FACULTY OF SCIENCE

SYLLABI

FOR

DIPLOMA IN FORENSIC SCIENCE AND CRIMINOLOGY (SEMESTER SYSTEM)


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### DEPARTMENT OF ANTHROPOLOGY, P.U., CHANDIGARH

Outlines of tests, syllabi and courses of readings in the subject of Diploma in Forensic Science and Criminology Course

<table>
<thead>
<tr>
<th>Paper No.</th>
<th>Title</th>
<th>Annual Marks</th>
<th>Intern Marks</th>
<th>Total</th>
<th>Paper Codes</th>
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SEMESTER I

DFSc 1.1
Paper-I: Fundamental of Forensic Science-Part I

Total Marks: 100
Annual Exam: 80
Internal Assessment: 20

The objective of the paper is to introduce the discipline to students and understand the various scientific principles involved in forensic science and to conduct the scientific studies on various physical parameters such as Law of Individuality, Principle of Exchange, Law of Probability, Principle of Comparison, Principle of Analysis, Presentation of expert evidence in the court of Law and basic understanding of different tools and techniques involved in forensic sciences.

SECTION-I


SECTION-II


SECTION-III


SECTION-IV

Presentation of evidence and evidentiary clue; expert’s presentation, presenting counsel’s contributions, defense counsel’s role, court’s participation; evidentiary clue.

NOTE:
(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.
(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.
(c) Each question will carry 8 marks.
SUGGESTED BOOKS

**Essential Readings:**


**Further Readings:**


**DFSc 1.2**

**Paper-II: Forensic Anthropology-I**

| Total Marks: 100 |
| Annual Exam: 80 |
| Internal Assessment: 20 |

The course introduces basic principles of forensic anthropology – a major branch of forensic science and an applied field of biological anthropology. Forensic anthropology uses human osteology and other biological anthropological techniques to solve problems of medicolegal significance, especially personal identity and cause of death from human remains. The present syllabus is designed in such a way to offer hands-on-experience that will adapt to virtually any professional situation to follow in the forensic career. The student will be trained at identifying human remains including bones and teeth, anthropometry, analysis of hair, fingerprint identification, examination of human body fluids and hematological markers and basic postmortem examination.

**SECTION-I**

Forensic anthropology: definition, aims and scope and its relevance in forensic science, Personal identification of the living and cadavers.
SECTION-II

Importance of Anthropometry and somatoscopy in personal identification: Bertillon system of identification, scope and present status.

SECTION-III

Forensic Osteology: elementary study of human skeleton, personal identification from bones, determination of age, sex, stature, reconstruction of skull and face.

SECTION-IV

Forensic Odontology: definition, personal identification from teeth, morphological variations and bite marks.

NOTE:

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.

(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.

(c) Each question will carry 8 marks.

SUGGESTED BOOKS

Essential Readings:


Further Readings:


DFSc 1.3
Paper-III: Forensic Physical Science- Part I

Total Marks: 100
Annual Exam: 80
Internal Assessment: 20

The objective of this paper is to conduct scientific study of various physical evidences such as firearms, ammunition, tool marks, foot prints, questioned documents, speech samples, toxicological material such as various kinds of poisons and drugs etc. These physical evidences have potential evidential value in various crime cases such as shooting incidence, forgery, hit and run vehicle accidents, murder, suicide, kidnapping and threatening, if collected and examined properly to link the culprit with the crime or vice versa.

SECTION-I

Identification and evaluation of foot prints, tracks and trails: Collection methods for 2D and 3D marks, footprints on snow, Evaluation and Identification.

SECTION-II

Handwriting and Questioned Documents: Questioned documents, handwriting and its development, anonymous letters, alterations, disguised handwriting, collection of specimens, individual characteristics.
SECTION-III

Forensic Toxicology-
Narcotics: Legal definition, Drugs and Crime, Basic Classification and evidentiary
clues.

SECTION-IV

Arson : Investigation of fires, seat, time, natural cause, suspected arson, motive search
for evidence & its collection and evaluation.
Explosives: Definition, type, uses, improvised explosive devices, investigation of site
of blasts, collection of evidence and its evaluation.

NOTE:
(a) In all nine questions to be set, two questions each from Sections I-IV and
one compulsory question of 4-8 short answer type questions covering the
whole syllabus. There will be no choice in the compulsory question.
(b) Students will be required to attempt five questions in all; at least
one from each Section and the compulsory question.
(c) Each question will carry 8 marks.

