



மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்

**MANONMANIAM SUNDARANAR UNIVERSITY**

**SYLLABUS FOR ADVANCED DIPLOMA IN FORENSIC TECHNOLOGY  
PROGRAM OFFERED THROUGH DIRECTORATE OF VOCATIONAL  
EDUCATION (COMMUNITY COLLEGES AND VOCATIONAL SKILL  
DEVELOPMENT CENTRES) FROM 2019 - 2020**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON  
ACADEMIC AFFAIRS HELD ON WEDNESDAY  
THE 22<sup>nd</sup> JANUARY 2020**

**ADVANCED DIPLOMA IN FORENSIC TECHNOLOGY**

மேம்பட்ட தடயவியல் தொழில்நுட்பம் பட்டயம்

**SCHEME OF EXAMINATION**

Subject code	Title of the Course	Credit	Hours	Passing Minimum
<b>Semester I</b>				
C19FC11/E19FC01	Principles of Criminology	6	90	40/100
C19FC12/E19FC02	Fundamentals of Forensic Science	6	90	40/100
C19FC13/E19FC03	Basics of Forensic Medicine	6	90	40/100
C19CE10/E19CE10	Communicative English	6	90	40/100
C19FCP1/E19FCP1	Practical I-Serology	4	120	40/100
<b>Semester II</b>				
C19FC21/E19FC04	Crime Scene Investigation	6	90	40/100
C19FC22/E19FC05	Physical Evidences in Forensic Science	6	90	40/100
C19LS23/E19LS05	Life Skill	6	90	40/100
C19FC24/E19FC06	Finger Print Classification	6	90	40/100
C19FCP2/E19FCP2	Practical II-Digital Finger Print and Impressions	4	120	40/100
<b>Semester III</b>				
C19FC31/E19FC07	Law and Criminal Behavior	6	90	40/100
C19FC32/E19FC08	Forensic Toxicology	6	90	40/100
C19FC33/E19FC09	Handwriting and Typewriting Analysis	6	90	40/100
C19FCIV/E19FCIV	Industrial Visit-Institutional visits and Case Studies	10	150	40/100
C19FCP3/E19FCP3	Practical III-DNA Finger Printing	4	120	40/100
<b>Semester IV</b>				
C19FC41/E19FC11	Forensic Biology	6	90	40/100
C19FC42/E19FC12	Ballistics	6	90	40/100
C19FCIP/E19FCIP	Internship	10	150	40/100
C19FCPW/E19FCPW	Dissertation-Dissertation and Viva-Voce	10	150	40/100

**Eligibility for admission:** Pass in 12<sup>th</sup>std examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

**Examination:** Passing Minimum for each Course is 40%. Classification will be done on the basis of percentage marks of the total marks obtained in all the Courses and as given below:

- 40 % but less than 50 %- Third class
- 50 % but less than 60 %- Second class
- 60 % and above- First class

## **Theory Paper**

Internal Marks-25

External Marks-75

### **Syllabus**

#### **First Semester:-**

- Course I- Principles of Criminology
- Course II- Fundamentals of Forensic Science
- Course III- Basics of Forensic Medicine
- Course IV- Communication English
- Course V- Practical I-Serology

#### **Second Semester:-**

- Course VI- Crime Scene Investigation
- Course VII- Physical Evidences in Forensic Science
- Course VIII- Life Skill
- Course IX- Finger Print Classification
- Course X- Practical II-Digital Finger Print and Impressions

#### **Third Semester:-**

- Course XI- Law and Criminal Behavior
- Course XII- Forensic Toxicology
- Course XIII- Handwriting and Typewriting Analysis
- Course XIV- Institutional visits and Case Studies
- Course XV- Practical III- DNA Finger Printing

#### **Fourth Semester:-**

- Course XVI- Forensic Biology
- Course XVII- Ballistics
- Course XVIII- Internship
- Course XIX- Dissertation- Dissertation and Viva-Voce

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**SEMESTER I  
(C19FC11/E19FC01) COURSE I  
PRINCIPLES OF CRIMINOLOGY**

**Objectives:**

- To introduce the origin and basics of criminology
- To learn criminological thoughts through various discipline
- To identify the Society and sociology of crime
- To examine the human behavior and psychology of crime
- To understand the various kinds of crimes

**Unit-I:**

**18 Hrs**

**Introduction**

Criminology: Definitions, historical perspectives, nature and scope. Social and Legal concept of Crime. Criminal Justice Agencies. Origin of Criminology. Status of Criminology in India. Stages of Crime. Elements of Crime.

**Unit-II:**

**18 Hrs**

**Criminological Thoughts**

Schools of Criminology- Demonology, Classical, Neo-Classical Schools, Positive School, Cartographic School, Biological and Constitutional School - Factors: Heredity, Ecological and Economic factors.

**Unit-III**

**18 Hrs**

**Sociology of crime**

Juvenile, Adult and Elders. Group, Community, Society. Norms, Customs, Mores, Folklore. Anomie theory, Social disorganization and Crime, Sub-Culture. Culture conflict theory, Differential opportunity theory and Social Theories.

