# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

**Semester-II (B.Sc.)**
**Name of Program** B.Sc./B.Sc. + M.Sc. (Forensic Science)

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING &EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BSFSN201 | Compulsory | Forensic Psychology | 60 | 20 | 20 | 30 | 20 | 4 | 0 | 2 | 5 |

**Legends**: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment shall be based upon following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks**

**Course Objectives**: The course aims to provide the students with-

1. The overview of forensic psychology and its applications.
2. The legal aspects of forensic psychology.
3. The significance of criminal profiling.
4. The importance of psychological assessment in gauging criminal behaviour.
5. The tools and techniques required for detection of deception.

**Course Outcomes:** After studying this course, the students will-

1. Be able to understand the concepts of forensic psychology.
2. Be able to distinguish the various psychological states of mind of a psychology patient.
3. Be familiar to criminal profiling
4. Be able to understand the various factors of crime.
5. Be able to know ethical and legal aspects of deception detection techniques.

**UNIT I: Basics of Forensic Psychology**

Definition and fundamental concepts of forensic psychology and forensic psychiatry. Psychology and law. Ethical issues in forensic psychology, Assessment of mental competency, Mental disorders and forensic psychology.

**UNIT II: Psychology of evidence**

Psychology of evidence–eyewitness testimony, confession evidence, Criminal profiling. Psychology in the courtroom, with special reference to Section 84 IPC.

**UNIT III: Psychology and Criminal Behaviour**

Psychopathology and personality disorder, Psychological assessment and its importance, Serial murderers, Psychology of terrorism, Biological factors and crime– social learning theories, psycho-social factors, abuse, Juvenile delinquency– theories of offending(social cognition ,moral reasoning),Child abuse (physical, sexual, emotional),juvenile sex offenders, legal controversies.

**UNIT IV: Detection of Deception**

Tools for detection of deception–interviews, non-verbal detection, statement analysis, voice stress analyzer, hypnosis, Polygraphy–operational and question formulation techniques, ethical and legal aspects, the guilty knowledge test.

**UNIT V: Norco analysis and Brain Finger printing**

Norco analysis and brain electrical oscillation signatures–principle and theory, ethical and legal issues, Brain Finger printing- Principle and technique, Legal standard of Brain fingerprinting. Case study.

**List of practicals:**

1. To cite a crime case where legal procedures pertaining to psychic behaviour had to be invoked.
2. To prepare a report on relationship between mental disorders and forensic psychology.
3. To study a criminal case in which hypnosis was used as a means to detect deception.
4. To prepare a case report on thematic appreciation test.
5. To prepare a case report on Minnesota multi phasic personality inventory test.
6. To prepare a case report on thematic appreciation test.
7. To prepare a case report on word association test.
8. To prepare a case report on Bhatia's battery of performance test of intelligence.

**Suggested Readings:**


1. A.A. Moenssens, J. Starrs, C.E. Hendersonand F. E. Inbau, *Scientific Evidence in Civil and Criminal Case s*, 4th Edition, The Foundation Press, Inc., New York (1995).
2. R. Saferstein, *Criminalistics*,8th Edition, Prentice Hall, New Jersey(2004).
3. J.C.DeLadurantey and D.R.Sullivan, *Criminal Investigation Standards*, Harper & Row, New York (1980)
4. J. Niehaus, *Investigative Forensic Hypnosis*, CRC Press, Boca Raton(1999).
5. E.Elaadin *Encyclopedia of Forensic Science, Volume 2*,J.A.Siegel, P.J.Saukkoand
6. G.C. Knupfer (Eds.),Academic Press, London (2000).

**Semester-II**

**Name of Program** B.Sc./B.Sc. + M.Sc. (Forensic Science)

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING &EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BSFSN202 | Compulsory | Criminal Law | 60 | 20 | 20 | 0 | 0 | 5 | 0 | 0 | 5 |

**Legends**: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;

***Teacher Assessment shall be based upon following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks**

**Course Objectives**: After studying this paper the students will know -

1. Elements of Criminal Procedure Code related to forensic science.
2. Acts and provisions of the Indian Penal Code.
3. Indian Evidence Act and Expert Witness.
4. Overview of Minor Acts.

