

**EKLAVYA UNIVERSITY, DAMOH (M.P.)**  
**Scheme of Examination B. Sc Forensic Science Hons.**  
**SEMESTER I**

[ For batch admitted in Academic Session 2020-2021 ]

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Periods Per week			Total Credits
			Theory Slot			Practical Slot				L	T	P	
			End Sem.	Mid term Examination	Quiz/ Assignment/ Attendance	End Sem	Lab Work/ sessional						
1	BFOSH20S101	Introduction to Forensic Science (Core-1A)	60	30	10	-	-	-	4	0	0	4	
2	BFOSH20S102	Forensic Science Practical (Core-1B)	-	-	-	60	40	100	0	0	2	2	
3	BFOSH20S103	Crime and Society (Core-2A)	60	30	10	-	-	100	4	0	0	4	
4	BFOSH20S104	Crime and Society Practical (Core-2B)	-	-	-	60	40	100	0	0	2	2	
5	BFOSH20S105	Elementary Forensic Science (GE - 1A)	60	30	10	-	-	100	4	0	0	4	
6	BFOSH20S106	Crime Scene Investigation Practical (GE - 1B)	-	-	-	60	40	100	0	0	2	2	
7	BFOSH20S107	English Communication/ MIL (AECC)	60	30	10	-	-	100	2	0	0	2	
8	BFOSH20S108	Yoga	-	-	-	60	40	100	0	0	2	2	
		<b>Total</b>	<b>240</b>	<b>120</b>	<b>40</b>	<b>240</b>	<b>160</b>	<b>800</b>	<b>14</b>	<b>0</b>	<b>8</b>	<b>22</b>	

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**EKLAVYA UNIVERSITY, DAMOH (M.P.)**  
**Scheme of Examination B. Sc Forensic Science Hons.**  
**SEMESTER II**

[For batch admitted in Academic Session 2020-2021]

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted						Total Marks	Contact Periods Per week			Total Credits
			Theory Slot			Practical Slot				L	T	P	
			End Sem.	Mid term Examination	Quiz/ Assignment/ Attendance	End Sem	Lab Work/ sessional						
1	BFOSH20S201	Criminal Law (Core-3A)	60	30	10	-	-	100	4	0	0	4	
2	BFOSH20S202	Case Study and Schedules based <b>Practical</b> (Core-3B)	-	-	-	60	40	100	0	0	2	2	
3	BFOSH20S203	Forensic Psychology (Core-4A)	60	30	10	-	-	100	4	0	0	4	
4	BFOSH20S204	Forensic Psychology <b>Practical</b> (Core-4B)	-	-	-	60	40	100	0	0	2	2	
5	BFOSH20S205	Applied Forensic Science (GE - 2A)	60	30	10	-	-	100	4	0	0	4	
6	BFOSH20S206	Applied Forensic Science <b>Practical</b> (GE - 2B)	-	-	-	60	40	100	0	0	2	2	
7	BFOSH20S207	Environmental Science (AECC)	60	30	10	-	-	100	2	0	0	2	
		<b>Total</b>	<b>240</b>	<b>120</b>	<b>40</b>	<b>180</b>	<b>120</b>	<b>700</b>	<b>18</b>	<b>0</b>	<b>8</b>	<b>20</b>	

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## SYLLABUS

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<b>Class</b>		<b>B.Sc. Forensic Science (Hons.)</b>		
<b>Semester/Year</b>		<b>I Semester – I Year</b>		
<b>Subject &amp; Subject Code</b>		<b>Forensic Science - BFOSH20S101</b>		
<b>Paper</b>		<b>Introduction to Forensic Science</b>		
<b>Max. Marks</b>		<b>100</b>		
L	T	P	<b>Credits Total</b>	<b>4</b>
3	1	0		
<p><b>Course Objectives:</b> This course provides knowledge about</p> <ul style="list-style-type: none"> <li>The basic principles of Forensic Science, its different branches, functions, nature and scope.</li> <li>Different roles, Organizational setup and functions of various Government Departments, Forensic laboratories and Police in Crime Scene investigations.</li> </ul>				
<p><b>Course Outcome:</b> The students will be able to understand</p> <ul style="list-style-type: none"> <li>Principles of Forensic science.</li> <li>About the basics and different branches of Forensic Sciences.</li> <li>Working and functioning of Forensic science laboratories.</li> <li>Police science its role in criminal investigation and Prevention of crime.</li> </ul>				
<p><b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know:</p> <ul style="list-style-type: none"> <li>The significance of forensic science to human society.</li> <li>The fundamental principles and functions of forensic science.</li> <li>The divisions in a forensic science laboratory.</li> <li>The working of the forensic establishments in India and abroad.</li> </ul>				
Unit	Syllabus			Periods
UNIT - I	<p><b>History of Development of Forensic Science in India</b></p> <ul style="list-style-type: none"> <li>History and development of forensic science.</li> <li>Definitions and concepts in forensic science.</li> <li>Functions, Nature and scope of Forensic science.</li> <li>Need of forensic science. Basic principles of forensic science.</li> <li>Frye case and Daubert standard.</li> </ul>			12 hrs.
UNIT - II	<p><b>Tools and Techniques in Forensic Science</b></p> <ul style="list-style-type: none"> <li>Branches of forensic science. Duties of forensic scientists.</li> <li>Ethics in forensic science. Code of conduct for forensic scientists.</li> <li>Qualifications of forensic scientists.</li> <li>Data depiction. Report writing. Expert testimony.</li> </ul>			12 hrs.

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UNIT - III	<b>Organizational set up of Forensic Science Laboratories in India</b> <ul style="list-style-type: none"> <li>• Hierarchical set up of Central Forensic Science Laboratories,</li> <li>• State Forensic Science Laboratories,</li> <li>• Government Examiners of Questioned Documents,</li> <li>• Directorate of Forensic Science and Mobile Crime Laboratories.</li> </ul>	12 hrs.
UNIT - IV	<b>Government Setup of Forensic Importance</b> <ul style="list-style-type: none"> <li>• Forensic science in international perspectives, including set up of INTERPOL and FBI, RAW and CBI.</li> <li>• Central Fingerprint Bureaus, National Crime Records Bureau, Police &amp; Detective Training Schools, Bureau of Police Research &amp; Development.</li> </ul>	12 hrs.
UNIT - V	<b>Police Science</b> <ul style="list-style-type: none"> <li>• Definition and scope,</li> <li>• Organizational set up of Police at State, Range and District level.</li> <li>• State armed forces and home guards. Role of Police in crime investigations. State criminal investigation departments, FIR, Police dogs. Services of crime laboratories.</li> <li>• Basic services and optional services.</li> </ul>	12 hrs.

