

Criterion 3: Research, Innovations, and Extensions

3.1. Background

Established by the foremost pioneers of criminology and forensic science, the department boasts of the richest faculties in terms of knowledge and experience in the subject. Being a DST-FIST (Fund for Improvement of Science & Technology infrastructure) sponsored department, the laboratories of the department are equipped with latest infrastructure and enabling facilities for promoting R&D activities in the subject domains. As a result of the easily accessible infrastructure under the supervision of the experienced faculties and lab assistants, the students are introduced to hands-on training in the laboratories since under-graduation. With this, the department aims to build upon the framework of existing research in criminology and forensic science. The syllabus of the course described in Criterion 1 is designed in such a way that the outcome is both employment oriented as well as research oriented. The illustrious results of the programs conducted by the university are evident in the placements and publications sections of the website.

3.2. Thrust areas of Research

The experienced group of faculty at this department engages in research pertaining to different areas of criminology and forensic science, as depicted in the following table:

Sr. No.	Forensic Science	Criminology
1.	Fingerprint identification	Gerontology
2.	Document & Cyber frauds	Juvenile conflict with law
3.	DNA technology	Sexual offence & attitude
4.	Adulterants	Drug Traffickers & personality
5.	Toxicity-induced stress	Cyber Crime and Security
6.	Preventive forensics	Child abuse & exploitation
7.	Alternative matrix	Victimology
8.	Neurological disorders	Criminal psychology
9.	Doping	Women & crime
10.	Green chromatography	Post Traumatic Stress Disorder
11.	Green & clean fuel	Green Crime
12.	Aquatic toxicology	Human trafficking

3.3. Instrumental facilities at the department for the purpose of research

Along with the assistance of Sophisticated Instrumentation Center, the department is adorned with the latest tools and techniques dedicated to conduct and promote research in the subject domains. Hands on training on these instruments aims to cultivate research aptitudes in the students. The details of the instruments made available to the students for the purpose of research are:

Instruments	Model	Manufacturer
GC	GC-2014 AF230VR	Shimadzu Corporation
HPLC	LC-20 AT	Shimadzu Corporation
UPLC	LC-30AD	Shimadzu Corporation
UV	UV1800EBG240V	Shimadzu Corporation
HPTLC		CAMAG
Lab Q Ultra Type-1		Indion
Weighing Machine	ME204	METTLER TOLEDO
ph Meter	Ph-103	CONTECH
Laboratory Weighing System		
VSC		Foster & Freeman
FTIR	TENSOR-37	Broker
Ultracentrifuge	R8C	REMI
Microscope	CH-20i BIMF	Olympus
UV-VIS Spectrophotometer	UV3000	LAB India
Water Bath		JSGW
Distilled water unit	AQUELIX 5	Elix Texhnology
PCR-Unit	Gene Amp PCR System 9700	Applied Biosystems
Laminar Air Flow		Tanco Systems
Comparison Microscope	Nr. 601688	Leitz WETZLAR
Stereo Microscope	MSZ	Magnus
UV-VIS Spectrophotometer	G6860A	Agilent Technologies
Vortex Shaker	CAT.3020	TARSONS
Electronic Balance	CAH-123	CONTECH
Stereo Microscope	M5A	HEERBURG AG
CENTRIFUGE	C-24PLUS	REMI
Electrophoresis Unit	Powerhouse PS0091	Life Technologies

3.4. Significant research contribution by the department in the last five years

Name of the faculty	Title of the paper	Publication	Year
Prof. Devasish Bose (Forensic Science)	Optimization and Validation of a Chromatographic Method for the Quantification of Isoniazid in Urine of Tuberculosis Patients According to the European Medicines Agency Guideline	Antibiotics	2016
	A Rapid Thin Layer Chromatographic Method for Simultaneous Screening of Albendazole and Ivermectin in Formulations Prescribed for Human or Veterinary	Asian Journal of Chemistry	2019
	Procedure for the screening of eggs and egg products to detect oxolonic acid, ciprofloxacin, enrofloxacin and sarafloxacin using micellar liquid chromatography	Antibiotics	2019
	Use of Micellar Liquid Chromatography to Determine Mebendazole in Dairy products and Breeding Waste from Bovine Animals	Antibiotics	2020
	An assay to determine revaroxaban in pharmaceutical formulation by micellar liquid chromatography	Journal of the Iranian Chemical Society	2020