**Course Outcomes:** After studying this course, the students will-

1. Be able to know the basics of Indian Law
2. Be able to understand important sections of Indian Penal Code, Criminal Procedure Code, Indian Evidence Act.
3. Be acquainted with FIR, Inquest and Summon procedure etc.
4. Be able to understand important provisions of minor acts as NDPS, FAA, IT act etc.

**UNIT I: Criminal law and Indian Penal Code**

Definition. Criminal Law and Civil Law, Classifiction of offences under IPC. Characteristics of crime (Actus Reus, Mens Rea, Prohibited Act & Punishments). Definition to IPC, CrPC & PEA. Difference between culpable homicide and murder.

Offences Related to Life- Sec-299, 300, Sec-301, 302, 304, 304A, 304B, 307, 308, 309, 319, 320, 323, 324, 325, 375, 376, 377. Cruelty by husband and Relatives (Sec-498A). Offenses against property- Sec- 378, 405, 420.

**UNIT II: Criminal Procedure Code**

Bailable and Non Bailable Offences. Cognizable and Non Cognizable Offences. Sec-6, 23. Sec-26, 27, 28, 29, 62, 63, 64, 65, 66, 67, 68, 69. What is warrant case, how warrant is executed- Sec-70, 71, 72. Sec- 154, 155, 156, 157, 158, 159, 164, 165, 173. Report of certain Government Scientific Experts (sec-291, 292 & 293).

**UNIT III: The Indian Evidence Act**
Expert witness and Expert Opinion, Expert Testimony, Who is an Expert, Difference between Expert & Non- Expert witness. IEA Sec- 45, 45A, 46, 47, 47A. Oral Evidence, Meaning and evidentiary value. 61, 67, 67A, 73, 73A.

**UNIT IV: General Legal Perceptions**
FIR, Panchnama, Courts in India and their jurisdiction, Powers of Magistrates and their purpose, , Special Magistrates, Juvenile Magistrates, Inquest (Police and Magistrate), Dying Declaration, Dying deposition, A subpoena (summons).

**UNIT V: Minor Acts**
Introduction to Narcotic Drug and Psychotropic Substances Act, Presentation of Food Adulteration Act, Prevention of Corruption Act, Drug and Cosmetics Act, . The protection of children from sexual offences act. The Information Technology Act.

**Suggested Readings:**


1. Ratan Lal & Dheeraj Lal, Indian Penal Code, 35th edition, Lexis Nexis Publication, Mumbai (2013).
2. K.D. Gaur, Indian Penal Code, Universal Publication, 2018.s
3. K.D. Gaur, The textbook in Indian Evidence Act, Universal Publication, 2018.
4. S.N. Mishra, The Criminal Procedure Code, Central Law Publicaation, Allahabad.
5. D.A. Bronstein, Law for the Expert Witness, CRC Press, Boca Raton (1999).
6. R.V. Kelkar, Criminal Procedure, Eastern Book Company, Allahabad.
7. V.N. Parajpaye, Criminology, Penology, Victimology, Central Law Publication, Allahabad, 2017.
8. General Bare Act reading for Minor Act's.

# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

**Semester-II**

**Name of Program** B.Sc./B.Sc. + M.Sc. (Forensic Science)

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING &EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BSFSN203 | - | Physics | 60 | 20 | 20 | 30 | 20 | 4 | 0 | 2 | 5 |

| | |
|---|---|
| **Course Objectives** | 1. To develop the comprehensive understanding of laws of physics and ability to apply them for laying the foundation for research and development.<br>2. To work ethically as member as well as leader in a diverse team. |
| **Course Outcomes** | 1. Student will be able to understand and solve the problems related to Physics.<br>2. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time. |

| **Abbreviation** | | **Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment/ Project / Participation in class (Given that no component shall be exceed 10 Marks).** |
|---|---|---|
| L | Lecture | |
| T | Tutorial | **Teacher Assessment (Practical) shall be based on following components: Viva / File / Participation in Lab work (Given that no component shall be exceed 50% of Marks).** |
| P | Practical | |

## UNIT I: Mechanics & Acoustics

Concept of force, Inertia, Newton's first law of motion, Newton's second law of motion, impulse, Newton's third law of motion, law of conservation of linear momentum, static and kinetic friction, laws of friction.

