



# **INTEGRAL UNIVERSITY, LUCKNOW**

**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH**

**DEPARTMENT OF PARAMEDICAL SCIENCES**

**BACHELOR OF SCIENCE IN FORENSIC SCIENCE  
(B.F.S.)**

**SYLLABUS**

**YEAR/ SEMESTER: II/III**



Integral University, Lucknow  
Department of Paramedical Sciences  
Study and Evaluation Scheme

Program: B.Sc. FS

Semester-III

S. N.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
<b>THEORIES</b>													
1	FS201	Forensic Medicine	Core	3	1	0	40	20	60	40	100	3:1:0	4
2	FS202	Forensic Physics- I	Core	2	1	0	40	20	60	40	100	2:1:0	3
3	FS203	Forensic Biology-I	Core	2	1	0	40	20	60	40	100	2:1:0	3
4	FS204	Forensic Psychology	Core	2	1	0	40	20	60	40	100	2:1:0	3
5	CH219	Forensic Chemistry-I	Core	3	1	0	40	20	60	40	100	3:1:0	4
6	ES101	Environmental Study	Core	2	1	0	40	20	60	40	100	2:1:0	3
<b>PRACTICAL</b>													
1	FS205	Forensic Medicine-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
2	CH220	Forensic Chemistry –I-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
3	FS206	Forensic Physics-I – Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
4	FS207	Forensic Biology-I - Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
5	FS208	Forensic Psychology-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
<b>Total</b>				<b>12</b>	<b>06</b>	<b>10</b>	<b>440</b>	<b>220</b>	<b>660</b>	<b>440</b>	<b>1100</b>	<b>25</b>	<b>25</b>

S. N.	Course code	Course Title	Type of Paper	Attributes							United Nation Sustainable Development Goal (SDGs)
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
<b>THEORIES</b>											
1	FS 201	Forensic Medicine	Core	√	√	√	√		√	√	3,4
2	FS 202	Forensic Physics- I	Core	√	√	√			√	√	3,4
3	FS 203	Forensic Biology-I	Core	√	√	√			√	√	3,4
4	FS 204	Forensic Psychology	Core	√	√	√			√	√	3,4
5	CH219	Forensic Chemistry-I	Core	√	√	√			√	√	3,4
6	ES 101	Environmental Study	Core	√	√	√		√	√	√	3,4
<b>PRACTICAL</b>											
1	FS 205	Forensic Medicine-Lab	Core	√	√	√	√		√	√	3,4
2	CH220	Forensic Chemistry –I-Lab	Core	√	√	√			√	√	3,4
3	FS 206	Forensic Physics-I – Lab	Core	√	√	√			√	√	3,4
	FS 207	Forensic Biology-I - Lab	Core	√	√	√			√	√	3,4
	FS 208	Forensic Psychology-Lab	Core	√	√	√			√	√	3,4

**L:** Lecture      **T:** Tutorials      **P:** Practical      **CT:** Class Test      **TA:** Teacher Assessment      **ESE:** End Semester Examination,  
**AE=** Ability enhancement, **DSE-** Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment      **Subject Total:** Sessional Total + End Semester Examination (ESE)





## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>										
<b>Course Code</b>	<b>FS201</b>	<b>Title of the Course</b>	<b>FORENSIC MEDICINE</b>				<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>				<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>							
<b>Course Objectives</b>	To understand and identification of informed Medico-legal responsibility.									

Course Outcomes	
<b>CO1</b>	After studying this paper, the students will know about the basic of death investigations.
<b>CO2</b>	After studying this paper, the students will know about the role of forensic medicine in court.
<b>CO3</b>	After studying this paper, the students will know about the basic introduction and Objectives of Medical autopsy
<b>CO4</b>	After studying this paper, the students will know about the basic of thanatology.
<b>CO5</b>	After studying this paper, the students will know about the basic introduction, classification, and significance of Wounds and injuries.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>DEATH INVESTIGATIONS</b>	<b>Death Investigations:</b> Fundamental aspects and scope of forensic medicine. Approaching the crime scene of death. Documentary evidence: -Medical certificates, medical reports, dying declaration. Understanding laws and ethics of medical practice.	8	CO1
2	<b>ROLE OF FORENSIC MEDICINE IN COURT</b>	<b>Role Of Forensic Medicine In Court:</b> Meaning, Scope, and types of Inquest, Oath and affirmation, Nature and Powers of Criminal Courts in India, Procedure of calling a witness to court.	8	CO2
3	<b>MEDICAL AUTOPSY</b>	<b>Medical Autopsy:</b> Introduction and objectives, rules for medico-legal autopsy, external and internal examination of the body, collection of ante-mortem and post-mortem samples, autopsy report. Virtual autopsy: Introduction, purpose, benefits, and procedure.	8	CO3
4	<b>THANATOLOGY</b>	<b>Thanatology:</b> Definition of death. Types of death (somatic and molecular). Medico-legal aspects of death – Causes of death such as asphyxia (strangulation, hanging, drowning etc.), electrocution, thermal trauma, heat burns, starvation, natural death, sudden death etc. Changes after death (immediate, early, and late changes) and Determination of time since death.	8	CO4
5	<b>WOUNDS AND INJURIES</b>	<b>Wounds And Injuries:</b> Definition of wounds and injuries and laws governing them. Types of injuries: Abrasions, grazes, lacerations, Bruises, contusions, Punctured wounds, incised wounds, and identification ante – mortem, post – mortem injuries. Medico-legal aspects of wounds; Determining the age of the injury, Identifying the difference between suicidal, homicidal, and accidental injuries.	8	CO5

<b>Reference Books:</b>	
1.	Forensic medicine and toxicology: principles and practice, Professor Krishna Vij Publisher: Elsevier, 5 Edition,2014.
2.	Practical Aspects of Forensic Medicine, Dr T.D. Dogra Dr. AD Agrawal Jaypee publishers,2014
3.	Parikh's textbook of medical jurisprudence, forensic medicine and toxicology Professor C. K. Parikh, CBS; 6 dition,2007
4.	The essentials of forensic medicine and toxicology Professor K.S. Narayan Reddy Jaypee Brothers Medical Publishers; 34 <sup>th</sup> edition2017.
5.	Principles of forensic medicine Professor Apurva Nandy New Central Book Agency; 3rd Revised edition edition2010.
6.	A Textbook of Medical Jurisprudence and Toxicology Dr. Jaising P. Modi (Edited by Justice K Kannan, Lexis Nexis; 24 <sup>th</sup> edition 2012.
7.	NB. R. Sharma, Forensic Science in Criminal Investigation and Trials(6 <sup>th</sup> Edition).
8.	Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,
<b>e-Learning Source:</b>	
1.	<a href="https://youtu.be/WobgHMVr3k8">https://youtu.be/WobgHMVr3k8</a>
2.	<a href="https://youtu.be/L0eZtNZ8CE8">https://youtu.be/L0eZtNZ8CE8</a>
3.	<a href="https://youtu.be/uUav053YGmU">https://youtu.be/uUav053YGmU</a>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5
	<b>CO1</b>	3	2	2	3	3	3	2	3	2	2	2	3	2	3	3
<b>CO2</b>	2	3	3	2	2	3	2	3	3	3	2	2	3	2	2	3
<b>CO3</b>	3	3	3	2	2	2	3	2	2	3	3	3	3	3	3	3
<b>CO4</b>	2	2	2	3	3	2	3	2	3	2	2	3	2	3	2	3
<b>CO5</b>	2	2	2	2	2	1	2	3	2	2	2	3	2	2	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
FS201	BASICS OF FORENSIC MEDICINE	√	√	√				√	√	3,4



**Integral University, Lucknow**

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS202</b>	<b>Title of the Course</b>	<b>FORENSIC PHYSICS- I</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	Understand and to appreciate the breadth and diversity of Physical science in respect of forensic science.						

<b>Course Outcomes</b>	
<b>CO1</b>	Basic introduction and forensic analysis of paint evidences.
<b>CO2</b>	Basic introduction, importance and forensic analysis of glass evidences.
<b>CO3</b>	Types, composition and examination of soil evidences.
<b>CO4</b>	Introduction of cement and its examination.
<b>CO5</b>	Basic introduction, importance and forensic analysis of fiber evidences.

<b>Unit No.</b>	<b>Title of the Unit</b>	<b>Content of Unit</b>	<b>Contact Hrs.</b>	<b>Mapped CO</b>
1	<b>PAINT</b>	<b>Paint</b> - Types of paint and their composition, collection and preservation of paint evidence. Macroscopic and microscopic studies of paint evidence, pigment distribution, micro-chemical analysis- solubility test, chemical and instrumental analysis of paint evidence, interpretation of paint evidence.	6	CO1
2	<b>GLASS</b>	<b>Glass</b> -Types of glass and their composition. Glass fractures and markings- rib marks, hackle marks, cone fractures, wavy, backward fragmentation, concentric and radial fractures. Examination of glass evidence-Color, fluorescence, physical measurements, refractive index, density gradient, beck-line, specific gravity examination, and elemental analysis of glass evidence.	6	CO2
3	<b>SOIL</b>	<b>Soil</b> - Classification and composition of the soil, sample preparation, removal of contaminants, Collection, and preservation of soil evidence, Forensic analysis, and examination of soil-color, molecular particle size distribution, turbidity test, pH measurements, microscopic examination, density gradient analysis, ignition-loss test, elemental analysis, interpretation of soil evidence, soil microbes significance of soil evidence and soil microbes.	6	CO3
4	<b>CEMENT AND CONCRETE- CEMENT</b>	<b>Cement and Concrete-Cement</b> - bromo form test, fineness test, ignition-loss test. Identification of adulterated cement. Mortar and concrete analysis.	6	CO4
5	<b>FIBRE</b>	<b>Fiber:</b> Introduction, Types of fibers, nature, location, collection, identification tests, forensic significance and comparison of fiber. Examination- microscopic examination, optical properties; refractive index, birefringence, dye analysis. Physical fit and chemical testing. Dye analysis by TLC, IR-micro spectroscopy. Difference between natural and man-made fibers.	6	CO5

