

# Bachelor of Science - Forensic Science (Honors)

## Syllabus - First Semester

### CRIME SCENE INVESTIGATION LAB

Course Code: FCH2108

CreditUnits: 02

**Course Objective:** - The students will understand & perform experiments relating to:

- Investigation of crime scene.
- Sketching of outdoor/ indoor scene of crime
- Packaging and forwarding of Evidences

#### Course Contents: - Lab/Practical

1. Investigation and sketching of indoor scene of crime
2. Investigation and sketching of outdoor scene of crime
3. Crime Scene Photography: indoor, outdoor
4. Notes making
5. Searching of crime scene
6. Parts of camera
7. Packaging and forwarding
8. Envelop making and Druggist fold method
9. Sealing procedure

#### Examination Scheme:

IA				EE	
A	PR	LR	V/Quiz	PR	V
5	10	05	5+5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

#### Text and references:

- A Glencoe Program Physics principles and problems: Forensic Laboratory Manual Student edition
- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals

# Syllabus - Second Semester

## FINGERPRINT SCIENCE

Course Code: FCH2202

CreditUnits: 03

**Course Objective:** The course focuses on following objectives-

- Developing an understanding and appreciation for the scope of Fingerprints Examination.
- Develop an understanding on various methods of development of Fingerprints.
- Develop comprehensive knowledge on fingerprint patterns, fingerprint classification, the various methods of fingerprint development- physical and chemical.

### Course Contents:

#### Module I: History and Development of Fingerprinting

Origin & History of fingerprints, Principles of Fingerprint identification, Searching, location and significance of fingerprints in criminal investigation.

#### Module II: Introduction of Fingerprint and its characteristics

Biological significance of skin pattern, Types of fingerprints, Fingerprint characteristics: class and individual, Collection, lifting and preservation of fingerprints, Photography of latent fingerprints and presentation of fingerprint evidence in court.

#### Module III: Classification of Fingerprints

Henry's system of classification, Batley's Single Digit classification, Extension of Henry's system of classification. Primary, secondary, sub-secondary, major, Second sub-secondary, key and final classifications

#### Module IV: Fingerprint Developmental techniques

Methods of lifting and developing latent fingerprints – Physical methods - Powder method (Black, silver, florescent, red, yellow), Iodine fuming etc. Chemical methods - Ninhydrin, Silver nitrate method, Glue fuming, VMD, SPR etc.

#### Module V: AFIS

Introduction, history, instrumentation, processing and applications, need and scopes of AFIS. Image enhancement, Image binarization, Minutiae pattern matching etc.

### Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
Att: Attendance

### Text & References:

- Nath, S., Fingerprint Identification, CRC Press, 2<sup>nd</sup> edition, 2002.
- Champhod, C., Fingerprint and other ridge skin impressions, CRC Press, 2004.
- Bridges, B. C., Vollmar, A. Monir, M., Criminal Investigation, Practical Fingerprinting, Thumb Impression, Handwriting, Expert Testimony Opinion Evidence, The University Book Agency, Allahbad, 2000.
- James, S. H. and Nordby, J. J. (Eds), Forensic Science - An Introduction to Scientific and Investigation Techniques, CRC Press, London, 2003.
- Nanda, B. B., and Tewari, R. K., Forensic Science in India. Select Publishers, New Delhi, 2001.

- Saferstein, Richard, Criminalistics, An Introduction to Forensic Science, 6<sup>th</sup> Ed. Prentice-Hall, New Jersey, 1998.
- Sharma, B. R., Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup>Edn) Universal Law Publishing Co. Ltd. New Delhi, 2001.



# THE METRIC SYSTEM & PHYSICAL PROPERTIES OF EVIDENCES

Course Code: FCH2203

CreditUnits: 03

**Course Objective:** The Objective of this course is to introduce the students to the characteristics and properties of different evidences like glass, soil, paint, hair and fibre, which are normally encountered at the scene of crime.

<b>Course Contents:</b>
<b>Module I: The Metric System</b> Introduction to the metric system, Introduction to prevalent physical evidences (soil, glass, fibre, hair and liquids)
<b>Module II: Glass Examination</b> Glass: Composition (organic and inorganic elements), Analytical and chemical examination, Comparing glass fragments, glass fractures.
<b>Module III: Forensic Paint Examination</b> Introduction to paint chemistry, types of paints and their composition, forensic examination of paints (household and automobile).
<b>Module IV: Soil examination</b> Composition of soil (organic and inorganic), Properties (Colour, density, size distribution of soil particles), Collection and preservations of soil, Mineral and chemical analysis of soil, Density gradient techniques.
<b>Module V: Introduction to various marks</b> Definition, nature, types of marks, skid marks, tread marks, significance and examination, Definition, nature, types, significance and examination of foot and shoeprints, gait pattern and footprint casting.

## Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
A: Attendance

## Text & References:

- Heard, B. J., Handbook of Firearm and Ballistics, Wiley & Sons, Chichester, England, 1997.
- James, S. H., and Nordby, J. J., Forensic Science; an Introduction to Scientific and Investigative Techniques, CRC Press, London, 2003.
- Saferstein, Richard, Criminalistics, an Introduction of Forensic Science, 6<sup>th</sup> Ed. Prentice-Hall, New Jersey, 1998.
- Sharma, B.R., Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup> Ed) Universal Law Publishing Co. Ltd., New Delhi, 2001.