Velocity of sound, eco, absorption coefficient, introduction to ultrasonic, production of ultrasonic waves, applications of ultrasonic waves, generation of sound amplitude, vibration, physical properties of vibrating system.

## UNIT II: Wave Optics-I

Reflection of light, Refraction of light, Total internal reflection and its applications, wave front and Huygen's principle, Huygen's theory of secondary wavelets, Introduction to interference, Interference in thin film, Newton's ring: formation and its applications, Michelson's Interferometer.

**UNIT III: Wave Optics-II**

Diffraction of light, types of diffraction, Diffraction of light in a single slit, Aberrations in images and types of aberrations. Principle and applications of some optical instruments, Simple Microscope, Compound Microscope, Polarizing Microscope, Stereomiscroscope, Comparison Microscope, Electron Microscope, Simple table spectrometer.

**UNIT IV: Electronics and Laser**

Conductors, Semi-conductors and Insulators, Types of semiconductors, Conduction in N-type and P-type semiconductors, Zener diode, Tunnel diode and photo diode.

Production of Laser, Types of Laser, Properties of laser, Applications of Laser, Optical fibres, Propagation of light through optical fibre, Angle of acceptance and numerical aperture.

**UNIT V: Nuclear Physics**

Comparision and size of nucleus, atomic masses, isotopes, isobars, isotones, Nuclear forces, fission, fusion, nuclear properties and half life, radioactive decays, alpha, beta and gamma rays, applications of radio isotopes, counters and detectors- giger-muller counter, scintillation counter.

**Suggested Readings:**


1. Applied fluid mechanics, Mott Robert, Prentice Hall International, New Delhi.
2. Atomic and Nuclear physics, N. Subramanyam, Brijlal.
3. Fundamental of Acoustics, John Wiley and Sons.
4. Mechanics, D. S. Mathur and S. Chand.
5. Nuclear Physics, S. N. Ghoshal.
6. Optics, Brijlal and Subramanyam.
7. The physics of waves and oscillation, N. K. Bajaj, Tata Mcgraw Hill.
8. Lasers-Theory and Applications, Thyagrajan and A. K. Ghatak.
9. "Engineering Physics", by Dr. S. L. Gupta and Sanjeev Gupta, Dhanpat Rai Publication, New Delhi.
10. "Engineering Physics", by Navneet Gupta, Dhanpat Rai Publication, New Delhi.
11. "Engineering Physics", by H. J Sawant, Technical Publications, Pune, Maharashtra.
12. "Engineering Physics". by M.N. Avdhanulu & P. G. Kshirsagar, S. Chand & Co.Edition (2012).

# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

**Semester-II (B.Sc.)**
**Name of Program** B.Sc./B.Sc. + M.Sc. (Forensic Science)

| COURSE CODE | CATEGORY | COURSE NAME | TEACHING &EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BSFSN204 | Compulsory | Biology | 60 | 20 | 20 | 30 | 20 | 4 | 0 | 2 | 5 |

**Legends**: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment shall be based upon following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks**

**Course Objectives**: The course aims to provide the students with-
1. The overview of cell biology
2. The concepts of human anatomy and physiology
3. The concepts of plant anatomy and physiology

**Course Outcomes:** After studying this course, the students will-
1. Be able to understand the cell theory.
2. Be able to distinguish the prokaryotic cell and eukaryotic cell, animal cell and plant cell.
3. Be familiar to various physiological systems of human
4. Be able to know the anatomical and physiological features of plant.

**UNIT I: Biology of Cell**
History of Cellular Biology, Modern Cell Theory. Types of Cells: Prokaryotic and Eukaryotic Cells, Animal and plant cell. Chemical composition of cells. Ultra structure of cell. Cell cycle (Mitosis and Meiosis)

**UNIT II : Human Anatomy And Physiology I**
Anatomy and Physiology of Musculoskeletal system, Nervous system, Circulatory system and Respiratory system

**UNIT III: Human Anatomy And Physiology II**
Anatomy and Physiology of Digestive system, Reproductive system, Endocrine system and Excretory System.

