

## List of Practicals - BSc. FORENSIC SCIENCE

Title of the lab	Virtual Lab Source	Source	Weblink
<p><b><u>Semester – I</u></b>  <b>Paper – I – Introduction to Forensic Science</b></p> <ol style="list-style-type: none"> <li>1. To study the history of crime cases from a forensic science perspective.</li> <li>2. To cite examples of crime cases in which apprehensions arose because of Daubert standards.</li> <li>3. To review the sections of forensic science at INTERPOL and compare with those in Central Forensic Science Laboratories in India. Include suggestions for improvements if any.</li> <li>4. To study the annual reports of National Crime Records Bureau and depict the data on different types of crime cases by way of smart art/templates.</li> <li>5. To write reports on different types of crime cases.</li> <li>6. To review how the Central Fingerprint Bureau, New Delhi, coordinates the working of State Fingerprint Bureaus.</li> <li>7. To examine the hierarchical set up of different forensic science establishments and suggest improvements.</li> <li>8. To examine the list of projects undertaken by the Bureau of Police Research and Development and suggest the thrust areas of research in Police Science.</li> <li>9. To compare and contrast the role of a</li> </ol>			

<p>Police Academy and a Police Training School.</p> <p>10. To compare the code of conduct prescribed by different establishments for forensic scientists.</p> <p><b>Paper – II – Crime, Criminology and Society (BSFS – 102)</b></p> <p>1. To review past criminal cases and elucidate which theory best explains the criminal behavior of the accused.</p> <p>2. To review crime cases where criminal profiling assisted the police to apprehend the accused.</p> <p>3. To cite examples of crime cases in which the media acted as a pressure group.</p> <p>4. To evaluate the post-trauma stress amongst victims of racial discrimination.</p> <p>5. To correlate deviant behavior of the accused with criminality (take a specific example).</p> <p>6. To evaluate victimology in a heinous crime.</p> <p>7. To examine a case of juvenile delinquency and suggest remedial measures.</p> <p>8. To evaluate how rising standards of living affect crime rate.</p> <p>9. To review the recommendations on modernization of police stations and evaluate how far these have been carried out in different police stations.</p> <p>10. To visit a ‘Model Police Station’ and examine the amenities vis-à-vis conventional police stations.</p> <p>11. To examine steps being taken for</p>	<p>Criminology and justice: An exploration of crime, courts, and sentencing.</p>	<p>Harvard Extension School</p>	<p><a href="https://online-learning.harvard.edu/course/criminology-and-justice-exploration-crime-courts-and-sentencing?delta=0">https://online-learning.harvard.edu/course/criminology-and-justice-exploration-crime-courts-and-sentencing?delta=0</a></p>
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<p>rehabilitation of former convicts and suggests improvements.</p> <p>12. To prepare a report on interrogation cells and suggest improvements.</p>			
<p><b><u>Semester – II</u></b>  <b>Paper – I – Forensic Law (BSFS – 201)</b></p> <p>1. To prepare a schedule of five cognizable and five non-cognizable offences.</p> <p>2. To study the powers and limitations of the Court of Judicial Magistrate of First Class.</p> <p>3. To prepare a schedule of the offences which may be tried under Section 260(2) of Criminal Procedure Code.</p> <p>4. To study a crime case in which an accused was punished on charge of murder under Section 302.</p> <p>5. To study a crime case in which an accused was punished on charge of rape under Section 375.</p> <p>6. To cite example of a case in which the opinion of an expert was called for under Section 45 of the Indian Evidence Act.</p> <p>7. To cite a case wherein a person was detained under Article 22(5) of the Indian Constitution. Express your views whether the rights of the person as enlisted in this Article were taken care of.</p> <p>8. To cite a case under Article 14 of the Constitution of India wherein the Right to Equality before Law was allegedly violated.</p> <p>9. To list the restrictions imposed on Right to</p>	<p><b>JUSTICE</b></p>	<p>Harvard Extension School</p>	<p><a href="https://online-learning.harvard.edu/course/justice?delta=2">https://online-learning.harvard.edu/course/justice?delta=2</a></p>

- Freedom of Worship under the Constitution of India.
10. To prepare a schedule of persons convicted under Narcotics, Drugs and The Psychotropic Act statistically analyzes the age group to which they belonged.
  11. To study a case in which the Drugs and Cosmetic Act was invoked.
  12. To study a case in which the Explosive Substances Act was invoked.
  13. To study a case in which the Arms Act was invoked.
  14. In light of Section 304B of the Indian Penal Code, cite a case involving dowry Death.
  15. To study a case wherein the Untouchability Offences Act was invoked on the basis of Article 15 of the Constitution of India.

