



NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

NIT CAMPUS POST, CALICUT, KERALA - 673 601, INDIA

Information Brochure for M. Tech.(Sponsored)/ M. Plan. (Sponsored & Self-Sponsored) Programmes - July 2021

ABOUT THE INSTITUTE

National Institute of Technology Calicut (NITC) is one of the premier national institutions for technical education in India. This was formerly known as Calicut Regional Engineering College. NITC is a technical institution of national importance set up by an Act of Parliament (Act 29 of 2007). The Institute offers academic programmes leading to B.Tech., B. Arch., M.Tech., M.C.A., M.Sc, M.B.A., M.Plan. and Ph.D. degrees in the appropriate disciplines. NITC is engaged in a wide spectrum of activities covering research and development, industrial consultancy, continuing education and faculty & staff development

VISION

International standing of the highest calibre.

MISSION

To develop high quality technical education and personnel with a sound footing on basic engineering principles, technical and managerial skills, innovative research capabilities and exemplary professional conduct to lead and to use technology for the progress of mankind, adapting themselves to the changing technological environment with the highest ethical values as the inner strength.

LOCATION

Set in a picturesque landscape at the foothills of the Western Ghats, NITC is located about 22.5 km north-east of Calicut City in the state of Kerala, India. It stretches over a length of about

1.5 km along the Calicut-Mukkam road, extending over an area of approximately 120 hectares. The nearest airport is Calicut which is about 45 km away from the campus.

INFRASTRUCTURE FACILITIES

The Institute has well equipped library, computer centre, seminar halls, lecture hall complexes, various laboratories in different departments, workshops, hostels for accommodating students, health care centre and adequate facilities for sports, games and co- curricular activities. The main computer centre, which is open 24 hours a day, has all the relevant software packages and latest computers with internet facilities. To provide service to the campus residents, State Bank of India, Post Office, Canteen & Co-operative Store are also functioning in the campus.

CO-CURRICULAR ACTIVITIES

Students' chapter of many professional bodies such as Computer Society of India (CSI), Indian Society for Technical Education (ISTE), Institute of Electrical & Electronics Engineers (IEEE) and Institution of Engineers (India) are functioning at NIT Calicut. In previous years, NITC won the best chapter award for CSI as well as ISTE. The Centre for Value Education provides students, a unique opportunity to engage in activities that promote human values. Social work is a part of curriculum. Students get opportunities to take part in cultural and other activities through a number of Clubs such as Literary & Debating Club, Industrial & Planning Forum, Nature Club, etc. operating under the

Students Council. Students annually organize cultural festival *Ragam* and technical festival *Tathva* in which students from all over India participate.

STUDENT SUPPORT SERVICES

The Institute has Training and Placement department that looks after the training needs of the students, their placement of jobs on graduation and partnership in industry. An Entrepreneurship Development Cell promotes the students for self-employment. A Technology Business Incubator (TBI) with the assistance from Department of Science and Technology, Government of India is established. TBI helps in incubating knowledge based start-ups into sustainable business with single window system.

DISTINGUISHED ALUMNI

Former students have made immense impact in various professional areas such as academics, administrative services, research activities in R&D laboratories, government and private industries. A strong network of alumni thrives in India as well as in foreign countries and is known as RECCAA.

WITHDRAWAL/ DISCONTINUATION OF PROGRAMME

Withdrawal/ Discontinuation of admission from any programme during the process of Counseling will be as per the guidelines issued by the Counseling agencies from time to time. On joining the courses the student will be governed by the Institute rules for withdrawal/discontinuation. As per the rule in force, the fees paid by the students for their current and previous semesters of the programme will not be refunded and the caution deposit will be adjusted against the processing fee, after clearing the liabilities if any.

M.Tech./M.Plan. PROGRAMMES OFFERED

Dept. /School	Dept./ School code	M. Tech. / M. Plan. Programme	Programme
Architecture and Planning	AP	Architecture and Planning	AR61
Civil Engineering	CE	Structural Engineering	CE61
		Traffic & Transportation Planning	CE62
		Offshore Structures	CE63
		Environmental Geotechnology	CE64
		Water Resources Engineering	CE65
Chemical Engineering	CH	Chemical Engineering	CH61
Computer Science & Engineering	CS	Computer Science & Engineering	CS61
		Computer Science & Engineering (Information Security)	CS62
Electrical Engineering	EE	Instrumentation & Control Systems	EE61
		Power Systems	EE62
		Power Electronics	EE63
		Industrial Power and Automation	EE64
		High Voltage Engineering	EE65