SUGGESTED BOOKS

Essential Readings:

Philip R. (2002). Forensic Speaker Identification Taylor and Francis, Forensic
Science Series, London


Delhi.

Edition), Universal Law Publishing CO., New Delhi

1,II


Thomas – Publisher

Press, Baltimore

2nd Ed., Universal, Ist Indian Reprint


Further Readings:


DFSc 1.4
Paper-IV: Criminology and Criminal Law I

The objective of this paper is to understand the basic ideas relating to criminology, so that the student is able to understand its scope, aims, objectives as well as its major tenets. The development of the subject in various countries is also looked at as well as the different methods for collecting or organizing criminological data. Some case studies are also collected by the students to highlight this aspect. The definitions used as a part of the criminal justice system are also explained as a part of this paper. They help to highlight certain aspects of criminal laws in the Indian context. Offences related to documents and correctional therapy are also covered. As a result of this information, the student will get an overview of criminal law and criminology in the Indian context, so that they are able to deal with expert evidence as well as ideas and theoretical insights about criminals and criminological behavior.

SECTION-I

1. Criminology: Definition, Scope and Development
2. Indian Penal Code – Definitions (a) Public Servant Section 21, Dishonesty Section 23, 24; Fraudulently Section 25; Common Intention and Common
Object Section 34/149; Good Faith Section 52; Inquiry Section 44; Voluntarily Section 39.

SECTION-II

3. Indian Penal Code: (a) General exceptions (sections 76 to 106), Criminal Conspiracy Section 120-B; (b) Crime Against Human Body: Hurt (sections 319 to 327); Murder (Sections 299 to 302).


SECTION-III

5. Causing Miscarriage Section 312 to 317 IPC


7. Theories of punishment


SECTION-IV

9. Offences relating to documents, sections 415-420, 403, 405, 467, 468, 471


11 Case Study

NOTE:

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.

(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.

(c) Each question will carry 8 marks.

SUGGESTED BOOKS


Criminal Procedure Code.

Indian Penal Code.
Indian Evidence Act.
Indian Constitution.


**DFSc 1. 5 Practical in Forensic Science I**

*Total Marks: 100*  
*Annual Exam: 80*  
*Internal Assessment: 20*


Determination of Age, Sex and Stature from Human Skeletal material.

Demonstration of and interpretation of different types of mechanical injuries
Suggested Readings


SEMESTER II

DFSc 2.1

Paper-I: Fundamentals of Forensic Science-Part II

Total Marks: 100
Annual Exam: 80
Internal Assessment: 20

The objective of the paper is to understand the material evidence and its strength in forensic science and tools and techniques in forensic science. Studies on elements of statistics will also be carried out for inter and intra comparison of physical clue material/evidences. These clue material/evidences have potential evidential value in various criminal cases to link the criminals with crime with great certainty, if these are collected and examined properly.

SECTION-I

The Evidence: Types, Material/Physical Evidence, Strength and weakness, Any alternative to material/ Physical evidence.

SECTION-II

SECTION-III

Forensic Science set-up, Problems of Proof.
Frye case and Daubert Standard.

SECTION-IV

Elements of statistics in Forensic Science: Some basic concepts, measurements and measurements scales, measure of central tendency and dispersion, some basic concepts on probability.

NOTE:

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.
(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.
(c) Each question will carry 8 marks.

SUGGESTED BOOKS

Essential Readings:


Further Readings:

The second part of the forensic anthropology course introduces forensic analysis of hair, fingerprint identification and their forensic significance. The course also introduces examination of human body fluids and hematological markers and basic postmortem examination with special emphasis on time and cause of death.

**SECTION-I**

Hair: morphology of hair, distinction between human and animal hair, differentiation of scalp, body and pubic hair; determination of age and sex from hair; population differences.

**SECTION-II**

Dermatoglyphics: Personal identification from finger, palm and sole prints; latent prints – methods of development and identification;

**SECTION-III**

Forensic serology: Body fluids and Haematological markers: detection of blood, blood stains, and other body fluids (semen, saliva, milk, urine, sweat); composition of blood, genetics of ABO, MN, Rh systems, ABH secretion.

**SECTION-IV**

Applications of blood groups in personal identification and paternity disputes. Molecular anthropology & basics of DNA profiling technique and its application in crime detection. Forensic anthropologist’s role in the examination of mass fatalities.

**NOTE:**

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.

(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.

