CONTENTS

AMRITA M.TECH./ PG DIPLOMA ADMISSIONS 2013

HAN DBOOK

1. INTRODUCTION:

Amrita Vishwa Vidyapeetham is an internationally acclaimed University that aims at creating professionals who will be driven by a firm commitment to excellence, yet rooted in the rich cultural heritage of our nation. This Multi-Campus University, with headquarters at Coimbatore and having campuses in Amritapuri, Bangalore, Kochi and Mysore, is accredited by National Assessment and Accreditation Council (NAAC), Government of India, with 'A' grade. AMRITA has also been ranked in the ivy league of Indian universities along with Indian Institute of Science, Bangalore, Tata Institute of Fundamental Research (TIFR), Mumbai etc. in the review of Deemed Universities constituted by the Ministry of Human Resource Development (MHRD) of the Government of India. AMRITA is placed in Category 1 in this review, which is popularly known as the Tandon Committee report conducted by a high power committee consisting of reputed academicians. Amrita is fast emerging as a pioneering Research cum Teaching Institution moulding a new generation of engineers, doctors, managers, healthcare and media professionals, scientists and entrepreneurs of calibre and character.

The engineering schools at Amritapuri, Bangalore, and Coimbatore are offering Under Graduate and Post-Graduate programmes including Ph.D. in various disciplines of engineering. The two – year post graduate programme leads to a M.Tech. degree to which the admission is on an all India basis. Candidates who satisfy the eligibility criteria stipulated by the University can apply.

Amrita is committed to provide the best career opportunities to its students by maintaining close rapport with the corporates, identifying potential recruiters and organising campus recruitment. The meticulously planned and executed placement programme for students who have been put through a well structured training schedule has contributed to the high percentage of student placements in reputed organisations like TCS, Microsoft, Wipro, L&T, Infosys, Patni, Cognizant, Caterpillar, Hindustan Motors, HP, HCL, Accord Soft, Honey Well, I - flex, Mind Tree etc. More than 100 Companies visit the campus regularly to meet their human resource needs.

This handbook contains general information and rules relating to the M.Tech./ PG Diploma admissions 2013 and other relevant details. Candidates are required to go through the handbook carefully and acquaint themselves with the procedures relating to the admission. The contents of the handbook are subject to modification as may be deemed necessary by the University. The decision of the University will be final and binding on any issue related to the admission .

2. CAMPUSES & PROGRAMMES

The various PG programmes offered in our campuses are listed below :

Amritapuri Campus

Amrita School of Engineering,
Amritapuri, Clappana (P.O),
Kollam - 690 525, Kerala, India
Tel: 0476 – 2809400/ 9402
Fax:0476 - 2896178
Email: admissions@am.amrita.edu
Website: http://amritapuri.amrita.edu

M.Tech

Computer Science & Engineering
Power & Energy
Thermal and Fluids Engineering
VLSI Design
Wireless Networks & Applications
Cyber Security Systems & Networks

Bangalore Campus

Amrita School of Engineering,
Kasavanahalli, Carmelaram (P.O),
Bangalore – 560 035,Karnataka, India.
Tel: 080 - 25183700
Fax: 080 - 28440092
Email: admissions@blr.amrita.edu
Website: http://blr.amrita.edu

M.Tech

Embedded Systems
Power Electronics
VLSI Design
Computer Science & Engineering
Thermal Science & Energy Systems

Coimbatore Campus

Amrita School of Engineering,
Amritanagar P.O., Ettimadai,
Coimbatore – 641 112,
Tamilnadu, India.
Tel: 0422 - 2685000,
Admission Enquiry: 0422 – 2685169 / 170
Fax: 0422 - 2656274
Email: admissions@amrita.edu
Website: www.amrita.edu

M.Tech

Automotive Engineering
Bio-Medical Engineering
Computational Engineering & Networking
Computer Science & Engineering
Computer Vision & Image Processing
Cyber Security
Embedded Systems
Engineering Design
Manufacturing Engineering
Power Electronics
Remote Sensing & Wireless Sensor Networks
VLSI Design

PG Diploma

Wind Power Development
Wind Resource Assessment

3. ELIGIBILITY :

3.1 M.Tech :

◆ Automotive Engineering

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Mechanical Engineering
- Automobile Engineering
- Production Engineering

◆ Bio-Medical Engineering

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade (with Electrical / Electronics / Instrumentation / Biomedical Engineering /Mechatronics as one of the specializations) or M.Sc (Physics with Electronics as one of the subjects) or M.Sc (Electronics) or equivalent.

◆ Computational Engineering and Networking

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any branch of engineering or equivalent or M.Sc.Maths/Physics/Computer Science(70% minimum).