**Paper – II – Forensic Psychology (BSFS – 202)**



1. To cite a crime case where legal procedures pertaining to psychic behavior had to be invoked.
2. To prepare a report on relationship between mental disorders and forensic psychology.
3. To review a crime case involving serial murders. Comment on the psychological traits of the accused.
4. To cite a crime case involving a juvenile and argue for and against lowering the age for categorizing an individual as juvenile.
5. To study a criminal case in which hypnosis was used as a means to detect deception.
6. To prepare a case report on thematic apperception test.
7. To prepare a case report on Minnesota multiphasic personality inventory test.

Modelling of ion channel



<http://vlab.amrita.edu/?sub=3&brch=212&sim=766&cnt=1>

<p>8. To prepare a case report on thematic apperception test.</p> <p>9. To prepare a case report on word association test.</p> <p>10. To prepare a case report on Bhatia's battery of performance test of intelligence.</p> <p>11. To cite a criminal case in which narco analysis was used as a means to detect deception.</p>			
<p><b><u>Semester – III</u></b></p> <p><b>Paper – I – Forensic Dermatoglyphics (BSFS – 301)</b></p> <ol style="list-style-type: none"> <li>1. To record plain and rolled fingerprints.</li> <li>2. To carry out ten digit classification of fingerprints.</li> <li>3. To identify different fingerprint patterns.</li> <li>4. To identify core and delta.</li> <li>5. To carry out ridge tracing and ridge counting.</li> <li>6. To investigate physical methods of fingerprint detection.</li> <li>7. To investigate chemical methods of fingerprint detection.</li> <li>8. To use different light sources for enhancing developed fingerprints.</li> <li>9. To prepare a cast of footprints.</li> </ol> <p><b>Paper – II – Technological Methods in Forensic Science (BSFS – 302)</b></p> <ol style="list-style-type: none"> <li>1. To determine the concentration of a colored compound by colorimetry analysis.</li> <li>2. To carry out thin layer chromatography of ink samples.</li> <li>3. To carry out separation of organic compounds by paper chromatography.</li> <li>4. To identify drug samples using UV-Visible spectroscopy.</li> <li>5. To take photographs using different filters.</li> <li>6. To take photographs of crime scene</li> </ol>	<p><b><u>Identification of finger print patterns</u></b> It includes identification of finger patterns of different individuals.</p>	<p>SHAKSHAT VIRTUAL LAB IIT Guwahati</p>	<p><a href="https://anthropology-iitg.vlabs.ac.in/">https://anthropology-iitg.vlabs.ac.in/</a></p> <p><a href="https://www.iitk.ac.in/dordold/index.php?option=com_content&amp;view=category&amp;layout=blog&amp;id=219&amp;Itemid=238">https://www.iitk.ac.in/dordold/index.php?option=com_content&amp;view=category&amp;layout=blog&amp;id=219&amp;Itemid=238</a></p>