Dept/School	Dept/ School code	M.Tech./ M.Plan. Programme	Programme
Electronics & Communication Engineering	EC	Electronics Design & Technology	EC61
		Microelectronics & VLSI Design	EC62
		Telecommunication	EC63
		Signal Processing	EC64
Mechanical Engineering	ME	Industrial Engineering & Management	ME61
		Thermal Sciences	ME62
		Manufacturing Technology	ME63
		Energy Engineering & Management	ME64
		Materials Science & Technology	ME65
		Machine Design	ME66
School of Materials Science and Engineering	MT	Materials Science and Engineering (Nanotechnology)	MT61

ELIGIBILITY FOR ADMISSION TO M.Tech./M.Plan PROGRAMMES - SPONSORED SEATS

Candidates for admission to M. Tech. /M. Plan degree programme at NIT Calicut should have passed B.E./ B. Tech/ B.Arch. / B. Plan. in an appropriate branch from an approved Institute/University with minimum 60% marks (or CGPA 6.5/10) for GEN/GEN-EWS/OBC and 55% marks (or CGPA 6.0/10) for SC/ST/PwD categories. Candidates applying for M. Tech admission with MCA should have minimum 60% marks (or CGPA 6.5/10) for GEN/GEN-EWS/OBC and 55% marks (or CGPA 6.0/10) for SC/ST/PwD categories, in both MCA and undergraduate degree. Candidates under lateral entry should have passed the three-year diploma in engineering with minimum 60% marks (or CGPA 6.5/10) for GEN/GEN-EWS/OBC and 55% marks (or CGPA 6.0/10) for SC/ST/PwD categories. Conversion from CGPA to percentage or vice versa given by individual Institute/university will not be considered / allowed. Holders of AMIE (approved by AICTE) / other nationally approved programmes equivalent to B.Tech / B.E., in an appropriate area of study, may also be considered eligible, subject to the condition that the candidate possesses eligible GATE score in the appropriate discipline. In addition to the above qualifications a minimum of 2 years industrial/ research/ teaching experience in the relevant organizations is also mandatory at the time of submitting application.

A maximum of 5 seats in each M.Tech. programme and a maximum of 3 seats in the M Plan program are available for candidates under the sponsored category. Candidates from Central/State Govt. Institutions, Public Sector Organizations and reputed Private Organizations will be considered in this category. In the case of teachers sponsored by Engineering Colleges and Polytechnics, the Institution should be recognized by AICTE/CoA. The employer while sponsoring will have to give an undertaking that the candidate will be paid full salary during the entire period of the M. Tech. /M. Plan. Programme and that the candidate will not be withdrawn midway. The sponsored candidates are NOT eligible for campus interview conducted by Placement Cell.

M.Tech./M.Planning Programme Code	Required B.E./B.Tech/B.Arch. branch/ discipline
AR61	Architecture/Civil Engineering/Other appropriate disciplines
CH61	Chemical Engineering/ Chemical Technology/ Petro-Chemical Engineering/ Petroleum Engineering/ Petrochemical Technology/ Industrial Biotechnology/Biochemical & Biotechnology Engineering/Biochemical Engineering/ Biotechnology/Biotechnology & Biochemical Engineering/Chemical & Bio Engineering/ Chemical & Polymer Engineering/ Environmental Science & Engineering/ Environmental Science & Technology/ Material Science & Engineering
CE61/CE62/CE63/CE64/CE65	Civil Engineering
CS61 / CS62	Computer Science & Engineering/ Information Technology/ I class MCA
EE61	Electrical Engineering/Electrical & Electronics Engineering/Instrumentation & Control System/ Applied Electronics & Instrumentation/ Instrumentation
EE62/EE63/EE65	Electrical Engineering/Electrical & Electronics Engineering
EE64	Electrical Engineering/Electrical & Electronics Engineering/Instrumentation & Control Systems/Applied Electronics & Instrumentation Engg. /Electronics & Instrumentation/Instrumentation/ Electronics & Communication Engg.
EC61/EC62	Electronics Engg./Electronics & Communication /Applied Electronics & Instrumentation
EC63/EC64	Electronics Engg./Electronics & Communication
ME61	UG Degree in any Engineering / Technology Stream
ME62	UG Degree in Mechanical Engineering/ Aerospace Engineering/Aeronautical Engineering/Automobile Engineering/ Energy Engineering/Manufacturing Engineering/Nuclear Engineering/ Production Engineering
ME63	UG Degree in Mechanical Engineering/ Automobile Engineering/Manufacturing Engineering/Material Science & Engg/ Mechatronics/ Metallurgical Engineering./ Production Engineering/Production & Industrial Engg./Production & Management
ME64	UG Degree in Mechanical Engineering/ Chemical Engineering/Aeronautical Engineering/Aerospace Engineering/ Automobile Engineering/ Energy Engineering/ Nuclear Engineering/Renewable Energy