#### Suggested Readings-

1. B.B. Nanda and R.K. Tiwari, Forensic Science in India: A Vision for the Twenty First Century, Select Publishers, New Delhi (2001).
2. M.K. Bhasin and S. Nath, Role of Forensic Science in the New Millennium, University of Delhi, Delhi (2002).
3. S.H. James and J.J. Nordby, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
4. W.G. Eckert and R.K. Wright in Introduction to Forensic Sciences, 2nd Edition, W.G. Eckert (ED.), CRC Press, Boca Raton (1997).
5. R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).
6. W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

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**SYLLABUS**

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		I Semester – I Year	
Subject & Subject Code		Practical Forensic Science - BFOSH20S102	
Paper		Forensic Science Practical	
Max. Marks		50= (30+20)	
L	T	P	Credits Total 2
0	0	2	

**PRACTICALS**

60 hrs.

1. To study the history of crime cases from forensic science perspective.
2. To cite examples of crime cases in which apprehensions arose due to Daubert standards.
3. To review the sections of forensic science at INTERPOL and compare with those in CFSL.
4. To study the annual reports of NCRB and depict the data on different type of crime cases by way of smart art/templates.
5. To write report on different type of crime cases.
6. To review how the Central Fingerprint Bureau, New Delhi, coordinates the working of State Fingerprint Bureaus.
7. To examine the hierarchical set up of different forensic science establishments and suggest improvements.
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.
9. To compare and contrast the role of a Police Academy and a Police Training School.
10. To compare the code of conduct prescribed by different establishments for scientists

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## SYLLABUS

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		I Semester – I Year	
Subject & Subject Code		Forensic Science - BFOSH20S103	
Paper		Crime and Society	
Max. Marks		100	
L	T	P	Credits Total 4
3	1	0	
<b>Course Objectives:</b> This course Provide knowledge about <ul style="list-style-type: none"> <li>• Crime, Impact of crime and criminals in society,</li> <li>• Elements of crime, importance of Criminology,</li> <li>• Different theories for crime causation, criminal behaviour,</li> <li>• Current crime trend in society,</li> <li>• Component and role of criminal justice system,</li> <li>• Human Rights, framing of charges, Correctional measures and rehabilitation of Criminals.</li> </ul>			
<b>Course Outcome:</b> Students will be able to understand <ul style="list-style-type: none"> <li>• What is crime and its impact on society.</li> <li>• What all theories proposed behind the causation criminal behaviour.</li> <li>• Human rights and its significance.</li> </ul>			
<b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know: <ul style="list-style-type: none"> <li>• The importance of criminology.</li> <li>• The causes of criminal behavior.</li> <li>• The significance of criminal profiling to mitigate crime.</li> <li>• The consequences of crime in society.</li> <li>• The elements of criminal justice system.</li> </ul>			
Unit	Syllabus		Periods
UNIT - I	<b>Basics of Criminology</b> <ul style="list-style-type: none"> <li>• Criminology: Definition, aims, nature and scope,</li> <li>• Brief Introduction of Theories of criminal behavior such as classical, positivist, sociological etc.</li> <li>• Criminal profiling, Understanding <i>Corpus delicti</i> and <i>Modus operandi</i>.</li> </ul>		12 hrs.

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UNIT - II	<b>Crime</b> <ul style="list-style-type: none"> <li>• Concept of Crime</li> <li>• Crime: Elements, nature, causations and consequences of crime,</li> <li>• Classification of crime and criminals, Deviant behavior, public disorders, domestic violence and workplace violence.</li> <li>• Psychological Disorders and Criminality.</li> </ul>	12 hrs.
UNIT - III	<b>Recent Advancements in Crimes I</b> <ul style="list-style-type: none"> <li>• Brief Introduction towards: Victimology, Juvenile delinquency,</li> <li>• Hate crimes, Organized crimes,</li> <li>• Situational crime, Economic crime, Sexual Offences</li> </ul>	12 hrs.
UNIT - IV	<b>Recent Advancements in crimes II</b> <ul style="list-style-type: none"> <li>• Crime due to intoxication,</li> <li>• Cybercrimes and White-collar crimes,</li> <li>• Modern Approaches towards Investigative strategy and Role of media in the solution of crime</li> </ul>	12 hrs.
UNIT - V	<b>Criminal Justice System</b> <ul style="list-style-type: none"> <li>• Broad Components of criminal justice system,</li> <li>• Policing styles and principles, Police's power of investigation,</li> <li>• Filing of criminal charges,</li> <li>• Community policing, Policing a heterogeneous society,</li> <li>• Correctional measures and rehabilitation of offenders,</li> <li>• Human rights and criminal justice system in India.</li> </ul>	12 hrs.

#### Suggested Readings-

1. S.H. James and J.J. Nordby, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
2. R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004). 22 | Page
3. R. Gupta, Sexual Harassment at Workplace, LexisNexis, Gurgaon (2014).
4. Paranjape, N.V. Criminology and Penology, Central Law Publication, Allahabad.
5. William Bailey, The Encyclopedia of Police Science, Second Edition Garland publishing, INC, London.
6. Suderland, E.H. and Donald R. Cressy; The Principals of Criminology, The Times of India Press, Bombay, 1968.
7. Ahuja Ram, Criminology, Rawat Publication, Jaipur.
8. Wayne Petherick, Brent Turvey, Claire Ferguson, Forensic Criminology, Academic Press.

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**SYLLABUS**

UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		I Semester – I Year		
Subject & Subject Code		Practical Forensic Science - BFOSH20S104		
Paper		Case Study and Schedules Practical		
Max. Marks		50= (30+20)		
L	T	P	Credits Total	2
0	0	2		

**PRACTICALS**

60 hrs.

1. To review past criminal cases and elucidate which theory best explains the criminal behavior of the accused.
2. To review crime cases where criminal profiling assisted the police to apprehend the accused.
3. To cite examples of crime cases in which the media acted as a pressure group.
4. To evaluate the post-trauma stress amongst victims of racial discrimination.
5. To correlate deviant behavior of the accused with criminality (take a specific example).
6. To evaluate Victimology in a heinous crime.
7. To examine a case of juvenile delinquency and suggest remedial measures.
8. To evaluate how rising standards of living affect crime rate.
9. To review the recommendations on modernization of police stations and evaluate how far these have been carried out in different police stations.
10. To visit a 'Model Police Station' and examine the amenities vis-à-vis conventional police stations.
11. To examine steps being taken for rehabilitation of former convicts and suggests improvements.
12. To prepare a report on interrogation cells and suggest improvements.