<b>Reference Books:</b>	
1.	Caddy, B; Forensic Examination of Glass and Paint Analysis and Interpretation, CRC Press, New York,2001.
2.	Shaw, D; Physics in the Prevention and Detection of Crime, Contem Phys. Vol.17,1976.
3.	Safer stein, R; Forensic Science Handbook. Vol. I,II, (Edition), Prentice Hall, New Jersey,1988.
4.	Sharma, B.R; Forensic Science in Criminal Investigation and Trials (3 <sup>rd</sup> Edition.), Universal Law Publishing Co., New Delhi, 2001.
5.	Working Procedure Manual- Physics, BPR&D Publication.2000
6.	B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6 <sup>th</sup> Edition).
<b>e-Learning Source:</b>	
1.	<a href="https://youtu.be/LpndOfsq_6M">https://youtu.be/LpndOfsq_6M</a>
2.	<a href="https://youtu.be/yHkhju99CZM">https://youtu.be/yHkhju99CZM</a>
3.	<a href="https://youtu.be/FTg6YpOntz0">https://youtu.be/FTg6YpOntz0</a>

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
<b>PO-PSO CO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>
<b>CO1</b>	3	2	2	3	2	2	3	3	2	3	3	2	2	3	3	3	3
<b>CO2</b>	3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	2	2
<b>CO3</b>	2	3	2	3	2	2	2	2	3	2	3	3	3	2	2	3	3
<b>CO4</b>	3	2	2	3	2	2	3	3	2	3	2	2	3	3	3	3	3
<b>CO5</b>	2	2	3	3	3	2	3	3	3	2	2	3	3	3	3	2	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

<b>Course Code</b>	<b>Course Title</b>	<b>Attributes</b>							<b>SDGs No.</b>
		<b>Employability</b>	<b>Entrepreneurship</b>	<b>Skill Development</b>	<b>Gender Equality</b>	<b>Environment &amp; Sustainability</b>	<b>Human Value</b>	<b>Professional Ethics</b>	
FS202	FORENSIC PHYSICS- I	√	√	√			√	√	3,4



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>										
<b>Course Code</b>	<b>FS203</b>	<b>Title of the Course</b>	<b>FORENSIC BIOLOGY-I</b>				<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>				<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>							
<b>Course Objectives</b>	Aims To Provide Students the Specific Biological Skills that are very important in the forensic science workplace and gain an appreciation of the different biology evidence types and their applications in the investigative process.									

<b>Course Outcomes:</b> After the successful course completion, learners will develop following attributes:										
<b>CO1</b>	To understand about introduction and forensic significance of biological evidences.									
<b>CO2</b>	Students will be able to apply basic principle and procedure of crime scene investigation.									
<b>CO3</b>	To understand about the basic introduction and forensic examination of hair and fiber.									
<b>CO4</b>	To understand about introduction, significance and tests of different types of body fluids in crime scene investigation.									
<b>CO5</b>	To learn about different types of bloodstain pattern analysis.									

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>FORENSIC BIOLOGY</b>	<b>Forensic Biology-</b> Introduction, Evidence of Biological Importance, Nature, the scope of crime scene presence and characterization of blood, semen, saliva, urine, sweat, vomit, botanical materials, diatoms, wildlife samples, and other biological evidence. <b>Crime Scene Investigation of Biological Evidence:</b> Protection, Recognition, Search & Collection, Documentation Packaging & Transportation of Biological Evidence encountered in various cases.	6	CO1
2	<b>FORENSIC DIATOMOLOGY</b>	<b>Forensic Diatomology:</b> Diatoms: Nature, classification, location, structure, life cycle, extraction from various body tissues including bone marrow, preparation of slides, methods of identification and comparison, forensic significance.	6	CO2
3	<b>HAIR &amp; FIBER</b>	<b>Hair &amp; Fiber:</b> <b>Hair:</b> Hair trichology – Nature, Importance, location, structure, Collection and tests for determination of origin, biochemistry, and forensic aspects of hair. <b>Fiber:</b> Introduction, source, importance and types of fiber, natural (plant, animal, and mineral), synthetic (nylon, polyester, terylene, carbon nanotube fiber), and blended (terrycloth, rayon)	6	CO3
4	<b>FORENSIC FLUIDS</b>	<b>Forensic Fluids:</b> Definition, Properties, Significance, collection, preservation, preliminary and confirmatory test of Blood, Semen, Saliva, Sweat, and Urine.	6	CO4
5	<b>BLOODSTAIN PATTERN ANALYSIS</b>	<b>Bloodstain Pattern Analysis:</b> Bloodstain characteristics. Formation, types and forensic importance of bloodstain patterns. Cast-off bloodstain patterns. Projected bloodstain patterns. Contact bloodstain patterns. Blood spatters, Blood trails. Bloodstain drying times. Documentation of bloodstain pattern evidence.	6	CO5

<b>Reference Books:</b>										
1. Forensic Biology by Richard Li CRC Press; 2 <sup>nd</sup> edition (27 April 2015).										
2. Practical Skills in Forensic Science–Alan Langford, John Deane Tal Addison-Wesley Longman Ltd (February 1, 2005).										
3. Scientific & Legal Applications of Bloodstain Pattern Interpretation – Stuart H. James CRC Press; 1 <sup>st</sup> edition (June 29, 1998).										
4. Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey, 1998.										
5. Sharma, B. R., Forensic Science in Criminal Investigation and Trials (3rd Ed) Universal Law Publishing Co. Ltd. New Delhi, 2001.										
6. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6 <sup>th</sup> Edition).										
<b>e-Learning Source:</b>										
1. <a href="https://youtu.be/XKvhn9v6WUg">https://youtu.be/XKvhn9v6WUg</a>										
2. <a href="https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#">https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#</a>										
3. <a href="https://youtu.be/0jltioeaEYy">https://youtu.be/0jltioeaEYy</a>										

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	2	3	3	2	3	3	2	2	3	3	2	3	3	2	2	3
<b>CO2</b>	3	3	3	3	2	3	2	3	3	2	3	2	2	3	3	3	3
<b>CO3</b>	3	3	2	2	3	2	3	3	2	2	2	3	3	2	3	2	3
<b>CO4</b>	3	2	2	3	3	3	2	2	2	3	3	3	3	3	3	3	3
<b>CO5</b>	3	2	3	3	3	2	2	3	3	3	3	2	2	3	2	3	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

### Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS203	FORENSIC BIOLOGY-I	√	√	√					3,4



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS204</b>	<b>Title of the Course</b>	<b>FORENSIC PSYCHOLOGY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	This course is designed to introduce students to the interface of psychology and the law, with a specific focus on forensic psychology. Critical issues, such as Not Guilty by Reason of Insanity pleas, will be addressed. Students will be introduced to the roles and responsibilities of a forensic psychologist including psychological assessments, expert testimony, offender treatment, and correctional psychology.						

Course Outcomes	
<b>CO1</b>	To develop the basic understanding of forensic psychology, ethical standards and role of forensic psychologists.
<b>CO2</b>	To discuss about the different social learning theories and influencing factors. Concept of Juvenile delinquency, juvenile sex offenders, and anti-social personality disorder.
<b>CO3</b>	To develop a basic understanding about functioning and significance of different techniques in investigative psychology.
<b>CO4</b>	To develop knowledge about the application of forensic psychology in legal proceedings and a brief about Mc. Naughten rule of insanity.
<b>CO5</b>	To discuss about the legal aspects of forensic psychology with some provisions of Mental Health Act 1987.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>BASICS OF FORENSIC PSYCHOLOGY</b>	<b>Basics of Forensic Psychology--</b> History of Forensic Psychology, Define Forensic Psychology, Importance of Forensic Psychology, Concept of Forensic psychiatry, Ethical Standards of Forensic Psychology, Services provided by Forensic Psychologists.	6	CO1
2	<b>PSYCHOLOGY AND CRIMINAL BEHAVIOR</b>	<b>Psychology and Criminal Behavior</b> -Biological factors, social learning theories, psychological factors, Serial murderers. Psychology of terrorism. Juvenile Delinquency: Definition, Concept of Juvenile delinquency, Child abuse (physical, sexual, emotional), juvenile sex offenders, antisocial personality disorder.	6	CO2
3	<b>INVESTIGATIVE PSYCHOLOGY</b>	<b>Investigative Psychology</b> 1. Criminal profiling 2. Polygraph 3. Norco Analysis 4. BEOS 5. voice stress analyzer	6	CO3
4	<b>PSYCHOLOGY AND LAW</b>	<b>Psychology and Law--</b> Application of Forensic Psychology in Civil and Criminal Legal Proceedings-Civil Proceedings- Assessment of Civil Competency, Criminal Proceedings, Psychological Disorders and Criminality <b>Mc Naughten rule insanity</b> – Nature of Insanity, Insanity Assessment, <i>Competency to stand trial</i> , Criminal responsibility, and insanity defence.	6	CO4
5	<b>LEGAL ASPECT- MENTAL HEALTH ACT, 1987</b>	<b>Legal aspect- Mental Health Act, 1987</b> [Reception Order, Object, Establishment or Maintenance of Psychiatric Hospitals and Psychiatric Nursing Homes, Procedures on Production of Mentally Ill Person in front of Magistrate]. Role of Psychiatric Hospitals and Psychiatric Nursing Homes in Criminal Justice system	6	CO5

**Reference Books:**

1. Criminal Profiling-An Introduction to Behavioral Evidence analysis', Brent Turvey, Academic Press; 4<sup>th</sup> edition (13May2011).
2. Handbook of Forensic Psychology', Prof Dr. Vimala Veera raghwan, Edition 1st, Elsevier.
3. Handbook of Forensic Psychology', Irving B. Weiner, Allen K. Hiss, Edition 3<sup>rd</sup>, 2006, Wiley Publication.
4. Theoretical Psychology', Mo Aziz Ali Beg, Sangeeta Gupta Beg, Vol [04], Edition 2nd, 2013, Global Vision Publishing House, New Delhi.
5. Abnormal Psychology-The Problem of Maladaptive Behavior', Irwin G. Sarson, Barbara R. Sarson, Edition 11th, 2012, PHI Publication, New Delhi.
6. 'Abnormal Psychology', James N. Butcher, Susan M. Mineka, JillM. Hooley, Edition 15<sup>th</sup>, 2014, Pearson.
7. Psychological Interventions of Mental Disorders', S. K. Shrivastava, Nayanika Singh, Shivani Kant, Edition 1<sup>st</sup>, 2013, Sarup Book Publishers, PVT.LTD.
8. Psychology and Crime', Nageshwar Singh, Edition 1<sup>st</sup>,2013, RBSA Publishers, Jaipur.
9. Criminology' [2005] S. M. A. Qadri, fifth edition, EBC Publication, Lucknow
- 10 B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
11. Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,

**e-Learning Source:**

1. <https://youtu.be/aflWenQNm18>
2. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>
3. <https://youtu.be/8Aw115vXNpQ>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	2	2	2	3	3	3	2	3	2	2	2	3	2	3	3	2	3
<b>CO2</b>	2	3	3	2	2	3	2	3	3	3	2	2	3	2	2	3	2
<b>CO3</b>	3	2	3	2	2	2	3	2	2	3	3	3	3	3	3	3	2
<b>CO4</b>	2	2	2	3	3	2	3	2	3	2	2	3	2	3	2	3	2
<b>CO5</b>	2	2	2	2	2	2	2	3	2	2	2	3	2	2	3	3	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**  
Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
FS204	FORENSIC PSYCHOLOGY	√	√	√				√	√	<b>3,4</b>



## Integral University, Lucknow

<b>Effective from Session: 2020-21</b>							
<b>Course Code</b>	<b>CH219</b>	<b>Title of the Course</b>	<b>FORENSIC CHEMISTRY- I</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	Understand and to appreciate the breadth and diversity of analytical science in respect of forensic science.						

