



પરિપત્ર:

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટીની સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજોનાં આચાર્યશ્રીઓને સવિનય જણાવવાનું કે સાયન્સ વિદ્યાશાખા હેઠળનો NEP-૨૦૨૦ અંતર્ગતનો ફોરેન્સિક સાયન્સ વિષયનો (બી.એસસી. વિથ ઓનર્સ) સેમેસ્ટર-૩ અને સેમેસ્ટર-૪ નો અભ્યાસક્રમ આ સાથે સામેલ છે.

માનનીય કુલપતિશ્રીની મંજૂરી અનુસાર સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ જુન, ૨૦૨૪ થી અમલવારી કરવાની રહે છે. સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજો ધ્વારા તેની અમલવારી કરવા જણાવવામાં આવે છે.



ખાસ ફરજ પરના અધિકારી  
(એકેડેમિક)

ક્રમાંક/બીકેએનએમયુ/ એકેડેમિક/૧૦૮૮/૨૦૨૪

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી,

સરકારી પોલીટેકનિક કેમ્પસ,

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી રોડ,

ખડીયા, જૂનાગઢ-૩૬૨૨૬૩

તા.૦૩/૦૮/૨૦૨૪

પ્રતિ,

- ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમો ચલાવતી તમામ કોલેજોના આચાર્યશ્રીઓ તરફ....

નકલ સાદર રવાના:-

- માન.કુલપતિશ્રી/કુલસચિવશ્રીનાં અંગત સચિવશ્રી.
- પરીક્ષા નિયામકશ્રી, ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી, જૂનાગઢ

નકલ રવાના જાણ તથા યોગ્ય કાર્યવાહી અર્થે:

- સીસ્ટમ મેનેજરશ્રી, આઈ.ટી.સેલ વિભાગ (વેબસાઇટ ઉપર પ્રસિદ્ધ થવા અર્થે.)



**BHAKTA KAVI NARSINH MEHTA UNIVERSITY  
JUNAGADH**



**BOARD OF FORENSIC SCIENCE STUDIES  
FACULTY OF SCIENCE  
SYLLABUS FOR  
B.Sc. (FORENSIC SCIENCE) (HONOURS)  
PROGRAMME  
(SEMESTER- III & IV)  
EFFECTIVE FROM JUNE, 2024**

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**Faculty of Science**  
**Effective from June 2024**  
**Subject: Forensic Science**  
**SEMESTER- III & IV**

**Preamble**

This National Education Policy 2020 is the first education policy of the 21<sup>st</sup> century and aims to address the many growing developmental imperatives of our country individual. It is based on the principle that education must develop not only cognitive capacities - both the ‘foundational capacities’ of literacy and numeracy and ‘higher-order’ cognitive capacities, such as critical thinking and problem solving – but also social, ethical, and emotional capacities and dispositions.

The rich heritage of ancient and eternal Indian knowledge and thought has been a guiding light for this Policy. The pursuit of Knowledge(Gyan), Wisdom(Pragyaa), and Truth(Satya) was always considered in Indian thought and philosophy as the highest human goal. The aim of education in ancient India was not just the acquisition of knowledge as preparation for life in this world, or life beyond schooling, but for the complete realization and liberation of the self. World-class institutions of ancient India such as Takshashila, Nalanda, Vikramshila, Vallabhi, set the highest standards of multidisciplinary teaching and research and hosted scholars and students from across backgrounds and countries. The Indian education system produced great scholars such as Charaka, Susruta, Aryabhata, Varahamihira, Bhaskaracharya, Brahmagupta, Chanakya, Chakrapani Datta, Madhava, Panini, Patanjali, Nagarjuna, Gautama, Pingala, Sankardev, Maitreyi, Gargi and Thiruvalluvar etc.

Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiaries. The upgradation of undergraduate programmes in the line of NEP, 2020 will play an extremely important role in promoting human as well as societal well-being and in developing India as envisioned in its Constitution - a democratic, just, socially conscious, cultured, and humane nation upholding liberty, equality, fraternity, and justice for all. A holistic and multidisciplinary education would aim to develop all capacities of human beings -intellectual, aesthetic, social, physical, emotional, and moral in an integrated manner. Such an education will help develop well-rounded individuals that possess. Such changes will further result in learning outcome-based curriculum to maximize the benefits of the newly designed curriculum. The learning outcome-based curriculum in general and in Forensic Sciences will definitely help the teachers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. It is pertinent to mention here that the purpose of education is to develop an integrated personality of the individual and the educational system provides all knowledge and skills to the learner for this. The template of learning outcome-based framework has categorically mentioned very well-defined expected outcomes for the program like core competency, communication skills, critical thinking, affective skills, problem-solving, analytical, reasoning, research-skills, teamwork, digital literacy, moral and ethical awareness, leadership readiness and so on along with very specific learning course outcomes at the

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starting of each course. Therefore, this template on Learning Outcomes based Curriculum Framework (LOCF) for B.Sc. with Forensic Sciences/Forensic Sciences Honours under the University will be in the line of NEP, 2020 – more flexible, multi-disciplinary, holistic and will definitely be a landmark in the field of outcome-based curriculum construction.