(c) Each question will carry 8 marks.
Essential Readings:


DFSc 2.3

Paper-III: Forensic Physical Science -Part II

Total Marks: 100
Annual Exam: 80
Internal Assessment: 20

The objective of this paper is to conduct scientific study of various physical evidences such as firearms, ammunition, speech samples, glass, paint, soil, fire debris etc. These physical evidences have potential evidential value in various crime cases such as shooting incidence, forgery, hit and run vehicle accidents, murder, suicide, kidnapping and threatening, if collected and examined properly to link the culprit with the crime or vice-versa. The paper will further explore use of photography and speaker identification and psychological evidence in forensic analysis. The paper will also shed light on examination of various kinds of accidents like Accidents: road accident, airplane crash, train accident, natural disasters.

SECTION-I

Forensic ballistics and tool marks: firearms, ammunition, powder residue, identification of firearm injuries, reconstruction.

SECTION-II

SECTION-III

Trace, element analysis of glass, paint, soils, inks, papers Neutron Activation Analysis (NAA) Atomic Absorption, X-ray Fluorescence (XRF), SEM-EDS.

SECTION-IV

Crime Scene Management, Managing Man-Made and natural disorder, Road and Train Accidents.

NOTE:

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.
(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.
(c) Each question will carry 8 marks.

SUGGESTED BOOKS

Essential Readings:


**Further Readings:**


DFSc-2.4

**Paper-IV: Criminology and Criminal Law II**

Total Marks: 100
Annual Exam: 80
Internal Assessment: 20

The objective of this paper is to give the students an idea of Criminal Law in India, especially relating to counterfeiting of coins and currency, definitions of legal terms and offences, arrest, investigation, and the laws relating to legal and judicial powers, complaints, investigation, experts, proof, evidence and facts. Focus is also laid on the ideas relating to victimology and compensation. One major emphasis in this paper is also on theories of criminology, limiting these to classical, positivist, sociological and multi-factorial theories. Students would also conduct case studies related to these. The students are expected to gain a good grounding on how the law in India relates to criminal cases as well as the possible background conditions within which criminals are likely to develop.
SECTION-I

Indian Penal Code:

1. Counterfeiting of coins and currency (sections 230-234, 237, 238)
2. Attempt to commit offence (section 511)
3. Theories of criminal behaviour: Classical Theory

SECTION-II

4. Criminal Procedure Code:
   a) Definitions: Cognizable and Non-cognizable, complaint, bailable and non-bailable, summons and warrant case, compoundable offences (section 2)
   b) Arrest (Sections 41 to 60)
   c) FIR and Powers of Police to investigate (Sections 154 to 176)
5. Theories of criminal behaviour: Positivist Theory

SECTION III

6. Criminal Procedure Code:
   a) Process to compel the appearance of a person (sections 61 to 90)
   b) Complaint case (sections 190 to 204)
   c) Reports of Certain Government Scientific Experts Section 293
   d) Classification of Criminal Courts and their powers (sections 6 to 35)
7. Theories of criminal behaviour: Sociological Theories

SECTION IV

8. Indian Evidence Act:
   a) Definition: Section 3 – Evidence, Facts Proved, Disproved and Not proved; May Presume, Shall Presume and Conclusive Proof.
   b) Confession by Accused (Sections 24 to 30)
   c) Expert Opinion (Sections 45 to 47)
9. Theories of criminal behaviour: Multifactor theory
10. Meaning and Scope of Victimology; Compensation to victims of crime in the Indian context.
11. Case Study

NOTE:

(a) In all nine questions to be set, two questions each from Sections I-IV and one compulsory question of 4-8 short answer type questions covering the whole syllabus. There will be no choice in the compulsory question.
(b) Students will be required to attempt five questions in all; at least one from each Section and the compulsory question.
(c) Each question will carry 8 marks.

SUGGESTED BOOKS

**Paper-IV : Criminology and Criminal Law**


Criminal Procedure Code.


Indian Penal Code.

Indian Evidence Act.

Indian Constitution.


Introduction to the practice of Human Somatometry and Somatoscopy and its applications in Forensic Sciences.

Somatoscopy and Somatometery (cranio-facial and other body measurements)
Overview of dermatoglyphic studies in Forensic practice, Finger Dermatoglyphics of human subjects.
Basic Blood grouping Techniques

Death investigations: time and cause of death, Post-mortem examination - Observation and record of Post Mortem Examinations.

Visit to Forensic Science Laboratory/ Finger print Bureau/ Police Station/ other relevant institutions. Students shall make a record of their visits and submit the same in the form of a report for examination.

**Suggested Reading**


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