**Unit-IV:**

**18 Hrs**

**Psychology of crime**

Normal Behaviour, Abnormal Behaviour, Deviance, Delinquency. Memory, learning Need and Motivation. Adjustment, adaptability and Reactivate behaviour.

**Unit-V:**

**18 Hrs**

**Forms of Crime**

Crimes against Person, Property and state and its sub-classifications. Traditional crime, Modern Crimes, Technology supported Crimes and Contemporary forms of Crimes.

## **Recommended Reading**

- 1) Ahmed Siddique, (1993), Criminology, Problems and Perspectives, III Edn., Eastern Book House, Lucknow.
- 2) Akers, R.L., and Sellers. C.S. (2004) Criminological Theory: Introduction, Evaluation, and Application. 4th Edition. Los Angeles; Roxbury Publishing.
- 3) Allen, Friday, Roebuck and Sagarin, (1981), Crime and Punishment: An introduction to Criminology. The Free press. New York.
- 4) Bernard, T.G., Vold, G.B., and Snipes, J.B. (2002) Theoretical Criminology. Fifth Edition. New York: Oxford University Press.
- 5) Brendan Maguire & Polly F. Radosh, (1999), Introduction to Criminology, Wadsworth Publishing Company, Boston, U.S.A.
- 6) Chockalingam, K. (1997), 'Kuttraviyal' (Criminology) in Tamil, Parvathi Publications, Chennai.
- 7) Cullen, F.T., and Agnew, R. (2003) Criminological Theory: Past to Present. Second Edition. Los Angeles, CA: Roxbury Publishing Company.
- 8) Curran, D.J., and Renzetti, C.M. (2001) Theories of Crime. Second Edition. Boston: Allyn and Bacon.
- 9) Edwin H. Sutherland and Donald R. Cressey (1974), Principles of Criminology, Lippincott, Philadelphia.
- 10) Elliot Mabel and Fransco E. Merrill, (1961), Social Disorganisation, N. Harper and Row, New York.
- 11) George Vold and Thomas J. Bernard, (1986), Theoretical Criminology, Oxford University Press, New York.
- 12) Gibbons, D.C. (1994) Talking About Crime and Criminals: Problems and Issues in Theory.
- 13) Harry E, Barnes and Negley K. Teeters, (1966), New Horizons in Criminology, Prentice Hall, New Delhi.
- 14) James S.H, JJ Nordby. Forensic Science: An Introduction to Scientific and Investigative Techniques.
- 15) John E. Conklin, J.E., (1981). Criminology, Macmillan, London.
- 16) Paranjepe, N.V. (2002). Criminology and Penology, Central Law Publications, Allahabad.
- 17) Williams, F.P. and McShane, M.D. (2004) Criminological Theory. Upper Saddle River, NJ: Prentice Hall.

**(C19FC12/E19FC02) COURSE II  
FUNDAMENTALS OF FORENSIC SCIENCE**

**Objectives:**

- To acquire a basic knowledge on forensic science
- To learn the techniques and procedure of handling the Scene of Crime
- To describe the specialization of forensic science

**Unit-I:**

**18 Hrs**

**Forensic Science**

Forensic Science-definition, history, development & scope. Principles and Methods of Forensic Science- State and Central Forensic Science Laboratories. Mobile Forensic Science Laboratory.

**Unit-II:**

**18 Hrs**

**Basic Methods**

Criminalistics – Methodology and techniques Scene of Crime: General crime scene procedure – notes of observation, photography, sketching.

**Unit-III:**

**18 Hrs**

**Wings of Forensic Science**

Department/ Area / Specializations in Forensic Science. Traditional VS Modern departments.

**Unit-IV:**

**18 Hrs**

**Evidence Identification**

Classification of physical evidence– class and individual characteristics. Identification and individualization of physical evidence. Locards Principle of exchange Varieties of trace evidence. Footwear impressions: Tyre marks, skid marks – tool marks and their significance. Questioned documents. The study of Glass Fractures.

**Unit-V:**

**18 Hrs**

**Ballistics and Arson**

Ballistics- history and importance. Fire arms-nature, types and classification.

## **Recommended Reading:**

- 1) Alan Langford, John Dean et al. Practical Skills in Forensic Science.
- 2) B. J. Fisher, W.J. Tilstone, C. Woytowicz. Introduction to Criminalistics: The foundation of Forensic Science.
- 3) James S.H, JJ Nordby. Forensic Science: An Introduction to Scientific and Investigative Techniques.
- 4) Peter R. De Forest et.al (1983) Forensic Science: An introduction to Criminalistics, McGraw Hill Book Company, New York.
- 5) Peter White (Ed.,) (1998) Crime Scene to Court – The essentials of Forensic Science, The Royal Society of Chemistry, UK.
- 6) Puri, Sharma and Pathania. Principles of Physical Chemistry.
- 7) Richard Saferstein. Criminalistics: An Introduction to Forensic Science, 9th ed. '
- 8) Saferstein R., (2001) Criminalistics: An introduction to Forensic Science, Prentice Hall, Eaglewood Cliffs, New Jersey, 2001.
- 9) Sharma B.R. Forensic Science in Criminal Investigation and Trial, 4th ed.
- 10) Shrikant H. Lade Forensic Biology.
- 11) Stuart H. James . Forensic Science: An Introduction to Scientific and Investigative Techniques 3rd ed.
- 12) Veerraghavan. Handbook of Forensic Psychology.
- 13) William G. Eckert., (1997) Introduction to Forensic Sciences, CRC press New York.
- 14) Wilson R. Harrison, Friction Ridge Skin By James F. Cowger. Suspect Documents their scientific examination.
- 15) Wilson Wall. Forensic Science in Court- The Role of Expert Witness.