Forensic Science is the use of scientific procedures and the examination of scientific information to assist the legal and law enforcement systems. Bachelor's degree programs in Criminology and Forensic science offer a well-balanced education in science, including statistics, biology, chemistry, and physics. Bachelor's degree programs in Forensic Science combine lecture and laboratory classes and may include internships and exposure to Forensics Science Laboratories (FSL's) and related agencies. This program is designed to introduce students to Forensic Science and its interdisciplinary nature through an exploration and examination of Forensic sub-disciplines and emerging techniques including Forensics Medicine, Forensic Chemistry, Forensic Physics, Forensic Fingerprinting, Cyber Security and among others. Beyond providing students with a broad overview of Forensic Science, students will be encouraged to explore and develop their own specific interests within the field. All these aspects have been given due weightage over the eight semesters. It is essential for the undergraduate students to acquaint themselves with various tools and techniques for exploring the field of Forensic Sciences. Papers on this aspect are proposed to provide such an opportunity to the students before they engage themselves with the learning of modern tools and techniques in Forensic Sciences. Keeping the employment entrepreneurship in mind, applied courses have also been introduced. These courses shall provide the Forensic Sciences students with hands-on experience and professional input. On the whole, the curriculum is a source of lot of information and is supported by rich resource materials. It is hoped that a student graduating in Forensic Sciences with the new curriculum will be a complete Forensic Sciences at Honours level.

This National Education Policy envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower. The Policy envisages that the curriculum and pedagogy of our institutions must develop among the students a deep sense of respect towards the Fundamental Duties and Constitutional values, bonding with one's country, and a conscious awareness of one's roles and responsibilities in a changing world. The vision of the Policy is to instill among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen. We tried our level best to fulfill the vision of NEP by providing Forensic Sciences syllabus for first year students to transform our Indian knowledge system with modern concept of Forensic Sciences.

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The new curriculum of B.Sc. in Forensic Sciences offers essential knowledge and technical skills to study Forensic Sciences used in the legal or justice system to support and uphold the law. When a crime has been committed and evidence is collected at the scene, scientists analyze it, arrive at scientific results and give expert court testimony about their findings. Forensic science concentrates on facts that prove something did or did not happen in a criminal or civil case.

The curriculum framework considers the need to maintain globally competitive standards of achievement in terms of the knowledge and skills in Forensic Science and allied courses, as well develop scientific orientation, spirit of enquiry problem, solving skills and, professional values which foster rational and critical thinking in the students. B.Sc. Forensic Sciences Program covers academic activities within the classroom sessions along with practical concepts at laboratory sessions. Infield, outstation activities and projects are also required to be organized for real-life experience and learning. Candidates who have curiosity in Crime Scene Investigation, Forensic Cyber Security, Forensic Fingerprinting, or wish to work as researchers or professions like Forensic Scientists, Investigating Officer, Forensic Expert, etc. can choose B.Sc. Forensic Science course.

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**SEMESTER- III & IV**

| Sem               | Credit Structure-Science Faculty (Honours) |           |                    |           |                                      |           |                                      |           |           |           |           |           |                 |           |            |
|-------------------|--------------------------------------------|-----------|--------------------|-----------|--------------------------------------|-----------|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------------|-----------|------------|
|                   | Ability Enhancement Course                 |           | Value Added Course |           | Skill Enhancement Course/Internship/ |           | Multidisciplinary, Interdisciplinary |           | Major     |           | Minor     |           | On Job Training | Total     |            |
|                   | Papers                                     | Credit    | Papers             | Credit    | Papers                               | Credit    | Papers                               | Credit    | Papers    | Credit    | Papers    | Credit    | Credit          | Papers    | Credit     |
| 1                 | 1                                          | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 2         | 8         | 1         | 4         | --              | 7         | 22         |
| 2                 | 1                                          | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 2         | 8         | 1         | 4         | --              | 7         | 22         |
| 3                 | 1                                          | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 3         | 12        | 0         | --        | --              | 7         | 22         |
| 4                 | 1                                          | 2         | 1                  | 2         | 1                                    | 2         | 0                                    | 0         | 3         | 12        | 1         | 4         | --              | 7         | 22         |
| 5                 | --                                         | --        | --                 | --        | 1                                    | 2         | 0                                    | 0         | 3         | 12        | 2         | 8         | --              | 6         | 22         |
| 6                 | 1                                          | 2         | --                 | --        | 1                                    | 4         | 0                                    | 0         | 3         | 12        | 1         | 4         | --              | 6         | 22         |
| <b>Total (UG)</b> | <b>5</b>                                   | <b>10</b> | <b>4</b>           | <b>08</b> | <b>6</b>                             | <b>14</b> | <b>3</b>                             | <b>12</b> | <b>16</b> | <b>64</b> | <b>06</b> | <b>24</b> | <b>--</b>       | <b>40</b> | <b>132</b> |
| 7                 | --                                         | --        | --                 | --        | --                                   | --        | 0                                    | 0         | 3         | 12        | 1         | 4         | 6               | 4         | 22         |
| 8                 | --                                         | --        | --                 | --        | --                                   | --        | 0                                    | 0         | 3         | 12        | 1         | 4         | 6               | 4         | 22         |
| <b>Total</b>      | <b>5</b>                                   | <b>10</b> | <b>4</b>           | <b>08</b> | <b>6</b>                             | <b>14</b> | <b>3</b>                             | <b>12</b> | <b>22</b> | <b>88</b> | <b>08</b> | <b>32</b> | <b>12</b>       | <b>48</b> | <b>176</b> |

\*Summer Internship will be held for only those students who want to exit after completion of First year (Sem-II) and Second Year (Sem-IV).