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UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		I Semester – I Year		
Subject & Subject Code		Forensic Science - BFOSH20S105		
Paper		Psychology		
Max. Marks		100		
L	T	P	Credits Total	4
3	1	0		
<b>Course Objectives:</b> This Course will provide knowledge about. <ul style="list-style-type: none"> <li>• Psychology definition, concept and goals.</li> <li>• Professions related to psychology.</li> <li>• Biological perspective of psychology.</li> <li>• States of consciousness, hypnosis.</li> </ul>				
<b>Course Outcome:</b> Students will be able to understand <ul style="list-style-type: none"> <li>• Different perspectives in psychology.</li> <li>• Difference in role of different profession related to psychology.</li> <li>• To assess problems in attention and perception.</li> </ul>				
<b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know <ul style="list-style-type: none"> <li>• The basic concept of Psychology</li> <li>• Biological perspective of Psychology</li> <li>• States of consciousness sleep and drinks.</li> </ul>				
Unit	Syllabus			Periods
UNIT - I	<b>The Science of Psychology</b> <ul style="list-style-type: none"> <li>• Concept of Psychology – Definition of psychology, goals of psychology,</li> <li>• History of psychology, Development of psychology, role of psychologist,</li> <li>• Different perspectives in Psychology – Modern perspectives, Humanistic, behavioristic, cognitive, psychodynamic, Types of psychology.</li> </ul>			12 hrs.
UNIT - II	<b>Professions in Psychology</b> <ul style="list-style-type: none"> <li>• Professions - Psychiatrist, Psychologist, Counsellor, The science and research methods - Interview, observation, case study method.</li> <li>• Professional and Ethical issues in psychology - APA code of conducts for Psychologist.</li> </ul>			12 hrs.
UNIT - III	<b>Biological Perspective</b> <ul style="list-style-type: none"> <li>• Nerve and neuron - Building the network, structure of neuron, neural impulses, neurotransmitters, Nervous System -Central nervous system,</li> </ul>			12 hrs.

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	structure and function of CNS, Peripheral nervous system, <ul style="list-style-type: none"> <li>Human brain - structure and function, significance of left and right brain, types of Amnesia, Endocrine system- Pituitary gland, Thyroid gland, Neurotransmitters.</li> </ul>	
UNIT - IV	<b>Consciousness &amp; Perception</b> <ul style="list-style-type: none"> <li>Consciousness - Definition of consciousness, states of consciousness, Altered state of consciousness -Dreams, awake states including day dreaming, Rhythms of consciousness (Circadian rhythms) Sleep- stages of sleep, Dreams —Content, REM sleep and non-REM sleep, Altered states - Hypnosis. Meaning, Hypnotic Phenomena, Hypnotic stages.</li> </ul>	12 hrs.
UNIT - V	<b>Attention and Awareness</b> <ul style="list-style-type: none"> <li>Attention and awareness - Attention: Definition, characteristics, selective attention and divided attention,</li> <li>Sensation and perception-Basic concepts in perception, Gestalt Principles, problems in attention and perception, assessment attention and perception.</li> </ul>	12 hrs.

### Suggested readings-

1. General Psychology by Cicarelli, Pearson Publication.
2. General Psychology by Vipin Kumar, Himalaya Publishing House.
3. Cognitive Psychology by Galloti, SAGE Publication.
4. Manuals of Respective Test.
5. Psychological testing by Anastasi.
6. Abnormal Psychology by Barlow and Durand.
7. Psychology and Work, by Schultz D (2006), 8<sup>th</sup> edition.
8. Experimental Psychology, Solso. R.L. (2008)
9. Social Psychology, Barron and Barron.
10. Behavior Modification, Martin Garry, (2002), 7th edition.
11. Introduction to Psychology, Morgan, King, Weiss and Schopler, VII edition, (1989) McGraw Hill, India.
12. Abnormal psychology & modern life, Carson RC & Butcher JN (10th Ed) Harper-Collins NY
13. Introduction to Psychology, Atkinson and Atkinson, (1975) Oxford IBH Publishing Co. Pvt. Ltd.

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## SYLLABUS

UG			
Class	B.Sc. Forensic Science (Hons.)		
Semester/Year	I Semester- I Year		
Subject & Subject Code	Practical Forensic Science - BFOSH20S106		
Paper	Psychology Practical		
Max. Marks	50= (30+20)		
L	T	P	Credits Total
0	0	2	

## PRACTICALS

60 hrs.

1. Introduction of Psychology Practicals.
2. Objective Personality Test: Locus of Control Test.
3. Projective Personality Test: House, tree, person test
4. Conduction of Personality Test.  
(i) D.A.P.  
(ii) H.T.P.

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## SYLLABUS

UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		I Semester – I Year		
Subject & Subject Code		Forensic Science - BFOSH20S107		
Paper		Foundation English		
Max. Marks		100		
L	T	P	Credits Total	2
2	0	0		
<b>Course Objectives:</b> This Course Provide knowledge about <ul style="list-style-type: none"> <li>• English language- communication, listening, language skills.</li> <li>• Business correspondence.</li> <li>• Writing- precise writing and note making.</li> </ul>				
<b>Course Outcome:</b> The students will be able to <ul style="list-style-type: none"> <li>• Develop the second language learners' ability to enhance and demonstrate LSRW Skills.</li> <li>• To acquire English Language Skills to further their studies at advanced levels.</li> <li>• To become more confident and active participants in all aspects of their undergraduate programs.</li> </ul>				
<b>Student Learning Outcomes (SLO):</b> The students will learn to: <ul style="list-style-type: none"> <li>• Have confidence in their ability to read, comprehend, organize, and retain written information.</li> <li>• Write grammatically correct sentences for various forms of written communication to express themselves.</li> </ul>				
Unit	Syllabus			Periods
UNIT - I	<b>Communication:</b> Nature, Meaning, Definition, Process, Functions and importance, Characteristics of Business Communication, Verbal and Non-Verbal Communication, Barriers to Communication.			06 hrs.
UNIT - II	<b>Listening:</b> Process, Types, Difference between Hearing and Listening, Benefits of Effective Listening, Pal Barriers to Effective Listening, Overcoming Listening Barriers, and How to Become an Effective Listener			06 hrs.



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UNIT - III	<b>Basic Language Skills:</b> Grammar and usage- Parts of Speech, Tenses, Subject and Verb Agreement, Prepositions, Articles, Types of Sentences, Direct - Indirect, Active - Passive voice, Phrases & Clauses	06 hrs.
UNIT - IV	<b>Business Correspondence:</b> Business Letters, Parts & Layouts of Business Letter, Job application and Resume, Application Calling/ Sending Quotations/ Orders/ Complaints. E-mail writing, Email etiquettes	06 hrs.
UNIT - V	<b>Précis Writing and Noting:</b> The Purpose of Notes, Methods of Note-Taking, General Principles of Good Notes. Drafting: Notices, Agenda and Minutes. Advertisement: Importance, Types, Various Media of Advertising. Slogan Writing.	06 hrs.