**COURSE III**  
**(C19FC13/E19FC03) BASICS OF FORENSIC MEDICINE**

**Objectives:**

- To expand student's knowledge about Forensic Medicine
- To explore the various aspects of Identification, Injuries
- To describe the Patterns of Death and Sex related issues

**Unit-I:**

**18 Hrs**

**Forensic Medicine**

Forensic Medicine-Definition, nature and scope. Inquests. Medico Legal documents- Evidences- Dying declarations- Identification of dead and living persons. Medico-legal autopsy. Consent – Euthanasia.

**Unit-II:**

**18 Hrs**

**Identification**

Identification – Data, Race, Sex, Age, Stature – Scars, Tattoo marks- Anthropometry and Dactylography. Medico legal importance of Age- Examination of decomposed and mutilated bodies. Preservation of bodies- Presumption of death- Exhumation.

**Unit-III:**

**18 Hrs**

**Injuries**

Wounds and injuries. Definitions- Mechanical Injuries: abrasions, contusions, Lacerations, Incisions, Cut Wounds, Punctured wounds, Thermal Injuries, Electrical Injuries, Fire Arm and blast injuries.

**Unit-IV:**

**18 Hrs**

**Death Patterns**

Natural and Unnatural death and its forms. Asphyxial death: Hanging, Strangulation, Smothering, Gagging, Choking, Dry and wet Drowning – Battered baby syndrome– Methods of torture.

**Unit-V:**

**18 Hrs**

**Sex related issues**

Potency- Sterility- virginity- Artificial insemination and test tube babies- Pregnancy, Signs of recent and remote pregnancy, Surrogate mother, disputed paternity and maternity. Abortion, Delivery & Infanticide. Acts of Commission and omission– Sexual offences: Natural, Unnatural and perversions.

**Recommended Reading**

- 1)Apurba, N., (2002). Principles of Forensic Medicine
- 2)Bann, Polson C.J., Knight Bernard, Essentials of Forensic medicine.
- 3)Basu S.C., Handbook of Forensic Medicine and Toxicology.
- 4)Camps F.E, Gradwohl's Legal medicine.
- 5)Glasstone S. Thermodynamics for Chemists.
- 6)Guharah P.V. Forensic Medicine.
- 7)Gupta and Kumar Vol I and Vol II. Heterocyclic Chemistry.
- 8)Parikh C.K. Text Book of Medical Jurisprudence, Forensic Medicine and Toxicology.



**Course IV**  
**(C19CE10/E19CE10) COMMUNICATIVE ENGLISH**

**1. Basic Grammar:**

- a. Review of grammar
- b. Remedial study of grammar
- c. Simple sentence
- d. Word passive voice etc.

**2. Bubbling Vocabulary:**

- a. Synonyms
- b. Antonyms
- c. One – work Institution

**3. Reading and Understanding English**

- a. Comprehension passage
- b. Précis – writing
- c. Developing a story from hints.

**4. Writing English**

- a. Writing Business letters.
- b. Paragraph writing
- c. Essay writing
- d. Dialogue writing

**5. Speaking English**

- a. Expressions used under different circumstances
- b. Phonetics

**Reference :**

1. V.H.Baskaran – “English Made Easy”
2. V.H.Baskaran – “English Composition Made Easy”  
(Shakespeare Institute of English Studies, Chennai)
3. N.Krishnaswamy – “Teaching English Grammar”  
(T.R.Publication, Chennai)
4. “Life Skill” – P.Ravi, S.Prabakar and T.Tamzil Chelvam,  
M.S.University, Tirunelveli.

**COURSE V**  
**(C19FCP1/E19FCP1) PRACTICAL- I-SEROLOGY**

**Objective:**

- The students are expected to get the experience through Practical test(s) and some kinds of analysis.

Blood Analysis, Phenolphthalein Test, Benzedine Test, Blood Pattern Analysis, Grouping, Species Identification.

**Recommended Reading**

- 1) Alan Langford, John Dean et al. Practical Skills in Forensic Science.