# RESEARCH METHODOLOGY & STATISTICS

Course Code: FCH2204

CreditUnits: 02

**Course Objective:** This course objective is to introduce the student with the:

- The research process: conceiving, designing, conducting and analyzing.
- Methods of statistical description and analysis
- Ethical issues about research
- Graphical presentation of data

<b>Course Contents:</b>
<b>Module I: Introduction</b> Definition, concept and research in science and forensic science.
<b>Module II: Methods of Research</b> Introduction to Research Methodology; scientific and social science and behavior science method. Experimental research and non – experimental research design. Observation, questionnaires, interview, schedules, case study methods, types of data, graphical representation of data
<b>Module III: Introduction to Statistics</b> Introduction to statistics; one tailed test, two tailed test, parametric (f-test, z-test, t- test, chi square test) and non-parametric statistics (sign test, rank test).
<b>Module IV: Descriptive Statistics</b> Measures of central tendency (Mean, Mode, Median); Measures of dispersion (Range, Variance, Skewness Kurtosis, Quartile); simple correlation methods (Karl Pearson method and regression on two lines).

## Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
Att: Attendance

## Text & References:

- Broota, K.D., Experimental designs in psychological research, Wiley eastern, New York, 1992.
- Guilford, Statistics in Psychology and Education, McGraw hill, New York, 1986.
- Katz and Kahn, Research in Behavioural Sciences, Methuen, USA, 1979.
- Kerlinger, F., Foundations of Behavioural Research, Surjeet Publications, Delhi, 1983.
- Rajamanickam, M., Statistical Methods in Psychological and Educational Research, Concept Publishing Co. New Delhi, India, 1983.
- Smith, Jonathan, A. (Ed.), Qualitative Psychology: A Practical Guide to Research Methods, Sage Publications, 2003.
- Woodworth and Schlosberg, Experimental Psychology, Methuen and co. ltd, London, 1971.

# FINGERPRINTING LAB

Course Code: FCH2207

CreditUnits: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- Packaging and forwarding of physical evidences
- Identifying fingerprints, their patterns, footprints and preparing fingerprint chart.
- Determine cations, anions, pH, density and refractive index of various physical evidences

Course Contents:
1.Prepare fingerprint card and identify the patterns.
2. Tape lifting of fingerprint
3. Casting of foot prints/ fingerprint
4. Ninhydrin method for fingerprint development
5. Iodine fuming method for fingerprint development



**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

**Text and references:**

- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- A. I. Vogel, Textbook of Practical organic Chemistry including Qualitative organic analysis
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- Isolation and identification of Drugs by E.G.C. Clark

## METRIC SYSTEM LAB

Course Code: FCH2208

CreditUnits: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- Analysis of physical evidences
- Identifying different Physical evidences on the basis of their physical properties.
- Determine pH, density and refractive index of various physical evidences

Course Contents:
1. Analysis of Glass, 2. Analysis of Paint chips 3. Comparative analysis of Glass fragments. 4. Analysis of soil and glass (Density gradient) 5. Differentiation of soil on the basis of pH. 6. Size distribution analysis of soil particles.

**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

**Text and references:**

- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- A. I. Vogel, Textbook of Practical organic Chemistry including Qualitative organic analysis
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- Isolation and identification of Drugs by E.G.C. Clark

# Syllabus - Third Semester

## HANDWRITING & TYPEWRITING ANALYSIS

**Course Code: FCH2310**

**CreditUnits: 3**

**Course Objective:** The course focuses on the following objectives-

- Developing an understanding and appreciation for the scope of Handwriting Identification and Examination.
- Develop an understanding of handwriting and their characteristics, principles of identification.
- Give a brief description on various methods of their detection and examination.
- Develop comprehensive knowledge on typewritten documents, common styles and their examination.

<b>Course Contents:</b>
<p><b>Module I: Introduction to Questioned Documents</b>                  Definition: Documents, questioned documents and the type of cases encountered; Importance, nature and problems of documents, Location, collection, handling and presentation of documents, adequacy of exemplars and standards</p>
<p><b>Module II: General Equipment for Examination</b>                  Hand lens, Camera, Compound Microscope, Stereo microscope, TLC, Transmitted light source, UV-IR radiation chamber and Oblique Light source.</p>
<p><b>Module III: Handwriting and Hand printing</b>                  Identification – principle individual handwriting characteristics, external, internal and physical factors affecting handwriting or signature of a person</p>
<p><b>Module IV: Signatures</b>                  Authentic Signatures, forged signatures, disguised signatures, traced signatures, and their characteristics</p>
<p><b>Module V: Typewriting identification and comparison</b>                  Comparison of typewritten documents, common types of styles, detection of altered typewritten documents</p>

**Examination Scheme:**

<b>Components</b>	<b>A</b>	<b>CT</b>	<b>S/V/Q</b>	<b>HA</b>	<b>EE</b>
<b>Weightage (%)</b>	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester, A: Attendance

**Text & References:**

- Albert, S. Osborn, Questioned Documents, Second Ed., Universal Law Publishing, Delhi, 1998.
- Charles, C. Thomas, I.S.Q.D. Identification System for Questioned Documents, Billy Prior Bates, Springfield, Illinois, USA, 1971.
- Kelly, J. S. Lindblom, B. S. (2006). *Science, Handwriting Examination and the Courts. Scientific Examinations of Questioned Documents*, 2<sup>nd</sup> edition, CRC Press, Taylor & Francis group.
- Huber, A. R. Headrick, A. M. (1999). *The Discrimination and Identification of writing. Handwriting Identification Facts and Fundamentals*, CRC Press, Boca Raton London.
- James, S. H. And Nordby, J. J. (Eds), Forensic Science; An Introduction to Scientific and Investigative Techniques, CRC Press, London, 2003.

- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6<sup>th</sup> Ed. Prentice-Hall, New Jersey, 1998.
- Sharma, B. R., Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup> Ed) Universal Law Publishing Co. Ltd. New Delhi, 2001.

# FORENSIC SEROLOGY LAB

Course Code: FCH2311

CreditUnits: 02

**Course Objective:** - The students will understand & perform experiments relating to:

- Analysis of blood, biological fluids and alcohol
- Thin layer chromatography for poisons.