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**SEMESTER- III & IV**

| Sem               | Credit Structure-Science Faculty UG Honours with Research |           |                    |           |                                      |           |                                      |           |           |           |           |           |                                |           |            |
|-------------------|-----------------------------------------------------------|-----------|--------------------|-----------|--------------------------------------|-----------|--------------------------------------|-----------|-----------|-----------|-----------|-----------|--------------------------------|-----------|------------|
|                   | Ability Enhancement Course                                |           | Value Added Course |           | Skill Enhancement Course/Internship/ |           | Multidisciplinary, Interdisciplinary |           | Major     |           | Minor     |           | Dissertation/ Research Project | Total     |            |
|                   | Papers                                                    | Credit    | Papers             | Credit    | Papers                               | Credit    | Papers                               | Credit    | Papers    | Credit    | Papers    | Credit    | Credit                         | Papers    | Credit     |
| 1                 | 1                                                         | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 2         | 8         | 1         | 4         | --                             | 7         | 22         |
| 2                 | 1                                                         | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 2         | 8         | 1         | 4         | --                             | 7         | 22         |
| 3                 | 1                                                         | 2         | 1                  | 2         | 1                                    | 2         | 1                                    | 4         | 3         | 12        | 0         | --        | --                             | 7         | 22         |
| 4                 | 1                                                         | 2         | 1                  | 2         | 1                                    | 2         | 0                                    | 0         | 3         | 12        | 1         | 4         | --                             | 7         | 22         |
| 5                 | --                                                        | --        | --                 | --        | 1                                    | 2         | 0                                    | 0         | 3         | 12        | 2         | 8         | --                             | 6         | 22         |
| 6                 | 1                                                         | 2         | --                 | --        | 1                                    | 4         | 0                                    | 0         | 3         | 12        | 1         | 4         | --                             | 6         | 22         |
| <b>Total (UG)</b> | <b>5</b>                                                  | <b>10</b> | <b>4</b>           | <b>08</b> | <b>6</b>                             | <b>14</b> | <b>3</b>                             | <b>12</b> | <b>16</b> | <b>64</b> | <b>06</b> | <b>24</b> | --                             | <b>40</b> | <b>132</b> |
| 7                 | --                                                        | --        | --                 | --        | --                                   | --        | 0                                    | 0         | 3         | 12        | 1         | 4         | 6                              | 4         | 22         |
| 8                 | --                                                        | --        | --                 | --        | --                                   | --        | 0                                    | 0         | 3         | 12        | 1         | 4         | 6                              | 4         | 22         |
| <b>Total</b>      | <b>5</b>                                                  | <b>10</b> | <b>4</b>           | <b>08</b> | <b>6</b>                             | <b>14</b> | <b>3</b>                             | <b>12</b> | <b>22</b> | <b>88</b> | <b>08</b> | <b>32</b> | <b>12</b>                      | <b>48</b> | <b>176</b> |

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**SEMESTER – 3**

| SN           | Category of Course                               | Title of the Course                               | Course Credit |
|--------------|--------------------------------------------------|---------------------------------------------------|---------------|
| 1            | Major - 5<br>(Discipline Specific Core Courses)  | Major-5 (Theory)<br>[Forensic Science]            | 4             |
| 2            | Major - 6<br>(Discipline Specific Core Courses)  | Major-6 (Theory)<br>[Forensic Science]            | 4             |
| 2            | Major – 7<br>(Discipline Specific Minor Courses) | Major-7 (Practical Aspects)<br>[Forensic Science] | 4             |
| 3            | Multidisciplinary course                         | MDC-3 (Theory + Practical)<br>[Physics]           | 4<br>(2+2)    |
| <b>Total</b> |                                                  |                                                   | <b>16</b>     |

**SEMESTER – 4**

| SN           | Category of Course                                | Title of the Course                                | Course Credit |
|--------------|---------------------------------------------------|----------------------------------------------------|---------------|
| 1            | Major - 8<br>(Discipline Specific Core Courses)   | Major-8 (Theory)<br>[Forensic Science]             | 4             |
| 2            | Major - 9<br>(Discipline Specific Core Courses)   | Major-9 (Theory)<br>[Forensic Science]             | 4             |
| 2            | Major - 10<br>(Discipline Specific Minor Courses) | Major-10 (Practical Aspects)<br>[Forensic Science] | 4             |
| 3            | Minor<br>(Discipline Specific Minor Courses)      | Minor (Theory + Practical)<br>[Chemistry]          | 4<br>(2+2)    |
| <b>Total</b> |                                                   |                                                    | <b>16</b>     |