ME65	UG Degree in Mechanical Engineering/ Automobile Engineering/Material Science & Engg./Engineering Physics/ Manufacturing Engineering/ Mechatronics/Metallurgical Engineering/ Industrial Metallurgy/Nano Technology/ Production Engg/ Production & Industrial Engg./Production &Management
ME66	UG Degree in Mechanical Engineering/ Aerospace Engineering/ Aeronautical Engineering/ Automobile Engineering/Material Science & Engg./Engineering Physics/ Manufacturing Engineering/ Mechatronics/ Metallurgical Engineering/ Industrial Metallurgy/ Nano Technology/ Production Engg./Production & Industrial Engg./Production & Management
MT61	Mechanical Engg./Chemical Engg/ Production Engg/ Material Science & Engg.

ELIGIBILITY FOR ADMISSION TO M PLAN. PROGRAMME – SELF SPONSORED SEATS

A maximum of 2 seats are available for admission in the M Plan Program for candidates under Self Sponsored Category. These seats are available to only those candidates with Masters' Degree (M.A./M.Sc) in Geography/Sociology/Economics. These candidates shall be required to have passed the two-year regular full-time M.A./M.Sc. Degree in Geography/Sociology/Economics with a minimum 60% marks (or CGPA 6.5/10) for GEN/GEN-EWS/OBC in the qualifying examination and 55% marks (or CGPA 6.0/10) for SC/ST/PwD categories. The candidates should have a valid UGC NET Score with/without JRF.

M.Plan. Programme Code	Eligibility
AR61	M.A./M.Sc. in Geography/ Sociology/ Economics with UGC-NET (with/without JRF)

FEE STRUCTURE

The fee structure for the M.Tech./ M.Plan. Programme 2021-22 admissions is given below.

Fee category	All Open, EWS, OBC, SC, and ST Candidates			
Onetime fee at the time of admission				
Caution Deposit	1,500			
Admission Fee	300			
Library Fee	1,500			
Matriculation Fee	150			
Sports Affiliation Fee	450			
Student Welfare Fee	450			
Association Fee	1,150			
Total (a)	5,500			
	Monsoon Semester	Winter Semester	Monsoon Semester	Winter Semester
	2021-22	2021-22	2022-23	2022-23
Tuition Fee	35,000*	35,000*	35,000*	35,000*
Development Fee	1,125	1,125	1,125	1,125
Registration Fee	300	300	300	300
Exam Fee	750	750	750	750
Students Group Fee	900	-	900	-
Other Fee	300	-	300	-
Amenities Fee	450	-	450	-
Magazine Fee	150	-	150	-
Medi. Claim**	643	-	643	-
NASA Subscription	-	-	-	-
Total (b)	39,618	37,175	39,618	37,175
Total (a) + (b)	Rs. 45,118/-	Rs. 37,175/-	Rs. 39,618/-	Rs. 37,175/-
Grand Total	Rs. 1,59,086/- (Rupees One Lakh Fifty Nine Thousand and Eighty Six Only)			

* Nil for SC/ST students

**Policy amount may vary year to year.

Tuition Fee may vary as per the directives of Ministry of HRD, Government of India from time to time. The present tuition fee is as per MHRD Order F No. 33-4/2014-TS.III dated 5th May, 2014 and subsequent clarifications under reference F No. 28/2013/T.S.III dated 21st October, 2014. Other fees are as determined by the Institute as per provision of Statute No. 37(i) (b)

SELECTION OF CANDIDATES

The admission to M. Tech. as well as M. Plan. Programmes under Sponsored/ Self sponsored category will be based on written test and/or Interview by the respective Department/School.

Test and/or Interview

Eligibility for test and/or interview and call letter for test and/or interview can be downloaded from the website after login using application number and date of birth. No separate call letter will be dispatched. All those who are called for test and/or interview will have to produce all the original certificates and other documents for verification. The verification of the documents, test and/or interview will be held in the Office of the respective department/school.

