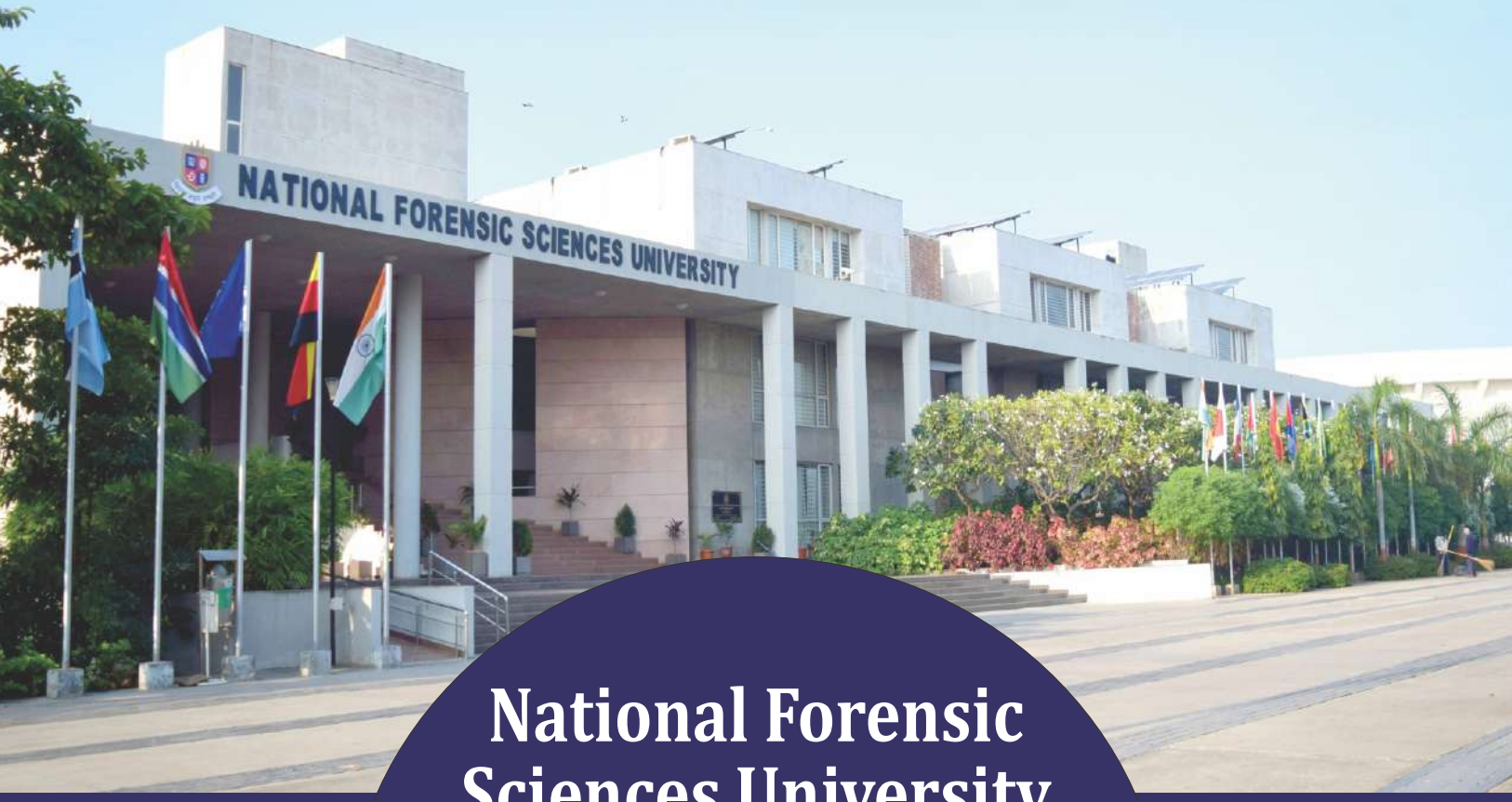
गृह मंत्रालय
MINISTRY OF
HOME AFFAIRS

NFSU
विद्यया अमृतं अश्नुते



National Forensic Sciences University

Knowledge | Wisdom | Fulfillment

An Institution of National Importance under Ministry of Home Affairs, Government of India

SCHOOL OF ENGINEERING & TECHNOLOGY

M.Tech. Civil Engineering
with specialization in
Forensic Structural Engineering

M.Sc. Food Technology
with specialization in
Forensic Food Analysis

M.Sc. Nanotechnology
with specialization in
Forensic Nanotechnology

M.Tech. Civil Engineering

Specialization in Forensic Structural Engineering

Rapid economic development and fast track modern construction practices can trigger catastrophic structural failures. To investigate the structural failure in a scientific manner, the unique and first of its kind Post graduate program of M. Tech. Civil Engineering with specialization in Forensic Structural Engineering is offered at National Forensic Sciences University (UGC Recognized - NAAC Accredited 'A' Grade) to civil engineering graduates.