<b>Course Outcomes:</b> After the successful course completion, learners will develop following attributes:	
<b>CO1</b>	Define the quantity called mole. Learn Avogadro's number. Understand how the molar mass is related to formula mass of a substance and can calculate the mass of atom and molecules.
<b>CO2</b>	Students would develop the concepts of thermogravimetric analysis and various volumetric analytical methods and their applications.
<b>CO3</b>	Students would restate difference between different modes of chromatographic separation: apply knowledge of qualitative and quantitative analysis in various fields of chemical, pharmaceutical industries extra.
<b>CO4</b>	Understand the working principle and application of various modern analytical techniques as well as their operation.
<b>CO5</b>	Understand the principle of nuclear chemistry and its application such as radiocarbon dating and radiotracers techniques along with nuclear decay, nuclear fission and nuclear fusion.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>BASIC CHEMICAL CALCULATIONS</b>	<b>Basic Chemical Calculations:</b> Introduction, Concept of atom, Mole and mole fraction, Methods of expressing the composition of mixtures (mass percent, volume percent, mole percent), equivalent weight, normality, molarity, molality.	6	CO1
2	<b>GRAVIMETRIC ANALYSIS</b>	<b>Gravimetric analysis:</b> Precipitation, digestion, filtration, washing, incineration, with reference to estimation of barium sulphate, volumetric analysis- standard solution, types of titrations- Acid-base or neutralization titration, complexometric titrations, redox titration, double titration method.	6	CO2
3	<b>SEPARATION TECHNIQUES</b>	<b>Separation techniques:</b> Chromatography, Classification of Chromatographic methods, Elution in column chromatography, chromatograms, distribution constant, retention time, stationary phase, mobile phase, principle of adsorption and partition chromatography, column chromatography; principle, adsorbents used, preparation of column, adsorption, elution.	6	CO3
4	<b>SPECTROSCOPIC TECHNIQUES</b>	<b>Spectroscopic Techniques:</b> Basic principles of spectroscopic methods. The use of UV, Visible, IR, <sup>1</sup> HNMR, for the determination of structure of simple organic compounds.	6	CO4
5	<b>NUCLEAR CHEMISTRY</b>	<b>Nuclear Chemistry:</b> Natural and artificial radioactivity, binding energy, rate equation for nuclear decay, nuclear fission and nuclear fusion and their applications, group displacement law, isotopes and isobars, applications of radioactivity: radiocarbon dating and radio tracer techniques.	6	CO5

### Reference Books:

1. Instrumental Method of Chemical Analysis. Chatwal & Anand, Himalaya Publication, 5th edition 2004.
2. Introduction of Forensic Science in Crime Investigation by Dr. (Mrs.) R. Krishnamurthy, Selective & Scientific Books (2015).
3. Handbook of Instrumental Technique for Analytical Chemistry by Settle F. A, Prentice Hall; Har /Cdr edition (4 June 1997).
4. Laboratory Procedure Manual: Petroleum Products, Directorate of Forensic Science, MHA, Govt. of India, 2005.
5. Working Procedure Manual on Chemistry; Directorate of Forensic Science MHA Govt. of India.
6. Settle F. A.: Handbook of Instrumental Technique for Analytical Chemistry, Prentice Hall 1997.

### e-Learning Source:

1. <https://www.youtube.com/live/0jp81yKaKw0?feature=share>
2. <https://youtu.be/DbE3qeyCPXs>
3. <https://youtu.be/0Joh1Y7fYQ>

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	3	2	2	3	3	2	2	2	3	3	2	2	2	2	2	2	3
<b>CO2</b>	2	2	2	3	2	3	2	2	2	2	2	2	2	2	2	2	3
<b>CO3</b>	3	2	2	2	2	3	2	3	3	3	3	3	3	3	2	2	2
<b>CO4</b>	3	3	2	2	3	3	2	2	2	3	2	2	2	2	2	3	2
<b>CO5</b>	2	3	2	2	3	3	2	2	2	3	2	2	2	2	2	3	2

**2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
CH219	FORENSIC CHEMISTRY- I	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	3,4
		√	√	√			√	√	





**Integral University, Lucknow**

<b>Effective from Session: 2020-21</b>							
<b>Course Code</b>	<b>ES101</b>	<b>Title of the Course</b>	<b>ENVIRONMENTAL STUDIES</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	The student will be made aware of our environment in general, natural resources, ecosystems, environmental pollution and social issues related to environment.						

<b>Course Outcomes</b>	
<b>CO1</b>	To study about the Environment and the ECO system.
<b>CO2</b>	To study about the Natural Resources.
<b>CO3</b>	To study about Biodiversity and Conservation
<b>CO4</b>	To study Environmental pollution, its policies and practices
<b>CO5</b>	To study Human Population and Environmental Ethics.

<b>Unit No.</b>	<b>Title of the Unit</b>	<b>Content of Unit</b>	<b>Contact Hrs.</b>	<b>Mappe d CO</b>
1	<b>INTRODUCTION TO ENVIRONMENT AND ECOSYSTEMS</b>	Environment, its components and segments, Multidisciplinary nature of Environmental studies, Concept of Sustainability and sustainable development, Environmental movements, Ecosystem, Structure & Function, Energy flow in the Ecosystem, Ecological Pyramids and Ecological Succession.	6	CO1
2	<b>NATURAL RESOURCES</b>	Energy Resources: Renewable and nonrenewable, Soil erosion and desertification, Deforestation, Water: Use and over exploitation, Impacts of large Dams, Case studies.	6	CO2
3	<b>BIODIVERSITY AND CONSERVATION</b>	Levels of biological diversity, Hot spots of biodiversity, India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity, Conservation of Biodiversity, Ecosystem and biodiversity services.	6	CO3
4	<b>ENVIRONMENTAL POLLUTION, POLICIES AND PRACTICES</b>	Environmental pollution, Solid waste management, Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment. Environmental Laws: Environment Protection Act, Wildlife protection Act, Forest conservation Act, Convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts.	6	CO4
5	<b>HUMAN POPULATION AND THE ENVIRONMENT</b>	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, Environmental ethics, Environmental communication and public awareness, case studies.	6	CO5

1. Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner.
2. Glick, H.P.1993 water in crisis, Pacific Institute for studies in dev, Environment & security, Stockholm Env, Institute, Oxford Univ, Press 473p.
3. Cunningham W.P.2001.Cooper, T.H. Gorhani, E & Hepworth, Environmental encyclopedia, Jacob Publication House, Mumbai
4. Clark R.S. Marine Pollution, Calderon Press Oxford (TB).
5. Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill.
6. Bharucha Erach, The Biodiversity of India, Mappin Pub. Pvt. Ltd., Ahemdabad-380, India.
7. De. A.K. Environmental chemistry Willey Eastern Limited.

**e-Learning Source:**

1. <https://youtu.be/7egemK9U2ds>
2. <https://www.youtube.com/live/Nz30xpuc-L8?feature=share>
3. <https://youtu.be/TFIZqv3a-Ws>

<b>PO-PSO CO</b>	<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	2	2	2	1	1	2	2	2	1	1	2	2	2	2	2	2	1
<b>CO2</b>	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
<b>CO3</b>	1	1	1	2	2	2	2	1	1	1	1	1	1	1	2	2	2
<b>CO4</b>	1	1	1	2	1	1	2	2	2	1	2	2	2	2	2	1	2
<b>CO5</b>	2	1	2	2	1	1	2	2	2	1	2	2	2	2	2	1	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

<b>Course Code</b>	<b>Course Title</b>	<b>Attributes</b>							<b>SDGs No.</b>
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
ES101	ENVIRONMENTAL STUDIES							√	<b>3,4,11,16</b>



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>										
<b>Course Code</b>	<b>FS205</b>	<b>Title of the Course</b>	<b>FORENSIC MEDICINE- LAB</b>				<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>				<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>							
<b>Course Objectives</b>	To provide a detailed practical knowledge of different dimensions of forensic medicine in crime scene investigation.									