Admission

Admission is subject to satisfying the eligibility requirements and the performance of the candidate in the test and/or interview. The call for Test and/or Interview does not guarantee admission. Candidates offered admission would have to remit the fees on the day of admission.

HIGHLIGHTS OF M.Tech./M.Plan. PROGRAMMES

The four-semester (two-year) M.Tech/M Plan Programmes are based on the credit system. The programmes comprise several core and elective courses and project work. The highlights of M.Tech./M.Plan. Programmes offered by various departments are given in the following section.

DEPARTMENT OF ARCHITECTURE AND PLANNING

M.Plan. in Urban Planning (AR61)

The Post Graduate Degree (2 Year M. Plan.) Program in Urban Planning aims to produce generalist planning professionals of international quality who can adapt to any challenging planning situation with superior capability to use geo-informatics which includes GIS, remote sensing, related models and quantitative methods in urban, regional and environmental planning. The program envisages inculcating scientific diagnostic and urban management abilities in professional planners to understand planning issues holistically and equip them with predictive ability to analyze the outcome of economic, social, environment and energy impacts using simulation of future scenarios.

DEPARTMENT OF CHEMICAL ENGINEERING

M. Tech. Programme in Chemical Engineering (CH61)

The M.Tech. Programme in Chemical Engineering is designed to provide a strong base on Chemical reactor theory, Transport phenomena, Thermodynamics, Mathematical methods in chemical engineering, Process simulation, Optimization and control, Separation processes, Polymer engineering, as well as in frontier areas of Energy and environment, Nanoscience, Molecular simulations, and Biotechnology. The research component of the programme is meant to develop capabilities to confidently undertake an independent analysis of problems of industrial relevance as well as of fundamental significance. The M.Tech. programme equips students with skills which enable them to contribute to the development of Chemical Industry in India.

DEPARTMENT OF CIVIL ENGINEERING

M.Tech. Programme in Structural Engineering (CE61)

The M.Tech. Programme in Structural Engineering was started in the year 1971 with an intention of providing a comprehensive education and training to civil engineers using a holistic approach to structural systems engineering by emphasising and building on the commonality of engineering structures at the levels of materials, mechanics, analysis and design. The programme provides a thorough training in the design principles and structural action as related to components and systems over a broad range of application areas. It also provides a thorough training in the methods of analysis, including problem formulation and the use of current mathematical and computational tools. The programme covers specialised topics in Theory of Elasticity, Earthquake Resistance Structures, Structural Dynamics, Structural Optimisation, Finite Element Analysis, Advanced Metal Structures, etc.

M.Tech. Programme in Traffic and Transportation Planning (CE62)

The M. Tech. Programme in Traffic and Transportation Planning was started in the year 1985. The programme aims to impart futuristic and need-based technical education, and to promote reengineering in the field of Transportation Engineering for working out cost-effective solutions in liaison with local authorities and to establish social relevance of research and developmental activities. Under the PMGSY (Pradhan Mantri Gram Sadak Yojana), and National Highway Development Programme (NHDP-Golden Quadrilateral, North-South and East-West corridors), etc. the importance given to the highway development has increased in leaps and bounds. Similarly, considerable attention is being given to the development of railways, waterways and airways. The present programme in Traffic and Transportation Planning has three broad areas of specialization namely i) Traffic Engineering ii) Transportation Planning and iii) Pavement Technology.

M.Tech. Programme in Offshore Structures (CE63)

The goal of the Programme is to prepare graduate students in civil engineering for the offshore profession having application to the challenging conditions encountered in the ocean environment. The oil industry with its crucial role in deciding the economy of the nation is shifting its exploitation strategy from land-based to ocean-based systems the world over. This shift in emphasis has resulted in turn in a growing need for structural engineers with expertise in design of offshore platforms and other deepwater structures, marine pipelines, towed bodies and cable systems, etc. The various major courses offered in the programme are Dynamics, Design of Offshore Structures, Marine Foundations, Offshore Structural Systems-Modelling and Behaviour, Theory of Elasticity, Structural Wave Hydrodynamics, Statistics, Probability & Reliability Methods in Civil Engineering.