	Quantification of rifampicin and rifabutin in plasma of tuberculosis patients by micellar liquid chromatography	Journal of the Iranian Chemical Society	2020
Prof. Mamata Patel (Criminology)	Youth Offenders: Gold chain snatcher	The International Journal of Humanities and Social Science	2016
	Domestic Violence against elderly: Challenges to social traditions	Global Journal for research analysis	2019
	Issues of Juveniles: Juveniles in conflict in law	Indian Police Journal	2020
	The psychoactive substances abuse among juveniles in conflict with law	Madhya Bharti	2020
	The effects of social networking sites among juveniles in conflict in law	The perspective International Journal of Social Science and Humanities	2020
	Victim offender relationship and post traumatic stress disorder in incarcerated murderers	Indian Police Journal	2020
Dr. Navjot Kaur Kanwal (Forensic Science)	Facial biometric: Versatile approach for personal identification	International Journal of Science & Engineering Development Research	2016
	Comparison of various writing characteristics of Hindi and Marathi languages of Devanagari origin	International Journal of Innovative Science, Engineering & Technology	2017
	Study of Genuine and Forged Indian Bank Cheques by Using Video Spectral Comparator-40	International Journal of Innovative Science, Engineering & Technology	2017
	Implication of Photogrammetry and Photomorphology: A Review	International Journal of Innovative Science, Engineering & Technology	2017

	A Comparative Study on Face indices by Digital 2D Photogrammetry and Direct Anthropometry	Madhya Bharti Journal of Science	2018
	A Study of Genuineness of Rupee 2000 banknote and related contemporary issues	The Indian Police Journal	2018
	A Contemporary Facet on Rohypnol: A Date Rape Drug	MOJ Toxicology Volume 4 Issue 1	2018
Dr. S.M. Mahendra Simha Karna (Criminology)	Crime Against Children – Paedophilia	Indian Police Journal	2018
	Internet Addiction: A comparative study among children in the State of Madhya Pradesh and Chhattisgarh	International Journal of Research and Analytical Reviews	2018
Dr. Vandana Vinayak	Fabrication of resonating microfluidic chamber for biofuel production in diatoms	IEEE Xplore	2016
	Biomimetic fabrication of biotinylated peptide nanostructures upon diatom scaffold; a plausible model for sustainable energy	RSC Advances	2016
	Metabolic engineering of TiO ₂ nanoparticles in Nitzschia palea to form diatom nanotubes: an ingredient for solar cells to produce electricity and biofuel.” 6, no. 99 (2016): 97276-97284.	RSC Advances	2016
	Short peptide amphiphile cage facilitate engineering of gold nanoparticles under the laser field	Chemistry Select	2017

Morphological and physiological alterations in the diatom <i>Gomphonema pseudoaugur</i> due to heavy metal stress.	Journal of Electrophoresis. 1(24), pp.2144-2148. Selected for Cover page of Journal. Wiley Publications. IF:3.535	2017
Doping of magnetite nanoparticles facilitates clean harvesting of diatom oil as biofuel for sustainable energy	Materials Research Express	2018
Transition Metal Ion-Mediated Tyrosine-Based Short-Peptide Amphiphile Nanostructures Inhibit Bacterial Growth.	ChemBioChem	2018
Peptide mediated facile fabrication of silver nanoparticles over living diatom surface and its application.	Journal of Molecular Liquids	2018
Fast Fourier infrared spectroscopy to characterize the biochemical composition in diatoms	Journal of Biosciences	2018
Gold-ions-Mediated Diproline Peptide Nanocarpets and Their Inhibition of Bacterial Growth	Chemistry Select	2019
TiO ₂ doped polydimethylsiloxane (PDMS) and <i>Luffa cylindrica</i> based photocatalytic nanosponge to absorb and desorb oil in diatom solar panels	RSC Advances	2019
Bio-fabrication of Diatom Surface by Tyrosine-Metal Complexes: Smart Microcontainers to Inhibit Bacterial Growth	Chemistry Select	2020