Program Highlights

- Analysis, design and detailing of structures
- Independent design studio projects to each students
- Hands-on training of various design softwares
- Hands-on experience of material testing and non-destructive testing
- Continuous evaluation through presentations and assignments
- Subject enrichment through renowned professional experts
- Frequent site visits: ongoing construction/repair projects, existing structures, material manufacturing plants, etc.
- Structural evaluation of existing structures
- Evaluation, repair & rehabilitation of existing structures

Advanced Equipment Facilities

The vishveswaraya laboratory for the programme M.Tech. Civil Engineering (Forensic Structural Engineering) is equipped with constructional material testing as well as non-destructive testing facilities such as: Digital Compression Testing Machine (3000 kN), Universal Testing Machine (600 kN). Rebound Hammer, Ultrasonic Pulse Velocity Meter, Rebar Locator, Concrete Cover Meter with Half Cell Potentiometer, Rapid Chloride Penetration Test, Pull off Tester, Resistivity Meter, Air Entrainment Meter, Concrete Permeability Test Apparatus, Automatic Blain Apparatus, Electronic Direct Shear Apparatus, California Bearing Ratio Test Apparatus, Centrifuge Extractor, Standard Tar Viscometer, Softening Point Apparatus, Uniaxial Seismic Shake Table, Eight Channel Datalogger, Total Station Survey and Structural Design Softwares: STAAD Pro., SAP2000 & ETabs.

Eligibility for Admission

Bachelor's degree (B.E./B.Tech.) in Civil Engineering with at least 55% for General/OBC/EWS category candidates and 50% or equivalent for SC/ST and PwD category from any reputed university.

Consultancy Services Offered

- Material Testing Consultancy for Construction Materials: Cement, Concrete, Steel, Bitumen, Aggregate, Masonary and Soil
- Non-Destructive Testing of Structural Members
- Investigation of Fire, Earthquake and Wind Damaged Structures
- Detecting and Estimating Damages in Insurance Claims
- Structural Audit of Heritage, Industrial, Residential and Commercial Structures
- Concrete Mix Design

Intake : 20 seats • **Duration :** 2 Years (4 Semesters)

Opportunities and Placements

The Programme provides comprehensive solution from designing a structure to post failure recommendations. There has been increasing expression of interest in this field by professional engineering groups, government agencies, Structural Consultants, Architects, Attorneys and Insurance Companies, Quality Auditing Agencies, Structural Failure Analysis-Repair & Rehabilitation Firms, Material Testing Laboratories, Design Consultancies, Infrastructure Development & Maintenance Firms. Alumni students are selected at various reputed and prestigious organisations such as: Roads and Buildings Department, Irrigation Department, Energy Transmission Corporation, Structural Designer and Consultant Pvt. Ltd, Ushta Infinity Pvt. Ltd., Multi Media Consultants Pvt. Ltd., Ultratech Cement Ltd., Institute of Seismological Research, etc.

The M.Sc. Nanotechnology (with specialization in Forensic Nanotechnology) programme has been designed in such a way that, it will provide fundamental knowledge on Nanotechnology as well as its wide applications in different branches including Forensic Science, Biotechnology, Security, Defence area, Environmental Science and Energy Harvesting. This is a unique and highly specialized research-oriented masters programs where students will gain theoretical knowledge along with hands-on practice of latest nano-analytical and nano-imaging techniques and will perform innovative research projects with aim to tackle many upcoming challenges faced by humanity in the 21st century. The students will be provided internship-driven training at various industrial and academic institutions and will get opportunity in institutional consultancy works to become familiar with the real-world challenges, which will eventually support them to get placed in various industrial sectors and will inspire them for doing innovative research.

Course Objectives

- To develop functional nanomaterials with unique optical, electrical, mechanical or thermal properties.
- To fabricate bio-inspired and bio-derived nanostructures based sensors & devices, metal, semiconductor, polymer, ceramic, etc.
- To develop non-conventional methods for the detection, identification and quantification of forensic traces.
- Applications of nanomaterials in forensics, food, environment, pharma and a number of important technology sectors.