M.Tech. Programme in Environmental Geotechnology (CE64)

The M.Tech. Programme in Environmental Geotechnology is an inter-disciplinary course covering geotechnical engineering and environmental engineering. The Programme will train engineers to develop environmentally sound solutions to geotechnical problems and to solve environmental engineering problems unique to soil and subsurface conditions. The Programme has its major core courses in topics dealing with geotechnical engineering, environmental protection and pollution control. A good number of electives are offered in areas such as foundation engineering in difficult soils, waste management,

waste water engineering, earth quake engineering, landslide mitigation methods, etc. The project work is spread over the third and fourth semesters.

M.Tech. Programme in Water Resources Engineering (CE65)

The M.Tech. Programme in Water Resources Engineering was started by the Department of Civil Engineering in the year 2015. A scientific and systematic approach is required to efficiently manage any water resources system which is characterized by either scarcity or excess issues, and quality issues. The success of any water resources project depends on the sound understanding of the interactions of various components of the system, effectiveness in collection and interpretation of relevant data, and use of modern computational techniques in the solution of the problem. This PG Programme intends to prepare graduates in Civil Engineering to attain these abilities by introducing them to topics like Advanced Fluid Mechanics, Surface and Subsurface Hydrology, Water Resources Systems Analysis and Design, Remote Sensing and its Applications in Water Resources Engineering and Computational Hydraulics and Hydrology. In addition to these core courses, six more elective courses from the related fields of Water Resources Engineering can be credited by the students depending on their aptitude and interest. A project work in the second year of the Programme provides the student with an opportunity to apply the principles and methods got familiarized in the first year to analyze and design some aspects of realistic water resources case studies.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M.Tech. Programme in Computer Science and Engineering (CS61)

The two-year post graduate Programme in Computer Science is intended to train the students in advanced areas in computer science and specialized topics in emerging areas in computing. Courses offered include Topics in Algorithms, Topics in Programming Languages, Operating Systems Design, Trends in Middleware Technologies, Bioinformatics and Machine Learning. The project work in the second year is intended to orient the student towards deeper study and research in her/his area of interest.

M.Tech. Programme in Computer Science and Engineering [Information Security] (CS62)

Information security relates to the protection of IT assets against the risks of loss, misuse, disclosure or damage. Information security management comprises of the controls that sensibly manage these risks. By proactively managing information security, we can reduce the likelihood and/or the impact on our information systems from a wide range of threats. The M.Tech. Programme in Computer Science and Engineering (Information Security) is envisaged to train graduates in Computer Science and Engg. / IT/ MCA with the necessary skills to design and develop policies, protocols and techniques to secure information systems.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.Tech. Programme in Electronic Design and Technology (EC61)

This course aims to educate / train engineers as creative designers of electronic products and systems. This programme is designed with the belief that any engineer concerned with the development of new electronic product needs to integrate the functional design, industrial design, equipment packaging and manufacturing. The electronics industries need design engineers, who can identify customer requirements and develop appropriate systems. This program is one among the very few post graduate programs in India, providing specialized training program on Electronics Design Technology with emphasis on practical design and problem solving skills. In this program the students are trained with the courses in the field of Mathematics, Digital System Design, Embedded System Design, Analog and Digital VLSI designs. The students will also get exposure to specialized courses required for electronics industries such as Electromagnetic Compatibility, Electronic Product Design Lab etc. with necessary competence and innovative skills to be an effective part of the research field of electronics design and development.

M.Tech. Programme in Microelectronics and VLSI Design (EC62)

The programme is focussed at training students in design, simulation, modelling of electronic components and systems. The programme cover the basics of all aspects of Microelectronics, Analog & digital IC design and physical design. A significant component of all courses are devoted for laboratory works where the students carry out pre silicon design and testing of analog and digital circuits using industry standard EDA tools besides modelling modern semiconductor devices. The programme has elective courses in the field of advanced semiconductor devices, testing and verification, MEMS and sensors, data converters, high frequency analog and digital design. and in allied areas of Electronic Design and Technology, Telecommunication and Signal Processing. At the end of this two year M.Tech program, the fundamental knowledge and the expertise in modern Microelectronics and VLSI tools will equip the students undergoing this programme to take up challenges in industry in wide variety of areas in the field of Microelectronics and VLSI Design.