	Chloroplast gene markers detect diatom DNA in a drowned mice establishing drowning as a cause of death	Electrophoresis	2020
	Exo-polysaccharides directed embellishment of diatoms triggered on plastics and other marine litter.	Scientific reports, NATURE	2020
Dr. Deepak Gupta (Guest Faculty)	Television avam media dwara nakaratmak vicharo ke prasaranprastutikaran ki ak parineeti: samaj mein vyapt apradhikta Radha Kamal Mukharjee: Chintan Prampar	National Refereed Journal of Social Science	2017
	Sagar nagar ke parikshetra mein yatayaat niyamon ke ullanghan ke roop mein apradh avam sadak durghatnao ke karanatkam karaan	International Research Journal of Management Sociology & Humanity, Vol.8 Issue7	2017
	Apradhi vyavahaar ka jyotish vishleshaniye drushtikon	Madhya Bharti Vol.72	2017
	Alcohol and its induced aura that imposed adverse effects on socio-economic, neurobehavioural and biological health in Indians	National Journal of Multidisciplinary Research and Development, Jan-Apr 2018, Vol. 3(1) Page 106-122,	2018
	School bus surakcha partiman ke sandarbh me supreme court ke disha nirdesho ke anupalan ke avmanna ak apradh (sagar nagar ke paripreksh mein ak addhyan)	Journal of Multidisciplinary Research and Development. Vol 3(1)	2018
	The Constrain Faced by Media for Propagating Peace	Think India Journal	2019

	Kamukta ke vartamman sansadhan avam yuva varg pr iske dushprabhaav ke roop mein kammum apraadh	Journal of Research in Social Science. Vol 9, Issue 7.	2019
	Crime Prevention And Global Peace Through Education	Alochana Chakra Journal	2020
	Why Islam is linked with Terrorism	Journal of Interdisciplinary Cycle Research, November-2020, Volume XII, Issue XI, Page 1865-1871	2020
Dr. Vivek Mehta (Guest Faculty)	Television avam media dwara nakaratmak vicharo ke prasaranprastutikaran ki ak parineeti: samaj mein vyapt apradhikta Radha Kamal Mukharjee: Chintan Prampar	National Refereed Journal of Social Science	2017
	Sagar nagar ke parikshetra mein yatayaat niyamon ke ullanghan ke roop mein apradh avam sadak durghatnao ke karanatkam karaan	International Research Journal of Management Sociology & Humanity, Vol.8 Issue7	2017
	Apradhi vyavahaar ka jyotish vishleshaniye drushtikon	Madhya Bharti Vol.72	2017
	Sagar Zila me 'hatya ka prayaas' apraadhon ki ghatna mein samay ka prabhaav: ak vishleshan	Global Journal of Engineering Science and Researches	2018
	School bus surakcha partiman ke sandarbh me supreme court ke disha nirdesho ke anupalan ke avmanna ak apradh (sagar nagar ke paripreksh mein ak addhyan)	Journal of Multidisciplinary Research and Development. Vol 3(1)	2018

	Mahila sashaktikaran mein mahila police ki bhumika ke prati mahilao ka drushitikon (sagar nagar ke paripreksh mein ak addhyan)	Madhya Bharti Vol.74,	2018
	Kamukta ke vartamman sansadhan avam yuva varg pr iske dushprabhaav ke roop mein kammum apraadh	Journal of Research in Social Science. Vol 9, Issue 7.	2019
Dr. Mukesh Kumar Chaurasia (Guest Faculty)	Crime Against tribal groups: Violation of the Rights	Madhya Bharti, Journal of Humanities & Social Science	2019
	Legal Mechanism on Violence against women: Causes and remedies	Madhya Bharti, Journal of Humanities & Social Science	2019