◆ Computer Science & Engineering

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Computer Science and Engineering
- Information Technology
- MCA / M.Sc. in Computer Science / Software Engineering

◆ Computer Vision and Image Processing

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electronics and Communication Engineering
- Electrical and Electronics Engineering
- Electronics and Telecommunication Engineering
- Instrumentation and Control Engineering
- Computer Science and Engineering
- Information Technology
- Electronics and Instrumentation Engineering
- MCA / M.Sc. in Computer Science / Software Engineering

◆ Cyber Security

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Computer Science & Engineering
- Information Technology
- Electronics & Communication Engineering

◆ Embedded Systems

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electronics & Communication Engineering
- Electrical & Electronics Engineering
- Computer Science and Engineering
- Information Technology
- Electronics & Instrumentation Engineering
- Instrumentation & Control Engineering

◆ Engineering Design

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Mechanical Engineering
- Automobile Engineering
- Production Engineering
- Manufacturing Engineering
- Metallurgical Engineering
- Industrial Engineering

◆ Manufacturing Engineering

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Mechanical Engineering
- Automobile Engineering
- Production Engineering
- Manufacturing Engineering
- Metallurgical Engineering
- Industrial Engineering

◆ Power and Energy

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in Electrical & Electronics Engineering or equivalent.

◆ Power Electronics

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electronics & Communication Engineering
- Electrical & Electronics Engineering
- Electronics & Instrumentation Engineering
- Electronics & Telecommunication Engineering
- Instrumentation & Control Engineering

◆ Remote Sensing and Wireless Sensor Networks

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any branch of Engineering or equivalent or M.Sc.Maths/Physics/Computer Science(70% minimum).

◆ Thermal and Fluids Engineering

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Mechanical Engineering
- Aerospace Engineering
- Chemical Engineering
- Automobile Engineering

◆ VLSI Design

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electronics & Communication Engineering
- Electronics & Instrumentation Engineering
- Electrical & Electronics Engineering
- Instrumentation & Control Engineering

◆ Wireless Networks & Applications

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electronics & Communication Engineering
- Electrical & Electronics Engineering
- Electronics & Telecommunication Engineering
- Instrumentation & Control Engineering
- Computer Science & Engineering
- Information Technology
- Electronics & Instrumentation Engineering
- MCA / MSc Computer Science / Software Engineeriing / Electronics Science

◆ Cybersecurity Systems and Networks

B.E. / B.Tech. Degree with minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Computer Science & Engineering
- Information Technology
- Electronics & Communication Engineering

◆ Thermal Science and Energy Systems

B.E. / B.Tech. Degree with minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Mechanical Engineering
- Automobile Engineering
- Aeronautical Engineering
- Chemical Engineering
- Production Engineering
- Manufacturing Engineering
- Industrial Production Engineering

3.2 P G Diploma:

◆ PG Diploma in Wind Power Development

B.E./B.Tech Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

- Electrical Engineering
- Electrical & Electronics Engineering
- Electronics Engineering
- Electronics & Communication Engineering
- Mechanical Engineering
- Production Engineering
- Instrumentation Engineering

◆ **PG Diploma in Wind Resource Assessment**

B.E./B.Tech/M.Sc. Degree with Minimum 60% marks or equivalent grade in any one of the following disciplines or equivalent.

B.E / B.Tech.

- Electrical Engineering
- Electrical & Electronics Engineering
- Electronics Engineering
- Electronics & Communication Engineering
- Mechanical Engineering
- Production Engineering
- Instrumentation Engineering

M.Sc.

- Physics
- Mathematics
- Statistics

4. DURATION OF THE PROGRAMME:

◆ M.Tech. : 2 Years(4 Semesters)

◆ P.G. Diploma : 1 Year (2 Semesters)

5. HOW TO APPLY :

5.1 Application fee is Rs. 650/-, which covers the cost of Application form, University Brochure, and Information Handbook . Application fee once paid will not be refunded.

5.2 Application forms for admission can be obtained as below:-¨By post, from the Admission Co-ordinators of Amrita Schools of Engineering at Amritapuri, Bangalore or Coimbatore (see section 2) on a written request indicating their full address together with a Demand Draft for Rs.650/- drawn in favour of “Amrita School of Engineering” payable at Coimbatore. (On the back of the Demand Draft, candidate should write his / her Name). Please keep a photocopy of the Demand Draft with you for future reference). Application forms can also be downloaded from the website.

OR

From the University counters of Amrita Schools of Engineering at Amritapuri, Bangalore or Coimbatore on producing a demand draft for Rs 650/- as above.

