O.P. Jindal Global University

A Private University Promoting Public Service

Scientific Investigation of Crime

Course Instructor: Dr. Girraj Sharma

Jindal Institute of Behavioral Sciences (JIBS)

04 Credit Course

FALL SEMESTER 2026

Faculty Contact: 8349628090
Email: Girraj.sharma@gmail.com
Office Hours: Monday to Friday (09 AM to 6 PM) - (On an appointment basis)
Classroom:
The information provided herein is by the Course Coordinator. The following information contains the official record of the details of the course.

PART I

Course Title: Scientific Investigation of Crime		
Course Code	BE-E-0149	
Course Duration	15 weeks	
No. of Credit Units	04	
Level	UG/PG	
Pre-Requisites	Nil	
Pre-Cursors	Nil	
Equivalent Courses	Nil	
Exclusive Courses	Nil	
Class Timing		

PART II

Course Description

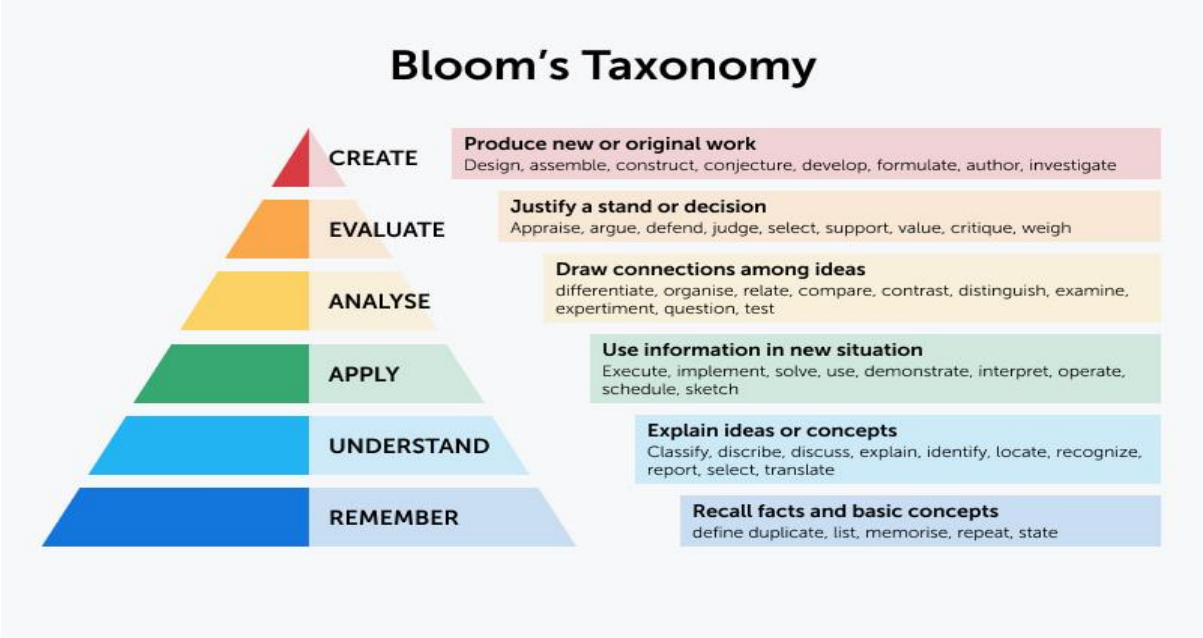
The scientific investigation of crime course provides students with a comprehensive course designed to equip students with the knowledge and skills necessary to analyze and solve crimes through scientific methods. This course covers a wide range of topics, including crime scene investigation, physical evidence handling, and the application of various forensic disciplines such as forensic biology, forensic chemistry, forensic toxicology, digital forensic and forensic physics. Students will also explore cutting-edge techniques in crime scene investigation, DNA analysis, toxicology, ballistics, and digital forensics. Emphasis will be placed on the integration of scientific principles with investigative procedures to ensure accurate and reliable results. Through case studies and hands-on laboratory exercises, learners will develop critical thinking skills and learn to apply scientific reasoning to real-world criminal investigations. The course also addresses the ethical considerations and legal frameworks governing forensic practices, preparing students to navigate the complexities of the criminal justice system. Ideal for those aspiring to careers in forensic science, criminal justice, or law enforcement, this course provides a solid foundation in the scientific approaches that are pivotal in solving crimes and delivering justice.