M.Tech. Programme in Telecommunication (EC63)

The M.Tech program in “Telecommunication” is designed to cater the needs of Industry in diverse domains of wireless communication and networking with a special emphasis on current and next generation wireless systems and standards. This program has a rich blend of core courses in communication system design and electives focusing on “Data Structures”, “Artificial Intelligence”, and “Design & Verification of VLSI Systems”. A significant component of all courses is devoted for laboratory works where the students get familiarized programming in Python, C/C++ along with software defined radio systems, wireless communication testbed etc. At the end of this program, the students will be gaining adequate fundamental knowledge, application level design orientation, and algorithm development and analysis skills, with sound footing on programming and system level VLSI design skillsets, which will make them industry ready.

M.Tech. Programme in Signal Processing (EC64)

The M Tech program in Signal Processing is focused on creative design and development of multidisciplinary signal processing systems. In addition to strong theoretical foundations and practical knowledge earned through courses such as Linear Algebra, Random Process, Statistical Signal Processing and Data Compression Techniques the students of this program earn specialized skills in areas such as Artificial Intelligence, Pattern

Recognition & Machine Learning, Computer Vision, DSP Algorithms & System Design, Testing and Verification of VLSI Systems, Physical Design Automation, etc. with the coding skills in VERILOG, C/C++, Python, MATLAB, Simulink and OpenCV. The program is designed to make the graduates industry ready with skills to identify, analyze and solve multi-disciplinary problems and expertise in application development through system level VLSI design.

DEPARTMENT OF ELECTRICAL ENGINEERING

M.Tech. Programme in Instrumentation and Control Systems (EE61)

Instrumentation is the heart of any industry and sophisticated process control and guidance techniques are essential in modern days. This course, which was the first master's Programme to be started in this institute, has been very useful in processing sufficient knowledge in control system and instrumentation to cater to the needs of industry and research organisations. The syllabus of this programme is structured to have the latest trends in Control and Instrumentation.

M.Tech. Programme in Power Systems (EE62)

This course is structured to give a strong base on power system generation, transmission and distribution, operation, analysis, dynamics and control together with the recent advances such as FACTS, power quality and deregulation and smart grid technologies. Adequate exposure is also given on software tools and techniques in the relevant areas. The course is designed so as to enable the students to work effectively both in industries and utilities.

M.Tech. Programme in Power Electronics (EE63)

This programme was introduced to meet the needs of the modern power industry which makes use of power converters and inverters. The emphasis is given for both theory and practical through design, fabrication and testing. The courses incorporate modern trends in switched mode power supplies, active power filters and the latest control techniques in drives.

M.Tech. Programme in Industrial Power and Automation (EE64)

Micro-processors/Micro-controller/DSP controlled motor drives, process control and SCADA systems, plant automation, cogeneration, power wheeling, power factor controllers etc. in industries make the necessity of integrating these devices and systems with electric power control. With the introduction of time of use and dynamic tariff schemes by the utilities, industries can effectively adapt load control techniques and energy conservation programmes. Computer controlled systems with integrated load control become essential for the modern industries. The M.Tech. programme in 'Industrial Power and Automation' is with this objective to provide sufficient theoretical and field experience on the above systems to the Electrical engineers.

M.Tech. Programme in High Voltage Engineering (EE65)

With the progress of technology, the transmission voltages have increased to ultra- high voltage levels. At these levels the insulators, the circuit breakers and all other equipments that are in operation will have to deal with strong electromagnetic fields that can affect the power quality as well as the proper functioning of the equipment. Thus it is essential that the electrical engineers need be equipped with the latest research and development issues in high voltage transmission and distribution technology and its analysis from the

electromagnetic point of view. The curriculum is designed to include both theoretical and practical aspects of high voltage technology. Exposure is also given on experimental techniques for testing of insulators as well as on software tools and techniques in the relevant area. Emphasis is also given on the latest developments in the field of nanodielectrics.

DEPARTMENT OF MECHANICAL ENGINEERING

M.Tech. Programme in Industrial Engineering and Management (ME61)

NIT Calicut has started PG Programme in Industrial Engineering in the year 1984. Later this Programme was restructured in the year 2003 to include management topics also and it was renamed as Industrial Engineering and Management. This Programme is tailored to train the students to meet the current needs of operations function. Along with it, this programme integrates other business functions to develop a total Industrial Engineer who can very well manage the resources of an organization. The Programme includes courses covering Decision modelling, Statistics for management, Inventory and supply chain management, Manufacturing planning and control, Machine learning and artificial intelligence, Accounting and finance management and a number of electives courses from different business functions. A choice of several advanced electives in areas such as Lean manufacturing, Marketing Management, Human resource management, Strategic management, Work system design, System modelling and simulation, Risk management, Quality engineering, Decision support system, etc. are offered under the Programme. The theory is enhanced through laboratory classes and seminars. Adequate exposure is also given on software tools and techniques in the relevant areas. This Programme is tailored to develop suitable skills for students to manage resources optimally, especially in the data science era and to develop better procedures and management practices for efficient operation of the corporate.