## Course Contents: - Lab/Practical

1. Analyse different blood groups from the blood found at crime scene.
2. Perform catalytic test for blood
3. Perform crystal tests for blood.
4. Analyse biological fluid (saliva).
5. Analyse biological fluid (urine).
6. Analyse alcohol, acetone, chloroform
7. Separate metallic poison by thin layer chromatography (Arsenic, mercury, bismuth, Antimony).

## Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

## Text and references:

- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Laboratory Protocols CIMMYT Applied Molecular Genetics Laboratory Third Edition
- Vogel Textbook of Practical organic Chemistry including Qualitative organic analysis By
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- Isolation and identification of Drugs by E.G.C. Clark

# Syllabus - Fourth Semester

## FORENSIC ANTHROPOLOGY LAB

Course Code: FCH2410

CreditUnits: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- Determine age, sex and stature from skull
- Determine age, sex and stature from long bones of human body

**Course Contents: - Lab/Practical**

1. Identification of various bones (appendicular, Pelvic and skull bones).
2. Estimation of height using long bones.
3. Determination of sex, using skull and pelvic bone and mandibular bone.
4. Determination of age using skull.

**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

**Text and references:**

- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Laboratory Protocols CIMMYT Applied Molecular Genetics Laboratory Third Edition
- A. I. Vogel Textbook of Practical organic Chemistry including Qualitative organic analysis
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- Isolation and identification of Drugs by E.G.C. Clark

## FORENSIC TOXICOLOGY LAB

Course Code: FCH2411

CreditUnits: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- Analysis of various metallic, vegetable, volatile and non-volatile poisons.
- Perform TLC of poisons, drugs, and inks.

<b>Course Contents: - Lab/Practical</b>					
1. Analysis of metallic poisons.					
2. Analysis of volatile poisons (Acetone, Alcohol).					
3. Analysis of corrosive poisons (acids, Alkali).					
4. TLC of common drugs.					
5. Spot test for insecticides and pesticides.					



**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

**Text and references:**

- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- A. I. Vogel Textbook of Practical organic Chemistry including Qualitative organic analysis
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- Isolation and identification of Drugs by E.G.C. Clark

# TERM PAPER

Course Code: FCH2431

Credit Units: 02

## Objectives

The objective of this course is to judge the understanding as well as application of the knowledge gained by the students. The aim of the term paper is to provide the students with an opportunity to further enhance their knowledge in a sector of their choice by undertaking a significant practical unit of examining and analysing various aspects of Forensic science & its application at a level commensurate with the learning outcomes of the various courses taken up them in the ongoing semester.

A term paper is primarily a record of intelligent reading in several sources on a particular subject. The students will choose the topic at the beginning of the session in consultation with the faculty assigned. At least one middle level or senior level person of a company from the chosen sector may be interviewed face to face

## Guidelines:

1. The term paper will be related to the contemporary business issue and the topic will be given by the department.
2. The presentation of the term paper is scheduled to be held before the commencement of Semester examinations.
3. The paper will carry 100 marks that will be marked on the basis of understanding and organization of content based on the literature review. The Bibliography shall form an important part of the paper.
4. Examples of a few broad areas for Term Paper (List is indicative, not exhaustive)
  - a. Forensic Toxicology
  - b. Forensic Anthropology
  - c. Physical chemistry
  - d. Handwriting & Typewriting Analysis
  - e. Crime Scene Investigation
  - f. Criminology, Criminal Law & Police Administration

## Evaluation Scheme

Organisation and relevance of content	Literature Review	Bibliography	Presentation	Total
30	30	20	20	100

# PROJECT

Course Code: FCH2432

Credit Units: 03

## Objectives:

The aim of the project is to provide the students with an opportunity to further their intellectual and personal development in the chosen field by undertaking a significant practical unit of activity. The project can be defined as a scholarly inquiry into a problem or issues, involving a systematic approach to gathering and analysis of information / data, leading to production of a structured report.

## Chapter Scheme and distribution of marks:

**Chapter 1:** Introduction – 10 marks

**Chapter 2:** Conceptual Framework/ National/International Scenario – 25 marks

**Chapter 3:** Presentation, Analysis & Findings -- 25 marks

**Chapter 4:** Conclusion & Recommendations -- 10 marks

**Chapter 5:** Bibliography -- 05 marks

## Components of a Project Report

The outcome of Project Work is the Project Report. A project report should have the following components:

**1) Cover Page:** This should contain the title of the project proposal, to whom it is submitted, for which degree, the name of the author, name of the supervisor, year of submission of the project work, name of the University.

**2) Acknowledgement:** Various organizations and individuals who might have provided assistance /co-operation during the process of carrying out the study.

**3) Table of Content:** Page-wise listing of the main contents in the report, i.e., different Chapters and its main Sections along with their page numbers.

**4) Body of the Report:** The body of the report should have these four logical divisions

**a) Introduction:** This will cover the background, rationale/ need / justification, brief review of literature, objectives, methodology (the area of the study, sample, type of study, tools for data collection, and method of analysis), Limitations of the Study, and Chapter Planning.

**b) Conceptual Framework / National and International Scenario:** (relating to the topic of the Project).

**c) Presentation of Data, Analysis and Findings :**( using the tools and techniques mentioned in the methodology).

**d) Conclusion and Recommendations:** In this section, the concluding observations based on the main findings and suggestions are to be provided.

**5) Bibliography or References:** This section will include the list of books and articles which have been used in the project work, and in writing a project report.

**6) Annexures:** Questionnaires (if any), relevant reports, etc.

(The main text of the Project should normally be in the range of 5000 words. However, there may be annexure in addition to the main text)

## The Steps of a Project Report

**STEP I:** Selection of the topic for the project by taking following points into consideration:

I. Suitability of the topic.

II. Relevance of the topic

III. Time available at the disposal.

IV. Feasibility of data collection within the given time limit.

V. Challenges involved in the data collection (time & cost involved in the data collection, possibility of getting responses, etc.)