Course aim-

The aim of the *Scientific Investigation of Crime* course is to equip students with a thorough understanding of the scientific methodologies and forensic techniques used in the investigation and analysis of criminal activities. By integrating theoretical knowledge with practical applications.

Learning outcomes
After the completion of the course the student will be able to:

1. **Identify** the foundational principles of crime scene management, including the identification, collection, and preservation of physical evidence.
2. **Demonstrate** an understanding of the protocols for scientific processing of a crime scene and the responsibilities of the first responding officer.
3. **Analyze** the physiological and environmental factors involved in the investigation of death, including estimating the time, cause, and manner of death.
4. **Evaluate** the specialized roles of forensic anthropology and entomology in recovering remains, determining victim characteristics, and interpreting situational trauma (e.g., drowning, hanging).
5. **Apply** the principles of forensic biology to explain the processes of DNA typing, biological evidence preservation, and the interpretation of DNA profiles in criminal cases.



Course Format

Class time will include a combination of lectures, detailed case study analyses, and active classroom discussions. Students are expected to complete the assigned essential readings prior to each class to facilitate robust discussion on the scientific techniques being covered. Practical case studies will be

utilized frequently to bridge the gap between theoretical laboratory methodologies and field investigations.

Assignments:

Note: Dates and submission formats to be finalized.

Internal Assessment (70 Marks)

1. Quiz 1 (10 Marks)
   Coverage: Unit I (Basics of Crime Scene) & Unit II (Scientific Processing of Scene of Crime)
   Linked to Learning Outcomes: 1 & 2
   Description: A short-format assessment designed to test students' foundational knowledge of crime scene management, the role of the first responding officer, and the identification of physical evidence.
2. Quiz 2 (15 Marks)
   Coverage: Unit III (Investigation of Death) & Unit IV (Cases of Scientific Investigation)
   Linked to Learning Outcomes: 3 & 4
   Description: An intermediate assessment focusing on the physiological factors of death investigation and the specialized applications of forensic anthropology and forensic entomology in recovering and analyzing remains.
3. Group or Solo Presentation (25 Marks)
   Linked to Learning Outcomes: Varies based on selected topic (1–5)
   Description: Students will select a specific topic or case study from the course manual to research and present to the class. Whether working individually or in small groups, students must demonstrate a thorough understanding of the scientific principles involved and the ability to critically analyze forensic methodologies.
4. Mock Crime Scene Analysis (10 Marks)
   Linked to Learning Outcomes: 1, 2, 3, 4 & 5
   Description: A practical, hands-on evaluation where students apply their theoretical knowledge to a simulated crime scene. Students will be assessed on their adherence to proper protocols for scene securing, documentation, and the scientific collection of physical and biological evidence.
5. Attendance and Active Participation (10 Marks)
   Description: Marks will be awarded based on consistent attendance, punctuality, and the quality of the student's engagement during lectures. Active participation requires meaningful contributions to case study discussions and demonstrating a professional attitude in the classroom environment.

End Semester Assessment (30 Marks Total)

6. End Semester Examination (Closed Book) (30 Marks)

Coverage: Comprehensive (Units I–V)
Linked to Learning Outcomes: 1, 2, 3, 4, & 5
Description: A comprehensive, closed-book final examination covering all course modules. This exam will evaluate the students' overall retention of forensic science principles, their analytical skills regarding complex case scenarios, and their deep understanding of specialized tools like DNA analysis.

(*Please note that absenteeism on day of assessment will not be entertained and no assessments shall be rescheduled.)