Course Outcomes	
<b>CO1</b>	Students will be able to design questionnaires for the first responder offices and deal with media at crime scene.
<b>CO2</b>	Students will be able to design a checklist for forensic scientist at death scene.
<b>CO3</b>	Students will be able to analyze the bite marks
<b>CO4</b>	Students will be able to distinguish different types of injuries
<b>CO5</b>	Students will be able to understand the process of post-mortem and post-mortem findings.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>DEATH INVESTIGATIONS</b>	1. To design a questionnaire for the first responder to the death scene. 2. To design a checklist for the forensic scientists at the death scene.	2	CO1-5
2	<b>ROLE OF FORENSIC MEDICINE IN COURT</b>	3. To study the procedure of calling a witness in a court of law.	2	
3	<b>MEDICAL AUTOPSY</b>	4. To design a canvass form giving a description of an unidentified victim. 5. To study post-mortem findings of a cadaver.	2	
4	<b>THANATOLOGY</b>	6. To study different stages of changes after death. 7. To identify different causes of death.	2	
5	<b>WOUNDS AND INJURIES</b>	8. Collection, preservation, and analysis of bite marks. 9. To identify the range of fire based on firearm injuries	2	

**Reference Books:**

- Forensic medicine and toxicology: principles and practice, Professor Krishna Vij Publisher: Elsevier ,5 edition ,2014.
- Practical Aspects of Forensic Medicine, Dr T.D. Dogra Dr. AD Aggrawal jaypee publishers,2014
- Parikh's textbook of medical jurisprudence, forensic medicine and toxicology Professor C. K. Parikh,CBS; 6 edition, 2007.
- The essentials of forensic medicine and toxicology Professor K.S. Narayan Reddy Jaypee Brothers Medical Publishers; 34<sup>th</sup> edition 2017.
- Principles of forensic medicine Professor Apurva Nandy New Central Book Agency; 3rd Revised edition edition 2010.
- A Textbook of Medical Jurisprudence and Toxicology Dr. Jaising P. Modi (Edited by Justice K Kannan, Lexis Nexis; 24<sup>th</sup> edition 2012.
- B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,

**e-Learning Source:**

- <https://youtu.be/WobgHMVr3k8>
- <https://youtu.be/L0eZtNZ8CE8>
- <https://youtu.be/uUav053YGmU>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	3	2	2	3	3	3	2	3	2	2	2	3	2	3	3	2	3
<b>CO2</b>	2	3	3	2	2	3	2	3	3	2	2	2	3	2	2	3	2
<b>CO3</b>	3	3	3	2	2	2	3	2	2	3	3	3	3	3	3	3	3
<b>CO4</b>	2	2	2	3	3	2	3	2	3	2	2	3	2	3	2	3	2
<b>CO5</b>	2	2	2	2	2	1	2	3	2	2	2	3	2	2	3	3	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
BO205	BASICS OF FORENSIC MEDICINE- LAB	√	√	√				√	√	3,4



## Integral University, Lucknow

<b>Effective from Session: 2020-21</b>							
<b>Course Code</b>	<b>CH220</b>	<b>Title of the Course</b>	<b>FORENSIC CHEMISTRY- I LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of different dimensions of chemical examinations pertaining to forensic examinations.						

Course Outcomes	
<b>CO1</b>	Students will be able to demonstrate the procedure of distillation and difference among various distillation
<b>CO2</b>	Students will be able to identify and compare the fibers
<b>CO3</b>	Students will be able to prepare the TLC
<b>CO4</b>	Students will be able to identify the polymers
<b>CO5</b>	Students will be able to perform centrifuge and extraction.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1		<b>1-</b>	2	CO1-5
2		<b>2-</b>	2	
3		<b>3-</b>	2	
4		<b>4-</b>	2	
5		<b>5-</b>	2	

Reference Books:	
1.	Instrumental Method of Chemical Analysis. Chatwal & Anand, Himalya Publication, 5th edition 2004.
2.	Settle F. A.: Handbook of Instrumental Technique for Analytical Chemistry, Prentice Hall 1997.
3.	Introduction of Forensic Science in Crime Investigation by Dr. (Mrs.) R. Krishnamurthy, Selective & Scientific Books (2015).
4.	Handbook of Instrumental Technique for Analytical Chemistry by Settle F.A, Prentice Hall; Har/Cdr edition (4 June 1997).
5.	Laboratory Procedure Manual: Petroleum Products, Directorate of Forensic Science, MHA, Govt. of India, 2005
6.	Working Procedure Manual on Chemistry; Directorate of Forensic Science MHA Govt. of India.
e-Learning Source:	
1.	<a href="https://youtu.be/ED8LHLQJyWU">https://youtu.be/ED8LHLQJyWU</a>
2.	<a href="https://youtu.be/CSAOdyEPrhg">https://youtu.be/CSAOdyEPrhg</a>
3.	<a href="https://youtu.be/Vz2la3947I0">https://youtu.be/Vz2la3947I0</a>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	
	<b>CO1</b>	3	2	2	3	3	2	2	2	3	3	2	2	2	2	2	2	3
<b>CO2</b>	2	2	2	3	2	3	2	2	2	2	2	2	2	2	2	2	3	
<b>CO3</b>	3	2	2	2	2	3	2	3	3	3	3	3	3	3	2	2	2	
<b>CO4</b>	3	3	2	2	3	3	2	2	2	3	2	2	2	2	2	3	2	
<b>CO5</b>	2	3	2	2	3	3	2	2	2	3	2	2	2	2	2	3	2	

**2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Course Code		Course Title		Attributes						SDGs No.
CH220	FORENSIC CHEMISTRY- I LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	3,4	
		√	√	√			√	√		



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	FS206	<b>Title of the Course</b>	BASICS OF FORENSIC PHYSICS- I LAB	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	II	<b>Semester</b>	III	0	0	2	1
<b>Pre-Requisite</b>	Nil	<b>Co-requisite</b>	Nil				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic analysis of different physical samples present at crime scene.						

Course Outcomes	
<b>CO1</b>	To perform the examination of soil and paint
<b>CO2</b>	To perform the forensic examination of glass
<b>CO3</b>	To identify the physical properties of soil
<b>CO4</b>	Analysis of paint pigments using instruments.
<b>CO5</b>	To compare the glass and soil sample found on crime scene.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>PAINT</b>	<b>1-</b> Examination of Paint chips/Paint evidence	5	CO1-5
2	<b>GLASS</b>	<b>2-</b> Examination of Glass fracture <b>3-</b> Determination of direction of impact on fractured glass sample <b>4-</b> Density examination of given glass sample	5	
3	<b>SOIL</b>	<b>5-</b> Preliminary examination of soil sample <b>6-</b> Density examination of given Soil sample	5	
4	<b>CEMENT AND CONCRETE-CEMENT</b>	<b>7-</b> Ignition test/Heat test for cement sample <b>8-</b> To examine the cement sample to detect the adulteration	5	
5	<b>FIBRE</b>	<b>9-</b> Ignition test/Heat test for fiber sample		

<b>Reference Books:</b>	
1.	Safer stein, R; Forensic Science Handbook. Vol. I, II, (Edition), Prentice Hall, New Jersey, 1988.
2.	Shaw, D; Physics in the Prevention and Detection of Crime, ContemnPhys. Vol.17, 1976.
3.	Caddy, B; Forensic Examination of Glass and Paint Analysis and Interpretation, CRC Press, New York, 2001.
4.	B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6 <sup>th</sup> Edition).
<b>e-Learning Source:</b>	
1.	<a href="https://youtu.be/AJAY8M4m9nM">https://youtu.be/AJAY8M4m9nM</a>
2.	<a href="https://youtu.be/TlKaHu8WsV8">https://youtu.be/TlKaHu8WsV8</a>
3.	<a href="https://youtu.be/LpndOfsq_6M">https://youtu.be/LpndOfsq_6M</a>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	3	2	2	3	2	2	3	3	2	3	3	2	2	3	3	3
<b>CO2</b>	3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	2	2
<b>CO3</b>	2	3	2	3	2	2	2	2	3	2	3	3	3	2	2	3	3
<b>CO4</b>	3	2	2	3	2	2	3	3	2	3	2	2	3	3	3	3	3
<b>CO5</b>	2	2	3	3	3	2	3	3	3	2	2	3	3	3	3	2	2

**3- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

Attributes & SDGs		Attributes							SDGs No.
Course Code	Course Title	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	No.
FS206	BASICS OF FORENSIC PHYSICS- I LAB	√	√	√			√	√	3,4



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS207</b>	<b>Title of the Course</b>	<b>BASICS OF FORENSIC BIOLOGY- I LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic analysis of different biological samples present at crime scene.						

Course Outcomes	
<b>CO1</b>	To perform the analysis and comparison of hair & fiber evidences.
<b>CO2</b>	To perform the presumptive test of blood found at crime scene using various methods.
<b>CO3</b>	To perform the confirmative test of blood found at crime scene using various methods.
<b>CO4</b>	To identify the blood group of given blood sample
<b>CO5</b>	To perform the species origin test from various biological samples

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>FORENSIC BIOLOGY</b>	1. Microscopic Comparison of Human Hair and Animal Hair 2. Techniques of species identification from various biological fluids a. Electrophoresis b. Precipitin tests 3. Acid Phosphatase test for semen	2	CO1-5
2	<b>FORENSIC DIATOMOLOGY</b>	4. Microscopic examination of spermatozoa 5. Detection of Amylase activity- Starch-Iodine Assay. 6. To carry out the microscopic examination of diatoms.	2	
3	<b>HAIR &amp; FIBER</b>	7. Microscopic Comparison of Fibres	2	
4	<b>FORENSIC FLUIDS</b>	8. Presumptive Tests for Blood a. Phenolphthalein Assay b. Benzidine c. Leucomalachite Green (LMG) d. Luminol Test 9. Confirmatory Tests for Blood 10. Acid Phosphatase test for semen	2	
5	<b>BLOODSTAIN PATTERN ANALYSIS</b>	11. ABO Grouping & Rhesus Factor	2	

**Reference Books:**

1. Shaw, D; Physics in the Prevention and Detection of Crime, Contemn Phys. Vol.17, 1976.
2. Caddy, B; Forensic Examination of Glass and Paint Analysis and Interpretation, CRC Press, New York, 2001.
3. Safer stein, R; Forensic Science Handbook. Vol. I, II, (Edition), Prentice Hall, New Jersey, 1988.
4. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).

**e-Learning Source:**

1. <https://youtu.be/XKvhn9v6WUg>
2. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>
3. <https://youtu.be/0jltioeaEyY>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	2	3	3	2	3	3	2	2	3	3	2	3	3	2	2	3
<b>CO2</b>	3	3	3	3	2	3	2	3	3	2	3	2	2	3	3	3	3
<b>CO3</b>	3	3	2	2	3	2	3	3	2	2	2	3	3	2	3	2	3
<b>CO4</b>	3	2	2	3	3	3	2	2	2	3	3	3	3	3	3	3	3
<b>CO5</b>	3	2	3	3	3	2	2	3	3	3	3	2	2	3	2	3	2

**4- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
FS206	BASICS OF FORENSIC PHYSICS- I LAB	√	√	√				√	√	3,4



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS208</b>	<b>Title of the Course</b>	<b>BASICS OF FORENSIC PSYCHOLOGY- LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>III</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic psychology in criminal investigation.						