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| Course Type                                               | Course Code      | Credit | Work Hours/ Week | External Exam Hours | Marks    |          | Total |
|-----------------------------------------------------------|------------------|--------|------------------|---------------------|----------|----------|-------|
|                                                           |                  |        |                  |                     | Internal | External |       |
| Discipline Specific Core Courses (Theory)-I               | <b>DSCFS-301</b> | 4      | 5                | 2                   | 50       | 50       | 100   |
| Discipline Specific Core Courses (Theory)-II              | <b>DSCFS-302</b> | 4      | 5                | 2                   | 50       | 50       | 100   |
| Discipline Specific Core Courses (Practical)-III          | <b>DSCFS-303</b> | 4      | 8                | 3                   | 50       | 50       | 100   |
| Multidisciplinary Courses<br>Physics (Theory + Practical) | <b>MDCFS-301</b> | 2+2    | 3+2              | 2                   | 50       | 50       | 100   |

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**Conceptual Framework for Sem 4**

**SEMESTER - 4**

| Course Type                                            | Course Code      | Credit | Work Hours/ Week | External Exam Hours | Marks    |          | Total |
|--------------------------------------------------------|------------------|--------|------------------|---------------------|----------|----------|-------|
|                                                        |                  |        |                  |                     | Internal | External |       |
| Discipline Specific Core Courses (Theory)-I            | <b>DSCFS-401</b> | 4      | 5                | 2                   | 50       | 50       | 100   |
| Discipline Specific Core Courses (Theory)-II           | <b>DSCFS-402</b> | 4      | 5                | 2                   | 50       | 50       | 100   |
| Discipline Specific Core Courses (Practical)-III       | <b>DSCFS-403</b> | 4      | 8                | 3                   | 50       | 50       | 100   |
| Discipline Specific Minor Courses (Theory + Practical) | <b>DSMFS-401</b> | 2+2    | 3+2              | 2                   | 50       | 50       | 100   |

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Students will have to attend theory and practical both during the semester and at the end of semester, University exams will be conducted. Examination contains 50% external and 50% internal marks. A student's performance during every practical session is assessed and marks for a maximum of 25 are recorded. External practical evaluation will carry 25 marks, so total 50 marks for each practical per paper examination will be counted. Internal assessment for theory can be following any one as mentioned below.

**Total Scheme of evaluation**

| <b>Semester</b> | <b>Total distribution of mark</b> |                   |            |                   |                  |                 |              |
|-----------------|-----------------------------------|-------------------|------------|-------------------|------------------|-----------------|--------------|
|                 | <b>Internal</b>                   |                   |            |                   |                  | <b>External</b> | <b>Total</b> |
|                 | <b>Exam</b>                       | <b>Assignment</b> | <b>MCQ</b> | <b>Attendance</b> | <b>Practical</b> |                 |              |
| <b>III</b>      | <b>10</b>                         | <b>10</b>         | <b>05</b>  | <b>05</b>         | <b>20</b>        | <b>50</b>       | <b>100</b>   |

**Total Scheme of evaluation**

| <b>Semester</b> | <b>Total distribution of mark</b> |                   |            |                   |                  |                 |              |
|-----------------|-----------------------------------|-------------------|------------|-------------------|------------------|-----------------|--------------|
|                 | <b>Internal</b>                   |                   |            |                   |                  | <b>External</b> | <b>Total</b> |
|                 | <b>Exam</b>                       | <b>Assignment</b> | <b>MCQ</b> | <b>Attendance</b> | <b>Practical</b> |                 |              |
| <b>IV</b>       | <b>10</b>                         | <b>10</b>         | <b>05</b>  | <b>05</b>         | <b>20</b>        | <b>50</b>       | <b>100</b>   |

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**THEORY EXAMINATION**  
**SEMESTER –III & IV**

**FORENSIC SCIENCE**

**Paper No. DSCFS301 – V, Paper No. DSCFS302 – VI**

**Paper No. DSCFS401 – VIII, Paper No. DSCFS402 - IX**

**Time: 2 Hours**

**Total Marks: 50**

**Instructions:**

1. This question paper contains **five** questions. **All** questions are compulsory.
2. Write answers to **all** the questions in main answer sheet.
3. Draw neat and labelled diagram wherever necessary.
4. Figures to the right side indicate full marks for the question.

| <b>EXTERNAL ASSESSMENT BY UNIVERSITY</b> |                                              |                 |              |
|------------------------------------------|----------------------------------------------|-----------------|--------------|
| <b>Que.<br/>No.</b>                      | <b>Particulars</b>                           | <b>Unit</b>     | <b>Marks</b> |
| Q-1                                      | Answer any one in detail: ( <b>Any One</b> ) | <b>1</b>        | <b>10</b>    |
| Q-2                                      | Answer any one in detail: ( <b>Any One</b> ) | <b>2</b>        | <b>10</b>    |
| Q-3                                      | Answer any one in detail: ( <b>Any One</b> ) | <b>3</b>        | <b>10</b>    |
| Q-4                                      | Answer any one in detail: ( <b>Any One</b> ) | <b>4</b>        | <b>10</b>    |
| Q-5                                      | Answer any one in detail: ( <b>Any One</b> ) | <b>Any Unit</b> | <b>10</b>    |

**BHAKTA KAVI NARSINH MEHTA UNIVERSITY**  
**Syllabus of B.Sc. (Honors) as per NEP-2020**  
**Faculty of Science**  
**Effective from June 2024**  
**Subject: Forensic Science**  
**SEMESTER- III & IV**  
  