## SEMESTER II

### COURSE VI (C19FC21/E19FC04) CRIME SCENE INVESTIGATION

#### **Objectives:**

- To built the knowledge on Crime Scene Investigation
- To understand the basics Crime Scene Management (Impressions and Prints)
- To identify the Forensic Documents
- To know the legal validity of Physical Evidence

#### **Unit-I:**

**18 Hrs**

##### **Crime Scene management**

Criminals, criminal behavior, criminal profiling, portrait parley, general crime scene procedures and their management, Crime Scene survey, Crime Scene Documentation, collection and preservation of physical evidence, crime scene reconstruction

#### **Unit-II:**

**18 Hrs**

##### **Recognition of Bloodstain Patterns**

History of Bloodstain Pattern interpretation, properties of human blood, target surface considerations, Size, Shape and Directionality of bloodstains, Spattered blood, other Bloodstain Patterns, interpretation of Bloodstain on clothing and footwear, Documentation and Photography for Bloodstain Pattern Analysis.

#### **Unit-III:**

**18 Hrs**

##### **Fingerprints**

Dactylography. Patterns of finger prints. Lifting Finger Prints. Importance of finger prints.

#### **Unit-IV:**

**18 Hrs**

##### **Forensic Documents**

Various types of forensic documents: genuine and forged documents, classification of forensic documents.

#### **Unit-V:**

**18 Hrs**

##### **Impressions and Prints**

Footprints: Importance, Gait Pattern, Casting of footprints in Different medium, Taking Control samples. **Tyre Marks/prints** and Skid marks, taking control samples, Forensic Significance. Other Marks and Prints: **Lip Prints, Bite Marks, Ear Prints** - Nature, Location, collection and evaluation, taking control samples, Forensic Significance.

## **Recommended Reading**

- 1) Barry A.J. Fisher., (2000) Techniques of Crime Scene Investigation, 6th Edition, CRC Press, New York.
- 2) Duncan C.D..Advanced Crime Scene Photography.
- 3) Henry C Lee. Crime Scene Handbook. Timonthy Palmbach.
- 4) Ishaya I.and D. Deghilee. Insecticides with Modes of Action.
- 5) James S.H, JJ Nordby. Forensic Science: An Introduction to Scientific and Investigative Techniques.
- 6) Patric Jones. Crime Scene Processing and Laboratory Work Book.
- 7) Peter White (Ed.,) (1998) Crime Scene to Court – The essentials of Forensic Science, The Royal Society of Chemistry, UK.
- 8) Puri, Sharma and Pathania. Principles f Physical Chemistry.
- 9) Rojer J. Willand (1997) PI: Self study guide on becoming a private detective, Paladin press.
- 10) Ross M. Gardner and Tom Bevel. Practical Crime Scene Analysis and Reconstruction.
- 11) Rosy J. Methahon (2000) Practical Handbook for private Investigations, CRC Press.
- 12) Rukmani Krishnamurthy. Introduction to Forensic Science in Crime Investigation.
- 13) Rukmani. Crime Scene Management with Special Emphasis on National level Crime Cases.
- 14) Sharma B.R. Forensic Science in Criminal Investigation and Trial, 4th ed.
- 15) Stuart H. James . Forensic Science: An Introduction to Scientific and Investigative Techniques 3rd ed.
- 16) Stuart H. James. Scientific & Legal Applications of Bloodstain Pattern Interpretation.
- 17) Veerraghavan. Handbook of Forensic Psychology.

**COURSE VII**  
**(C19FC22/E19FC05) PHYSICAL EVIDENCES IN FORENSIC SCIENCE**

**Objectives:**

- To introduce the part on Physical Evidence in Forensic Science
- To explore the Principles and classification of Physical Evidence
- To promote safer collection and Packaging of Physical Evidence
- To know the legal validity of Physical Evidence

**Unit - I. 18 Hrs**

**Basics of Physical Evidence**

Physical evidence, types and importance in a criminal investigation. Protecting a scene of crime – various steps involved, contamination issues.

**Unit -II. 18 Hrs**

**Principles of Physical Evidence**

Laws and Principles, basics of Forensic Science. Classification of Physical Evidence and Recording. Locards Principle of exchange Varieties of trace evidence

**Unit –III. 18 Hrs**

**Classification of Physical Evidence**

Physical evidence– class and individual characteristics. Identification and individualization of physical evidence. Pollens, fibers, metal fragments, Paint, Soil, glass particles, dust and airborne particles etc., their significance.

**Unit - IV. 18 Hrs**

**Physical Evidence Collection & Packaging**

Recovery and preservation of samples from a crime scene– biological, toxicological, petroleum, explosives, trace items, projectiles and bullets.

**Unit - V. 18 Hrs**

**Legal Validity of Physical Evidence**

Criminal Procedure code and its relevance to physical evidence. Expert opinion. Law of Evidence and its relevance to physical evidence.