### Suggested Readings-

1. Adair, John (2003). Effective Communication. London: Pan Macmillan Ltd.
2. A. J. Thomson and A.V. Martinet (1991).4 Practical English Grammar (4<sup>th</sup> ed). New York: Oxford IBH Pub.
3. Ashraf Rizvi. (2005). Effective Technical Communication. New Delhi: Tata Mc Graw Hill.
4. Kratz, Abby Robinson (1995). Effective Listening Skills. Toronto: ON: Irwin Professional.

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**SYLLABUS**

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		I Semester – I Year	
Subject & Subject Code		Practical Forensic Science - BFOSH20S108	
Paper		Yoga	
Max. Marks		100= (60+40)	
L	T	P	Credits Total 2
0	0	2	

**PRACTICALS**

60 hrs.

The students are required to learn to practice the following. They are to maintain a record which consists of the step-by-step details of the yoga practices along with an account of the possible benefits of the practices. The principles, which should be adopted in practice, are the following:

1. Proper gradation in order of flexibility, balance and difficulty in performance.
2. Each asana is to be analyzed into intermediate positions in a natural sequence of movement.
3. For purposes of class training each movement to be associated with a count to reach the final pose.
4. Rhythmic breathing should be observed. When the chest is in the expanding position inspiration should take place. In the contracting position expiration should take place rhythmically with movement. In certain asanas duration of retention is important.
5. Proper relaxation should be allowed in between the batches of asanas. Sukshnavyayamam

**KriyaPracticals:**

1. Neti - Jalaand Sutra 2. Dhauti – Jala 3. Kapalabharti 4. Trataka

**BandhaTraya:**

1. Jalandharabandha 2. Moolabandha 3. Uddiyana bandha

**Pranayama:**

1. Nadisuddhi 2. Suryabhedana 3. Seetali 4. Sitkari Asanas:

**Meditative postures:**

1. Sukhasana 2. Swastikasana 3. Ardhapadmasana 4. Padmasana 5. Siddhasana 6. Vajrasana

**Relaxation postures:**

1. Shavasana 2. Makharasana 3. Matsyakridasana

**Suryanamaskara:**

1. Pranamasana 2. Hasta uttanasana 3. Padahastasana 4. Aswasanchalanasana 5. Dandasana 6. Ashtangasana 7. Bhujangasana 8. Parvatasana

**Standing postures:**

1. TiryakTadasana 2. Trikonasana 3. Parivrita Trikonasana 4. Veerabhadrasana 5. Katichakrasana

**Balancing Postures:**

1. Tadasana 2. Vrikshasana 3. Natarajasan 4. Ekapadasana 5. Grudasana 6. Pada Angustasana

**Sitting postures:**

1. Bhadrasana 2. Virasana 3. Ardha-matsyendrasana 4. Ushtrasana 5. Suptavajrasana 6. Shashankasana 7. Simhasana 8. Marjariasana 9. Shashanka Bhujangasana 10. Yogamudrasana 11. Paschimottanasana 12. Poorvotnasan 13. Lolasana.

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## SYLLABUS

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		II Semester – I Year	
Subject & Subject Code		Forensic Science - BFOSH20S201	
Paper		Criminal Law	
Max. Marks		100	
L	T	P	Credits Total 4
3	1	0	
<b>Course Objectives:</b> This course gives idea about the <ul style="list-style-type: none"> <li>• Criminal justice system,</li> <li>• Different Acts and Provision in Indian Constitution related to Forensic science, hierarchy of criminal courts.</li> <li>• Knowledge of Various sections of Criminal Procedure code, Indian Penal Code and Indian evidence Act,</li> <li>• Acts related to socio economic crime, environmental crime and about types of offences Provided under the Act.</li> </ul>			
<b>Course Outcome:</b> Students will able to <ul style="list-style-type: none"> <li>• Classify the offences, criminal courts and their functions.</li> <li>• Know sections of IPC, IEA, CrPC.</li> <li>• Understand Dowry Act, NDPS Act, Wildlife Act etc.</li> </ul>			
<b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know: <ul style="list-style-type: none"> <li>• Elements of Criminal Procedure Code related to forensic science.</li> <li>• Acts and provisions of the Constitution of India related to forensic science.</li> <li>• Acts governing socio-economic crimes.</li> <li>• Acts governing environmental crimes.</li> </ul>			
Unit	Syllabus		Periods
UNIT - I	<b>Criminal law and Indian Penal Code</b> <ul style="list-style-type: none"> <li>• Definition, Criminal Law and Civil Law, Classification of offences under IPC. Characteristics of crime. Definition to IPC, CrPC &amp; IEA.</li> <li>• Difference between culpable homicide and murder.</li> <li>• Offences Related to Life- Sec-299, 300, Sec-301, 302, 304, 304A, 304B, 307, 308, 309, 319, 320, 323,324, 325, 375, 376, 377.</li> <li>• Cruelty by husband and Relatives (Sec-498A).</li> <li>• Offenses against property-Sec- 378, 405, 420.</li> </ul>		12 hrs.

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UNIT - II	<b>Criminal Procedure Code</b> <ul style="list-style-type: none"> <li>Bailable and Non Bailable Offences.</li> <li>Cognizable and Non-Cognizable Offences.</li> <li>CrPC Sec-6, 23, 26, 27, 28, 29, 62, 63, 64, 65, 66, 67, 68, 69.</li> <li>Warrant case &amp; its execution. Sec-60, 71, 72. Sec- 154, 155, 156, 157, 158, 159, 164, 164A 165, 173.</li> <li>Report of certain Government Scientific Experts (sec-291, 292 &amp; 293).</li> </ul>	12 hrs.
UNIT - III	<b>The Indian Evidence Act</b> <ul style="list-style-type: none"> <li>Expert witness and Expert Opinion, Expert Testimony, Who is an Expert, Difference between Expert &amp; Non- Expert witness.</li> <li>IEA Sec- 45, 45A, 46, 47, 47A. Oral Evidence- Meaning and its evidentiary value. 61, 67, 67A, 73, 73A.</li> </ul>	12 hrs.
UNIT - IV	<b>General Legal Perceptions</b> <ul style="list-style-type: none"> <li>FIR and Zero FIR, Panchnama, Courts in India and their jurisdiction,</li> <li>Powers of Magistrates and their purpose, Special Magistrates, Juvenile Magistrates,</li> <li>Inquest (Police and Magistrate), Dying Declaration, Dying deposition, A subpoena (summons).</li> </ul>	12 hrs.
UNIT - V	<b>Minor Acts</b> <ul style="list-style-type: none"> <li>Introduction to Narcotic Drug and Psychotropic Substances Act, Prevention of Food Adulteration Act, Prevention of Corruption Act, Drug and Cosmetics Act, The protection of children from sexual offences Act, The Information Technology Act.</li> </ul>	12 hrs.