**SEMESTER –III & IV**

**FORENSIC SCIENCE**

**DSCFS303 - VII: Practical & DSCFS403 - X: Practical**

**Time: 3 Hours**

**Total Marks: 50**

**Instructions:**

1. This question paper contains **Three** questions. **All** questions are compulsory.
2. Write answers to **all** the questions in main answer sheet.
3. Draw neat and labelled diagram wherever necessary.
4. Figures to the right side indicate full marks for the question.

| <b>Que. No.</b> | <b>Particulars</b>                              | <b>Marks</b> |
|-----------------|-------------------------------------------------|--------------|
| Q-1             | Perform the given Practical: <b>(Any One)</b>   | <b>20</b>    |
| Q-2             | Perform the given Practical: <b>(Any One)</b>   | <b>16</b>    |
| Q-3             | Perform the given Practical: <b>(Any Seven)</b> | <b>14</b>    |
| <b>Total</b>    |                                                 | <b>50</b>    |

**Program Outcome (PO):**

- The University is on its way to start with four-year course B.Sc. program in Forensic Sciences, in line with new government education Policy to uproot the Forensic experts from undergraduate level.
- Forensic sciences program is to develop professional, ethical graduates whose competence in problem-solving, legal analysis and application, quantitative reasoning, investigation, and scientific laboratory procedures can be applied to immediate employment or advanced study.
- The curriculum of the program is designed in such a way that it will not only foster laboratory skills but also strengthen the knowledge of basic sciences viz. Chemistry, Physics, & Biology.
- The program aims to provide a wide vision and knowledge to the students in the field of forensic science which will promote truth and justice in our community, state, and nation.
- This comprehensive program incorporates a unique curriculum that balances knowledge and practice through in field Crime Scene Investigations.
- B.Sc. Forensic Sciences composed of different courses like Criminal law, Crime and Society, Forensic Psychology, Crime Scene Management, Biometrics, Questioned Documents, Forensic Dermatoglyphics which are theoretical curriculum for students.
- Indoor and outdoor Crime scene Investigation techniques to handle the evidence, maintaining chain of Custody, handling, and packaging of evidence, Toxicological, Biological, Chemical are the practical subject area of the course.
- During the investigating process, forensic equipment is used to process samples and evidence to solve crimes.

**Course Outcome (CO):**

- The CO for B.Sc. Forensic Science program is as follows:
- Understand the concepts of basic and applied sciences including psychology and its applications in forensics.
- Analyze the sample in field and laboratory test of crime exhibits with the latest norms and standards.
- Analyze the different crime scenario and make decision regarding analysis of crime exhibits.
- Evaluate the various results and presenting into the court of law on requirements.
- Understand the basic and advanced techniques in various disciplines of forensic science.
- Analyze the forensic samples using different techniques of various disciplines of forensic science.
- Evaluate the results of various techniques and make decisions on simple or complex forensic problems.
- Design and develop research-based solutions of complex forensic problems.
- On completion of the program students will apply the Laboratory skills to participate in the career needs of Forensic community.
- Become trained in the laboratory skills of different division of Forensic Science and will be able to work with different Research & Development organizations.
- Forensic ballistic is used in analysis of fired bullet, cartridge case and its impact to determine information about firearm and comparison purpose.
- Forensic question document is used in analysis of document either it is genuine or forged and is any addition or alteration or obliteration is present in document or not.
- Forensic psychology is the practice of psychology applied to the law. It is the application of scientific knowledge and method to help answer legal question arising in civil, contractual, or other judicial proceedings.

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**Program Specific Outcome (PSO):**

**Sem – 3**

In 3<sup>rd</sup> semester student:

- Understand basic concept of principles of genetics, including Mendelian genetics, DNA and Histon, chromosome structure and function, modern gene concepts, and DNA replication and protein synthesis.
- Understand the Immunology and immune system of the human body with its working in the human body.
- Understand the basic of diatom, body fluid and hair of the human and its classification and its forensic importance with its forensic examination.
- Understand the basic concept of AAS, NMR, LASER and Thermal Analysis and its application in the forensic science.
- Understand the basics of document and its examination during forgery of the same.
- Understand the concept of cement and concrete-cement and its types with its examination in the forensic science.

**Sem – 4**

In 4<sup>th</sup> semester student:

- Understand basic concept of essential Indian laws including Indian Penal Code and Criminal procedure code with the objective to enhance students learning about the related laws so that student can use these essential laws while working in a forensic setting.
- Understand the basics of forensic biology in examination of body fluid and its confirmative test .
- Will go through the basics of DNA analysis wit its different techniques and its applications in the real world.
- Understand the classification, nomenclature, and mechanisms of enzyme actions, which are foundational concepts in biochemistry and forensic biology.