**Recommended Reading**

- 1)Balding DJ, Donnelly P. 1994. a. How convincing is DNA evidence? Nature 368: 285-286.
- 2)Balding DJ, Donnelly P. 1994. b. The prosecutor's fallacy and DNA evidence. Crim Law Rev 1994: 711-721
- 3)Ballantyne J, Sensabaugh G, Witkowski J. 1989. Banbury Report 32: DNA technology and forensic science. New York: Cold Spring Harbor Lab Pr.
- 4)Bar-Hillel M. 1980. The base-rate fallacy in probability judgements. Acta Psychologica 44: 211-233.
- 5)Brent E. Turvey. Criminal Profiling: An Introduction to a Behavioral Evidence Analysis, 3rd ed.
- 6)Richard Saferstein. Criminalistics: An Introduction to Forensic Science, 9th ed. '
- 7)Saferstein R., (2001) Criminalistics: An introduction to Forensic Science, Prentice Hall, Eaglewood Cliffs, New Jersey, 2001.
- 8)Sharma B.R. Forensic Science in Criminal Investigation and Trial, 4th ed.
- 9)Shrikant H. Lade Forensic Biology.
- 10)Stuart H. James . Forensic Science: An Introduction to Scientific and Investigative Techniques 3rd ed.
- 11)Wilson Wall. Forensic Science in Court- The Role of Expert Witness.

**Course VIII**  
**(C19LS23/E19LS05)Life Skill**

I Life Coping or adjustment

- (a) External and internal influence in one's life
- (b) Process of coping or adjustment
- (c) Coping with physical change and sexuality
- (d) Coping with stress, shyness, fear, anger for live and criticism.

II Attitude

- (a) Attitude
- (b) Self acceptance, self – esteem and self actualization
- (c) Positive thinking

III Problem Solving

- (a) Goal Setting
- (b) Decision Making
- (c) Time Management and stress Management.

IV Computers

- (a) Introduction to Computers
- (b) M.S.Office
- (c) Power Point

V Internet

- (a) Introduction to internet
- (b) E – mail
- (c) Browsing

Recommended Reading

- 1) Life Skill Programme Program I & II by Dr. Xavier Alphona MCRDCE Publications. R.K.Mutt Road, Chennai – 28
- 2) ஆளுமை பண்பு வளர்த்தல் மற்றும் தகவல் தொடர்பு by M.Selvaraj Community College, Palayamkottai
- 3) “Life Skill” –P.Ravi, S.Prabakar & T.Tamil Chelvam, M.S. University, Tirunelveli

**COURSE IX**  
**(C19FC23/E19FC06)FINGER PRINT CLASSIFICATION**

**Objectives:**

- To improve knowledge on Finger Print Classification
- To ensure the proper Latent Fingerprints with Powder Method
- To Practice the specialty concerned with technology support

**Unit-I:**

**18 Hrs**

**Nature and Definition**

Fingerprint and its uniqueness. Finger print Photography. Dactylography and its importance.

**Unit-II:**

**18 Hrs**

**Latent Fingerprints with Powder method**

Identifying, Marking and importance of Preservation. To develop Latent fingerprints with Powder method. Different Powder used, extraction and preservation.

**Unit-III:**

**18 Hrs**

**Finger Print Analysis**

Analysis using Plain and Rolled inked fingerprints and to identify the patterns. Analysis using powders. Lifting of Finger Prints.

**Unit-IV:**

**18 Hrs**

**Basic Analysis**

How to perform ridge tracing and ridge counting. To identify ridge characteristics. Lifting of Fingerprints. Scientific Report writing.

**Unit-V:**

**18 Hrs**

**Using technology support**

Concept of computational loading, comparing, coding, decoding and inferences of Fingerprints.

**Recommended Reading**

- 1)Brent E. Turvey. Criminal Profiling: An Introduction to a Behavioral Evidence Analysis, 3rd ed.
- 2)Brian H. Kaye (2995) Science and the Detective, VCH, Weinbeim, Federal Republic of Germany.
- 3)Briges B. C.Criminal Investigation, Practical Fingerprinting.
- 4) Chatterjee S. K.Speculation in Fingerprint Identification.
- 5)Galton F. 1892. Finger prints. London: Macmillan.
- 6)Ross M. Gardner and Tom Bevel. Practical Crime Scene Analysis and Reconstruction.
- 7)Rosy J. Methahon (2000) Practical Handbook for private Investigations, CRC Press.
- 8)Rukmani Krishnamurthy. Introduction to Forensic Science in Crime Investigation.
- 9)Rukmani. Crime Scene Management with Special Emphasis on National level Crime Cases.

**COURSE X**  
**(C19FCP2/E19FCP2) PRACTICAL II- Digit Finger Print and Impressions**

**Objective:**

- To enhance the knowledge on Impressions and Prints through Practical.

Ten Digit Finger Print Classification- Latent Finger Prints, Foot Prints, Tool Marks and Tyre Impression.



**SEMESTER III  
(C19FC31/E19FC07) COURSE XI  
LAW AND CRIMINAL BEHAVIOUR**

**Objectives:**

- To develop knowledge on Typology of Offences
- To understand the need for Making of Law
- To promote the IT Act, PITA, IPC , Cr.P.C., etc.

**Unit I**

**18 Hrs**

**Offence Typology**

Classification of offences: Cognizable and Non cognizable offence, bailable and non bailable offences, compoundable and non-compoundable Crimes under Dowry offences.