Missed or Late Assessment Submission

All assessments are expected to be submitted on the scheduled day. In case of exceptional circumstances, the student can contact the course instructor and at their discretion (with or without penalty), the instructor may take a call on the concession that is granted. It is the students responsibility to double check that the correct file has been submitted. In case the incorrect or corrupted document is submitted for evaluation, it may result in a lower grade for the student.

Grading of Student Assessment

Letter Grade	Percentage of Marks	Grade Points	Interpretation
O	80 and above	8	**Outstanding:** Exceptional knowledge of the subject matter, thorough understanding of issues; ability to synthesize ideas, rules and principles and extraordinary critical and analytical ability.
A+	75 - 79	7.5	**Excellent:** Sound knowledge of the subject matter, thorough understanding of issues; ability to synthesize ideas, rules and principles and critical and analytical ability.
A	70 - 74	7	**Very Good:** Sound knowledge of the subject matter, excellent organizational capacity, ability to synthesize ideas, rules and principles, critically analyse existing material and originality in thinking and presentation.
A-	65 -69	6	**Good:** Good understanding of the subject matter, ability to identify issues and provide balanced solutions to problems and good critical and analytical skills.
B+	60 - 64	5	**Fair:** Average understanding of the subject matter, limited ability to identify issues and provide solutions to problems and reasonable critical and analytical skills.
B	55 - 59	4	**Acceptable:** Adequate knowledge of the subject matter to go to the next level of the study and reasonable critical and analytical skills.

B-	50 - 54	3	**Marginal:** Limited knowledge of the subject matter and irrelevant use of materials, and poor critical and analytical skills.
P1	45 - 49	2	**Pass 1:** Pass with Basic understanding of the subject matter.
P2	40 - 44	1	**Pass 2:** Pass with Rudimentary understanding of the subject matter.
F	Below 40	0	**Fail:** Poor comprehension of the subject matter; poor critical and analytical skills and marginal use of the relevant materials. Will require repeating the course.

Course Outline and Reading with Application Hours

Dates/Module	**Lesson / Topic**	**Classroom Activity**	**Readings**
Unit I (Weeks 1-2)	**Basics of Crime Scene:** Introduction to crime scenes, locating scenes, the role of physical evidence in criminal investigation, scientific crime scene investigation.	Lecture & Case Studies	**Essential:** Henry Lee et al. (2001).
Unit II (Weeks 3-5)	**Scientific Processing of Scene of Crime:** Elements of crime scene management (information, technology, logistics, manpower), role of the first responding officer, how to proceed at a crime scene.	Lecture & Discussion	**Essential: Henry** Lee et al. (2001). **Suggested:** Tilstone et al. (2019); Sharma (2003).
Unit III (Weeks 3-5)	**Investigation of Death:** Introduction and definition of death, role of forensic pathologist, autopsy, cause of death, manner of death, estimating time of death.	Lecture & Case Studies	**Essential:** Saferstein & Tiffany (2021).
Unit IV	**Cases of Scientific Investigation:** Role of forensic anthropologist, recovering/processing remains, determining victim characteristics. Role	Lecture & Case Studies	**Essential:** Saferstein & Tiffany (2021).

(Weeks 6-7)	of forensic entomologist. Antemortem/postmortem drowning and hanging cases.		
(Weeks 8-9)	*Mid-Semester Break / Mid-Term Assessments*	*Review and Assessment*	*Review previous readings*
Unit V (Weeks 10-15)	**DNA: The Indispensable Forensic Science Tool:** Introduction to DNA, Structure, DNA at work, Replication, DNA typing with STR, mitochondrial DNA, Collection and preservation of biological evidence.	Lecture, Discussion & Case Studies	**Essential:** Saferstein & Tiffany (2021).

Reading List: Mention all the readings here

- **Essential Readings**
  1. Lee, H., Palmbach, T., & Miller, M. T. (2001). Henry Lee's crime scene handbook.

