- Salt decay of treatment
- Visitor management
- Vandalism graffiti etc.

RECOMMENDED READINGS

1. Ashraf Khan, M. (1994) Historic Rock Carvings in Dir District. *East and West*, Vols. 2-4, ISMEO, Rome, pp. 455-466.

2. Ashraf Khan, M. (1996) Survey of the Historic Rock Carvings in Swat Valley. *Archaeological Reconnaissance in Gandhara*. Karachi, pp. 107-118.
3. Ashraf Khan, M., Bahadar Khan, M. and Azeem, A. (1999-2000). Newly Discovered Rock Engravings and Inscriptions in the Bajaur Valley, Gandhara, Pakistan. *Ancient Pakistan*, Vol. XIII, pp. 11-25.
4. Bahn, P. Pettitt, P. and Ripoll, S. (2003). Discovery of Palaeolithic Cave Art in Britain, *Antiquity*, vol. 77 (296), pp. 227-231.
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RECOMMENDATIONS

The National Curriculum Revision Committee (NCRC) after revising courses for BS (Archaeology) unanimously resolved the following recommendations to the HEC to be supported and forwarded for implementation to the concerned quarters/agencies.

1. Field and practical work (exploration, survey, excavation, museum studies, sites and monuments study) is required and compulsory for acquiring BS, MS degrees in Archaeology. It is, therefore, recommended that sufficient amount of funds should be allocated in the budget/grants for the Departments of Archaeology in each University of the country on permanent recurrent basis.
2. Archaeology is a scientific discipline and depends on various laboratory and field equipment for analysis of archaeological data. Teaching departments of all the universities should, therefore, be strengthened by establishing Archaeological Documentation Laboratories and be provided with electronic equipments, such as computers, plotters, printers, digital cameras, electronic microscopes, theodolites, EDMs (Electron Distance Meter), Total station, GPR, Soil augur, Proton Magnetometer, GPS (Global Positioning system), metal detectors, etc.
3. Laboratories for conservation of cultural property should be established at each of the teaching departments of archaeology.
4. Laboratories for palaeontological and palynological studies should be established at each of the departments of archaeology.
5. Laboratories for C¹⁴ and thermoluminescence dating should be established at each of the teaching departments.
6. Like a laboratory, a teaching museum is an essential component for an archaeological research. Therefore, it is resolved that museums should be established at each department of all the universities like the one at Peshawar University and adequate budget be provided to them on annual basis.
7. Funds for holding national and international symposia/conferences, seminars and workshops be provided to review the archaeological research carried out in Pakistan.
8. Funds should be allocated for establishing a "Reading Material Resource Management Cell" at the Institute of Archaeology, University of Peshawar, being the oldest and well-established Institution in the country.
9. Archaeology plays an important role in the strategic, economic, educational and political conditions of a country. It is, therefore, recommended that full-fledged departments of Archaeology be established at the Universities of Balochistan, Karachi, Bahawalpur, Multan, AJK, University of Sindh (Jamshoro), Allama Iqbal Open University (Islamabad), University of Sargodha,

Karakorum International University (Gilgit) and Abdul Wali Khan University (Mardan).

11. Archaeology being taught in all the three Provinces at the University level, it is therefore recommended that it should be included in the competitive examinations at the Provincial and Federal levels.
12. Full-fledged Provincial Departments of Archaeology and Museums should be established in Sindh, Balochistan, Gilgit-Baltistan and Azad Jammu and Kashmir.
13. The Department of Archaeology, University of Peshawar, being the oldest and well-established teaching and research Department in Pakistan, should be upgraded to the status of “**Centre of Excellence in Archaeology**” by providing sufficient funds and physical facilities/infrastructure.
14. To protect cultural heritage of the Country, a consultant archaeologist and museologist should be nominated from teaching departments of Archaeology on various local bodies: Auqaf Department, Environmental Department, and City Development Authorities which are mainly concerned with building, demolition, development and rebuilding processes in rural/urban areas.
15. Culture Ministries (Federal and Provincial) should be approached to establish a fund under the title “Contract Archaeology”. One per cent (01%) money from all Government Contracts should go to this fund, which will be utilized in rescuing cultural (archaeological) material where threatened by such projects (such as building and developmental works).
16. The Federal and Provincial governments should be approached to advise the “Tourism departments” to recruit the degree holders of Archaeology on priority basis, since study of Cultural Tourism is an integral part of the curriculum of Archaeology in Pakistan.
17. The process of conducting excavation and exploration at all the provinces should be reviewed in order to rescue important sites from being destroyed by illegal digging/illicit traders. Fund should be provided to preserve and conserve the historical monuments throughout the country. In this regard coordination among the Federal, Provincial and Teaching Departments in the country is highly desired.
18. Government should adopt an aggressive and forward-looking policy towards the development of Cultural tourism in the country.
19. Switching over to the new programme will require to enhance infrastructure and faculty to over three times of the existing facilities to accommodate and facilitate growing number of students in the next two to three years.
20. Museums housing local cultural material should be established in all district headquarters. The federal government has already been agreed to recognize the importance of our cultural property. The government should make it practical to encourage tourism as a