**Unit II**

**18 Hrs**

**Process of Law Making**

Process of Criminalization. Offences and its impact. Stages in criminal proceedings- FIR, Investigation, prosecution and trial stage. Remand and bail processes. Crimes under Special and Local laws.

**Unit III**

**18 Hrs**

**Legal Procedures**

Procedures involved in detection of crime– latest evidence based research in detection and prevention of crime. Different agencies involved in crime detection and prevention Indian Police System – State & Central level. Functions and role of media, Role & Functions of Police.

**Unit IV**

**18 Hrs**

**Crimes under Forensic purview**

Prohibition Act, Crimes under Immoral Traffic Act, Specific offences under the Indian Penal Code (Homicide, sexual offences, offences against property). Understanding behavioral patterns.

**Unit V**

**18 Hrs**

**Information Technology Law**

IT Act 2000: Scope, Objectives, E- Governance, Creation, Recognition and Verification of Digital Signature, Digital Signature and Penalties under IT Act 2000, Certifying Authority and Controller. Emerging trends in Information Technology law.

**Recommended Reading**

- 1) Bukshi P.M. and R.K. Suri Guide to Cyber and E- Commerce Laws by - Bharat Law House, New Delhi.
- 2) Tiwari R.K. Compute Crime and Computer Forensic.

**(C19FC32/E19FC08) COURSE XII  
FORENSIC TOXICOLOGY**

**Objectives:**

- To create knowledge about Forensic Toxicology
- To explore the nature and classification of poisons
- To educate the method of collection and preservation
- To aware the Medico-Legal importance

**Unit I 18 Hrs**

**Introduction**

Introduction and concept of forensic toxicological examination and its significance.

**Unit II 18 Hrs**

**Poisons**

Plant Poison, Animal Poison, Metallic Poison) classification of poisons, types of Poisoning. The routes of administration of poison.

**Unit III 18 Hrs**

**Natural and Chemical Poison**

Classification of natural poison and its properties. Classification of Chemical poison and its properties. Drug abuse and its impact.

**Unit IV 18 Hrs**

**Collection and preservation**

Collection and preservation of toxicological collection and preservation of toxicological exhibits in fatal and survival cases, signs and symptoms of poisoning, mode of action and its effect on vital functions. Evidence Vesra.

**Unit V 18 Hrs**

**Medico-legal Importance**

Medico-legal and post mortem examination report/finding studies, specific analysis plan/ approach to toxicological examination of poisoning samples, excretion of poisons, detection of poisons on the basis of their metabolic studies, interpretation of analytical data and forming of opinion.

**Recommended Reading**

- 1)Basu S.C., Handbook of Forensic Medicine and Toxicology.
- 2)Glasstone S. Thermodynamics for Chemists.
- 3)Guharah P.V. Forensic Medicine.
- 4)Gupta and Kumar Vol I and Vol II. Heterocyclic Chemistry.
- 5)Parikh C.K. Text Book of Medical Jurisprudence, Forensic Medicine and Toxicology.
- 6)Richard Saferstein. Criminalistics: An Introduction to Forensic Science, 9th ed.
- 7)Saferstein R., (2001) Criminalistics: An introduction to Forensic Science, Prentice Hall, Eaglewood Cliffs, New Jersey, 2001.
- 8)Sharma B.R. Forensic Science in Criminal Investigation and Trial, 4th ed.
- 9)Shrikant H. Lade Forensic Biology.
- 10)Stuart H. James . Forensic Science: An Introduction to Scientific and Investigative Techniques 3rd ed.

## (C19FC33/E19FC09) COURSE XIII

### HANDWRITING AND TYPEWRITING ANALYSIS

#### **Objectives:**

- To describe the factors and determination of documents
- To improve knowledge on Basic Principles of Handwriting and Typewriting
- To learn for Preservation of Handwriting and Type written Scripts

#### **Unit I**

**18 Hrs**

##### **Functions of Examiners**

Collection protocols of writing standards and process of comparison. Examination of built-up documents and determination of sequence of strokes. Determination of age of documents by examining various factors. Comparison of documents, examination of seal rubber & other mechanical impressions.

#### **Unit II**

**18 Hrs**

##### **Basic Principles in Handwriting**

Various types of forensic documents: genuine and forged documents, classification of forensic documents: Specimen writings, admitted writings, examination and their use. Writing materials and ink in use.

#### **Unit III**

**18 Hrs**

##### **Preservation of Handwritings**

Basic Principles in Handwriting Handling, preservation and marking of documents, natural variation and disguise in writing, Principle of Handwriting Identification, general and individual characteristics, Basic Tools needed for forensic documents.

#### **Unit IV**

**18 Hrs**

##### **Basic Principles in Typewriting**

Photocopy & photocopier examination: - photocopier identification, visual photocopy examination, photocopy forgery. Course & watermark examination: - Course size and thickness, Course opacity, colour and brightness, understanding watermarks. Examination of alterations, erasures, overwriting, additions and obliterations. Decipherment of secret writings, indentations & charred documents.