Course Outcomes	
<b>CO1</b>	To perform the psychological assessment of serial murder cases.
<b>CO2</b>	Case study on hypnosis was used as a means to detect deception
<b>CO3</b>	Analyze the thematic appreciation test
<b>CO4</b>	Case report study on word association test
<b>CO5</b>	Case study on narco analysis

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>BASICS OF FORENSIC PSYCHOLOGY</b>	1. To study and Discussion, a criminal case in which hypnosis was used as a means to detect deception.	4	CO1-5
2	<b>PSYCHOLOGY AND CRIMINAL BEHAVIOR</b>	3. To review a crime case involving serial murders in India.	4	
3	<b>INVESTIGATIVE PSYCHOLOGY</b>	4. To prepare a case report on thematic appreciation test. 5. To prepare a case report on Minnesota multiphase 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 cite a criminal case in which Narco analysis was used as a means to detect deception.	4	
4	<b>PSYCHOLOGY AND LAW</b>	9. To prepare a case report on Bhatia's battery of performance test of intelligence.	4	
5	<b>LEGAL ASPECT- MENTAL HEALTH ACT, 1987</b>	10. To Prepare a report on psychological traits of the accused.	4	

**Reference Books:**

1. Criminal Profiling-An Introduction to Behavioral Evidence analysis', Brent Turvey, Academic Press; 4<sup>th</sup> edition (13 May 2011).
2. Handbook of Forensic Psychology', Prof Dr. Vimala Veera raghwan, Edition 1st, Elsevier.
3. Handbook of Forensic Psychology', Irving B. Weiner, Allen K. Hiss, Edition 3<sup>rd</sup> 2006, Wiley Publication.
4. Theoretical Psychology', Moazziz Ali Beg, Sangeeta Gupta Beg, Vol[04], Edition 2nd, 2013, Global Vision Publishing House, New Delhi.
5. Abnormal Psychology-The Problem of Maladaptive behavior', Irwin G. Sarson, Barbara R. Sarson, edition 11th, 2012, PHI Publication, New Delhi.
7. Working Procedure Manual on Chemistry; Directorate of Forensic Science MHA Govt. of India.
8. Settle F. A.: Handbook of Instrumental Technique for Analytical Chemistry, Prentice Hall 1997.
9. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
10. Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,

**e-Learning Source:**

1. <https://youtu.be/zIHS2n8dBgY>
2. <https://youtu.be/jIiaJKGjeDU>
3. <https://youtu.be/jjehxtlFO9k>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	2	2	2	3	3	3	2	3	2	2	2	3	2	3	3	2
<b>CO2</b>	2	3	3	2	2	3	2	3	3	3	2	2	3	2	2	3	2
<b>CO3</b>	3	2	3	2	2	2	3	2	2	3	3	3	3	3	3	3	2
<b>CO4</b>	2	2	2	3	3	2	3	2	3	2	2	3	2	3	2	3	2
<b>CO5</b>	2	2	2	2	2	2	2	3	2	2	2	3	2	2	3	3	2

**5- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
FS208	BASICS OF FORENSIC PSYCHOLOGY- LAB	√	√	√				√	√	3,4



**INTEGRAL UNIVERSITY, LUCKNOW**  
**INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH**

**DEPARTMENT OF PARAMEDICAL SCIENCES**

**BACHELOR OF SCIENCE IN FORENSIC SCIENCE  
(B.FS.)**

**SYLLABUS**

**YEAR/ SEMESTER: II/IV**



Integral University, Lucknow  
Department of Paramedical Sciences  
Study and Evaluation Scheme

Program: B.Sc. FS

Semester-IV

S. N.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
<b>THEORIES</b>													
1	FS 209	Forensic Anthropology	Core	3	1	0	40	20	60	40	100	31:0	4
2	FS210	Forensic Physics-II	Core	2	1	0	40	20	60	40	100	2:1:0	3
3	FS211	Forensic Biology-II	Core	2	1	0	40	20	60	40	100	2:1:0	3
4	FS212	Digital and Cyber Forensic- I	Core	2	1	0	40	20	60	40	100	2:1:0	3
5	FS213	Quality management in Laboratory	Core	2	1	0	40	20	60	40	100	2:1:0	3
6	CH227	Forensic Chemistry-II	Core	3	1	0	40	20	60	40	100	3:1:0	4
<b>PRACTICAL</b>													
1	FS214	Forensic Anthropology-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
2	FS215	Forensic Physics II-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
3	FS216	Forensic Biology –II- Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
4	FS217	Digital and cyber forensic-I –Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
5	CH228	Forensic Chemistry-II- Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
<b>Total</b>				<b>14</b>	<b>06</b>	<b>10</b>	<b>440</b>	<b>220</b>	<b>660</b>	<b>440</b>	<b>1100</b>	<b>25</b>	<b>25</b>

S. N.	Course code	Course Title	Type of Paper	Attributes							United Nation Sustainable Development Goal (SDGs)
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
<b>THEORIES</b>											
1	FS209	Forensic Anthropology	Core	√	√	√	√		√	√	3,4
2	FS210	Forensic Physics-II	Core	√	√	√			√	√	3,4
3	FS211	Forensic Biology-II	Core	√	√	√			√	√	3,4
4	FS212	Digital and Cyber Forensic- I	Core	√	√	√			√	√	3,4
5	FS213	Quality management in Laboratory	Core	√	√	√	√	√	√	√	3,4
6	CH227	Forensic Chemistry-II	Core	√	√	√			√	√	3,4
<b>PRACTICAL</b>											
1	FS214	Forensic Anthropology-Lab	Core	√	√	√	√		√	√	3,4
2	FS215	Forensic Physics II-Lab	Core	√	√	√			√	√	3,4
3	FS216	Forensic Biology –II- Lab	Core	√	√	√			√	√	3,4
4	FS217	Digital and cyber forensic-I –Lab	Core	√	√	√			√	√	3,4
5	CH228	Forensic Chemistry-II- Lab	Core	√	√	√			√	√	3,4

**L:** Lecture    **T:** Tutorials    **P:** Practical    **CT:** Class Test    **TA:** Teacher Assessment    **ESE:** End Semester Examination,  
**AE=** Ability enhancement, **DSE-** Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment    **Subject Total:** Sessional Total + End Semester Examination (ESE)







**Integral University, Lucknow**

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS209</b>	<b>Title of the Course</b>	<b>FORENSIC ANTHROPOLOGY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	3	1	0	4
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	Forensic Anthropology is best described as the analysis of human remains for the medico legal purposes of establishing identity.						

<b>Course Outcomes</b>	
<b>CO1</b>	To discuss about the basic introduction and scope of forensic anthropology, study and identification of human bones for forensic consideration.
<b>CO2</b>	Developing the understanding about the different aspects of forensic odontology and forensic significances of bite marks.
<b>CO3</b>	To discuss about the importance of somatoscopy in personal identification.
<b>CO4</b>	To develop the knowledge about importance of somatometry in personal identification.
<b>CO5</b>	To discuss about the different techniques and their aspects in facial reconstruction for forensic case work.

<b>Unit No.</b>	<b>Title of the Unit</b>	<b>Content of Unit</b>	<b>Contact Hrs.</b>	<b>Mapped CO</b>
1	<b>FORENSIC ANTHROPOLOGY</b>	<b>Forensic Anthropology</b> -Introduction, General Definition, Scope and Significance, Types of bones, Anatomy, and physiology of major bones like pelvis, limb bones, skull, clavicle, and sternum. Determination of sex, age, race, and stature through bones, Skull, Pelvis, and long bones. Advancement in age and sex determination of human skeleton system.	8	CO1
2	<b>FORENSIC ODONTOLOGY</b>	<b>Forensic Odontology</b> - Types of teeth and their comparative anatomy. Role and scope of odontology in forensic science. Identification of skeleton remains in mass disasters. Estimation of age from teeth: eruption sequence, Gustafson’s Method, dental anomalies and their importance. Advancement in forensic odontology. <b>Bite marks</b> - Introduction, photography, lifting, preservation and Forensic significance of bite marks. Legal aspects of bite marks.	8	CO2
3	<b>PERSONAL IDENTIFICATION-SOMATOSCOPY</b>	<b>Personal Identification -Somatoscopy</b> –observation of hair on head, forehead, eyes, root of nose, nasal bridge, nasaltip, chin, Darwin’s tubercle, earlobes, supra-orbital ridges, physiognomic ear breadth, the circumference of head. Importance of somatoscopy in personal identification. Introduction and forensic application of Scar marks and occupational marks.	8	CO3
4	<b>ANTHROPOMETRY (SOMATOMETRY, OSTEAMETRY AND CRANIOMETRY)–</b>	<b>Anthropometry (Somatometry, Osteometry and Craniometry)</b> – measurements of skull, head, face, nose, cheek, ear, hand and foot, bodyweight, height. Indices - cephalic index, nasal index, cranial index, upper facial index. Importance of anthropometry in personal identification.	8	CO4
5	<b>FACIAL RECONSTRUCTION</b>	<b>Facial Reconstruction</b> - Portrait Parle/Bertillon System. Facial reconstruction from skeleton, Superimposition technique, Video analysis. Importance of tissue depth in facial reconstruction. Advancement in facial reconstruction. Genetic and congenital anomalies–causes, types, identification and their forensic significance.	8	CO5

**Reference Books:**

- M.Y. Iscan and S.R. Loth, The scope of forensic anthropology in, Introduction to Forensic Sciences, 2<sup>nd</sup> Ed., W.G. Eckert (Ed.), CRC Press, Boca Raton (1997).
- D. Ubelaker and H. Scammell, *Bones*, M. Evans & Co., New York (2000).
- S. Rhine, *Bone Voyage: A Journey in Forensic Anthropology*, University of Mexico Press, Mexico (1998).
- Introduction to Forensic Anthropology, Steven N. Byers, Pearson/ Allyn & Bacon; 3<sup>rd</sup> edition (December 1, 2008).
- Forensic Anthropology Laboratory Manual, Steven N. Byers, Pearson Education, USA, 2011.
- Forensic Anthropology: Current Methods and Practice, Angi M. Academic Press; 1<sup>st</sup> edition (5 March 2014)
- Christensen, Nicholas V. Passalacqua and Eric J. Bartelink, Academic Press, USA, 2014.
- B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,

- e-Learning Source:**
- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>
  - [https://youtu.be/wh1tJ1xu8\\_M](https://youtu.be/wh1tJ1xu8_M)
  - <https://youtu.be/9Z84bOxBbGU>

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
<b>PO-PSO CO</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	2	3	3	3	2	3	2	3	2	2	2	2	3	2	3	2	3
<b>CO2</b>	3	2	2	3	2	2	3	2	3	2	2	3	2	3	3	2	2
<b>CO3</b>	3	3	3	2	3	2	3	2	3	2	3	3	3	2	2	3	2
<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	3	2	3	3	2	3
<b>CO5</b>	2	3	3	2	3	2	3	2	3	2	3	2	3	3	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

<b>Course Code</b>	<b>Course Title</b>	<b>Attributes</b>							<b>SDGs No.</b>
FS209	FORENSIC ANTHROPOLOGY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	<b>3,4</b>
		√	√	√	√		√	√	



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS210</b>	<b>Title of the Course</b>	<b>FORENSIC PHYSICS-II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	The student will develop an understanding and importance of Physics in Forensic Science.						