Salient Features of the Facilities

- Nanomaterial/ Nano biomaterials synthesis and characterization
- Surface topography and chemical analysis of nanomaterials
- Detection of nanomaterials and nano particles in various environmental & biological metrices, and other complex matrices
- Surface modification and nanofabrication for sensors/devices
- Advanced materials characterization facilities for various industrial applications

M. Sc. Nanotechnology

Specialization in Forensic Nanotechnology

Advanced Instrumentation Facilities

Scanning Electron Microscope, Raman Microscope, Atomic Force Microscope (AFM), Powder X-ray diffractometer (XRD), Particle Size & Zeta Potential Analyzer, Time-correlated single photon counting, Differential Scanning Calorimeter (DSC), Gel electrophoresis, ELISA Reader, PCR, RT-PCR, Gel-DOC system, Automated Smart-HPLC system, Isocratic HPLC, UV Visible-NIR spectrophotometer, Spectr of luorimeter, FT-IR with image microscope, GC-MS, LC/MS/MS, ICP-OES, Fluorescence microscope, etc.

Nanomaterials Processing Facilities

Refrigerated high-speed centrifuge, High-speed stirrer , High-temperature furnaces. Rotary evaporators , Probe sonicators, Microwave oven, Rotary shakers, Microwave Digestion, Electrospinning System, etc.

Eligibility for Admission

Bachelor's degree in Science / Medicine / Engineering / Pharmacy/ Dentistry/Ayush with at least 55% for General/OBC/EWS category candidates and 50% or equivalent for SC/ST and PwD category.

Consultancy Services Offered

- On Demand Functionalization of Smart Nanomaterials
- Synthesis of Size and Shape Specific Nanostructures
- Semiconductor, Metal, Metal Oxide, Carbon and Magnetic Based Nanostructures- Formulations of Nanocarriers (Micelles, Liposomes)- Sensors for Detection of Forensic Tracers
- Size and Morphology Characterization Facilities
- Spectroscopy (UV-Vis-NIR, fluorometer, Raman, FIR, TCSPC, ICP-OES) & Chromatography Analysis (GC-MS, LC-MS)
- Microscopy (FE-SEM with EDS, AFM, Image Microscope, Stereo, Microscope) Forensic Sample Analysis

Intake : 20 seats • **Duration :** 2 Years (4 Semesters)

Opportunities & Placements: The students of M.Sc. Nanotechnology (with specialization in Forensic Nanotechnology) program will have good job opportunities in different industries including pharmaceutical companies, forensic firms, chemical industries, semiconductor and electronics manufacturing companies and in research organisations. The students will also get preference for doctoral programs in India and abroad because of their research experience gained through this program.

M. Sc. Food Technology
Specialization in Forensic Food Analysis

Food safety has remained a global priority issue for every country. Food adulteration, Food contamination, Food product coun- terfeiting, Food poisoning and Food Crime, Damage to Food product related intellectual property rights are key concern for entire food sector and consumers. National Forensic Sciences University has established Food Testing and Research infrastruc- ture to tackle major food safety issues prevailing in today's scenario

The specially designed curriculum for this unique program is specific to investigative approach where basic knowledge of general science and food sciences provides added advantage to the enrolling candidates. Apart from forensic food analysis, students also get knowledge of advanced technologies, upcoming trends of food and



nutraceutical industries. Since inception of this program, every year NFSU is making progress with this program to newer heights, new research, new collaborations and new applications in this upcoming specialized domain.

Amul (India) Ltd is the gold medal sponsor for the candidate getting 1st rank in this program every year. The students of this program get direct experience of all vigilance and testing activities being performed by Food Testing Laboratory (FTL) & Food Research Laboratory (A joint center established by Civil Supply department-Gujarat State and Directorate of Forensic Sciences-Gujarat state).

M.Sc. Food Technology program with specialization in Forensic Food Analysis and Doctorate in Food Forensics program gives opportunity to graduate students to explore the avenues of Applied Food Forensics where food safety and related high end technology applications are taught. The department is successfully conducting various government funded research projects. Students get a direct opportunity to work in all state and central government funded projects and fulfilling experience of real research environment.

Laboratory of Forensic Food Analysis

Food forensic analysis laboratory at School of Engineering and Technology is rich in all advanced technology instruments as follows:

Liquid Chromatography, Mass Spectrometer, Gas Chromatogrpahy, High Pressure Liquid Chromatography, Freeze Dryer, Proximate Analysis Instruments, Fourier Transfer Infrared, X-ray Diffraction, X-ray Fluoresence, Inductively Coupled Plasma, Raman Spectroscopy, Rotary Evaporator, Lyophilizer, Energy Dispersive X-ray Fluorescence, Milk O Scan, etc.

The laboratory is also well equipped with food testing sensor development work related facilities and numerous research and new product development work is carried out which provides a platform to the students to get hands on experience in contamination investigation cases, sensor development work, contamination characterization, and an additional opportunity to work on high end and sophisticated instrumentation.