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|                           |                                                 |                                     |        |
|---------------------------|-------------------------------------------------|-------------------------------------|--------|
| <b>Course Level</b>       | <b>U.G. (5.0)</b>                               | <b>Internal Marks</b>               | 50     |
| <b>Programme</b>          | <b>B.Sc. Forensic Science</b>                   | <b>External Marks</b>               | 50     |
| <b>Semester</b>           | <b>III</b>                                      | <b>Practical Internal</b>           | -      |
| <b>Category of Course</b> | <b>MAJOR-5</b>                                  | <b>Practical External</b>           | -      |
| <b>Course Credit</b>      | 04                                              | <b>Prac. External Exam Duration</b> | -      |
| <b>Teaching Hours</b>     | 5 Hrs./ Week                                    | <b>Total</b>                        | 100    |
| <b>Course Code</b>        | <b>DSCFS301</b>                                 | <b>Exam Duration</b>                | 2 hrs. |
| <b>Course Title</b>       | <b>Basic Concepts and Principles of Biology</b> |                                     |        |

| <b>Unit No.</b> | <b>Syllabus</b>                                                                                                                                                                                                                                                                                                                                         | <b>Teaching Hours/ Week</b> |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1               | <b>Principles of Genetics</b> <ul style="list-style-type: none"> <li>Principles of Mendelian genetics</li> <li>DNA and Histon</li> <li>Structure and function of chromosomes</li> <li>Modern concept of gene</li> <li>DNA replication and protein synthesis</li> </ul>                                                                                  | 5                           |
| 2               | <b>Immunology – I</b> <ul style="list-style-type: none"> <li>Concept of immunity, classification</li> <li>Hormonal and Cellular immunity</li> <li>Immunoglobulin: Structure, Function, Types</li> <li>Antigen: Nature</li> <li>Antigen - Antibody reaction (In-vitro &amp; In-vivo)</li> <li>Hypersensitivity, Allergy, Auto-Immune Diseases</li> </ul> |                             |
| 3               | <b>Immuno-chemical Technique – II</b> <ul style="list-style-type: none"> <li>General Principles and properties of antigen antibody</li> <li>Production of antibodies</li> </ul>                                                                                                                                                                         |                             |

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|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|   | <ul style="list-style-type: none"> <li>• Precipitin reaction, Gel immuno-diffusion, Immuno-electrophoresis, complement fixation, Radio Immuno Assay (RIA), ELISA, Fluorescence immuno assay.</li> </ul>                                                                                                                                                                                                                                                                                                                                     |  |
| 4 | <p><b>Hair, Fibers, Diatoms and Body Fluids</b></p> <ul style="list-style-type: none"> <li>• Examination of Hair and Fibers: Morphology of human hair, its microscopic examination, determination of origin, race, sex, site. Type of fibers (with one example each), forensic aspects of fiber.</li> <li>• Microscopic examination of diatoms and it's forensic importance in drowning cases.</li> <li>• Introduction to body fluids, Identification and examination of stains of body fluids</li> <li>• like saliva and urine.</li> </ul> |  |

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|                           |                                                 |                                     |        |
|---------------------------|-------------------------------------------------|-------------------------------------|--------|
| <b>Course Level</b>       | <b>U.G. (5.0)</b>                               | <b>Internal Marks</b>               | 50     |
| <b>Programme</b>          | <b>B.Sc. Forensic Science</b>                   | <b>External Marks</b>               | 50     |
| <b>Semester</b>           | <b>III</b>                                      | <b>Practical Internal</b>           | -      |
| <b>Category of Course</b> | <b>MAJOR-6</b>                                  | <b>Practical External</b>           | -      |
| <b>Course Credit</b>      | 04                                              | <b>Prac. External Exam Duration</b> | -      |
| <b>Teaching Hours</b>     | 5 Hrs./ Week                                    | <b>Total</b>                        | 100    |
| <b>Course Code</b>        | <b>DSCFS302</b>                                 | <b>Exam Duration</b>                | 2 hrs. |
| <b>Course Title</b>       | <b>Basic Concepts and Principles of Physics</b> |                                     |        |

| <b>Unit No.</b> | <b>Syllabus</b>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Teaching Hours/ Week</b> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1               | <b>Different types of Spectroscopies</b> <ul style="list-style-type: none"> <li>Atomic absorption spectrometry: Instrumentation and techniques, interference in AAS, background correction methods, quantitative analysis.</li> <li>Nuclear Magnetic Resonance spectroscopy: Basic principles, theory and Instrumentation.</li> </ul>                                                                                        | 5                           |
| 2               | <b>Laser and Thermal Analysis method</b> <ul style="list-style-type: none"> <li>Laser (He, Ne, Argon ion, dye lasers, semiconductor lasers) Introduction, Principle of laser, Kinds of lasers, Construction and working of He-Ne laser, Applications of lasers.</li> <li>Thermal analysis methods, Basic principles and theory, differential scanning calorimetric and differential analysis, thermal gravimetry.</li> </ul> |                             |
| 3               | <b>Forged Documents</b> <ul style="list-style-type: none"> <li>Examination of counterfeit currency notes, passport, credit card, and visa card</li> <li>Examination of seal,</li> <li>Examination of counterfeit coins</li> </ul>                                                                                                                                                                                            |                             |

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|   |                                                                                                                                                                                                                                                                                                                                                                           |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|   | Examination of alterations, Erasers, overwriting, addition and obliterations in documents                                                                                                                                                                                                                                                                                 |  |
| 4 | <b>Cement and Concrete – Cement</b> <ul style="list-style-type: none"><li>• Introduction, History, Manufacturing of cement, its types, and concrete-cement.</li><li>• Identification of adulterated cement</li><li>• Forensic examining by preliminary &amp; chemical test</li><li>• Instrumental analysis,</li><li>• Application of Cement and Concrete-Cement</li></ul> |  |