<p>exhibits at different angles. 7. To record videography of a crime scene.</p> <p><b>Paper – III – Criminalistics (BSFS – 303)</b></p> <ol style="list-style-type: none"> <li>1. To prepare a report on the evaluation of crime scenes.</li> <li>2. To reconstruct a crime scene (outdoor and indoor).</li> <li>3. To compare soil samples by density gradient method.</li> <li>4. To compare paint samples by physical matching method.</li> <li>5. To compare paint samples by thin layer chromatography method.</li> <li>6. To compare glass samples by refractive index method.</li> <li>7. To identify and compare tool marks.</li> <li>8. To compare cloth samples by physical matching.</li> </ol>	<p><b>UV-Vis Spectrophotometer</b></p> <p>Molecular Fluorescence Spectroscopy Lab</p> <p><b>Study of Physical Properties of Soil</b></p> <p><b>determination of density of solid</b></p> <p><b>Paper chromatography</b></p>	<p>Research &amp; Development IIT- Kanpur</p>  <p>OLABS Ministry of electronics &amp; information technology</p> <p>OLABS Ministry of electronics &amp; information technology</p> 	<p><a href="http://mfs-iiith.vlabs.ac.in/Experiments.html?domain=%20Chemical%20Sciences">http://mfs-iiith.vlabs.ac.in/Experiments.html?domain=%20Chemical%20Sciences</a></p> <p><a href="http://amrita.olabs.edu.in/?sub=79&amp;brch=18&amp;sim=235&amp;cnt=4">http://amrita.olabs.edu.in/?sub=79&amp;brch=18&amp;sim=235&amp;cnt=4</a></p> <p><a href="http://amrita.olabs.edu.in/?sub=1&amp;brch=1&amp;sim=2&amp;cnt=4">http://amrita.olabs.edu.in/?sub=1&amp;brch=1&amp;sim=2&amp;cnt=4</a></p> <p><a href="http://amrita.olabs.edu.in/?sub=79&amp;brch=17&amp;sim=124&amp;cnt=4">http://amrita.olabs.edu.in/?sub=79&amp;brch=17&amp;sim=124&amp;cnt=4</a></p>
<p><b><u>Semester – IV</u></b> <b>Paper – I – Forensic Toxicology (BSFS – 401)</b></p> <ol style="list-style-type: none"> <li>1. To identify biocides.</li> </ol>			

2. To identify metallic poisons.
3. To identify organic poisons.
4. To identify ethyl alcohol.
5. To identify methyl alcohol.
6. To carry out quantitative estimation of ethyl alcohol.
7. To prepare iodoform.
8. To identify drugs of abuse by spot tests.
9. To perform color tests for barbiturates.
10. To separate drugs of abuse by thin layer chromatography.

**Paper – II – Forensic Chemistry (BSFS – 402)**

1. To carry out analysis of gasoline.
2. To carry out analysis of diesel.
3. To carry out analysis of kerosene oil.
4. To analyze arson accelerators.
5. To prepare a case report on a case involving arson.
6. To carry out analysis of explosive substances.
7. To separate explosive substances using thin layer chromatography.
8. To prepare a case report on bomb scene management.

**Paper – III – Forensic Biology (BSFS – 403)**

1. To examine hair morphology and determine the species to which the hair belongs.
2. To prepare slides of scale patterns of human hair.
3. To examine human hair for the cortex and medulla.
4. To carry out microscopic examination of pollen grains.
5. To carry out microscopic examination of diatoms.
6. To cite a crime case in which diatoms have served as forensic evidence.
7. To prepare a case report on forensic entomology.

**Soil Analysis:**

Determination of available organic carbon content in the soil

**Detection of Adulterant in Food items:**

Dal, Jaggery, turmeric powder, arhar dal.

**Development of Musculoskeletal System and Skin**

Development of Hair and Nails

Development of



<http://vlab.amrita.edu/index.php?sub=2&brch=294&sim=1552&cnt=1>

OLABS  
Ministry of electronics & information technology

<http://amrita.olabs.edu.in/?sub=79&brch=15&sim=122&cnt=4>




<https://www.lecturio.com>.

Lecturio Medical



<https://app.lecturio.com/#/lecture/c/10346/44456>

<p>8. To prepare a case report on problems of wildlife forensics.</p>	<p>Musculoskeletal system</p> <p><b>-Study of pollen germination</b></p> <p>Real Lab Procedure</p> <p>Simulator Procedure (as performed through the Online Labs)</p>	<p>OLABS Ministry of electronics &amp; information technology</p> 	<p><a href="http://amrita.olabs.edu.in/?sub=79&amp;brch=18&amp;sim=228&amp;cnt=2">http://amrita.olabs.edu.in/?sub=79&amp;brch=18&amp;sim=228&amp;cnt=2</a></p>
<p><b><u>Semester – V</u></b> <b>Paper – I – Questioned Documents (BSFS – 501)</b></p> <ol style="list-style-type: none"> <li>1. To identify handwriting characters.</li> <li>2. To study natural variations in handwriting.</li> <li>3. To compare handwriting samples.</li> <li>4. To detect simulated forgery.</li> <li>5. To detect traced forgery.</li> <li>6. To study the line quality defects in handwriting samples.</li> <li>7. To examine the security features of currency notes, passports and plastic money.</li> <li>8. To study alterations, obliterations and erasures in handwriting samples.</li> <li>9. To cite a case wherein Section 45 of Indian Evidence Act was invoked, seeking expert opinion for authentication of handwriting and/or signatures.</li> <li>10. To cite a case wherein Section 489A of the Indian Penal Code was invoked in context of fake currency.</li> </ol>			