#### Suggested Readings-

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

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**SYLLABUS**

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		II Semester – I Year	
Subject & Subject Code		Practical Forensic Science - BFOSH20S202	
Paper		Case Study and Schedules- Practical	
Max. Marks		50	
L	T	P	Credits Total
0	0	2	

**PRACTICALS**

60 hrs.

1. To prepare a schedule of five cognizable and five non-cognizable offences.
2. To study the powers and limitations of the Court of Judicial Magistrate of First Class.
3. To prepare a schedule of the offences this may be tried under Section 260(2) of Criminal Procedure Code.
4. To study a crime case in which an accused was punished on charge of murder under Section 302.
5. To study a crime case in which an accused was punished on charge of rape under Section 375.
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.
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.
8. To cite a case under Article 14 of the Constitution of India wherein the Right to Equality before Law was allegedly violated.
9. To list the restrictions imposed on Right to Freedom of Worship under the Constitution of India.
10. To prepare a schedule of persons convicted under Narcotics, Drugs and Psychotropic Act statistically analyze the age group to which they belonged.
11. To study a case in which Drugs and Cosmetic Act was invoked.
12. To study a case in which Explosive Substances Act was invoked.
13. To study a case in which 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 where in the Untouchability Offences Act was invoked on the basis of Article 15 of the Constitution of India.

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## SYLLABUS

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Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		II Semester – I Year		
Subject & Subject Code		Forensic Science - BFOSH20S203		
Paper		Forensic Psychology		
Max. Marks		100		
L	T	P	Credits Total	4
3	1	0		
<b>Course Objectives:</b> To Provide the basic Knowledge of Psychology and its application in Forensic science, <ul style="list-style-type: none"> <li>• Legal Applications to the field, role of Forensic psychiatric and Forensic Psychology, about Juvenile delinquency</li> <li>• Study and classification of various psychological and Personality disorders with their traits,</li> <li>• Principle and working of various devices used in Psychological assessment</li> </ul>				
<b>Course Outcome:</b> Students will able to <ul style="list-style-type: none"> <li>• Correlate the theories and various aspects of Psychology in Forensic science.</li> <li>• Learn assessment techniques, how actually interview questions are prepared.</li> <li>• Know about role of media and police.</li> <li>• To have knowledge of various personality disorders.</li> </ul>				
<b>Student Learning Outcomes (SLO):</b> After studying this paper the students will know – <ul style="list-style-type: none"> <li>• The overview of forensic psychology and its applications.</li> <li>• The legal aspects of forensic psychology.</li> <li>• The significance of criminal profiling.</li> <li>• The importance of psychological assessment in gauging criminal behaviour.</li> </ul>				
Unit	Syllabus			Periods
UNIT - I	<b>Basics of Forensic Psychology</b> <ul style="list-style-type: none"> <li>• Definition and fundamental concepts, Forensic psychiatry,</li> <li>• Psychology and law. Ethical issues in forensic psychology.</li> <li>• Assessment of mental competency, Mental disorders and forensic psychology.</li> </ul>			12 hrs.
UNIT - II	<b>Psychology of evidence</b> <ul style="list-style-type: none"> <li>• Psychology of evidence – eyewitness testimony, confession evidence.</li> <li>• Criminal profiling. Psychology in the courtroom, with special reference to Section 84 IPC (McNaughton's Rule), Durham Rule of Insanity.</li> </ul>			12 hrs.







UNIT - III	<p><b>Psychology and Criminal Behaviour</b></p> <ul style="list-style-type: none"> <li>• Psychopathology and personality disorder, Psychological assessment and its importance, Serial murderers, Psychology of terrorism, Biological factors and crime— social learning theories, psycho-social factors, abuse,</li> <li>• Juvenile delinquency— theories of offending (social cognition, moral reasoning), Child abuse (physical, sexual, emotional), juvenile sex offenders, legal controversies.</li> </ul>	12 hrs.
UNIT - IV	<p><b>Detection of Deception</b></p> <ul style="list-style-type: none"> <li>• Tools for detection of deception—interviews, non-verbal detection, statement analysis, voice stress analyzer, hypnosis,</li> <li>• Polygraphy—operational and question formulation techniques, ethical and legal aspects, the guilty knowledge test.</li> </ul>	12 hrs.
UNIT - V	<p><b>Norco analysis and Brain Finger printing</b></p> <ul style="list-style-type: none"> <li>• Norco analysis and brain electrical oscillation signatures—principle and theory, ethical and legal issues,</li> <li>• Brain Finger printing- Principle and technique, Legal standard of Brain fingerprinting. Case study.</li> </ul>	12 hrs.

**Suggested Readings-**

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

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**SYLLABUS**

UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		II Semester – I Year		
Subject & Subject Code		Practical Forensic Science - BFOSH20S204		
Paper		Forensic Psychology- Practical		
Max. Marks		50= (30+20)		
L	T	P	Credits Total	2
0	0	2		

**PRACTICALS**

60 hrs.

1. To cite a crime case where legal procedure pertaining to psychic behaviour 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 Minnesota multiphasic personality inventory test.
7. To prepare a case report on Bhatia's battery of performance test of intelligence.
8. To cite a criminal case in which narco analysis was used as a means to detect deception.