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|                           |                               |                                     |               |
|---------------------------|-------------------------------|-------------------------------------|---------------|
| <b>Course Level</b>       | <b>U.G. (5.0)</b>             | <b>Internal Marks</b>               | 50            |
| <b>Programme</b>          | <b>B.Sc. Forensic Science</b> | <b>External Marks</b>               | 50            |
| <b>Semester</b>           | <b>III</b>                    | <b>Practical Internal</b>           | -             |
| <b>Category of Course</b> | <b>MAJOR-7</b>                | <b>Practical External</b>           | -             |
| <b>Course Credit</b>      | 04                            | <b>Prac. External Exam Duration</b> | -             |
| <b>Teaching Hours</b>     | 8 Hrs./ Week                  | <b>Total</b>                        | 100           |
| <b>Course Code</b>        | <b>DSCFS303</b>               | <b>Exam Duration</b>                | <b>3 hrs.</b> |
| <b>Course Title</b>       | <b>Practical</b>              |                                     |               |

| <b>Practical No.</b> | <b>Syllabus</b>                                                            | <b>Teaching Hours/ Week</b> |
|----------------------|----------------------------------------------------------------------------|-----------------------------|
| <b>1</b>             | Examination of additions, alterations, and obliterations in the documents. | <b>8</b>                    |
| <b>2</b>             | Examination of indented handwriting.                                       |                             |
| <b>3</b>             | Analysis of phenolphthalein in bribe cases                                 |                             |
| <b>4</b>             | Examination of security documents (currency notes and passports)           |                             |
| <b>5</b>             | Examination of security features of debit card, visa card and credit card. |                             |
| <b>6</b>             | Examination of saliva and its stains - biochemical test.                   |                             |
| <b>7</b>             | Examination of Urine - biochemical and microscopic examination.            |                             |
| <b>8</b>             | Morphological and microscopic examination of hairs.                        |                             |
| <b>9</b>             | Morphological and microscopic examination of fibers.                       |                             |
| <b>10</b>            | Identification, classification and microscopic examination of Diatoms.     |                             |
| <b>11</b>            | Examination of physical properties of cement evidences.                    |                             |

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# **SEMESTER- IV**

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|                           |                               |                                     |        |
|---------------------------|-------------------------------|-------------------------------------|--------|
| <b>Course Level</b>       | <b>U.G. (5.0)</b>             | <b>Internal Marks</b>               | 50     |
| <b>Programme</b>          | <b>B.Sc. Forensic Science</b> | <b>External Marks</b>               | 50     |
| <b>Semester</b>           | <b>IV</b>                     | <b>Practical Internal</b>           | -      |
| <b>Category of Course</b> | <b>MAJOR-8</b>                | <b>Practical External</b>           | -      |
| <b>Course Credit</b>      | 04                            | <b>Prac. External Exam Duration</b> | -      |
| <b>Teaching Hours</b>     | 5 Hrs./ Week                  | <b>Total</b>                        | 100    |
| <b>Course Code</b>        | <b>DSCFS401</b>               | <b>Exam Duration</b>                | 2 hrs. |
| <b>Course Title</b>       | <b>Law</b>                    |                                     |        |

| <b>Unit No.</b> | <b>Syllabus</b>                                                                                                                                                                                                                                                                                                                                                                          | <b>Teaching Hours/ Week</b> |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1               | <ul style="list-style-type: none"> <li>Definition of Law, Court, Judge, Basic Terminology in Law, Introduction to Criminal Procedure Code, FIR,</li> <li>Difference between civil and Criminal Justice, Object of Punishment, Kinds of Punishment,</li> <li>Primary and Sanctioning Rights Primary and Secondary functions of Court of Law.</li> </ul>                                   | 5                           |
| 2               | <ul style="list-style-type: none"> <li>Law to Combat Crime- Classification - civil, criminal cases. Essential elements of criminal law. Constitution and hierarchy of criminal courts.</li> <li>Criminal Procedure Code- Cognizable and non-cognizable offences.</li> <li>Bailable and nonbailable offences. Sentences which the court of Chief Judicial Magistrate may pass.</li> </ul> |                             |
| 3               | <ul style="list-style-type: none"> <li>Laws specific to Forensic Science: Indian Penal Code pertaining to offences against persons - Sections 121A, 299, 300, 302, 304A, 304B, 307, 309, 319, 320, 324, 326,</li> </ul>                                                                                                                                                                  |                             |

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|   |                                                                                                                                                                                                                                                                                                                                                                                          |  |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|   | <p>351, 354, 359, 362. Sections 375 &amp; 377 and their amendments.</p> <ul style="list-style-type: none"> <li>• <b>Acts Pertaining to Socio-economic and Environmental Crimes</b> - Dowry Prohibition Act, POCSO Act, Wildlife Protection Act, IT Act, ND&amp;PS Act.</li> </ul>                                                                                                        |  |
| 4 | <ul style="list-style-type: none"> <li>• Indian Evidence Act - Evidence and rules of relevancy in brief.</li> <li>• Expert witness. Cross examination and re-examination of witnesses.</li> <li>• Sections 32, 45, 46, 47, 57, 58, 60, 73, 135, 136, 137, 138, 141.</li> <li>• Criminal Procedure Code - Sections 291, 291A, 292 &amp; 293 in the code of criminal procedure.</li> </ul> |  |