Course Outcomes	
<b>CO1</b>	To develop the deep understanding and knowledge about different types of tool marks, their examination and significances in crime scene investigation
<b>CO2</b>	Developing the understanding of Foot/Footwear/Tyre Impression, their forensic examination protocols and gait pattern analysis
<b>CO3</b>	To discuss about the basic principles of photography, technique used in photography, Videography and Crime Scene & laboratory photography.
<b>CO4</b>	To develop the deep understanding about the Restoration of erased / obliterated marks on different surfaces.
<b>CO5</b>	To discuss about the principles, Working and Applications of Electrostatic Dust Lifting Kit (DLK), LUMA light, Video Spectral Comparator (VSC), Electrostatic Developing Apparatus (ESDA) in the field of forensic science.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>TOOL MARKS</b>	<b>Tool Marks</b> -Types and formation of tool marks- compression marks, striated marks, combination of compression and striated marks, repeated marks .Class characteristics and individual characteristics, crime scene processing of tool marks, Photographic examination of tool marks and cut marks on clothes and walls etc. Significances of tool marks.	6	CO1
2	<b>IMPRESSIONS AT CRIME SCENE</b>	<b>Impressions at Crime Scene:</b> Foot/Footwear/ Tyre Impression, Collection, Tracing, Lifting, Casting of impressions, Enhancement of Footwear Impression, Analysis & comparison of foot impressions, Moulds, Gait Pattern analysis and identification.	6	CO2
3	<b>FORENSIC PHOTOGRAPHY</b>	<b>Forensic Photography</b> -Basic principles of Photography, Techniques of black & white and color photography, Types of cameras and basic terminologies used in photography, developers and fixers; Types of photography; Modern development in photography- digital photography, working and basic principles of digital photography; Surveillance photography. Videography and Crime Scene & laboratory photography.	6	CO3
4	<b>RESTORATION OF ERASED/ OBLITERATED MARKS</b>	<b>Restoration of erased / obliterated marks</b> - Method of making-cast, punch, engrave; methods of obliteration, method of restoration- etching (etchings for different metals), magnetic, electrolytic etc., recording of restored marks – restoration of marks on wood, leather, polymer etc.	6	CO4
5	<b>FORENSIC PHYSICS TOOLS</b>	Principles, Working and Applications in Forensic Science. <ol style="list-style-type: none"> <li>1. Electrostatic Dust Lifting Kit (DLK)</li> <li>2. Forensic Light Source</li> <li>3. Video Spectral Comparator (VSC)</li> <li>4. Gas Chromatography</li> </ol>	6	CO5

**Reference Books:**

1. Houck, M.M& Siegel, J.A; Fundamentals of Forensic Science, Academic Press, London, 2<sup>nd</sup> Edition 2010.
2. Sharma, B.R; Forensic Science in Criminal Investigation & Trials, Universal Publishing Co., New Delhi, Fifth edition 2016.
3. Nanda B.B and Tewari, R.K; Forensic Science in India- A vision for the Twenty First Century, Select Publisher, New Delhi, Select publishers (2014).
4. Robertson and Vignaux; Interpreting Evidence, John Wiley, New York, 1995.
5. H.L. Blitzer and J.Jacobia; Forensic Digital Imaging and Photography, 1<sup>st</sup> Edition Academic Press, London, 2002.
6. Forensic Medical Investigation of Motor Vehicle Incidence By Michel P. Burke,CRC Press ,2016.
7. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
8. Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey,

**e-Learning Source:**

1. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>
2. <https://youtu.be/LZBXvD7TaxA>

PO-PSO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	3	3	2	3	2	2	3	3	3	3	3	2	3	2	2	3	3
<b>CO2</b>	3	2	2	3	2	2	3	2	3	2	3	3	2	3	2	2	3
<b>CO3</b>	2	3	3	2	3	2	3	3	2	3	3	2	3	3	3	2	3
<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	2	2	3	3	2	3
<b>CO5</b>	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

### Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS210	FORENSIC PHYSICS-II	√	√	√			√	√	<b>3,4</b>



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS211</b>	<b>Title of the Course</b>	<b>FORENSIC BIOLOGY-II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To demonstrate the Forensic Biology and their role in crime scene investigation.						

Course Outcomes	
<b>CO1</b>	To develop the deep understanding and knowledge about basics concepts of forensic entomology, forensic significances of entomological evidence during death investigations
<b>CO2</b>	Developing the understanding about the botanical evidence encounter in forensic investigation, Dendrography, Limnology and Dendrochronology.
<b>CO3</b>	To discuss about the fundamentals and significance of wildlife forensic
<b>CO4</b>	To develop the sound knowledge about the types and identification of microbial organisms of forensic significance
<b>CO5</b>	To discuss about the dimensions of Forensic ornithology and its importance

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>FORENSIC ENTOMOLOGY</b>	<b>Forensic Entomology:</b> General entomology and arthropod biology, Insects of forensic importance. Collection of entomological evidence during death investigations. Determining the age of blow fly life cycle stages, Introduction, forensic entomological application, and factors influencing of insect succession on carrion and its relationship to determine time since death.	6	CO1
2	<b>FORENSIC BOTANY</b>	<b>Forensic Botany:</b> Introduction, Scope, and Significance, Various types of evidence related to forensic botany like <b>1.Wood:</b> types of wood and anatomy, methods of identification, and comparison. <b>2. Leaves:</b> Identification of various types of leaves and their anatomy, and methods of comparison. <b>3.Seeds:</b> identification and analysis. Documentation of botanical evidence. Endangered plants. Introduction and importance of Dendrochronology.	6	CO2
3	<b>WILDLIFE FORENSICS AND LAW</b>	<b>Wildlife forensic and laws:</b> Introduction and Significance of wildlife forensics. Types of wildlife evidences, such as skin, fur, bone, horn, teeth, flowers, plants etc. Wildlife crime, commodities in the trade, Trade level, value of trade, prevention of wildlife crime. Importance of Wildlife (Protection) Act – 1972(flora and fauna species).Identification of pug marks of various animals.	6	CO3
4	<b>MICROBIAL FORENSIC AND FORENSIC ORNITHOLOGY</b>	<b>Microbial Forensic and Forensic Ornithology:</b> Introduction, identification, types and forensic significance of microbial organisms. Bioterrorism. <b>Forensic Ornithology:</b> Introduction, flight and means of locomotion, forensic significance.	6	CO4
5	<b>FORENSIC PALYNOLOGY</b>	<b>Forensic Palyology:</b> Pollens or pollen grains: Structure, function, methods of identification, and comparison of Seeds and Spores: structure and formation in fungi, gymnosperm, and angiosperm. Forensic Importance of Pollen and Spores.	6	CO5

<b>Reference Books:</b>	
1.	Forensic Biology by Richard Li CRC Press; 2 edition (27 April 2015).
2.	A textbook of medical jurisprudence and toxicology- Modi Lexis Nexis; First edition (22 April 2016).
3.	Wildlife forensic investigation-Principles and practice: Cooper and Cooper, CRC press ,2013.
4.	Forensic Palyology in the United States of America (1990)- Bryant, V.M. Jr, Mildren Hall, D.C. and Jones, J.G.14. PP.193-208.
5.	Microbial forensics -Roger Breeze, Bruce Bud Owle, Steven E. Schutzer, Elsevier.
6.	B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6 <sup>th</sup> Edition).
7.	Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey.
<b>e-Learning Source:</b>	
1.	<a href="https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjv3c0vICLa6VYg==#">https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjv3c0vICLa6VYg==#</a>
2.	<a href="https://youtu.be/gbfo60qSzeQ">https://youtu.be/gbfo60qSzeQ</a>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	3	2	3	3	2	3	3	2	3	2	3	2	3	2	2	3	3
<b>CO2</b>	3	2	2	3	2	2	3	2	3	2	3	3	2	3	2	2	3
<b>CO3</b>	3	3	3	2	3	2	3	3	2	3	2	2	3	2	3	3	2
<b>CO4</b>	2	3	2	3	2	3	3	3	2	3	3	2	2	3	3	2	3
<b>CO5</b>	3	2	3	3	3	2	3	3	3	3	3	3	3	2	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS211	FORENSIC BIOLOGY-II	√	√	√			√	√	3,4



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	FS212	<b>Title of the Course</b>	DIGITAL & CYBER FORENSIC-I	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	II	<b>Semester</b>	IV	2	1	0	3
<b>Pre-Requisite</b>	Nil	<b>Co-requisite</b>	Nil				
<b>Course Objectives</b>	To provide insight of cyber forensic investigation and technical issues related to it. To learn about cyber security tools, possible security issues, cyber-attacks and concealment techniques.						