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Class			B.Sc. Forensic Science (Hons.)	
Semester/Year			II Semester – I Year	
Subject & Subject Code			Forensic Science - BFOSH20S205	
Paper			Chemistry	
Max. Marks			100	
L	T	P	Credits Total	4
3	1	0		
<b>Course Objectives:</b>				
This course provides knowledge about				
<ul style="list-style-type: none"> <li>• Periodic Table, Acids, Bases, solvents</li> <li>• Mole concept, Oxidation and Reduction</li> <li>• Alcohols and Phenols</li> <li>• Haloalkanes, Plastic, Rubber, Fibres</li> </ul>				
<b>Course Outcome:</b>				
Students will be able to				
<ul style="list-style-type: none"> <li>• Classify elements into different blocks based on their characteristics</li> <li>• Identify different compounds on the basis of their physical properties.</li> <li>• Form Various chemical compounds</li> </ul>				
<b>Student Learning Outcomes (SLO):</b>				
After studying this paper, the students will know—				
<ul style="list-style-type: none"> <li>• The classification of elements into s, p, d, f blocks and learn their main characteristics.</li> <li>• The nomenclature methods of formation and uses of organic compounds.</li> <li>• The Oxidation, Reduction reactions and Mole Concept.</li> </ul>				
Unit	Syllabus			Periods
UNIT - I	<b>I. Introduction to Periodic Table</b> Study of Modern Periodic Table, Electronic configurations and types of elements: s, p, d, f blocks. Periodic properties —Atomic radius, ionization potential, electron affinity, electro negativity, metallic characters, Non-metallic characters and magnetic properties, Comparative study of S and P block elements. <b>II. Acids, Bases and Solvents</b> - Definition of acids and bases, Arrhenius theory of acid and bases, Lowry —Bronsted theory of acid and bases, Lewis concept of acid and bases, Ionization of acids and bases, the pH scale, Buffer solutions, Properties of solvents - M.P- B.P range, dipole moment, dielectric constant, Lewis acid-base character and types of solvent,			12 hrs.




UNIT - II	<p><b>Mole Concept and Oxidation — Reduction</b>  <b>Mole Concept</b> — Equivalent weight, determination of molecular weight by gram molecular volume. relationship, Problems based on mole concept, Methods of expressing concentrations — strength, normality, molarities, molality, present w/v, present v/v, ppm. Standardization of solutions- primary and secondary standard substances, preparation of standard solution of acids and bases, Problems related to acid base titrations.</p> <p><b>Oxidation and reduction</b> — Definitions related to terms like oxidation, reduction, oxidizing agent reducing agent, oxidization number, balancing of redox reactions using oxidation number method and ion electron method, Problems based on equivalent weight of oxidant and reductants.</p>	12 hrs.
UNIT - III	<p><b>Alcohols:</b> Classifications, Nomenclature and Isomerism, methods of preparation, Industrial preparations of alcohols, structure of alcohol, physical and chemical properties, identification of primary, secondary and tertiary alcohols, mechanism of dehydration, Manufacture properties and uses of some important compounds Methanol, Ethanol. Absolute alcohol.</p> <p><b>Phenols:</b> Nomenclature, structure and methods of formation, physical and chemical properties, acidic character, comparative acidic strength of alcohols and phenols. stabilization of peroxide ion by resonance, electrophilic substitution reactions. uses of phenols. Gattermann synthesis. Hauben-Hoesch reaction, Lederer-Manasse reaction, and Riemer-Tiemann reaction. Coupling reaction, Kolbe reaction. Liebermann's Test of phenol.</p> <p><b>Ethers:</b> Classification, Nomenclature and Isomerism, methods of preparation. physical and chemical properties and uses.</p>	12 hrs.
UNIT - IV	<p><b>Haloalkanes:</b> Classification, Nomenclature, and Isomerism, structure, nature of C-X bond. methods of formation, physical and chemical properties, mechanism of substitution reactions. optical rotation.</p> <p><b>Haloarenes:</b> Nature of C-X bond, method of formation, physical and chemical properties and reactions of aryl halides. Mechanism of nucleophilic aromatic substitution reactions, Methods of preparation, Physical and chemical properties, uses and 'environmental effects of - dichloromethane, trichloromethane, tetrachloromethane. Iodoform freons, DDT &amp; BHC.</p>	12 hrs.
UNIT - V	<p><b>Polymers:</b> Introduction, types &amp; classification of polymerization, methods of polymerization addition, condensation, copolymerization, Reaction mechanism.</p> <p><b>Fibres:</b> Cellulose and synthetic Nylon, Decoran, Polyvinyl, Polyacrylates.</p> <p><b>Rubber:</b> Natural Rubber, isolation from latex, Vulcanisation &amp; its mechanism cis-trans rubbers, Styrene rubber (GR-S) and nitrile rubber (GR-A), Neoprene, butyle rubber, thiocols, Polyurethanes.</p> <p><b>Plastic:</b> Classification, Thermoplastic &amp; Thermo setting _ plastics, Polythene, PVC. PVA, Polyacrylonitrils, Phenol formaldehydes resin, urea Formaldehyde resin and silicon resin.</p>	12 hrs.

#### Suggested Readings-

1. Advanced Inorganic Chemistry. Volume-I, Nineteenth Edition, Satya Prakash, G. D. Tuli, S. K. Basu. R. D. Madan, S. Chand Publication. ISBN- 81-219-0263-0.
2. Concise Inorganic Chemistry, Fifth Edition, of Inorganic Chemistry, Third Edition. Douglas Mc.Doniels, Wiley India. J. D. Lee, Wiley India
3. General Chemistry, Sixth Edition, Ravmand Chang. McGraw Hill
4. Morrison, R. N. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd.
5. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd.

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## SYLLABUS

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Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		II Semester – I Year		
Subject & Subject Code		Practical Forensic Science - BFOSH20S206		
Paper		Chemistry - Practical		
Max. Marks		50= (30+20)		
L	T	P	Credits Total	2
0	0	2		

## PRACTICALS

60 hrs.

- To determine relative viscosity of given organic liquids by viscometer (Four liquids)
- To determine the molecular weight of a high polymer by using solutions of different concentrations
- To determine Pk value of given weak acid by pH-metric titration with strong base.
- pH metric measurement
  - To prepare buffers and standardization of pH meter
  - Determine the molarity of Hcl pH-metrically provided M/10 NaOH
- Tests for the functional groups present in organic compounds.
- Preparation of Inorganic Compounds.
- Preparation of Organic Compounds.
- Test for un-saturation and functional groups present in organic compounds.
- Determination of concentration/molarity of KMnO<sub>4</sub> solution by titrating it against a standard solution.
- Qualitative Analysis — Determination of Cations and Anions in a given salt.

Cations- Pb<sup>2+</sup>, Cu<sup>2+</sup>, As<sup>3+</sup>, Al<sup>3+</sup>, Fe<sup>3+</sup>, Zn<sup>2+</sup>, Mn<sup>2+</sup>, Ni<sup>2+</sup>, Co<sup>2+</sup>, Ba<sup>2+</sup>, Sr<sup>2+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, NH<sub>4</sub><sup>+</sup>

Anions — CO<sub>3</sub><sup>2-</sup>, S<sup>2-</sup>, SO<sub>3</sub><sup>2-</sup>, SO<sub>4</sub><sup>2-</sup>, NO<sub>2</sub><sup>-</sup>, NO<sub>3</sub><sup>-</sup>, Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, CH<sub>3</sub>COO<sup>-</sup>, PO<sub>4</sub><sup>3-</sup>, C<sub>2</sub>O<sub>4</sub><sup>2-</sup>

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Class				B.Sc. Forensic Science (Hons.)	
Semester/Year				II Semester – I Year	
Subject & Subject Code				Forensic Science - BFOSH20S207	
Paper				Biology	
Max. Marks				100	
L	T	P	Credits Total	4	
3	1	0			

#### Course Objectives:

This course provide knowledge about

- Human and Plant cell
- Anatomy and physiology of different Human organs and system.
- Anatomy and physiology of plant.