  2. Saferstein, R., & Tiffany, R., (2021). Criminalistics – An Introduction to Forensic Science. Pearson.

CLASSROOM POLICIES

Professional Conduct in Classroom

Developing professionalism means arriving on time to the classroom, maintaining classroom decorum, such as being seated within the first two minutes, being respectful to the instructor, peers, conflicting opinions, and submitting assignments on time. As a student of this course you are expected to integrate these skills into your daily behaviour as maintaining professionalism is an essential component of the course. It is essential that we pursue higher ideals which means incorporating behaviours such as listening to others when they are contributing, being sensitive to other individuals and diversity, and supporting the overall learning environment. Disrupting the learning environment by arriving after a two-minute window from the designated start time would mean that the student will be refused entry/attendance. It is also expected that the student contributes in classroom discussions, activities, and presentations to enhance the overall learning environment.

Attendance Policy

Students are expected to attend all classes (100% attendance). Students that are regularly absent cause a disruption to the learning environment and limit their own potential. A student who fails to attend a class is expected to inform the Course Instructor, beforehand, orally or in writing, the

reason for their absence. A minimum of 75% attendance is mandatory, failing which, student is not permitted to take the final exam or end term exam.

Punctuality

Students are expected to be seated and prepared inside the class at the scheduled class time. Regular late comers will denied entry. Both later comers and early departures disrupt the learning environment and would be penalized. A student who might feel like that they might be late for a class is expected to inform the Course Instructor, beforehand, orally or in writing, the reason for the same.

Respectfulness

Students must maintain the integrity of the classroom which means respecting peers, faculty, and staff. It is essential that the student is attentive and sensitive about the words that they use and its impact on others. Students who harm the decorum of the classroom will be asked to leave the classroom and marked absent for the day.

Electronic Devices

Electronic devices such as laptops, headphones, mobiles phones are known to be major distractions for learning. Therefore, students will be permitted to use electronic devices only at the behest of the course instructor.

Notes on Plagiarism

Plagiarism is not acceptable! Chat GPT extracted answers are not acceptable either. Please refrain from copying and pasting paragraphs and sentences from your reading materials. This include copying someone's words, structure, grammar, ideas, thoughts, and phrases and passing them as your own. Too many quotes are not acceptable! Using

What is acceptable? Using one quote which is not more than 40 words with proper citation. Use citation! It's a must! Present the content you read from your reading materials in your own words! It is necessary to cite all material that is not the student's original work. Think and critically analyse the content! The source should be always acknowledged in your written material and presentation. All papers in this class will be checked electronically for plagiarism. Sharing or using past work is also counted as plagiarism.

Academic learning is founded on ideals of honesty, integrity, and civility and students are expected to display these ideals at all times. Serious consequences could result when the ideals of academic behaviour are violated.

Safe Space Pledge

Some parts of this course may discuss a range of issues that might result in distress for some students. Discussions and images in the course might also provoke strong emotional responses. To make sure that all students collectively benefit from the course, and do not feel troubled due to either the contents of the course, or the conduct of the discussions, it is incumbent upon all within

the classroom to pledge to maintain respect towards our peers. This does not mean that you need to feel restrained about what you feel and what you want to say. Conversely, this is about creating a safe space where everyone can speak and learn without inhibition and fear. This responsibility lies not only on students, but also the instructor.

Disability Support and Accommodation Requirements

JGU endeavors to make all its courses accessible to students. All students with a known disability needing academic accommodations are required to register with the Disability Support Committee s. The Committee has so far identified the following conditions that could possibly hinder student's overall well-being. These include: physical and mobility related difficulties; visual impairment; hearing impairment; medical conditions; specific learning difficulties e.g. dyslexia; mental health. The Disability Support Committee maintains strict confidentiality in its discussions. The students should preferably register with the Committee in the first week of the semester as disability accommodation requires early planning. DSC will approve and coordinate all the disability related services such as appointment of academic mentors, specialized interventions and course related requirements such as accessible classrooms for lectures, tutorials and examinations.
All faculty members are required to refer students with any of the above-mentioned conditions to the Disability Support Committee for addressing disability-related accommodation requirements.

Centre for Wellness and Counseling Services:
Contact: Email ID: cwcs@jgu.edu.in
Mobile: +91 8396907312