Course Outcomes	
<b>CO1</b>	To develop the deep understanding and knowledge about basics concepts of cyber forensic investigation, digital evidence collection, evidence preservation along with search and seizure of computers.
<b>CO2</b>	Developing the understanding about the basic concepts of security technologies such as certification and key distribution, digital signature protocols for transactions, SSL, SET etc.
<b>CO3</b>	To discuss about the security issues and different types of attacks in digital & cyber forensic, firewalls and implementation of security policies
<b>CO4</b>	To develop the sound knowledge about the cyber security such as software and hardware-based security, Strategies for a Secure Network and The Ethics of Computer Security.
<b>CO5</b>	To discuss about the Cryptography Techniques and their types, Data Hiding on NTFS with Alternate data Streams

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>BASIC OF CYBER FORENSICS</b>	<b>Basic of Cyber Forensics</b> — Define Cyber Forensic, Introduction & Importance of Cyber Forensic Investigation, Types of Cyber Crime, Cyber forensic Investigation procedure, Types of digital evidence, Collection, Preservation and packaging of Digital evidence, Types of digital evidence, Cyber Forensic Investigation Tools, , Types of Computer forensics, Cyber forensic investigation technique	6	CO1
2	<b>FORENSIC TECHNOLOGY &amp; INVESTIGATION</b>	<b>Forensic Technology &amp; Investigation-</b> Introduction to Digital forensics, Extraction of information from the hard disk. Data recovery and deleted files, Password cracking, E-mail tracking and analysis. Encryption and decryption methods. Introduction to Biometrics: face, iris and fingerprint recognition, Audio-video evidence collection, Preservation and Forensic Analysis.	6	CO2
3	<b>SECURITY ISSUES</b>	<b>Security Issues</b> –Operating system, Viruses and Worms, Digging for Worms, Trojan horse, trap door, super zapping, logic bombs, types of Attacks (Active and Passive), Stealing Passwords, Bugs and Backdoors, Social Engineering, Denial- of Service, etc, Firewalls, Biometric Security Systems, Packet Filters, Application- Level Filtering, Circuit- Level Gateways, Dynamic Packet Filters, Packet Filtering, SSL (Secure Socket Layer), SET Secure Electronic Transaction)	6	CO3
4	<b>CYBER SECURITY</b>	<b>Cyber Security-</b> Introduction to Cyber Security, Importance of Cyber security, Implementing Hardware and software Based Security, Security Standards and protocols, Forensic Analysis of OS artifact, Internet Artifacts, File System Artifacts, Registry Artifacts, Application Artifacts, The Ethics of Computer Security, Security Threats and levels,	6	CO4
5	<b>CRYPTOGRAPHY TECHNIQUES</b>	<b>Cryptography Techniques-</b> Introduction to Cryptography, Types of Cryptographic Algorithms: (Secret Key Cryptography, Public Key Cryptography, Hash Function), technique in cryptography, application and advantage of cryptography, Electronic Signature, Introduction to Steganography, Reversing the Steganographic Process	6	CO5

**Reference Books:**

1. File System Forensic Analysis by Brian Carrier, Publisher: Addison-Wesley Professional.
2. Cyber Law & Crimes (IT Act 2000 & Computer Crime Analysis) by Barkha & Ram Mohan, Publisher: Asian Law House, Hyderabad.
3. Firewalls and Internet Security: Repelling the Wily Hacker, Second Edition, Addison.
4. E-Commerce: The Cutting Edge of Business by Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill.
5. Cyberlaw Simplified Vivek Sood, TMG.
6. Tata McGraw Hill Reference Cyber Law and E-Commerce, David Baumer, J C Poindexter, TMG.
7. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
8. Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey.

**e-Learning Source:**

1. <https://youtu.be/23oYYMrvAsk>
2. <https://youtu.be/nL2vHJ53Wr4>
3. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	3	2	3	2	3	3	3	2	3	2	3	2	3	3	2	3
<b>CO2</b>	2	2	2	3	3	2	3	2	3	2	3	3	2	3	2	2	2
<b>CO3</b>	3	3	3	2	3	3	3	3	2	3	2	2	3	2	3	3	2

<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	2	2	3	3	2	3
<b>CO5</b>	2	3	2	2	3	2	3	2	3	3	2	3	3	2	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS212	DIGITAL & CYBER FORENSIC-I	√	√	√	√		√	√	<b>3,4</b>





## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS213</b>	<b>Title of the Course</b>	<b>QUALITY MANAGEMENT IN LABORATORIES</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>I</b>	<b>Semester</b>	<b>IV</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	The Objective of this course is to introduce the students with the Quality management system and requirements for the competence of testing and calibration, the technical requirements needed in a laboratory.						

Course Outcomes	
<b>CO1</b>	To discuss about the basic concepts of quality management as per ISO/IEC 17025 and general requirements for the competence of testing and calibration laboratories.
<b>CO2</b>	Developing the understanding about the basic concept of laboratory management and information system.
<b>CO3</b>	To discuss about the importance of laboratory accreditation & certification and various accreditation and certification bodies.
<b>CO4</b>	To develop the understanding about Report Writing and Evidence Evaluation in respect of Crime Scene and Laboratory findings.
<b>CO5</b>	To discuss about the different cases of Special Importance, Pertaining to forensic examination.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>QUALITY MANAGEMENT (ISO/IEC 17025)</b>	<b>Quality Management (ISO/IEC 17025):</b> Introduction and importance of quality management in laboratories, General requirements for the competence of testing and calibration laboratories. Management requirement: control of records, Technical requirements: Personnel, environmental condition for tests. Test and calibration method and method of validation. Equipment, Safety measures of equipments. Measurement traceability.	6	CO1
2	<b>LABORATORY MANAGEMENT (METHODS AND SAMPLING)</b>	<b>Laboratory Management (methods and sampling):</b> Selection verification and validation of the method using in laboratories. Sampling, Handling of test and calibration items, Assuring the quality of test calibration results and reporting the results	6	CO2
3	<b>ACCREDITATION AND CERTIFICATION BODIES</b>	<b>Accreditation and certification bodies-</b> NABL, ISO, IEC, BIS, ASCLD/LAB, ABC, IAI	6	CO3
4	<b>REPORT WRITING AND EVIDENCE EVALUATION</b>	<b>Report Writing and Evidence Evaluation:</b> Components of reports and Report formants in respect of Crime Scene and Laboratory findings. Court Testimony- admissibility of expert Examination in chief, cross examination and re examination, Ethics in Forensic Science	6	CO4
5	<b>CASE STUDIES</b>	<b>Case Studies:</b> Cases of Special Importance, pertaining to forensic examination Biology and Serology, Toxicology, documents, fingerprints, ballistics, Voice identifications, Tape authentication and cyber crime.	6	CO5

<b>Reference Books:</b>	
1. International Standard on General requirements for the competence of testing and calibration laboratories, 1st Ed., 1999-12-15, ISO/IEC 17025:1999(E).	
2. Crime Laboratory by Oster burg.	
3. William L. Duncan: Total Quality, Key Terms and Concepts.	
4. Murray S. Cooper: Quality control in the Pharmaceutical Industry.	
5. John T. Rabbitt, Peter A Bergh: The ISO 9000 Book.	
6. NABL -113	
7. NABL -113A	
<b>e-Learning Source:</b>	
1. <a href="https://youtu.be/2HxxfynCLII">https://youtu.be/2HxxfynCLII</a>	
2. <a href="https://youtu.be/7Z6lgesaK14">https://youtu.be/7Z6lgesaK14</a>	
3. <a href="https://youtu.be/DW6PBrcptCg">https://youtu.be/DW6PBrcptCg</a>	

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	2	2	3	2	3	2	2	2	3	2	3	2	3	3	2	2
<b>CO2</b>	2	2	2	3	3	2	3	2	3	2	3	3	2	3	2	2	2
<b>CO3</b>	3	2	2	2	3	3	2	2	2	3	2	2	3	2	3	3	2
<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	2	2	3	3	2	3
<b>CO5</b>	2	3	2	2	3	2	3	2	3	3	2	3	3	2	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**  
**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
FS213	QUALITY MANAGEMENT IN LABORATORIES	√	√	√				√	√	3,4, 11



## Integral University, Lucknow

<b>Effective from Session: 2020-21</b>							
<b>Course Code</b>	<b>CH227</b>	<b>Title of the Course</b>	<b>FORENSIC CHEMISTRY-II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	3	1	0	4
<b>Pre-Requisite</b>	<b>NIL</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	Understand and to appreciate the breadth and diversity of analytical science in respect of forensic science.						

Course Outcomes	
<b>CO1</b>	To understand the analysis of traces of petroleum products in forensic exhibits and adulteration of petroleum products
<b>CO2</b>	To understand the Chemistry of fire, cause and origin of fire & forensic examination of fire/arson cases.
<b>CO3</b>	To understand the absorption, detoxication and excretion of alcohol. Analytical techniques used for the analysis of alcohol.
<b>CO4</b>	To understand the Analytical techniques for analysis of exhibits involved in food and other materials.
<b>CO5</b>	To understand the examination and legal aspects of gold, silver, sugar, salts, fertilizers, Detective dyes

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>Petroleum and Petroleum Products</b>	Commercial uses of different petroleum fractions. Analysis of traces of petroleum products in forensic exhibits. Adulteration of petroleum products.	8	CO1
2	<b>Arson and Fire</b>	Chemistry of fire, difference between Arson and Fire, cause of fire and origin of fire Material and Chemicals use in initiating fire and arson Examination of scene of fire/arson, recognition and collection of evidence, packing labelling and forwarding of exhibits, and forensic detection of arson cases.	8	CO2
3	<b>Study of Analysis of Beverages</b>	Introduction, Definition of alcohol and illicit liquor, Alcoholic and non-alcoholic beverages and their composition, Proof spirit, absorption, detoxication and excretion of alcohol, problems in alcohol cases and difficulties in diagnosis, Alcohol and prohibition, Consequences of drunken driving, Analytical techniques used for the analysis of alcohol.	8	CO3
4	<b>Food adulteration</b>	Introduction, Prevention of food adulteration, Analytical techniques for analysis of exhibits involved in food and other material.	8	CO4
5	<b>Miscellaneous</b>	Characteristics, examination and legal aspects of gold, silver, sugar, salts, fertilizers, Detective dyes- cases and importance in trap cases.	8	CO5

**Reference Books:**

1. Safer stein, R; Forensic Science Handbook. Vol. I, II, (Ed.), Prentice Hall, New Jersey, 1988.
2. Working Procedure Manual; Chemistry BPR&D Publication, 2000.
3. Sharma, B.R; Forensic Science in Criminal Investigation and Trials (3<sup>rd</sup> edition), Universal Law Publishing Co., New Delhi, 2001.
4. J.D. DeHaan, *Kirk's Fire Investigation*, 3rd Edition, Prentice Hall, New Jersey (1991).
5. W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, *Techniques of Crime Scene Investigation*, CRC Press, Boca Raton (2013).
6. S. Ballou, M. Houck, J.A. Siegel, C.A. Crouse, J.J. Lentini and S. Palenik in *Forensic Science*, D.H. Ubelaker (Ed.), Wiley-Blackwell, Chichester (2013).