M.Tech. Programme in Thermal Sciences (ME62)

The M.Tech.. in Thermal Sciences is designed to equip engineers with latest know-how of the current trends related in the fields of research and industry. The course content includes adequate amount of theoretical aspects of thermodynamics, fluid flow and heat transfer applied to classical and practical engineering problems. The major courses offered in this specialization are Advanced chemical thermodynamics, Advanced fluid mechanics, Analytical methods in heat transfer, Analysis of thermal power plant cycles and systems, Cryogenic engineering, Thermal environmental engineering, Internal combustion engine systems, Combustion and performance analysis, Multiphase flow, Design of heat transfer equipments Advanced computational methods in fluid flow and heat transfer, etc. The students also get opportunity to undertake research work pertaining to current engineering problems in the dissertation wherein they are exposed to latest equipments and software packages.

M.Tech. Programme in Manufacturing Technology (ME63)

The objective of this PG programme is to train manpower required to develop and manage the manufacturing capabilities of industries. The students will develop a capability to model, analyse and solve complex engineering problems in manufacturing

and allied fields. The thrust areas of the programme are machining science, advanced machining processes, advanced metrology, digital manufacturing and automation. The core courses offered in this specialization are Advanced Machining Science, Modern Machining Processes, Machine Tool Design, Industrial Automation & Robotics and Advanced Metrology & Computer Aided Inspection. Two Laboratory courses in Advanced Manufacturing and CAD/CAM are also part of the curriculum. Students may also choose electives such as Mechatronics Systems, Additive Manufacturing, Quality Engineering & Management, Six Sigma, Vibration & Noise in Machine Tools and Machinery, Finite Element Methods and Applications, Design of Experiments, Computer Aided Design, etc.

M.Tech. Programme in Energy Engineering and Management (ME64)

Energy Management is critical to our future economic prosperity and environmental well-being. This M.Tech. Programme is designed to develop Mechanical/Chemical engineers with a high standard of expertise in energy management. The core courses offered in this Programme include Energy conversion systems, Renewable energy technology, Electrical energy systems and management, Design and analysis of energy systems, Energy and environment, and Energy conservation in thermal systems. A number of courses such as Energy policies for sustainable development, Optimal design of heat exchangers, Direct energy conversion, Cost management, Heat pump technology, Fluidized bed systems, Industrial load management etc., are offered as electives. There is ample scope for doing project work in non-conventional energy systems.

M.Tech. Programme in Materials Science and Technology (ME65)

The educational mission of the Materials Science and Technology Programme is to provide students with a unique interdisciplinary academic foundation on which development of intellectual capacity, and the scholarly training needed to address complex problems in materials science with emphasis on advances in materials processing, Electronic materials, Ceramics, Composites, Polymers, Super alloys, and the selection of materials to meet specific design goals. An in-depth study on materials science and technologies will contribute to the development of newer materials and material systems. The programme provides students the following essential elements: a firm grasp of the fundamentals of science and engineering, ample exposure to a wide range of applications and an understanding of contemporary issues and the need for lifelong learning.

M.Tech. Programme in Machine Design (ME66)

The objective of this programme is to develop personnel trained in design of mechanical systems and related areas for serving the industry as design engineers and analysts, or to motivate them for research in this challenging field. The thrust areas of this programme can be divided into two major categories: (i) stress analysis and related fields and (ii) vibration and dynamics. Students will be given a thorough training in both these areas before being exposed to an advanced design course, where in they are expected to use their knowledge for system level design. After doing advanced core courses in subjects like solid mechanics, mechanisms and design, the students are expected to choose electives of their interest from an array of specialised courses like fracture mechanics, non-linear dynamics, etc., for developing the skills required for a successful career as a design engineer, analyst or researcher.