**STEP II:** Finalisation of the Topic and preparation of Project Proposal in consultation with the Supervisor.

**STEP III:** Collection of information and data relating to the topic and analysis of the same.

**STEP IV:** Writing the report dividing it into suitable chapters, viz.

**Chapter 1:** Introduction,

**Chapter 2:** Conceptual Framework / National & International Scenario,

**Chapter 3:** Analysis & Findings

**Chapter 4:** Conclusion and Recommendations.

**Chapter 5:** Bibliography

**STEP V:** The following documents are to be attached with the Final Project Report.

- I. Approval letter from the supervisor (Annexure-IA)
- II. Student's declaration (Annexure-IB)
- III. Certificate from the Competent Authority of the Organisation / Institution, if the student undertakes the Project Work in any Organisation / Institution.

**Guidelines for Evaluation:**

1. Each of the students has to undertake a Project individually under the supervision of a teacher and to submit the same following the guidelines stated below.
2. Language of Project Report and Viva-Voce Examination may be English. The Project Report must be typed and hard bound.
3. Failure to submit the Project Report or failure to appear at the Viva-voce Examination will be treated as "Absent" in the Examination. He /she has to submit the Project Report and appear at the Viva-Voce Examination in the subsequent years (within the time period as per University Rules).
4. No marks will be allotted on the Project Report unless a candidate appears at the Viva-Voce Examination. Similarly, no marks will be allotted on Viva-Voce Examination unless a candidate submits his/her Project Report.
5. Evaluation of the Project Work to be done jointly by one internal expert and one external expert with equal weightage, i.e., average marks of the internal and external experts will be allotted to the candidate. The evaluation scheme shall be as follows:

<b>Project Report</b>	<b>Power Point Presentation &amp; Viva</b>
75 marks	25 marks

**Annexure-IB**

**Student's Declaration**

I .....hereby declare that the Project Work with the title (in block letters).....

Submitted by me for the partial fulfilment of the degree of B.Sc. in Forensic science is my original work and has not been submitted earlier to any other University /Institution for the fulfilment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Signature of Supervisor:

Signature of Student

Name

Registration No.

Place:

Date:

# WORKSHOP

**Course Code: FCH2433**

**Credit Units: 01**

## Objectives

A workshop is primarily an activity based academic event that is organized to provide the students a one to one and hands on experience on any aspect of their learning. The communication in a workshop has to be necessarily two ways. The trainer has to make sure that the aspect covered is practically practiced by the participants. The student will choose the option of workshop from amongst their concentration electives. The evaluation will be done by Board of examiners comprising of the faculties.

## Major Themes for Workshop

The workshop may be conducted on any of the following major themes:

1. Crime Scene Investigation
2. Forensic Toxicology
3. Forensic Anthropology
4. Handwriting & Typewriting Analysis
5. Crime Scene Investigation
6. Criminology, Criminal Law & Police Administration
7. Fingerprint Science
8. Forensic Serology
9. DNA Fingerprinting
10. Wounds & its Medico-Legal Aspects

These themes are merely indicative and other recent and relevant topics of study may be included.

## Guidelines for Workshop

The procedure for earning credits from workshop consists of the following steps:

1. Relevant study material and references will be provided by the trainer in advance.
2. The participants are expected to explore the topic in advance and take active part in the discussions held
3. Attending and Participating in all activities of the workshop
4. Group Activities have to be undertaken by students as guided by the trainer.
5. Evaluation of workshop activities would be done through test and quiz at the end of the workshop.
6. Submitting a write up of at least 500 words about the learning outcome from the workshop.

## Methodology

The methodology followed at the workshop could be based on any one or more of the following methods:

1. Case Study
2. Simulation
3. Quiz
4. Quality analysis & characterization
5. Identification and preparation of materials

## Evaluation Scheme:

Attendance	Active Participation	Multiple Choice Questions/ Quiz	Solving the case/ Assignment/ Write up	Total
10	30	30	30	100

# Syllabus - Fifth Semester

## BALLISTICS

Course Code: FCH2501

CreditUnits: 03

**Course Objective: - The objectives of the course:**

- To understand the role of ballistics in Forensic Science
- Classification of firearms, determination of the range of firing, methods of laboratory examination of fired cartridges and fire arms.
- The students will also learn to reconstruct the sequence of events in cases involving firearms.

<b>Course Contents:</b>
<b>Module I: Ballistics</b> Definition, Indian Arms Act, Forensic Importance; Nature of firearms, parts of a firearm, classification of firearm.
<b>Module II: Ammunition</b> Types, Bullet comparisons, cartridge case examination, class and individual characteristics of identification.
<b>Module III: Range of Fire</b> Muzzle pattern, scorching, blackening, tattooing, wad distribution, pellet patterns, GSR analysis, and primer residues.
<b>Module IV: Analysis and Reconstruction</b> Reconstruction of the sequence of events in a shooting case. Presentation of evidence in the court. accidental firing
<b>Module V: Firearm injuries</b> Entrance wound, exit wound and internal wound, evaluation of firearm injuries.

**Examination Scheme:**

<b>Components</b>	<b>A</b>	<b>CT</b>	<b>S/V/Q</b>	<b>HA</b>	<b>EE</b>
<b>Weightage (%)</b>	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
Att: Attendance

**Text & References:**

- James, S. H. And Nordby, J. J. (Ed), Forensic Science - An Introduction to Scientific and Investigative Techniques, CRC Press, London, 2003.
- Modi, A Text Book of Medical Jurisprudence & Toxicology.
- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6<sup>th</sup> Ed. Prentice-Hall, New Jersey, 1998.
- Sharma, B. R., Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup>Edn) Universal Law Publishing Co. Ltd. New Delhi, 2001.