#### **Unit V**

**18 Hrs**

##### **Preservation of Type written scripts**

Various types of typewriting devices- examination of typewriters with proportional letter spacing, electronic typewriters, dot matrix, inkjet & laser printers, machines used for printing security documents, cheques, and currency notes, etc. Basic Principles in Basic Tools needed for forensic documents.

#### **Recommended Reading**

- 1)John M. Butler. Fundamentals of Forensic DNA Typing.
- 2)Lee J.D. Concise Inorganic Chemistry.
- 3)Madan , Malik and Tuli. Advanced Inorganic Chemistry.
- 4)Moris and Boyed. Organic Chemistry.
- 5)Murray. Harper's Biochemistry.
- 6)Ordway Hilton. Scientific Examination of Questioned Documents.
- 7)Wilson R. Harrison, Friction Ridge Skin By James F. Cowger. Suspect Documents their scientific examination.
- 8)Wilson Wall. Forensic Science in Court- The Role of Expert Witness

## **COURSE XIV**

### **(C19FCIV/E19FCIV) Industrial Visit- INSTITUTIONAL VISITS AND CASE STUDIES**

The objective of this Course is to familiarize the students of Forensic Technology with the functioning of the various institutions of the criminal justice system and forensic department. The students are expected to make observational visits to a police station, a court of criminal trial, Crime records bureau, Police Control Room, Institutions for the treatment of drug addicts, and all Forensic Science department in the district. The students will undertake the visits under the guidance of a faculty and will prepare a detailed report for evaluation for the final examination. Along with this each student should complete a minimum of three case studies and present it before the examiners.

## **(C19FCP3/E19FCP3) COURSE XV**

### **PRACTICAL III- DNA FINGER PRINTING**

#### **Objective:**

- To ensure the student's knowledge on DNA Criminal Profiling through Finger Printing

#### **DNA FINGER PRINTING**

#### **Recommended Reading**

- 1)John M. Butler. Fundamentals of Forensic DNA Typing.
- 2)Lee J.D. Concise Inorganic Chemistry.
- 3)Madan , Malik and Tuli. Advanced Inorganic Chemistry.
- 4)Moris and Boyed. Organic Chemistry.
- 5)Murray. Harper's Biochemistry.
- 6)Ordway Hilton. Scientific Examination of Questioned Documents.
- 7)Balding DJ, Donnelly P. 1994. a. How convincing is DNA evidence? Nature 368: 285-286.
- 8)Balding DJ, Donnelly P. 1994. b. The prosecutor's fallacy and DNA evidence. Crim Law Rev 1994: 711-721
- 9)Ballantyne J, Sensabaugh G, Witkowski J. 1989. Banbury Report 32: DNA technology and forensic science. New York: Cold Spring Harbor Lab Pr.
- 10)Bar-Hillel M. 1980. The base-rate fallacy in probability judgements. Acta Psychologica 44: 211-233.

**SEMESTER IV**  
**(C19FC41/E19FC11) COURSE XVI**  
**FORENSIC BIOLOGY**

**Objectives:**

- To introduce Crime Scene Investigation regarding Forensic Biology
- To analyze the Biological Fluid and Skeletal remains
- To create knowledge on Forensic Odontology, Entomology and Botany

**Unit I**

**18 Hrs**

**Introduction Forensic Biology**

Crime Scene Investigation- Protection of Biological Evidences- Documentation Chain of Custody- Recognition of Biological evidences encountered in various cases. Search & Collection of Biological Evidences- Packaging & transportation of Biological Evidences

**Unit II**

**18 Hrs**

**Analysis of Biological Fluid**

Saliva, Semen, Vaginal Fluid, Urine, Sweat, Serological Concepts, Antigen / Antibodies, Polyclonal antibodies, Monoclonal antibodies, Antiglobulins, Serological Techniques, Electrophoretic Methods – Agarose gel, SDS, Natured/Denatured, Identification of Blood Properties, Blood Grouping – Human & Non-human, Presumptive & Confirmatory Tests, Human & Animal Hair morphology

**Unit III**

**18 Hrs**

**Analysis of Skeletal Remains**

Forensic Anthropology, Skeletal system & bone formation, Skeletal indicators of health & injuries, Identification of joint wear & deterioration, Estimation of Age, Sex & Race, Estimation of Time Since Death, Human V/s Animal Bone morphology, Facial Reconstruction.

**Unit IV**

**18 Hrs**

**Forensic Odontology**

Development of Dental structure, Estimation of Age, Sex & Race, Bite mark Analysis.

**Unit V**

**18 Hrs**

**Forensic Entomology and Botany**

Basic Principle of Insect Biology, Life Cycle, Estimation of Time of Death. Forensic Botany Identification of Plant specimen, Analysis of pollen & aquatic microorganisms, Techniques for dating specimens using plant material.