#### Course Outcome:

Students will able to

- Differentiate between human and plant cells
- Differentiate body organ and their working
- Identify parts of plants on the basis of functions and structure

#### Student Learning Outcomes (SLO):

After studying this paper, the students will know —

- Cell Biology
- Human Anatomy and Physiology
- Plant Anatomy and Physiology

Unit	Syllabus	Periods
UNIT - I	<b>Biology of Cell</b> History of Cellular Biology, Modern Cell Theory. Types of Cells: Prokaryotic and Eukaryotic Cells, Animal and plant cell. Chemical composition of cells. Ultra-structure of cell. Cell cycle (Mitosis and Meiosis)	12 hrs.
UNIT - II	<b>Human Anatomy and Physiology I</b> Anatomy and Physiology of Musculoskeletal system, Nervous system, Circulatory system and Respiratory system	12 hrs.









UNIT - III	<b>Human Anatomy and Physiology II</b> Anatomy and Physiology of Digestive system, Reproductive system, Endocrine system and Excretory System.	12 hrs.
UNIT - IV	<b>Plant Anatomy</b> Structure and functions of: Roots, Stems, Leaves. Plant tissues: Meristematic, Dermal, Ground and Vascular Tissue (Xylem & Phloem). Flower, Fruits.	12 hrs.
UNIT - V	<b>Plant Physiology:</b> Transport in plants, Photosynthesis, Respiration, Plant growth and development: Phase of growth, and Plant Growth regulator. Photoperiodism and flowering.	12 hrs.

**Suggested reading-**

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

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**SYLLABUS**

UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		II Semester – I Year		
Subject & Subject Code		Practical Forensic Science - BFOSH20S208		
Paper		Biology Practical		
Max. Marks		50= (30+20)		
L	T	P	Credits Total	2
0	0	2		

**PRACTICALS**

60 hrs.

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

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<b>Class</b>				<b>B.Sc. Forensic Science (Hons.)</b>			
<b>Semester/Year</b>				<b>II Semester – I Year</b>			
<b>Subject &amp; Subject Code</b>				<b>Forensic Science - BFOSH20S209</b>			
<b>Paper</b>				<b>Environmental Science</b>			
<b>Max. Marks</b>				<b>100</b>			
<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits Total</b>	<b>2</b>			
2	0	0					
<p><b>Course Objectives:</b> This course provides knowledge about</p> <ul style="list-style-type: none"> <li>• Environment and environmental pollutions</li> <li>• Effects of pollutions on environment</li> <li>• Natural resource and effect of over exploitation of them on environment</li> <li>• Ecosystem, Biodiversity and environmental policies</li> </ul>							
<p><b>Course Outcome:</b> Students will be able to</p> <ul style="list-style-type: none"> <li>• Know the cause of different types of pollution on environment</li> <li>• Help in reducing the waste and pollution</li> <li>• Know the alternatives for items causing pollution</li> </ul>							
<p><b>Student Learning Outcomes (SLO):</b> After studying this paper the students will know —</p> <ul style="list-style-type: none"> <li>• Understand the various environment, culture and society.</li> <li>• To know the differences between the business and Government.</li> <li>• Contextualize the concepts of public sector in India.</li> </ul>							
<b>Unit</b>		<b>Syllabus</b>				<b>Periods</b>	
UNIT - I		<p><b>Introduction to Environment:</b> Definition, Components of Environment, Relationship between different components, Man- Environment relationship, Impact of Technology on the environment, Environmental Degradation, Sustainable Development, Environmental Education.</p>				05 hrs.	
UNIT - II		<p><b>Ecology &amp; Ecosystems:</b> Introduction: Ecology- Objectives and Classification, Concepts of an ecosystem- structure &amp; function of ecosystem, Components of ecosystem- Producers, Consumers, Decomposers, Energy flow in the ecosystem - Ecological succession, Food chains, food webs and ecological pyramids, Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems and its types, Bio- Geo- Chemical Cycles - Hydrological Cycle, Carbon cycle, Oxygen Cycle, Nitrogen Cycle, Sulfur Cycle.</p>				07 hrs.	



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UNIT - III	<b>Environmental Pollution:</b> Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like SPM, SO <sub>2</sub> , NO <sub>x</sub> , Natural & Anthropogenic Sources, Effects of common air pollutants, Air Pollution Episodes, Sound and Noise measurements, Sources of Noise Pollution, Ambient noise levels, Effects of noise pollution, Noise pollution control measures, Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants, Eutrophication, Water Pollution Episodes, Global Warming and Green Houses Effect, Acid Rain, Depletion of Ozone Layer.	07 hrs.
UNIT - IV	<b>Energy Resources:</b> Renewable & Nonrenewable Resources: Renewable Resources, Nonrenewable Resources, Indian Scenario, Conventional Energy Sources & its problems, non-conventional energy sources- Advantages and its Limitations	04 hrs.
UNIT - V	<b>Disaster Management:</b> Natural Disasters and its types, Accidental Disasters, Impact of Disasters on Trade and International Trade, Introduction, Natural disasters , Earthquakes, Hurricanes, Tornadoes, Floods, Drought, Tsunami, Volcanoes, Cyclones and Storms, Forest Fires, Severe Heat Waves, Landslides and Avalanches, Epidemics and Insect Infestations, Technological and Social Disasters Types of Technological Hazards, Social Disasters, Political and Crowd Disasters, War and Terrorism, Components of Disaster Management, Government's Role in Disaster Management through Control of Information, Actors in Disaster Management, Organizing Relief measures at National and Local Level, Psychological Issues, Carrying Out Rehabilitation Work, Government Response in Disaster.	07 hrs.

#### Suggested reading-

- 1 Basics of Environmental Studies by Dr. N. S. Varandani, Books India Publications.
- 2 Disaster Management by Mukesh Dhunna, Vayu Education of India, Delhi Publication.
- 3 Environmental Studies by Benny Joseph, McGraw Hills Education.