# DNA FINGERPRINTING

Course Code: FCH2502

CreditUnits: 03

**Course Objective:** The objectives of the course are to:

- Provide basic understanding of genetics in forensic science
- Provide students with technical skills and competencies in DNA fingerprinting techniques

Course Contents:
<b>Module I: Introduction to DNA Fingerprinting</b> Definition, Importance of DNA Fingerprinting in Forensic Science., Structure of DNA, RNA, Chromosome, Nuclear DNA and Mitochondria DNA
<b>Module II: DNA Isolation Techniques</b> Collection and types of evidences for DNA fingerprinting. Different types of DNA Isolation techniques (Organic, Inorganic and Mechanical), FTA cards for isolation of DNA, DNA isolation from different evidences (blood, tissue, hair, bone, stains)
<b>Module III: Techniques for DNA Fingerprinting</b> Electrophoresis, Northern and Southern blotting. Polymerase Chain Reaction (Denaturation, annealing and extension, Detection of PCR products).
<b>Module IV: Types of DNA Fingerprinting Techniques</b> Mini satellites and Micro-satellites., VNTR and RFLP, AFLP, STRs, SNP and Genotyping.
<b>Module V: Practical application of DNA Fingerprinting</b> Paternity testing and Personal identification. DNA databank, Limitations of DNA Fingerprinting. Legality of DNA Fingerprinting in India.

## Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
A: Attendance

## Text & References:

- Norah Rudin and Keith Inman (2<sup>nd</sup> Edition) An Introduction to Forensic DNA Analysis, CRC Press, New York, 2002.
- Sharma, B. R. (3<sup>rd</sup> Edition) Forensic Science in Criminal Investigation and Trials, Universal Law Publishing Co. Ltd. New Delhi, 2001.
- John M. Butler (1<sup>st</sup> Edition) Fundamentals of Forensic DNA Typing, Academic Press, 2005.

## DNA FINGERPRINTING LAB

Course Code: FCH2511

Credit Units: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- DNA properties, extraction and quantification
- DNA isolation techniques

### Course Contents: - Lab/Practical

1. DNA extraction (plants/ blood)
2. Centrifugation technique
3. Agarose gel electrophoresis.
4. Immunodiffusion.
5. Spectrophotometry

### Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

### Text and references:

- A Glencoe Program Physics principles and problems: Forensic Laboratory Manual Student edition
- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Laboratory Protocols CIMMYT Applied Molecular Genetics Laboratory Third Edition
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- G.H. Stout & L.H. Jensten, X-ray Structure Determination – A practical Guide; 2<sup>nd</sup> Edn. Wiley, New York, 1989

## FORENSIC BALLISTICS LAB

Course Code: FCH2512

CreditUnits: 01

**Course Objective:** - The students will understand & perform experiments relating to:

- GSR analysis
- Identifying parts of firearm, explosives

<b>Course Contents: - Lab/Practical</b>					
1. Spot test for GSR (Nitrate test, sulphate and chlorate test)					
2. Identification of parts of firearm (Shotgun, rifle and pistol)					
3. Filter test for petroleum products					
4. TLC for flammable liquids (Kerosene and diesel)					



**Examination Scheme:**

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

**Text and references:**

- A Glencoe Program Physics principles and problems: Forensic Laboratory Manual Student edition
- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Laboratory Protocols CIMMYT Applied Molecular Genetics Laboratory Third Edition
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals
- G.H. Stout & L.H. Jensten, X-ray Structure Determination – A practical Guide; 2<sup>nd</sup> Edn. Wiley, New York, 1989



# TECHNICAL WRITING IN SCIENCE-I

Course Code: FCH2509

CreditUnits: 2

## Course Objective:

Students will be introduced to learning the written and oral communication of technical information. Assignments include writing and presenting proposals, reports, and documentation. Emphasis on use of rhetorical analysis, computer applications, collaborative writing, and usability testing to complete technical communication tasks in the workplace.

## Contents

### Module I:

Writing Skills; Selection of topic, thesis statement, developing the thesis; introductory, developmental, transitional and concluding paragraphs, linguistic unity, coherence and cohesion, descriptive, narrative, expository and argumentative writing.

### Module II:

Technical Writing: Scientific and technical subjects; formal and informal writings; formal writings/reports, handbooks, manuals, letters, memorandum, notices, agenda, minutes; common errors to be avoided.

### Module III: Documentation Process

Understanding Audience/Readers, Collecting and Organizing information, drafting information verbally and visually, Producing Information.

## Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

## Text & References:

- M. Frank. Writing as thinking: *A guided process approach*, Englewood Cliffs, Prentice Hall Regents.
- L. Hamp-Lyons and B. Heasley: Study Writing; *A course in written English*. For academic and professional purposes, Cambridge Univ. Press.
- R. Quirk, S. Greenbaum, G. Leech and J. Svartik: *A comprehensive grammar of the English language*, Longman, London.
- Daniel G. Riordan & Steven A. Panley: *“Technical Report Writing Today”* - Biztaantra.
- Daniel G. Riordan, Steven E. Pauley, Biztantra: *Technical Report Writing Today*, 8th Edition (2004).
- *Contemporary Business Communication*, Scot Ober, Biztantra, 5th Edition (2004)

# TERM PAPER

Course Code: FCH2531

Credit Units: 02

## Objectives

The objective of this course is to judge the understanding as well as application of the knowledge gained by the students. The aim of the term paper is to provide the students with an opportunity to further enhance their knowledge in a sector of their choice by undertaking a significant practical unit of examining and analyzing various aspects of chemistry and applied chemistry at a level commensurate with the learning outcomes of the various courses taken up them in the ongoing semester.