foreign exchange earning industry.

21. A course on Conservation be introduced in the degree programmes of Architecture, Cultural Heritage Management, and Civil Engineering.
22. The members of the committee unanimously decided that there should be follow up of the recommendations suggested previously.

**COMPULSORY COURSES IN ENGLISH FOR BS
(4-YEAR) IN BASIC & SOCIAL SCIENCES**

English I (Functional English)

Objectives: Enhance language skills and develop critical thinking.

Course Contents

Basics of Grammar
Parts of speech and use of articles
Sentence structure, active and passive voice
Practice in unified sentence
Analysis of phrase, clause and sentence structure
Transitive and intransitive verbs
Punctuation and spelling

Comprehension

Answers to questions on a given text

Discussion

General topics and every-day conversation (topics for discussion to be at the discretion of the teacher keeping in view the level of students)

Listening

To be improved by showing documentaries/films carefully selected by subject teachers

Translation skills

Urdu to English

Paragraph writing

Topics to be chosen at the discretion of the teacher

Presentation skills

Introduction

Note: Extensive reading is required for vocabulary building

Recommended Books:

1. **Functional English**
 - a) Grammar

1. Practical English Grammar by A. J. Thomson and A. V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492
 2. Practical English Grammar by A. J. Thomson and A. V. Martinet. Exercises 2. Third edition. Oxford University Press. 1997. ISBN 0194313506
- b) Writing
1. Writing. Intermediate by Marie-Christine Boutin, Suzanne Brinand and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
- c) Reading/Comprehension
1. Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.
- d) Speaking.

English II (Communication Skills)

Objectives: Enable the students to meet their real life communication needs.

Course Contents

Paragraph writing

Practice in writing a good, unified and coherent paragraph

Essay writing

Introduction

CV and job application

Translation skills

Urdu to English

Study skills

Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

Academic skills

Letter/memo writing, minutes of meetings, use of library and internet

Presentation skills

Personality development (emphasis on content, style and pronunciation)

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 Françoise 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.

English III (Technical Writing and Presentation Skills)

Objectives: Enhance language skills and develop critical thinking

Course Contents

Presentation skills

Essay writing

Descriptive, narrative, discursive, argumentative

Academic writing

How to write a proposal for research paper/term paper

How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

Technical Report writing

Progress report writing

Note: Extensive reading is required for vocabulary building

Recommended Books

Technical Writing and Presentation Skills

- a) Essay Writing and Academic Writing
 1. Writing. Advanced by Ron White. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 435407 3 (particularly suitable for discursive, descriptive, argumentative and report writing).
 2. College Writing Skills by John Langan. Mc-Graw-Hill Higher Education. 2004.
 3. Patterns of College Writing (4th edition) by Laurie G. Kirszner and Stephen R. Mandell. St. Martin's Press.
- b) Presentation Skills
- c) Reading

The Mercury Reader. A Custom Publication. Compiled by northern Illinois University. General Editors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharon. (A reader which will give students exposure to the best of twentieth century literature, without taxing the taste of engineering students).

Pakistan Studies
(Compulsory)

Introduction/Objectives

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Course Contents

1. **Historical Perspective:**

- a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-e-Azam Muhammad Ali Jinnah.
- b. Factors leading to Muslim separatism
- c. People and Land
 - i. Indus Civilization
 - ii. Muslim advent
 - iii. Location and geo-physical features.

2. **Government and Politics in Pakistan:**

Political and constitutional phases:

- a. 1947-58.
- b. 1958-71.
- c. 1971-77.
- d. 1977-88.
- e. 1988-99.
- f. 1999 onward.

3. **Contemporary Pakistan:**

- a. Economic institutions and issues.
- b. Society and social structure.
- c. Ethnicity.
- d. Foreign policy of Pakistan and challenges.
- e. Futuristic outlook of Pakistan.