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| <b>Programme</b>          | <b>B.Sc. Forensic Science</b> | <b>External Marks</b>               | 50     |
| <b>Semester</b>           | <b>IV</b>                     | <b>Practical Internal</b>           | -      |
| <b>Category of Course</b> | <b>MAJOR-9</b>                | <b>Practical External</b>           | -      |
| <b>Course Credit</b>      | 04                            | <b>Prac. External Exam Duration</b> | -      |
| <b>Teaching Hours</b>     | 5 Hrs./ Week                  | <b>Total</b>                        | 100    |
| <b>Course Code</b>        | <b>DSCFS401</b>               | <b>Exam Duration</b>                | 2 hrs. |
| <b>Course Title</b>       | <b>Forensic Biology</b>       |                                     |        |

| <b>Unit No.</b> | <b>Syllabus</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Teaching Hours/ Week</b> |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1               | <b>Body Fluids</b> <ul style="list-style-type: none"> <li>• Introduction to various types of body fluids and forensic examination</li> <li>• Introduction to various types of body fluids such as blood, saliva, semen urine, etc.</li> <li>• and its morphology, histology and biochemical properties.</li> <li>• Identification and examination of various stains of body fluids e.g. Blood Saliva,</li> <li>• Semen, Urine, vomit etc. using various techniques, chemical, Spectroscopy,</li> <li>• microscopy, electrophoresis method.</li> </ul>                                                                                                                     | 5                           |
| 2               | <b>Serology</b> <ul style="list-style-type: none"> <li>• Blood – As connective liquid tissue and its composition. Collection and Storage of biological samples.</li> <li>• Origin of Species – Identification and determination of species by various techniques like tube precipitation technique, gel diffusion techniques etc.</li> <li>• Blood group Antigens and their significance in forensic investigation. Blood Typing / Grouping – ‘ABO’ system by various indirect typing techniques. ‘Rh sub types’.</li> <li>• Inheritance and Signification of blood typing in establishing paternity and criminal investigations. Hemoglobin and its variants.</li> </ul> |                             |

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|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|   | <ul style="list-style-type: none"> <li>• Application of various polymorphic enzymes and proteins in criminal investigation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 3 | <b>Forensic DNA Analysis</b> <ul style="list-style-type: none"> <li>• History of DNA fingerprinting and DNA polymorphism.</li> <li>• Procedure for collection and preservation of biological sample for DNA analysis.</li> <li>• Techniques of DNA isolation and its quantization.</li> <li>• DNA profiling and its forensic application</li> <li>• RFLP and PCR based techniques in DNA analysis, PCR amplification.</li> <li>• Result of STR marker analysis and its interpretation.</li> <li>• Y-STR analysis and its significance in establishing paternal relationships.</li> <li>• Human genome project.</li> </ul> |  |
| 4 | <b>Enzyme Techniques</b> <ul style="list-style-type: none"> <li>• Classification, nomenclature and action mechanisms of enzymes</li> <li>• Enzyme kinetics</li> <li>• Purification and protein estimation</li> <li>• Enzyme assay technique</li> <li>• Visible &amp; ultraviolet Spectrophotometric methods</li> <li>• Immobilized enzymes.</li> </ul>                                                                                                                                                                                                                                                                    |  |

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|---------------------------|-------------------------------|-------------------------------------|--------|
| <b>Course Level</b>       | <b>U.G. (5.0)</b>             | <b>Internal Marks</b>               | 50     |
| <b>Programme</b>          | <b>B.Sc. Forensic Science</b> | <b>External Marks</b>               | 50     |
| <b>Semester</b>           | <b>IV</b>                     | <b>Practical Internal</b>           | -      |
| <b>Category of Course</b> | <b>MAJOR-10</b>               | <b>Practical External</b>           | -      |
| <b>Course Credit</b>      | 04                            | <b>Prac. External Exam Duration</b> | -      |
| <b>Teaching Hours</b>     | 8 Hrs./ Week                  | <b>Total</b>                        | 100    |
| <b>Course Code</b>        | <b>DSCFS403</b>               | <b>Exam Duration</b>                | 3 hrs. |
| <b>Course Title</b>       | <b>Practical</b>              |                                     |        |

| <b>Practical No.</b> | <b>Syllabus</b>                                                                                              | <b>Teaching Hours/ Week</b> |
|----------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>1</b>             | To study a crime case in which an accused was punished under different sections.                             | <b>8</b>                    |
| <b>2</b>             | To study a case in which Drugs and Cosmetic Act was invoked.                                                 |                             |
| <b>3</b>             | To study a case in which Explosive Substances Act was invoked.                                               |                             |
| <b>4</b>             | To study a case in which Arms Act was invoked.                                                               |                             |
| <b>5</b>             | Examination and identification of blood stains: Benzidin test, Hemin test.                                   |                             |
| <b>6</b>             | Determination of origin of species (Tube method and agar gel method).                                        |                             |
| <b>7</b>             | Determination of blood groups from fresh and dry blood sample.                                               |                             |
| <b>8</b>             | Examination and identification of semen stains: Acid phosphate test, Microscopic examination of spermatozoa. |                             |
| <b>9</b>             | Estimation and identification of saliva stains: Amylase test, Microscopic examination of epithelial cells.   |                             |
| <b>10</b>            | Examination and identification of urine stains.                                                              |                             |