**UNIT IV: Plant Anatomy**
Structure and functions of: Roots, Stems, Leaves. Plant tissues: Meristematic, Dermal, Ground and Vascular Tissue (Xylem & Phloem).Flower, Fruits.

**UNIT V: Plant Physiology:**

Transport in plants, Photosynthesis, Respiration, Plant growth and development: Phase of growth, and Plant Growth regulator. Photoperiodism and flowering.

**List of Practicals:**

1. Study of construction and working of compound microscope.
2. Monochrome staining of prokaryotic cell (Bacterial cells).
3. Monochrome staining of eukaryotic cell (Yeast)
4. Gram staining of bacterial cells.
5. Detection of mitochondria by differential centrifugation.
6. Study of different stages of mitosis.
7. Study of different stages of meiosis.
8. Qualitative test for detection of DNA by diphenylamine method.
9. Qualitative test for detection of RNA by Orcinol method.
10. Staining of epithelial cells from oral cavity.
11. Study of permanent slides of muscular, bone tissues.
12. Osmosis – by potato osmoscope experiment.
13. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot embryos using permanent slides / Photographs.
14. Study of ovule types and developmental stages of embryo sac using permanent slides /Photographs.
15. Separation of plant pigments (chlorophyll) by chromatography.

**Suggested Readings:**


1. Gerald Karp, Cell Biology, Sixth Edition International , Wiley Publications,
2. Sherwood Lauralee Human Physiology : From Cells to Systems,
3. Lodish, H., Berk, A., Zipursky, S. L., Matsudaira, P., Baltimore, D. and James Darnell,
4. Karp, G. Cell and Molecular Biology: Concepts and Experiments. Wiley,
5. Morgan, David O. The Cell Cycle.
6. Hancock, J.T., Cell Signalling.
7. Gray H., Gray's anatomy.
8. Chaurasia B.D., Human Anatomy.
9. Chatterjee C.C., Human Physiology, Medical Allied Agency.
10. Drake R.L., Vogl A.W., Gray's Anatomy, Elsevier
11. Klein Jonathon, Plant Anatomy and Physiology

**Semester-II (B.Sc.)**
**Name of Program** B.Sc./B.Sc. + M.Sc. (Forensic Science)

| SUBJECT CODE | CATEGORY | SUBJECT NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | END SEM University | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| ML-307 | Compulsory | Environmental Management and Sustainability | 60 | 20 | 20 | 0 | 0 | 4 | 0 | 0 | 4 |

**Legends**: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher's Assessment** shall be based upon following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

## Course Objectives

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards environment friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

## Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

## Course Outcomes

1. The course will give students an overview of various environmental concerns and practical challenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day -to-day activities.

## COURSE CONTENT

### Unit I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

### Unit II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

### Unit III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

### Unit 1V: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used in this Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

### Unit V: Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies**:** The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute, Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods.

**Suggested Readings:**


1. Rogers, P.P., Jalal, K.F. , Boyd, J.A.(Latest Edition) . **An Introduction to Sustainable Development.** Earthscan
2. Kalam, A.P.J. (Latest Edition) . ***Target 3 Billon: Innovative Solutions Towards Sustainable Development.*** Penguin Books
3. Kaushik , A. and Kaushik (Latest Edition). ***Perspectives in Environmental Studies***. New Delhi: New Age International Publishers.
4. Dhameja, S.K. (Latest Edition). ***Environmental Studies***. S.K. Kataria and Sons.New Delhi
5. Bharucha, E. (Latest Edition). ***Environmental Studies for Undergraduate Courses.*** New Delhi: University Grants Commission.
6. Wright, R. T. (Latest Edition). ***Environmental Science: towards a sustainable future*** .New Delhi: PHL Learning Private Ltd.
7. Rajagopalan, R. (Latest Edition). ***Environmental Studies***. New York: Oxford University Press.