SCHOOL OF MATERIALS SCIENCE AND ENGINEERING

M.Tech. Programme in Nanotechnology (MT61)

Nanotechnology is an emerging interdisciplinary area, which is rated as one of the top-ranked subjects in academics and research. This programme will impart state-of-the-art knowledge in this new area, and has an objective of training the students to make them capable of addressing the challenges of this emerging technological field. The programme is designed for students with a background in Mechanical/Production/Chemical Engineering. This will deal with topics related to the fundamentals and applications of the subject, with a focus on emerging areas in nanoscience and nanotechnology. The courses offered in the programme include fundamental and applied subjects such as Physics of Materials, Thermodynamics of Nano Materials and Systems, Mechanics of Finite-size Elements, Microscale and Nanoscale Heat Transfer, Nanosized Structures, Experimental Techniques in Nanotechnology and Micro Electro Mechanical Systems, and a variety of elective subjects ranging from Computational Nanotechnology to Composite Materials from which students can choose, according to their background and interest. Laboratory courses dealing with production and applications of nanoparticles, nanofluids and nanocomposites, as well as giving exposure to discrete computational analysis of nanoscale phenomena and systems will also be offered as part of the curriculum. The specialization in Nanotechnology holds a very high potential for employment in R&D, academics and industries, as well as provides a gateway to this extremely challenging field, which is expected to have a profound impact on the future of all streams of science and technology.

HOW TO APPLY?

1. Apply online using the following link:
<http://www.dss.nitc.ac.in/MtechApp/login.aspx>
2. Register with your e-mail id and mobile number for creating a login in the online portal.
3. Upload colored scan copy of the following documents in the portal (as a rar file).
 - a) Mark sheet of Class X
 - b) Photo ID proof as per Govt. of India norms.
 - c) Grade/Mark sheets of qualifying examination for all semesters (Mark sheets of all semesters/years need to be combined to a single pdf for uploading/ Consolidated Grade (Mark) sheet with all subjects mentioned in it).
 - d) Degree/ Provisional (applicable to 2020 pass out candidates) certificate.
 - e) Certificate of work experience.
 - f) Candidates claiming percentage/CGPA relaxation as specified in the eligibility conditions should produce the relevant category certificate as detailed below.
 - i. Community Certificate, in the case of SC/ST candidate, from a competent authority (not below the rank of Tahsildar).
 - ii. Certificate from the Medical Board of Govt. Medical Colleges/Dist. Head Quarters Hospitals, in the case of Persons with Disabilities (PwD), if applicable.
 - g) Sponsorship certificate duly filled by the sponsoring authority on their letter head with the seal of the sponsoring authority in the prescribed format.

- h) No objection certificate duly signed by the Head of the institution.
 - i) Certificate of AICTE recognition in the prescribed format, for teachers sponsored by Engineering Colleges and Polytechnics.
 - j) Recent PHOTOGRAPH (Maximum of 120 kB).
4. Payment can be made using Net Banking/Credit Card/SBI Challan (by cash) through State Bank Collect (online) at the following link by choosing the payment category as **MTECH/MPLAN (SPONSD.) APPLICATION FEE MONSOON 2021-22.**
<https://www.onlinesbi.com/sbicollect/collecthome.htm?corpID=365553>
- After successful completion of the fee payment, save the fee payment receipt for uploading in the application form. Application fee is Rs. 600/-. **APPLICATION FEE IS NON-REFUNDABLE.**

Note:

1. If the original certificates are not in English/Hindi, English/Hindi version/translation of such certificates, duly certified by the Principal/Director or other competent authority of the graduating Institute, will be required during the verification of documents.
2. Standard format of the necessary certificates are available in the following link <http://nitc.ac.in/index.php?url=admission/index/58>
3. Applications which are incomplete/defective/received late, will be rejected summarily and no correspondence will be entertained on such applications. The instructions for online submission of application are available in the online admission portal.

IMPORTANT DATES

Events	Dates
Availability of Online Application in Institute website	10th April to 15th May 2021
Last Date for Receipt of Completed Applications (through online)	15th May 2021
Test and/or Interview	To be announced later

LEGAL JURISDICTION

All disputes pertaining to the counseling and admission for the M. Tech./M.Plan. programmes of NIT Calicut shall fall within the jurisdiction of High Court of Kerala only.

DISCLAIMER

The statement made in the information brochure and all other information contained herein is believed to be correct at the time of publication. However, the Institute reserves the right to make, at any time without notice, changes in and additions to the regulations, conditions governing the admission, requirements, seats, fees and any other information, or statements contained in this information brochure. No responsibility will be accepted by the Institute/Chairperson-PG Admissions for hardship or expenses encountered by its students/any other person for such changes, additions, omissions or errors, no matter how they are caused.

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