#### Reference Books-

- 4 Environmental Studies by R. Rajagopalan, Oxford University Press Publication.
- 5 Environmental Science by Richard T Wright & Bernard J Nebel, Prentice Hall India Publication.
- 6 Environmental Science by Daniel B Botkin & Edward A Keller, Wiley Publications

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**SYLLABUS**

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Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		III Semester –II Year		
Subject & Subject Code		Forensic Science - BFOSH20S301		
Paper		Forensic Dermatoglyphics		
Max. Marks		100		
L	T	P	Credits Total	4
3	1	0		
<p><b>Course Objectives:</b> This course provides the knowledge of</p> <ul style="list-style-type: none"> <li>• The Principles behind science of Fingerprint,</li> <li>• Fingerprint on various evidences in crime scene,</li> <li>• Classifying criminal record by fingerprints and worked carried out in India,</li> <li>• Other impressions evidences such as lip prints, foot prints etc. its classification and significance.</li> </ul>				
<p><b>Course Outcome:</b> The Students will learn the following:</p> <ul style="list-style-type: none"> <li>• Types and patterns of Fingerprints and its classification,</li> <li>• Different physical and chemical methods used to develop</li> <li>• Fingerprints and how Fingerprint helps in identification of criminal.</li> <li>• How other impressions such as lip prints, foot prints etc. are used for individual identification.</li> </ul>				
<p><b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know –</p> <ul style="list-style-type: none"> <li>• The fundamental principles on which the science of fingerprinting is based.</li> <li>• Fingerprints are the most infallible means of identification.</li> <li>• The physical and chemical techniques of developing fingerprints on crime scene evidence.</li> <li>• The significance of foot, palm, ear and lip prints.</li> </ul>				

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Unit	Syllabus	Periods
UNIT - I	<b>Basics of Fingerprinting</b> <ul style="list-style-type: none"> <li>• Introduction and history, with special reference to India. Biological basis of fingerprints. Formation of ridges.</li> <li>• Fundamental principles of fingerprinting.</li> <li>• Significance of poroscopy and edgeoscopy.</li> </ul>	12 hrs.
UNIT - II	<b>Types of fingerprints.</b> <ul style="list-style-type: none"> <li>• Fingerprint patterns and types.</li> <li>• Fingerprint characters/minutiae. Plain and rolled fingerprints.</li> <li>• Classification and cataloguing of fingerprint record.</li> <li>• Automated Fingerprint Identification System.</li> </ul>	12 hrs.
UNIT - III	<b>Development of Fingerprints</b> <ul style="list-style-type: none"> <li>• Latent prints. Constituents of sweat residue.</li> <li>• Latent fingerprints' detection by physical and chemical techniques.</li> <li>• Mechanism of detection of fingerprints by different developing reagents.</li> <li>• Application of light sources in fingerprint detection.</li> <li>• Metal deposition method.</li> </ul>	12 hrs.
UNIT - IV	<b>Advancements in Fingerprint Development</b> <ul style="list-style-type: none"> <li>• Digital imaging for fingerprint enhancement.</li> <li>• Fingerprinting the deceased.</li> <li>• Developing fingerprints on gloves.</li> <li>• Preservation of developed fingerprints.</li> </ul>	12 hrs.
UNIT - V	<b>Other Impressions</b> <ul style="list-style-type: none"> <li>• Importance of footprints, Casting of foot prints, Electrostatic lifting of foot prints.</li> <li>• Palm prints, Lip prints - Nature, location, collection and examination of lip prints.</li> <li>• Ear prints and their significance.</li> </ul>	12 hrs.

#### Suggested Readings-

1. J.E. Cowger, Friction Ridge Skin, CRC Press, Boca Raton (1983).
2. D.A. Ashbaugh, Quantitative-Qualitative Friction Ridge Analysis, CRC Press, Boca Raton (2000).
3. C. Champod, C. Lennard, P. Margot an M. Stoilovic, Fingerprints and other Ridge Skin Impressions, CRC Press, Boca Raton (2004).
4. Lee and Gaensleen's, Advances in Fingerprint Technology, 3rd Edition, R.S. Ramotowski (Ed.), CRC Press, Boca Raton (2013).

**SYLLABUS**

UG			
Class		B.Sc. Forensic Science (Hons.)	
Semester/Year		III Semester – II Year	
Subject & Subject Code		Practical Forensic Science - BFOSH20S302	
Paper		Finger Prints- Practical	
Max. Marks		50= (30+20)	
L	T	P	Credits Total 2
0	0	2	

**PRACTICALS**

60 hrs.

1. To record plain and rolled fingerprints.
2. To carry out ten-digit classification of fingerprints.
3. To identify different fingerprint patterns.
4. To carry out ridge tracing and ridge counting.
5. To develop latent fingerprint by physical and chemical method
6. To investigate physical methods of fingerprint detection.
7. To investigate chemical methods of fingerprint detection.
8. To use different light sources for enhancing developed fingerprints.
9. To prepare cast of foot prints.

*Shama*

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*Mehar*

*Megha*

*[Signature]*

## SYLLABUS

UG				
Class		B.Sc. Forensic Science (Hons.)		
Semester/Year		III Semester – II Year		
Subject & Subject Code		Forensic Science - BFOSH20S303		
Paper		Technological Methods in Forensic Science		
Max. Marks		100		
L	T	P	Credits Total	4
3	1	0		
<p><b>Course Objectives:</b> This course provides knowledge about</p> <ul style="list-style-type: none"> <li>• Various instrumental techniques used in Forensic science and importance of chromatographic and spectroscopic techniques in processing crime scene evidence.</li> <li>• Significance of microscopy in visualizing trace evidence and comparing it with control samples, Fundamental Principles and types of microscope used in forensic science,</li> <li>• The utility of colorimetry, electrophoresis and neutron activation analysis in identifying chemical and biological materials,</li> <li>• Principle and significance of Photography, IR, UV photography.</li> </ul>				
<p><b>Course Outcome:</b> The Students will learn the following:</p> <ul style="list-style-type: none"> <li>• How different evidences are analysed using various instrumental methods.</li> <li>• Student will have knowledge about different microscopes and photography technique required in evidence collection and examination.</li> <li>• Students will learn the basic principle working and forensic application of electrophoretic techniques, spectroscopic and chromatographic techniques.</li> </ul>				
<p><b>Student Learning Outcomes (SLO):</b> After studying this paper, the students will know –</p> <ul style="list-style-type: none"> <li>• The importance of chromatographic and spectroscopic techniques in processing crime scene evidence. The utility of colorimetry, electrophoresis and neutron activation analysis in identifying chemical and biological materials.</li> <li>• The significance of microscopy in visualizing trace evidence and comparing it with control samples.</li> <li>• The usefulness of photography and videography for recording the crime scenes.</li> </ul>				

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*Sharma*

*Mehrotra*

*Mishra*

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