A term paper is primarily a record of intelligent reading in several sources on a particular subject. The students will choose the topic at the beginning of the session in consultation with the faculty assigned. At least one middle level or senior level person of a company from the chosen sector may be interviewed face to face

## Guidelines:

1. The term paper will be related to the contemporary business issue and the topic will be given by the department.
2. The presentation of the term paper is scheduled to be held before the commencement of Semester examinations.
3. The paper will carry 100 marks that will be marked on the basis of understanding and organization of content based on the literature review. The Bibliography shall form an important part of the paper.
4. Examples of a few broad areas for Term Paper (List is indicative, not exhaustive)
  1. Crime Scene Investigation
  2. Forensic Toxicology
  3. Forensic Anthropology
  4. Handwriting & Typewriting Analysis
  5. Crime Scene Investigation
  6. Criminology, Criminal Law & Police Administration
  7. Fingerprint Science
  8. Forensic Serology
  9. DNA Fingerprinting
  10. Wounds & its Medico-Legal Aspects

## Evaluation Scheme

Organisation and relevance of content	Literature Review	Bibliography	Presentation	Total
30	30	20	20	100

# WORKSHOP

**Course Code: FCH2533**

**Credit Units: 01**

## **Objectives**

A workshop is primarily an activity based academic event that is organized to provide the students a one to one and hands on experience on any aspect of their learning. The communication in a workshop has to be necessarily two ways. The trainer has to make sure that the aspects covered are practically practiced by the participants. The student will choose the option of workshop from amongst their concentration electives. The evaluation will be done by Board of examiners comprising of the faculties.

## **Major Themes for Workshop**

The workshop may be conducted on any of the following major themes:

1. Forensic Science
2. Crime Scene Investigation
3. Microscopy
4. Forensic Toxicology
5. Forensic Anthropology
6. Handwriting & Typewriting Analysis
7. Crime Scene Investigation
8. Criminology, Criminal Law & Police Administration
9. Fingerprint Science
10. Forensic Photography
11. Forensic Serology
12. DNA Fingerprinting
13. Wounds & its Medico-Legal Aspects

These themes are merely indicative and other recent and relevant topics of study may be included.

## **Guidelines for Workshop**

The procedure for earning credits from workshop consists of the following steps:

1. Relevant study material and references will be provided by the trainer in advance.
2. The participants are expected to explore the topic in advance and take active part in the discussions held
3. Attending and Participating in all activities of the workshop
4. Group Activities have to be undertaken by students as guided by the trainer.
5. Evaluation of workshop activities would be done through test and quiz at the end of the workshop.
6. Submitting a write up of at least 500 words about the learning outcome from the workshop.

## **Methodology**

The methodology followed at the workshop could be based on any one or more of the following methods:

1. Case Study
2. Simulation
3. Quiz
4. Quality analysis & characterization
5. Identification and preparation of materials

## **Evaluation Scheme:**

<b>Attendance</b>	<b>Active Participation</b>	<b>Multiple Choice Questions/ Quiz</b>	<b>Solving the case/ Assignment/ Write up</b>	<b>Total</b>
<b>10</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>100</b>

## Syllabus - Sixth Semester

### ARSON & EXPLOSION INVESTIGATION

**Course Code: FCH2602**

**CreditUnits: 03**

**Course Objective:** The objectives of the course are to:

- Provide the scientific knowledge and understanding needed in Fire and Explosion
- Provide illustrations of fire investigation through a wide range of fire and explosion investigation case studies.

**Course Contents:**

**Module I: Arson**

Introduction, laws related to arson, Definition, Forensic importance and prerequisites for the cause of Arson cases; The Arson investigation - Collecting Arson evidence

**Module II: Laboratory Examination of Arson Evidence**

Identification of flammable liquids, Identification of solid chemical incendiary, Reconstruction of incendiary devices

**Module III: Explosives**

Introduction to explosives, definition, High explosives and low explosives, difference and classification

**Module IV: Laboratory examination of bomb and explosive evidence**

Identifying the explosives, Black and smokeless powder identification, dynamite identification, identifying other explosives, reconstructing the destructive devices.

**Module V: Identification of RDX and PETN**

Use of EGIS system, microscopic examination of the explosives and use of TLC and HLC to detect RDX and PETN

**Examination Scheme:**

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
A: Attendance

**Text & References:**

- James, S. H. and Nordby, J. J. (Eds), Forensic Science - An Introduction to Scientific and Investigation Techniques, CRC Press, London, 2003.
- Saferstein, R., Forensic Science Handbook, Prentice Hall, New Jersey, 1982.
- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6<sup>th</sup> Ed. Prentice-Hall, New Jersey, 1998.
- Sharma, B. R., Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup> Ed) Universal Law Publishing Co. Ltd. New Delhi, 2001.

# SECURITY DOCUMENTS & BANK NOTES

Course Code: FCH2603

CreditUnits: 02

**Course Objective:** The course focuses on the following objectives-

- Developing an understanding and appreciation for the scope of security documents Questioned Documents.
- Develop an understanding of different types of security documents and their salient features and characteristics.
- Brief description of Bank notes, security features and their examination.

## Course Contents:

### Module I: Introduction to Security Documents

Introduction of security documents, identity documents in India, Introduction to security feature used in various

### Module II: Disputed Documents

Types of security documents, passports, stamp paper, stamps, voter ID Cards, PAN Card credit cards, Aadhar card, Ration card, driving license, educational documents, etc.

### Module III: Bank Notes

Introduction to Bank Notes, Currency notes, brief description on currency Governing and Manufacturing bodies in India, salient features for identification of genuine bank notes of 50, 100, 500, 1000 rupees Introduction to counterfeiting, comparison of genuine and counterfeiting

### Module IV: Examination of Fake currencies

Latest introduced security features, Process underlining the examination and Instrumentation used to differentiate, salient features of identification of original and fake security features in various documents.

## Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
A: Attendance

## Text & References:

- Charles, C. Thomas, I.S.Q.D. Identification System for Questioned Documents, Billy Prior Bates, Springfield, Illinois, USA, 1971.
- Lingaed, J. R., (1985). Bank Security Documents, Butterworths.
- Budhram, T., (2007). Examining the Unique Security Features of a Credit Card with the Aim of Identifying Possible Fraudulent Use, University of South Africa.
- Fumy, W. and Paeschke, M. (2011). Handbook of e- ID Security, Publicis Publishing.
- Kelly, J. S. Lindblom, B. S. (2006). *Science, Handwriting Examination and the Courts. Scientific Examinations of Questioned Documents*, 2<sup>nd</sup> edition, CRC Press, Taylor & Francis group.

## QUESTIONED DOCUMENTS LAB

**Course Code: FCH2615**

**Credit Units: 02**

<b>Course Contents</b>
1. Handwriting analysis based on size, slant 2. Examination of documents under different light sources- transmitted, oblique, UV 3. Identification of genuine and fake currencies 4. Identification features of security documents 5. Visit for autopsy 6. Identification of Bite marks

### Examination Scheme:

<b>Components</b>	<b>Practical Exam</b>	<b>Record File</b>	<b>Viva</b>	<b>Practical (Throughout the Sem.)</b>	<b>Attn.</b>
<b>Weightage (%)</b>	35	10	25	25	05

### Text and references:

- A Glencoe Program Physics principles and problems: Forensic Laboratory Manual Student edition
- Thomas Kubic, Nicholas Petraco Forensic Science Laboratory Manual and Workbook, Third Edition 2009
- Kathy Mirakovits, Gina Londino, The Basics of Investigating Forensic Science: A Laboratory Manual 2015
- Washington state patrol Forensic Laboratory services: Crime Laboratory: Technical & Training Manuals

## TECHNICAL WRITING IN SCIENCE-II

Course Code: FCH2612

CreditUnits: 02

### Course Objective:

Students will be introduced to learning the written and oral communication of technical information. Assignments include writing and presenting proposals, reports, and documentation. Emphasis on use of rhetorical analysis, computer applications, collaborative writing, and usability testing to complete technical communication tasks in the workplace.

### Course Contents:

#### Module I: Technical Writing Process

Document development process, Estimating Technical Documentation, Documentation Planning, Selection of Tools, Information Architecture, Templates and Page design, Audience Profiling.

#### Module II:

Journal paper writing: Abstract for paper and poster, different kind of journal for chemistry, impact factors of journals, ISBN number, Citation, H-index.

#### Module III:

Analytical report, Project Management in Technical Communication, Project writing, project proposal writing.

### Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;  
A: Attendance

### Text & References:

- M. Frank. Writing as thinking: *A guided process approach*, Englewood Cliffs, Prentice Hall Regents.
- L. Hamp-Lyons and B. Heasley: Study Writing; *A course in written English*. For academic and professional purposes, Cambridge Univ. Press.
- R. Quirk, S. Greenbaum, G. Leech and J. Svartik: *A comprehensive grammar of the English language*, Longman, London.
- Daniel G. Riordan & Steven A. Panley: "*Technical Report Writing Today*" - Biztantra.
- Daniel G. Riordan, Steven E. Pauley, Biztantra: *Technical Report Writing Today*, 8th Edition (2004).
- *Contemporary Business Communication*, Scot Ober, Biztantra, 5th Edition (2004).

# TERM PAPER

Course Code: FCH2631

Credit Units: 02

## Objectives

The objective of this course is to judge the understanding as well as application of the knowledge gained by the students. The aim of the term paper is to provide the students with an opportunity to further enhance their knowledge in a sector of their choice by undertaking a significant practical unit of examining and analyzing various aspects of chemistry and its application at a level commensurate with the learning outcomes of the various courses taken up by them in the ongoing semester.

A term paper is primarily a record of intelligent reading in several sources on a particular subject. The students will choose the topic at the beginning of the session in consultation with the faculty assigned. At least one middle level or senior level person of a company from the chosen sector may be interviewed face to face.

## Guidelines:

1. The term paper will be related to the contemporary issue and the topic will be given by the department.
2. The presentation of the term paper is scheduled to be held before the commencement of Semester examinations.
3. The paper will carry 100 marks that will be marked on the basis of understanding and organization of content based on the literature review. The Bibliography shall form an important part of the paper.
4. Examples of a few broad areas for Term Paper (List is indicative, not exhaustive)
  1. Forensic Toxicology
  2. Forensic Biochemistry
  3. Forensic Anthropology
  4. Handwriting & Typewriting Analysis
  5. Forensic Taphonomy
  6. Crime Scene Investigation
  7. Criminology, Criminal Law & Police Administration
  8. Fingerprint Science
  9. Forensic Serology
  10. DNA Fingerprinting
  11. Wounds & its Medico-Legal Aspects

## Evaluation Scheme

Organisation and relevance of content	Literature Review	Bibliography	Presentation	Total
30	30	20	20	100

# PROJECT

Course Code: FCH2632

Credit Units: 03

## Objectives:

The aim of the project is to provide the students with an opportunity to further their intellectual and personal development in the chosen field by undertaking a significant practical unit of activity. The project can be defined as a scholarly inquiry into a problem or issues, involving a systematic approach to gathering and analysis of information / data, leading to production of a structured report.

## Chapter Scheme and distribution of marks:

**Chapter 1:** Introduction – 10 marks

**Chapter 2:** Conceptual Framework/ National/International Scenario – 25 marks

**Chapter 3:** Presentation, Analysis & Findings -- 25 marks

**Chapter 4:** Conclusion & Recommendations -- 10 marks

**Chapter 5:** Bibliography -- 05 marks

## Components of a Project Report

The outcome of Project Work is the Project Report. A project report should have the following components:

**1) Cover Page:** This should contain the title of the project proposal, to whom it is submitted, for which degree, the name of the author, name of the supervisor, year of submission of the project work, name of the University.