Recommended books

1. Burki, S.J., 1980. State and Society in Pakistan, The Macmillan Press Ltd
2. Zaidi, A.S., 2000. Issue in Pakistan's Economy. Karachi: Oxford University Press
3. Burke, S.M. and Ziring, L., 1993. Pakistan's Foreign policy: A Historical analysis. Karachi: Oxford University Press
4. Mehmood, S., 1994. Pakistan Political Roots and Development. Lahore
5. Wilcox, W., 1972. The Emergence of Banglades. Washington: American Enterprise, Institute of Public Policy Research
6. Amin, Tahir. Ethno - National Movement in Pakistan, Islamabad: Institute of Policy Studies, Islamabad
7. Ziring, L., 1980. Enigma of Political Development. Kent England: WmDawson and sons Ltd
8. Zahid, A., 1980. History and Culture of Sindh. Karachi: Royal Book Company
9. Rafique, A.M., 1998. Political Parties in Pakistan, (I), (II) and III. Islamabad: National Institute of Historical and cultural Research
10. Sayeed, K., 1967. The Political System of Pakistan. Boston: Houghton Mifflin
11. Aziz, K.K., 1976. Party, Politics in Pakistan, Islamabad: National Commission on Historical and Cultural Research
12. Waseem, M., 1987. Pakistan Under Martial Law, Lahore: Vanguard

**ISLAMIC STUDIES
(Compulsory)**

Objectives

This course is aimed at

1. To provide Basic information about Islamic Studies.
2. To enhance understanding of the students regarding Islamic Civilization.
3. To improve Students skill to perform prayers and other worships.
4. To enhance the skill of the students for understanding of issues related to faith and religious life.

Course Contents

Introduction to Quranic Studies

- 1) Basic Concepts of Quran.
- 2) History of Quran.
- 3) Uloom-ul –Quran.

Study of Selected Text of Holy Quran

1. Verses of Surah Al-Baqra Related to Faith (Verse No-284-286).
2. Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18).
3. Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11).
4. Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77).
5. Verses of Surah Al-Inam Related to Ihkam (Verse No-152-154).

Study of Selected Text of Holy Quran

1. Verses of Surah Al-Ihزاب Related to Adab al-Nabi (Verse No. 6, 21, 40, 56, 57, 58.).
2. Verses of Surah Al-Hashar (18, 19, 20) Related to thinking, Day of Judgment.
3. Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14).

Seerat of Holy Prophet (S.A.W) I

- 1) Life of Muhammad Bin Abdullah (Before Prophet Hood).
- 2) Life of Holy Prophet (S.A.W) in Makkah.
- 3) Important Lessons derived from the life of Holy Prophet in Makkah.

Seerat of Holy Prophet (S.A.W) II

- 1) Life of Holy Prophet (S.A.W) in Madina
- 2) Important Events of Life of Holy Prophet in Madina

- 3) Important Lessons Derived from the life of Holy Prophet in Madina

Introduction to Sunnah

- 1) Basic Concepts of Hadith.
- 2) History of Hadith.
- 3) Kinds of Hadith.
- 4) Uloom –ul-Hadith.
- 5) Sunnah and Hadith.
- 6) Legal Position of Sunnah.

Selected Study from Text of Hadith

Introduction to Islamic Law and Jurisprudence

- 1) Basic Concepts of Islamic Law and Jurisprudence.
- 2) History and Importance of Islamic Law and Jurisprudence.
- 3) Sources of Islamic Law and Jurisprudence.
- 4) Nature of Differences in Islamic Law.
- 5) Islam and Sectarianism.

Islamic Culture and Civilization

- 1) Basic Concepts of Islamic Culture and Civilization.
- 2) Historical Development of Islamic Culture and Civilization.
- 3) Characteristics of Islamic Culture and Civilization.
- 4) Islamic Culture and Civilization and Contemporary Issues.

Islam and Science

- 1) Basic Concepts of Islam and Science.
- 2) Contributions of Muslims in the Development of Science.
- 3) Quran and Science.

Islamic Economic System

- 1) Basic Concepts of Islamic Economic System.
- 2) Means of Distribution of wealth in Islamic Economics.
- 3) Islamic Concept of Riba.
- 4) Islamic Ways of Trade and Commerce.

Political System of Islam

- 1) Basic Concepts of Islamic Political System.
- 2) Islamic Concept of Sovereignty.
- 3) Basic Institutions of Govt. in Islam.