**e-Learning Source:**

1. <https://youtu.be/dz6EgD-Rwwk>
2. <https://youtu.be/M8KaHdAUBPM>
3. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	2	3	2	2	3	3	2	3	3	2	3	2	3	2	2	3	3
<b>CO2</b>	3	2	2	3	2	2	3	2	2	2	2	3	2	3	2	2	3
<b>CO3</b>	2	3	3	2	3	2	3	2	2	2	3	2	3	2	2	3	2
<b>CO4</b>	2	3	2	3	2	3	3	3	2	3	3	3	2	3	3	2	3
<b>CO5</b>	2	3	3	2	3	2	2	2	3	2	3	2	3	3	3	3	2

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.	
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics		
CH227	FORENSIC CHEMISTRY-II	√	√	√				√	√	<b>3,4</b>



## Integral University, Lucknow

<b>Effective from Session: 2023-24</b>							
<b>Course Code</b>	<b>FS214</b>	<b>Title of the Course</b>	<b>FORENSIC ANTHROPOLOGY- LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic anthropology in criminal investigation.						

Course Outcomes	
<b>CO1</b>	Students will be able to determine the age, race and sex from the skeletal remains.
<b>CO2</b>	Students will be able to identification and description of bones and their measurements.
<b>CO3</b>	Students will be able to determine differences between animal and human bones
<b>CO4</b>	Students will be able to perform somatometric measurements on living subjects
<b>CO5</b>	Students will be able to carry out craniometric measurements of human skull.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>FORENSIC ANTHROPOLOGY</b>	1. To study the identification of sex from pelvis. 2. To study the identification of sex from skull.	2	CO1
2	<b>FORENSIC ODONTOLOGY</b>	3. To determine the identification of age from teeth. 4. Preparation of Dental chart. 5. To analyze and preserve bite marks.	2	CO2
3	<b>PERSONAL IDENTIFICATION-SOMATOSCOPY</b>	6. To investigate the differences between animal and human bones.	2	CO3
4	<b>ANTHROPOMETRY (SOMATOMETRY, OSTEAMETRY AND CRANIOMETRY)–</b>	7. To perform somatometric measurements on living subjects. 8. To estimate stature from long bone length and skull.	2	CO4
5	<b>FACIAL RECONSTRUCTION</b>	9. To carry out cranio metric measurements of human skull.	2	CO5

**Reference Books:**

- M.Y. Iscan and S.R. Loth, The scope of forensic anthropology in, Introduction to Forensic Sciences, 2<sup>nd</sup> Ed., W.G. Eckert (Ed.), CRC Press, Boca Raton (1997).
- D. Ubelaker and H. Scammell, *Bones*, M. Evans & Co., New York (2000).
- S. Rhine, *Bone Voyage: A Journey in Forensic Anthropology*, University of Mexico Press, Mexico (1998).
- Introduction to Forensic Anthropology, Steven N. Byers, Pearson/ Allyn & Bacon; 3<sup>rd</sup> edition (December 1, 2008).
- Forensic Anthropology Laboratory Manual, Steven N. Byers, Pearson Education, USA, 2011.
- B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).
- Saferstein, Richard, Criminalistics - An Introduction to Forensic Science, 6th Ed. Prentice-Hall, New Jersey.

**e-Learning Source:**

- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjy3c0vICLa6VYg==#>
- [https://youtu.be/wh1tJ1xu8\\_M](https://youtu.be/wh1tJ1xu8_M)
- <https://youtu.be/9Z84bOxBbGU>

PO-PSO CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	2	3	3	3	2	3	2	2	3	2	2	2	3	2	3	2	3
<b>CO2</b>	3	2	2	3	2	2	3	2	3	2	2	3	2	3	3	2	2
<b>CO3</b>	3	3	3	2	3	2	3	2	3	2	3	3	3	2	2	3	2
<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	3	2	3	3	2	3
<b>CO5</b>	2	3	3	2	3	2	3	2	3	2	3	2	3	3	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**  
**Attributes & SDGs**

Course Code	Course Title	Attributes						SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	
FS214	FORENSIC ANTHROPOLOGY- LAB	√	√	√	√	√	√	3,4



## Integral University, Lucknow

<b>Effective from Session:</b> 2023-24							
<b>Course Code</b>	<b>FS215</b>	<b>Title of the Course</b>	<b>FORENSIC PHYSICS- II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic physics in criminal investigation.						

<b>Course Outcomes:</b> After the successful course completion, learners will develop following attributes:	
<b>CO1</b>	To examine the tool marks and other impressions present over the crime scene
<b>CO2</b>	To perform crime exhibits photography
<b>CO3</b>	To perform crime scene videography
<b>CO4</b>	To perform crime scene photography and processing
<b>CO5</b>	To compare glass samples by refractive index method.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	<b>TOOL MARKS</b>	1. To identify and compare tool marks.	2	CO1
2	<b>IMPRESSIONS AT CRIME SCENE</b>	2. To take photographs of crime scene exhibits at different angles using different filters.	2	CO2
3	<b>FORENSIC PHOTOGRAPHY</b>	3. To record videography of a crime scene. 4. To carry out the photography of indoor crime scenes. 5. To carry out the photography of outdoor crime scenes	2	CO3
4	<b>RESTORATION OF ERASED/OBLITERATED MARKS</b>	6. Restoration techniques of tool mark impressions and casting footprints.	2	CO4
5	<b>FORENSIC PHYSICS TOOLS</b>	7. To study the tool mark evidences in different light sources.	2	CO5

**Reference Books:**

1. Houck, M.M& Siegel, J.A; Fundamentals of Forensic Science, Academic Press, London, 2<sup>nd</sup> Edition 2010.
2. Sharma, B.R; Forensic Science in Criminal Investigation & Trials, Universal Publishing Co., New Delhi, Fifth edition 2016.
3. Nanda B.B and Tewari, R.K; Forensic Science in India- A vision for the Twenty First Century, Select Publisher, New Delhi, Select publishers (2014).
4. Robertson and Vignaux; Interpreting Evidence, John Wiley, New York, 1995.
5. H.L. Blitzer and J.Jacobia; Forensic Digital Imaging and Photography, 1<sup>st</sup>. Edition Academic Press, London, 2002.
6. Forensic Medical Investigation of Motor Vehicle Incidence By Michel P. Burke, CRC Press ,2016.
7. B. R. Sharma, Forensic Science in Criminal Investigation and Trials(6<sup>th</sup> Edition).

**e-Learning Source:**

1. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjv3c0vICLa6VYg==#>
2. <https://youtu.be/LZBXvD7TaxA>

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
<b>CO1</b>	3	3	2	3	2	2	3	3	3	3	3	2	3	2	2	3	3
<b>CO2</b>	3	2	2	3	2	2	3	2	3	2	3	3	2	3	2	2	3
<b>CO3</b>	2	3	3	2	3	2	3	3	2	3	3	2	3	3	3	2	3
<b>CO4</b>	3	3	2	3	2	3	3	3	2	3	3	2	2	3	3	2	3
<b>CO5</b>	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3

**1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS215	FORENSIC PHYSICS- II	√	√	√					<b>3,4</b>







## Integral University, Lucknow

<b>Effective from Session: 2020-21</b>							
<b>Course Code</b>	<b>CH228</b>	<b>Title of the Course</b>	<b>FORENSIC CHEMISTRY-II LAB</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Year</b>	<b>II</b>	<b>Semester</b>	<b>IV</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>
<b>Pre-Requisite</b>	<b>Nil</b>	<b>Co-requisite</b>	<b>Nil</b>				
<b>Course Objectives</b>	To provide a detailed practical knowledge of forensic chemistry in criminal investigation.						

<b>Course Outcomes:</b> After the successful course completion, learners will develop following attributes:	
<b>CO1</b>	To perform the analysis of residue material in fire and arson cases
<b>CO2</b>	To perform the analysis of petroleum products
<b>CO3</b>	To perform the analysis of food adulteration
<b>CO4</b>	To perform the analysis of alcohols
<b>CO5</b>	To prepare a case report on a case involving arson.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
UNIT 1-5		Analysis of residue material in fire and arson cases by TLC/, UV- spectrophotometric.	2	CO1-5
		Examination of chemicals used in Trap cases by UV-visible spectroscopy.	2	
		To carry out analysis of petroleum products.	2	
		To analyze arson accelerators	2	
		To prepare a case report on a case involving arson.	2	
		Identification of food adulteration. -vegetable oil, Cold drinks etc.	2	
		Detection and determination of various adulterants in alcohol, by color tests.	2	
		To identify ethyl / methyl alcohol	2	
	Thin layer chromatography of Food adulterants.	2		

**Reference Books:**

1. Safer stein, R; Forensic Science Handbook. Vol. I, II, (Ed.), Prentice Hall, New Jersey, 1988.
2. Working Procedure Manual; Chemistry BPR&D Publication, 2000.
3. D. DeHaan, *Kirk's Fire Investigation*, 3rd Edition, Prentice Hall, New Jersey (1991).
4. W.J. Tinstone, M.L. Hastrup and C. Hald, Fisher's, *Techniques of Crime Scene Investigation*, CRC Press, Boca Raton (2013).
5. Ballou, M. Houck, J.A. Siegel, C.A. Crouse, J.J. Lentini and S. Pale Nik in *Forensic Science*, D.H. Ubelaker (Ed.), Wiley- Blackwell, Chichester (2013).

**e-Learning Source:**

1. <https://youtu.be/dz6EgD-Rwwk>
2. <https://youtu.be/M8KaHdAUBPM>
3. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=eCJfy23Kjv3c0vICLa6VYg==#>

<b>Course Articulation Matrix: (Mapping of COs with POs and PSOs)</b>																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	<b>CO1</b>	2	3	2	2	3	3	2	3	3	2	3	2	3	2	2	3
<b>CO2</b>	3	2	2	3	2	2	3	2	2	2	2	3	2	3	2	2	3
<b>CO3</b>	2	3	3	2	3	2	3	2	2	2	3	2	3	2	2	3	2
<b>CO4</b>	2	3	2	3	2	3	3	3	2	3	3	3	2	3	3	2	3
<b>CO5</b>	2	3	3	2	3	2	2	2	3	2	3	2	3	3	3	3	2

**4- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

**Attributes & SDGs**

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
FS218	FORENSIC CHEMISTRY-II LAB	√	√	√			√	√	<b>3,4</b>