NIRMA UNIVERSITY

Institute:	Institute of Law
Name of Programme:	B.A., LL.B (Hons.), B.Com.LL.B(Hons.)
Course Code:	2CRM844
Course Title:	Forensic Science
Course Type:	Department Elective
Year of Introduction	2021-2022

Credit Scheme

L	T	Practical component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLO)

At the end of the course, students will be able to-

1. Evaluate and Describe the relevance of forensic science in finding the truth in legal proceedings
2. Analyse the basic principles relating to forensic science
3. Identify and articulate the emerging issues in forensic evidence
4. Analyse the various forensic techniques which may be utilised in investigation and judicial proceedings
5. Describe various emerging methods and technology which may be helpful in investigation of crime
6. Critically evaluate the relevant constitutional and legislative provisions' viability for adoption of forensic science and technology

Syllabus: **Total teaching hour: 60**

Unit	**Syllabus**	**Teaching hours**
Unit-I	**Introduction**	**08 Hours**

1.1 Meaning and concept of forensic science
1.2 Evolution of forensic science
1.3 Cyber Forensic
1.4 Scope and importance of forensic science in administration of justice and judicial process
1.5 Role of forensic scientist in the administration of justice and judicial process

1.6 Limitations of forensic science in respect of proof of facts

Unit-II **Basic Principles of Forensic Science** **06 Hours**

2.1 Individuality
2.2 Exchange
2.3 Progressive Change
2.4 Law of comparisons
2.5 Law of probability
2.6 Law of circumstantial facts

Unit-III **Scene of Crime and Forensic Science** **08 Hours**

3.1 Investigation and scene of crime
3.2 Meaning and concept of scene of crime
3.3 Value of trace evidence
3.4 Importance of mutual exchange
3.5 Preservation and quality of scene of crime

Unit-IV **Modern Scientific Techniques and Proof** **16 Hours**

4.1 Advantages and costs of modern scientific techniques in the criminal justice system
4.2 Application of various modern scientific techniques in criminal investigation and criminal proceedings at various stages
4.2.1 Narco Analysis
4.2.2 Polygraph-Lie detector test
4.2.3 Brain electric activation profile BEAP
4.2.4 DNA profiling
4.2.5 Drugs and poisoning
4.2.6 Trace evidences
4.2.7 Ballistics
4.2.8 Paternity test
4.2.9 Documents
4.2.10 Fingerprints
4.2.11 Voice identification-forensic acoustic
4.2.12 Cyber forensics
4.3 Various legal issues and challenges in the use of modern scientific techniques

Unit- V **Constitutional, Legislative and Judicial Framework** **12 Hours**

5.1 Constitutional Issues relating to forensic evidence
5.2 Relevant provisions of The Indian Evidence Act, 1872 relating to relevancy and admissibility
5.3 The dichotomy of admissibility and reliability
5.4 Expert witnesses and their opinions
5.5 The DNA Technology (Use and Application) Regulation Bill, 2019
5.6 Relevant Provisions of Code of Criminal Procedure, 1973 relating to investigation and arrest

Unit-VI **Emerging Areas, Concerns and Future of Forensic Science** **10 Hours**

6.1 Criminal personality profiling
6.2 Analysis of bloodstain pattern interpretation
6.3 Forensic engineering
6.3. Forensic cyber technology
6.4 Forensic psychology
6.5 Forensic economics and accounting
6.6 Forensic photography
6.7 Forensic radiology
6.8 Forensic security
6.9 *Frye* v. *Daubert* rule in Indian context
6.10 Future of forensic science in criminal law and judicial proceedings.

Suggested Reading Reference:

1. Adhikary, Jyotirmoy (2007). *DNA Technology in Administration of Justice*, Lexis Nexis.
2. Andrewartha, Danielle (2008). Lie Detection in Litigation: Science or Prejudice?, *Psychiatry, Psychology and Law*, 15:1, 88-104, DOI: 10.1080/13218710701873940
3. Balk, Carly (2015). Reducing Contamination in Forensic Science, Themis: *Research Journal of Justice Studies and Forensic Science*, Vol. 3 pp. 222-239
4. Bell, Suzanne (2008). *Drugs, Poisons, and Chemistry*, Facts On File Inc.
5. Bell, Suzanne (2008). *Fakes and Forgeries,* Facts On File Inc.

6. Bhasin, M.K. & Nath, S. (2002). *Role of Forensic Science in the New Millennium*, University of Delhi.
7. Bond. J. W. (2009). The Value of Fingerprint Evidence in Detecting Crime. *International Journal of Police Science & Management*, *11*(1), 77–84. https://doi.org/10.1350/ijps.2009.11.1.111
8. Brown, Stan & Willis, Sheila (2010). Complexity in Forensic Science, *Forensic Science Policy & Management: An International Journal*, 1:4, 192-198, DOI: 10.1080/19409041003698454
9. Cole S.A. (2014). Forensic Science and Miscarriages of Justice. In: Bruinsma G., Weisburd D. (eds) *Encyclopedia of Criminology and Criminal Justice*. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-5690-2_233
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15. Houck, Max M. (2009). *Trace Evidence,* Facts On File Inc.
16. Houck, Max M. (2010). *Essentials of Forensic Science*, Facts on File Inc.
17. Hueske, Edward E. (2007). *Firearms and Fingerprints: Essentials of Forensic Science,* Facts On File Inc
18. James, S.H. & Nordby, J.J. (2005). *Forensic Science: An Introduction to Scientific and Investigative Techniques*, CRC Press.
19. Johnson, L. D. (2009). Guilty or innocent..just take look at my brain analyzing the nexus between traumatic brain injury and criminal responsibility. *Southern University Law Review, 37(1),* 25-40.

20. Kannan, K. *Modi A Textbook of Medical Jurisprudence and Toxicology*, (25th Edition) Lexis Nexis.
21. Lee, Henry C., Palmbach, Timothy & Miller, Marilyn T. (2001). *Henry Lee's Crime Scene Handbook*, Academic Press.
22. Machado H., & Granja R. (2020). DNA Technologies in Criminal Investigation and Courts. In: *Forensic Genetics in the Governance of Crime*. Palgrave Pivot, Singapore. https://doi.org/10.1007/978-981-15-2429-5_4
23. Nanda, B.B. & Tiwari, R.K. (2001). *Forensic Science in India: A Vision for the Twenty First Century*, Select Publishers.
24. R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).
25. Saks, M.J. & Koehler, J.J. (2008). The Individualization Fallacy in Forensic Science Evidence. *Vanderbilt Law Review, Vol 61, No. 1, pp. 199-219.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1432516
26. Schwoeble, A.J. & Exline D.L. (2000). *Current Methods in Forensic Gunshot Residue Analysis*, CRC Press.
27. Sharma, B. R. (2013). *Forensic Science in criminal Investigation and Trials*, Universal Lexis Nexis.
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