Islamic History

- 1) Period of Khlaft-E-Rashida.
- 2) Period of Ummayyads.
- 3) Period of Abbasids.

Social System of Islam

- 1) Basic Concepts of Social System of Islam.
- 2) Elements of Family.
- 3) Ethical Values of Islam.

Recommended books

1. Hameed ullah, M., "Emergence of Islam" , IRI, Islamabad
2. Hameed ullah, M., "Muslim Conduct of State"
3. Hameed ullah, M., 'Introduction to Islam
4. Islahi, M.M.Y.,"
5. Hassan, H.H., "An Introduction to the Study of Islamic Law" leaf Publication, Islamabad, Pakistan
6. Hasan, A., 1993. "Principles of Islamic Jurisprudence" Islamic Research Institute, International Islamic University, Islamabad
7. Waliullah, M., 1982. "Muslim Jurisprudence and the Quranic Law of Crimes" Islamic Book Service
8. Bhatia, H.S., 1989. "Studies in Islamic Law, Religion and Society" Deep and Deep Publications New Delhi
9. Zia-ul-Haq, M., 2001. "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad

ANNEXURE - D

Note: One course will be selected from the following three courses of Mathematics.

COMPULSORY MATHEMATICS **COURSES FOR BS (4-YEAR)** **(FOR STUDENTS NOT MAJORING IN MATHEMATICS)**

1. MATHEMATICS I (ALGEBRA)

Prerequisite (s): Mathematics at secondary level.

Credit Hours: 3

Objectives

To prepare the students, not majoring in mathematics, with the essential tools of algebra to apply the concepts and the techniques in their respective disciplines.

Course Contents

Preliminaries: Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.

Matrices: Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule.

Quadratic Equations: Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.

Sequences and Series: Arithmetic progression, geometric progression, harmonic progression.

Binomial Theorem: Introduction to mathematical induction, binomial theorem with rational and irrational indices.

Trigonometry: Fundamentals of trigonometry, trigonometric identities.

Recommended books

1. Dolciani, M.P., Wooton, W., Beckenback E.F. and Sharron. S., 1978. Algebra 2 and Trigonometry. Houghton and Mifflin

Suggested text

Kaufmann, J.E., 1986. College Algebra and Trigonometry: Fundamentals of Algebra and Trigonometry.6th ed. PWS-Kent Company,USA.

2. MATHEMATICS II (CALCULUS)

Prerequisite (s): Mathematics I (Algebra)

Credit Hours: 3

Objectives

To prepare the students, not majoring in mathematics, with the essential tools of calculus to apply the concepts and the techniques in their respective disciplines.

Course Contents

Preliminaries: Real-number line, functions and their graphs, solution of equations involving absolute values, inequalities.

Limits and Continuity: Limit of a function, left-hand and right-hand limits, continuity, continuous functions.

Derivatives and their Applications: Differentiable functions, differentiation of polynomial, rational and transcendental functions, derivatives.

Integration and Definite Integrals: Techniques of evaluating indefinite integrals, integration by substitution, integration by parts, change of variables in indefinite integrals.

Recommended books

1. Anton, H., Bevens, I., Davis, S., 2005. Calculus: A New Horizon. 8th ed. John Wiley, USA.
2. Stewart, J., 1995. Calculus. 3rd ed. Brooks/Cole
3. Swokowski, E.W., 1983. Calculus and Analytic Geometry. PWS-Kent Company, USA.
4. Thomas, G.B. and Finney, A.R., 2005. Calculus. 11th ed. Addison-Wesley, Reading, USA.

3. MATHEMATICS III (GEOMETRY)

Prerequisite (s): Mathematics II (Calculus)

Credit Hours: 3

Objectives

To prepare the students, not majoring in mathematics, with the essential tools of geometry to apply the concepts and the techniques in their respective disciplines.

Course Contents

Geometry in Two Dimensions: Cartesian-coördinate mesh, slope of a line, equation of a line, parallel and perpendicular lines, various forms of

equation of a line, intersection of two lines, angle between two lines, distance between two points, distance between a point and a line.

Circle: Equation of a circle, circles determined by various conditions, intersection of lines and circles, locus of a point in various conditions.

Conic Sections: Parabola, ellipse, hyperbola, the general-second-degree equation.

Recommended books

1. Kaufmann, J.E., 1987. College Algebra and Trigonometry. PWS-Kent Company, USA.
2. Swokowski, E.W., 1997. Fundamentals of Algebra and Trigonometry . 9th ed. PWS-Kent Company, Boston
3. Abraham, S., 1969. Analytic Geometry, Scott, Freshman and Company

INTRODUCTION TO STATISTICS

Credit Hours: 3

What is Statistics?