Consultancy Services Offered

- On-Spot Food Quality Testing Tool Development
- Commercial Food Testing to FMCG Companies & Citizens
- "Food safety Certification" Support to Other Universities & Organizations
- Support to Government Agencies in Food Poisoning & Toxicity Cases
- Contamination Investigation for Pharma & Food Products
- New Products Development Support
- Adulterated and Sub-Stranded Drug/Food Testing
- Drug Characterization Support
- Analytical Testing Support to Other Government Organizations & Universities
- Executions of Multiple Government Assignments Related to Food Supply Chain Authentication & Impact Assessment

Eligibility

Bachelor's degree (science background in 12th standard) in Food Science / Food Tech / Life Sciences / chemistry / Chemical Engineering) / Pharmacy / Forensic Science with at least 55% for General/OBC/EWS category candidates and 50% or equivalent for SC/ST and PwD category.

Duration : 2 Years (4 Semesters)

Opportunities and Placements

Students gets opportunity to work in Forensic Labs, National Food and Agro regulatory agencies, food industries, analytical labs, national research institutes in various scientific positions.

National Forensic Sciences University

The National Forensic Sciences University (NFSU) with the status of an Institution of National Importance (INI) is the world's first and only University dedicated to forensic, behavioural, cyber security, digital forensics and allied sciences. It was established by the Government of India through Act, 2020 (32 of 2020) with the objective of fulfilling the acute shortage against the increasing demand for forensic experts in the country and around the world. The University has nine campuses across the country: Gujarat, Delhi, Goa, Tripura, Bhopal, Pune, Guwahati, Manipur and Karnataka. The headquarter of all campuses continues to be at its ultra-modern and lush green campus at Gandhinagar, the capital city of Gujarat-a vibrant and dynamic state. The University comprises of various schools & centers/cells/institutes spread across wide-ranging academic disciplines of Forensic Science, Cyber Security and Digital Forensics, Behavioural Sciences, Forensic Psychology, Engineering & Technology, Pharmacy, Management Studies, Police Science & Security Studies, Medico Legal Studies and Law, Forensic Justice and Policy Studies, Doctoral Studies and Research, Interdisciplinary Research-Writing Clinic; and Open Learning. Presently, the University offers a wide range of under-graduate, post-graduate and integrated courses.

School of Engineering & Technology

The School of Engineering & Technology established in 2020 is an integral part of the newly formulated National Forensic Sciences University (formerly known as Gujarat Forensic Sciences University). The school seeks to contribute to peace and prosperity in the nation and world, and aims to develop global human capabilities par excellence through pioneering research and education in the domain of forensic and allied sciences. To achieve this mission, the School of Engineering & Technology has a mandate in educating highly moral and motivated students to acquire in-depth academic knowledge with technological superiority in the specific domain of forensic science, engineering and technology.

The school presently offers three unique Master's degree programs; (i) M.Tech. in Civil Engineering (with specialization in Forensic Structural Engineering), (ii) M.Sc. in Food Technology (with specialization in Forensic Food Analysis), (iii) M.Sc in Nanotechnology (with specialization in Forensic Nanotechnology) as well as Ph.D. program in such areas.

Faculty members are involved in specific consultancy services for multinational companies and different government bodies to solve critical challenges related to safety and security of mankind, where students are also exposed. The School aspires to pursue interdisciplinary research to develop indigenous technologies and products in the domain of forensic investigative sciences. Various sponsored research projects from both government and industry funding agencies are regularly getting executed under the active supervision of faculty members of this school.

Further, the School of Engineering and Technology has modern and state-of-the-art infrastructure including smart class rooms, centrally air conditioned building and excellent research laboratories housing high end research and investigation based instruments. Another thrust area of School of Engineering & Technology is to impart quality research, provide unique training programs to forensic professionals and to conduct consultancy services in the domain of forensic structural failures, food and drug quality testing, particulate contamination on injection vials, nanomaterials testing. With its vast reservoir of talent, extensive network of affiliates and commitment to forensic and allied sciences, School of Engineering and Technology is uniquely positioned to steer education and research in directions that will benefit local, national and global communities.

For Admission: https://www.nfsu.ac.in/admission

Our Students are Placed at:

UltraTech Cement – The Engineer's Choice; Multi Media Consultants; Troikaa Pharmaceuticals Ltd's Drugs List; Amul; ISR; INTAS Biopharmaceuticals; Licious – Born to Meat; ACCUPREC Research Labs Pvt. Ltd.; Alliance; Zydus Wellness; Ushta Infinity Construction Co. Pvt. Ltd.; NASSCOM; Qualitas; S3M; Ami Engineers Consulting Engineers; CASAD Consultants Pvt. Ltd.; TCS Tata Consultancy Services; Geo Designs & Research (P) Ltd.; Balaji Wafers; Zydus – Dedicated To Life

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Capital Offset