**Paper – II – Forensic Ballistics  
(BSFS – 502)**

1. To describe, with the aid of diagrams, the firing mechanisms of different types of firearms.
2. To correlate the velocity of a bullet with the impact it produces on the target.
3. To correlate the striking angle of the bullet with the impact on the target.
4. To estimate the range of fired bullets.
5. To carry out the comparison of fired bullets.
6. To carry out the comparison of fired cartridge cases.
7. To identify gunshot residue.
8. To correlate the nature of injuries with distance from which the bullet was fired.
9. To differentiate, with the aid of diagram, contact wounds, close range wounds and distant wounds.

**Semester – VI**

**Paper – I – Forensic Medicine  
(BSFS – 601)**

1. To design a questionnaire for the first

- responder to the death scene.
- 2. To design a protocol to deal with the media at the crime scene.
- 3. To design a checklist for the forensic scientists at the death scene.
- 4. To design a canvass form giving description of an unidentified victim.
- 5. To analyze and preserve bite marks.

**Paper – II – Forensic Anthropology (BSFS – 602)**

- 1. To determine age from skull and teeth.
- 2. To determine of sex from skull.
- 3. To determine sex from pelvis.
- 4. To study identification and description of bones and their measurements.
- 5. To investigate the differences between animal and human bones.
- 6. To perform somatometric measurements on living subjects.
- 7. To carry out craniometric measurements of the human skull.
- 8. To estimate stature from long bone length.
- 9. To conduct portrait parley using a photofit identification kit.



**Development of the Nervous System, Head, and Neck**

**Playlists:**

- 1.Skull Fractures (Nursing) 04:04 min
- 2.Malformations in Skull Development 06:26 min
- 3.Ossification of Skull 06:26 min
- 4.Le Fort Fractures – Cranium (Skull)
- 5.Abnormalities of Brain and Skull – Skull and Brain Development 02:15
- 6.Cranial Fossae and Foramina (Superior View) – Cranium (Skull) 09:09
- 7.Cranial Fossae

<https://www.lecturio.com>.

Lecturio Medical



**Development of the Nervous System, Head, and Neck**

<https://app.lecturio.com/#/course/c/10348>

	<p>and Foramina (Inferior and Anterior View) – Cranium (Skull)03:49 min</p> <p>8.Bone Begins to Form in Association With the Brain – Skull and Brain Development 03:09 min</p> <p>9.Development of Teeth09:22 min</p> <p>10.Cranial Fossae and Foramina (Superior View) – Cranium (Skull)</p> <p><b>ANATOMY</b></p> <p><b>Playlists:</b></p> <p>Bone Anatomy in Radiology</p> <p>Female Pelvic Anatomy</p> <p>Bone Anatomy &amp; Bone Density</p> <p>Surface Anatomy: Inguinal anatomy</p> <p>Brain Anatomy</p> <p><b>Virtual Anthropology Lab</b></p>	<p>SHAKSHAT VIRTUAL LAB IIT Guwahati</p>	<p>10.<a href="https://app.lecturio.com/#/lecture/c/7106/24766">https://app.lecturio.com/#/lecture/c/7106/24766</a></p> <p>ANATOMY: <a href="https://app.lecturio.com/search#q=Anatomy%23tab=videos">https://app.lecturio.com/search#q=Anatomy%23tab=videos</a></p> <p><a href="https://anthropology-iitg.vlabs.ac.in/">https://anthropology-iitg.vlabs.ac.in/</a></p>
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	<p><b><u>Skeleton - Assembling, Identification &amp; labeling</u></b>  Assembling , Identifying &amp; labeling different parts of a skeleton</p> <p><b><u>Calculation of Indices</u></b>  Calculation of various craniometric indices.</p>		