Definition of Statistics, Population, sample Descriptive and inferential Statistics, Observations, Data, Discrete and continuous variables, Errors of measurement, Significant digits, Rounding of a Number, Collection of primary and secondary data, Sources, Editing of Data. Exercises.

Presentation of Data

Introduction, basic principles of classification and Tabulation, Constructing of a frequency distribution, Relative and Cumulative frequency distribution, Diagrams, Graphs and their Construction, Bar charts, Pie chart, Histogram, Frequency polygon and Frequency curve, Cumulative Frequency Polygon or Ogive, Histogram, Ogive for Discrete Variable. Types of frequency curves. Exercises.

Measures of Central Tendency

Introduction, Different types of Averages, Quantiles, The Mode, Empirical Relation between Mean, Median and mode, Relative Merits and Demerits of various Averages. Properties of Good Average, Box and Whisker Plot, Stem and Leaf Display, definition of outliers and their detection. Exercises.

Measures of Dispersion

Introduction, Absolute and relative measures, Range, The semi-Inter-quartile Range, The Mean Deviation, The Variance and standard deviation, Change of origin and scale, Interpretation of the standard Deviation, Coefficient of variation, Properties of variance and standard Deviation, Standardized variables, Moments and Moments ratios. Exercises.

Probability and Probability Distributions

Discrete and continuous distributions: Binomial, Poisson and Normal Distribution. Exercises

Sampling and Sampling Distributions

Introduction, sample design and sampling frame, bias, sampling and non-sampling errors, sampling with and without replacement, probability and non-probability sampling, Sampling distributions for single mean and proportion, Difference of means and proportions. Exercises.

Hypothesis Testing

Introduction, Statistical problem, null and alternative hypothesis, Type-I and Type-II errors, level of significance, Test statistics, acceptance and rejection regions, general procedure for testing of hypothesis. Exercises.

Testing of Hypothesis- Single Population

Introduction, testing of hypothesis and confidence interval about the population mean and proportion for small and large samples, Exercises.

Testing of Hypotheses-Two or more Populations:

Introduction, Testing of hypothesis and confidence intervals about the difference of population means and proportions for small and large samples, Analysis of Variance and ANOVA Table. Exercises.

Testing of Hypothesis-Independence of Attributes:

Introduction, Contingency Tables, Testing of hypothesis about the Independence of attributes. Exercises.

Regression and Correlation

Introduction, cause and effect relationships, examples, simple linear regression, estimation of parameters and their interpretation. r and R^2 . Correlation. Coefficient of linear correlation, its estimation and interpretation. Multiple regression and interpretation of its parameters. Examples

Recommended books

1. Muhammad, F., 2005. Statistical Methods and Data Analysis. Kitab Markaz, Islamabad.
2. Walpole, R. E., 1982. Introduction to Statistics. 3rd ed. Macmillan Publishing, USA.

Note: General Courses from other Departments.

- Details of courses may be developed by the concerned universities according to their Selection of Courses as recommended by their Board of Studies.

ANNEXURE - F

Introduction to Information and Communication Technologies

Course Structure: Lectures: 2 Labs: 1 **Credit Hours: 3**
Pre-requisite: None **Semester: 1**

Course Description

This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and World Wide Web, and ICT based applications.

After completing this course, a student will be able to:

- Understand different terms associated with ICT
- Identify various components of a computer system
- Identify the various categories of software and their usage
- Define the basic terms associated with communications and networking
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools
- Understand the enabling/pervasive features of ICT

Course Contents

Basic Definitions & Concepts

Hardware: Computer Systems & Components

Storage Devices, Number Systems

Software: Operating Systems, Programming and Application Software

Introduction to Programming, Databases and Information Systems

Networks

Data Communication

The Internet, Browsers and Search Engines

The Internet: Email, Collaborative Computing and Social Networking

The Internet: E-Commerce

IT Security and other issues

Project Week

Review Week

Text Books/Reference Books

1. Introduction to Computers by Peter Norton, 6th International Edition, McGraw-Hill
2. Using Information Technology: A Practical Introduction to Computer & Communications by Williams Sawyer, 6th Edition, McGraw-Hill
3. Computers, Communications & information: A user's introduction by Sarah E. Hutchinson, Stacey C. Swayer
4. Fundamentals of Information Technology by Alexis Leon, Mathews Leon, Leon Press.