**Recommended Reading**

- 1) Shrikant H. Lade Forensic Biology.
- 2) Balding DJ, Donnelly P. 1994. a. How convincing is DNA evidence? Nature 368: 285-286.
- 3) Balding DJ, Donnelly P. 1994. b. The prosecutor's fallacy and DNA evidence. Crim Law Rev 1994: 711-721
- 4) Cavalli-Sforza LL, Menozzi P, Piazza A. 1994. The history and geography of human genes. Princeton, NJ: Princeton Univ Pr.
- 5) Cecil JS, Willging TE. 1994. Court appointed experts. In: Reference manual on scientific evidence. Washington, DC: Federal Judicial Center. p525-573
- 6) Rana AK. The Future of Forensic Biology. J Biomed 2018; 3:13-18. doi:10.7150/jbm.22760. Available from <http://www.jbiomed.com/v03p0013.htm>

**COURSE XVII**  
**(C19FC42/E19FC12) BALLISTICS**

**Objectives:**

- To improve the knowledge on Bullets and Fire Arms
- To describe the Nature and physics of Ballistics
- To aware the Legal aspects in Fire Arms and Ammunitions

**Unit I**

**18 Hrs**

**Introduction**

Introduction, General consideration, Parabolic trajectory of a bullet, Vacuum trajectory and calculation of remaining velocity, Air resistance, Bullet drop, Wind deflection, Gyroscopic drift, Twist versus stability, Canting, Shooting up/down, Velocity of falling shot and falling bullet,

**Unit II**

**18 Hrs**

**Physics of Ballistics**

Escape velocity, Maximum horizontal and vertical range of shot pellets, Ricochet; Critical angle for ricochet for the bullet and the surface, Relationship between the angle of incidence and ricochet, Stability in flight after ricochet, Lethal effects of ricochet bullet.

**Unit III**

**18 Hrs**

**Terminal (Wounds) Ballistics**

Introduction, Stopping power of bullet, Injuries and the quantity of energy of projectiles, Shock, wave and cavitations effect, Wounding mechanism, Elements of wound

**Unit IV**

**18 Hrs**

**Ballistics Nature**

Nature of Target- Velocity of projectile, Constructional features of projectile. Range; Classification of range (maximum horizontal/ vertical, effective, dangerous, safe and legal sense), Contact Range, Point blank range, near range, chips range, distant range. Penetration of shots in different regions of the body.

**Unit V**

**18 Hrs**

**Legal Aspect in Fire Arms and Ammunitions**

Licensing of Fire Arms and Ammunitions, Fire Arms and Ammunitions-Offenses and Penalties- Arms Act, 1950.

**Recommended Reading**

- 1)Balding DJ, Donnelly P. 1994. a. How convincing is DNA evidence? Nature 368: 285-286.
- 2)Balding DJ, Donnelly P. 1994. b. The prosecutor's fallacy and DNA evidence. Crim Law Rev 1994: 711-721
- 3)Cavalli-Sforza LL, Menozzi P, Piazza A. 1994. The history and geography of human genes. Princeton, NJ: Princeton Univ Pr.
- 4)Cecil JS, Willging TE. 1994. Court appointed experts. In: Reference manual on scientific evidence. Washington, DC: Federal Judicial Center. p525-573
- 5)Duncan C.D..Advanced Crime Scene Photography.

- 6)Rana AK. The Future of Forensic Biology. J Biomed 2018; 3:13-18.  
doi:10.7150/jbm.22760. Available from  
<http://www.jbiomed.com/v03p0013.htm>
- 7)Ross M. Gardner and Tom Bevel. Practical Crime Scene Analysis and Reconstruction.
- 8)Rosy J. Methahon (2000) Practical Handbook for private Investigations, CRC Press.
- 9)Shrikant H. Lade Forensic Biology.

### **(C19FCIP/E19FCIP) Course XVIII INTERNSHIP**

All the students are expected to take this Course compulsorily. The objective of this Course is to provide field level experience to the students of Forensic Technology and professionally equip them to find appropriate places in the allied fields of Forensic Science. The students will be placed for internship at anyone of the following agencies for a period of 21 days.

The agencies to be covered for internship include

- Governmental agencies
- Non- governmental agencies
- Private detective agencies and etc.,

During this period the students are expected to work for the organization under the guidance of an experienced person. The Students will take up the regular activities of the organization like field work, administrative activities, lab work and related activities, training and report writing depending upon the requirements of the organization.

Each student will be evaluated by his/her supervisor in the organization during the internship period, through a Confidential performance appraisal report filled and sent to the Head of the Department/ Program- Co-ordinator, directly. The students are required to submit a record based on activities/roles performed by them during the internship. The student will be evaluated at the end of the semester based on the performance appraisal report, record, and a public viva-voce.



**(C19FCPW/E19FCPW) COURSE XIX**  
**DISSERTATION-Dissertation and Viva-Voce**

All the students are expected to take this Course compulsorily. The objective of this Course is to provide opportunity for the students to make use of their knowledge regarding the various steps involved in conducting a research project under the supervision of a guide. The faculty at various stages of research will assist the students. The students will be encouraged to select their research problems relevant to the field of forensic science and Criminal justice. The completion of the research project by the students under the supervision of the faculty would provide with sufficient training to take up research related assignments in governmental and voluntary organizations within India and abroad.

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