**2) Acknowledgement:** Various organizations and individuals who might have provided assistance /co-operation during the process of carrying out the study.

**3) Table of Content:** Page-wise listing of the main contents in the report, i.e., different Chapters and its main Sections along with their page numbers.

**4) Body of the Report:** The body of the report should have these four logical divisions

**a) Introduction:** This will cover the background, rationale/ need / justification, brief review of literature, objectives, methodology (the area of the study, sample, type of study, tools for data collection, and method of analysis), Limitations of the Study, and Chapter Planning.

**b) Conceptual Framework / National and International Scenario:** (relating to the topic of the Project).

**c) Presentation of Data, Analysis and Findings :**( using the tools and techniques mentioned in the methodology).

**d) Conclusion and Recommendations:** In this section, the concluding observations based on the main findings and suggestions are to be provided.

**5) Bibliography or References:** This section will include the list of books and articles which have been used in the project work, and in writing a project report.

**6) Annexures:** Questionnaires (if any), relevant reports, etc.

(The main text of the Project should normally be in the range of 5000 words. However, there may be annexure in addition to the main text)

## The Steps of a Project Report

**STEP I:** Selection of the topic for the project by taking following points into consideration:

1. Suitability of the topic.
2. Relevance of the topic
3. Time available at the disposal.
4. Feasibility of data collection within the given time limit.  
Challenges involved in the data collection (time & cost involved in the data collection, possibility of getting responses, etc.)

**STEP II:** Finalisation of the Topic and preparation of Project Proposal in consultation with the Supervisor.

**STEP III:** Collection of information and data relating to the topic and analysis of the same.

**STEP IV:** Writing the report dividing it into suitable chapters, viz.

**Chapter 1:** Introduction,

**Chapter 2:** Conceptual Framework / National & International Scenario,

**Chapter 3:** Analysis & Findings

**Chapter 4:** Conclusion and Recommendations.

**Chapter 5:** Bibliography

**STEP V:** The following documents are to be attached with the Final Project Report.

Approval letter from the supervisor (Annexure-IA)

Student's declaration (Annexure-IB)

Certificate from the Competent Authority of the Organisation / Institution, if the student undertakes the Project Work in any Organisation / Institution.

#### **Guidelines for Evaluation:**

1. Each of the students has to undertake a Project individually under the supervision of a teacher and to submit the same following the guidelines stated below.
2. Language of Project Report and Viva-Voce Examination may be English. The Project Report must be typed and hard bound.
3. Failure to submit the Project Report or failure to appear at the Viva-voce Examination will be treated as "Absent" in the Examination. He /she has to submit the Project Report and appear at the Viva-Voce Examination in the subsequent years (within the time period as per University Rules).
4. No marks will be allotted on the Project Report unless a candidate appears at the Viva-Voce Examination. Similarly, no marks will be allotted on Viva-Voce Examination unless a candidate submits his/her Project Report.
5. Evaluation of the Project Work to be done jointly by one internal expert and one external expert with equal weightage, i.e., average marks of the internal and external experts will be allotted to the candidate. The evaluation scheme shall be as follows:

<b>Project Report</b>	<b>Power Point Presentation &amp; Viva</b>
75 marks	25 marks

**Annexure-IB**  
**Student's Declaration**

I .....hereby declare that the Project Work with the title (in block letters).....  
submitted by me for the partial fulfilment of the degree of B.Sc. Honours in Forensic science is my original work and has not been submitted earlier to any other University /Institution for the fulfilment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Signature of Supervisor:

Signature of Student  
Name

Registration No.

Place:

Date:

# WORKSHOP

**Course Code: FCH2633**

**Credit Units: 01**

## **Objectives**

A workshop is primarily an activity based academic event that is organized to provide the students a one to one and hands on experience on any aspect of their learning. The communication in a workshop has to be necessarily two ways. The trainer has to make sure that the aspects covered are practically practiced by the participants. The student will choose the option of workshop from amongst their concentration electives. The evaluation will be done by Board of examiners comprising of the faculties.

## **Major Themes for Workshop**

The workshop may be conducted on any of the following major themes:

1. Forensic Toxicology
2. Forensic Biochemistry
3. Forensic Anthropology
4. Handwriting & Typewriting Analysis
5. Forensic Taphonomy
6. Crime Scene Investigation
7. Criminology, Criminal Law & Police Administration
8. Fingerprint Science
9. Forensic Serology
10. DNA Fingerprinting
11. Wounds & its Medico-Legal Aspects
12. Forensic science and judicial process
13. Introduction to Forensics
14. Polygraph and Lie Detector
15. Cybercrimes and their Tracking

These themes are merely indicative and other recent and relevant topics of study may be included.

## **Guidelines for Workshop**

The procedure for earning credits from workshop consists of the following steps:

1. Relevant study material and references will be provided by the trainer in advance.
2. The participants are expected to explore the topic in advance and take active part in the discussions held
3. Attending and Participating in all activities of the workshop
4. Group Activities have to be undertaken by students as guided by the trainer.
5. Evaluation of workshop activities would be done through test and quiz at the end of the workshop.
6. Submitting a write up of at least 500 words about the learning outcome from the workshop.

## **Methodology**

The methodology followed at the workshop could be based on any one or more of the following methods:

1. Case Study
2. Simulation
3. Business Planning
4. Quiz
5. Quality analysis & characterization
6. Identification and preparation of materials

## **Evaluation Scheme:**

<b>Attendance</b>	<b>Active Participation</b>	<b>Multiple Choice Questions/ Quiz</b>	<b>Solving the case/ Assignment/ Write up</b>	<b>Total</b>
<b>10</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>100</b>