OR

From the designated branches of Dhanalakshmi Bank Ltd on payment of Rs.650/-

Branches of Dhanalakshmi Bank where Applications are available:

◆ **Thrissur Main Branch**
Naickanal Junction
The Round, Thrissur
Kerala- 680 001
Ph. 0487 - 2335177

◆ **Ernakulam Kaloor Branch**
MES Cultural Complex Building
Ground Floor, Kaloor
Ernakulam, Kerala - 682 017
Ph. 0484 – 401059

- **Thiruvananthapuram Branch**
  HDFC House, Vellayambalam Road
  Vazhuthacaud, Thiruvananthapuram
  Kerala - 695 010
  Ph. 0471 - 321686

- **Bengaluru MG Road Branch**
  No. 9/3 First Floor
  Nitish Broadway, MG Road,
  Bengaluru, Karnataka - 560 042
  Ph: 080 - 25593300

- **Calicut Branch**
  17/1341H, Rammohan Road
  Chinthavalappu
  Calicut - 673 004
  Ph: 0495 - 6453463

- **Coimbatore Main Branch**
  PB No. 2951, 268 Crosscut Road
  Gandhipuram, Coimbatore
  Tamil Nadu - 641 012
  Ph. 0422 – 2234332

- **Hyderabad Branch**
  PB No. 246
  4-1-353/A , Abids Road
  Hyderabad, Andrapradesh - 500 001
  Ph. 040 – 4752831

- **Mangalore Branch**
  Dhinda Chambers, Ground Floor
  5-5-301/3, Kodialbail
  Opp. SBM Law College
  Mangalore - 575 003
  Ph: 0824 - 6450741

6. SELECTION PROCEDURE:

Admission is based on the performance in the Entrance Test and subsequent Interview. Candidates with valid GATE Score will be given preference for M.Tech.

7. GENERAL GUIDELINES:

7.1 Mere submission of the application does not guarantee admission to the programme.

7.2 Admission will stand cancelled automatically if the candidate fails to join the University on the specified date.

7.3 All the relevant original Certificates / mark statements should be submitted at the time of interview or on the stipulated date.

7.4 The candidate should submit the completed application to the respective campuses according to the first preference / choice of campus. Downloaded, filled application shall be submitted with the demand draft of Rs. 650/-. The addresses of all the three campuses are as follows:

The Admission Co-ordinator,
Amrita School of Engineering,
Amrita Vishwa Vidyapeetham,
Amritapuri, Clappana (P.O),
Kollam 690 525, Kerala.
Phone: 0476 – 280 9400 /9402
E-mail : admissions@am.amrita.edu

The Admission Co-ordinator,
Amrita School of Engineering,
Amrita Vishwa Vidyapeetham,
Kasavanahalli, Carmelaram (P.O),
Bangalore 560 035, Karnataka.
Phone: 080 – 25183700
E-mail : admissions@blr.amrita.edu

The Admission Co-ordinator,
Amrita School of Engineering,
Amrita Vishwa Vidyapeetham,
Amritanagar (P.O), Ettimadai,
Coimbatore 641 112, Tamil Nadu.
Phone: 0422 – 2685169 /2685170
E-mail : admissions@amrita.edu

8. ENQUIRIES:

For all enquiries related to the Amrita M.Tech./ PG Diploma Admissions - 2013, please contact 0422-2685169 / 170

9. FEE STRUCTURE – 2013 Admissions (In Rupees)

9.1 For M.Tech Programme

Sl.No.	Head	Term	Amritapuri	Bangalore	Coimbatore
1.	Tuition Fee	Per Semester	**45,000**	**40,000**	**50,000**
2.	Additional Charges (University Fees, Establishment Fees & Special Fees)	Annual	**26,000**	**28,000**	**33,000**
3.	One Time Charges (Insurance, Admission Fees and Caution Deposit)	At the time of Admission	**7,000**	**5,500**	**7,500**
	TOTAL		**78,000**	**73,500**	**90,500**

9.2 For PG Diploma Programme

PG Diploma Programmes are Govt. Funded Programmes. Hence, no Fees / Charges are applicable except the Caution Deposit of Rs.5,000/- (One time, Refundable).

10. HOSTEL CHARGES (In Rupees)

10.1 Hostel Charges M.Tech. / PG Diploma

S.No.	Head	Term	Amritapuri	Bangalore	Coimbatore
1.	Room Rent	Annual	18,000	18,000	24,000
2.	Establishment Charges	Annual	8,000	9,000	12,000
3.	Mess Charges	Annual	30,000	34,000	37,000
5.	Caution Deposit (Refundable)	One Time	3,000	5,000	5,000
	TOTAL		**59,000**	**66,000**	**78,000**

***Subject to changes**

11. REFUND RULES:

Refund of fees will be made as per the regulations of the Govt. of India. If a student admitted to the M.Tech / PG Diploma programme withdraws from the programme before the starting of the classes, the fees collected from the student will be refunded after deducting a processing fee of Rs.1000/-. If a student leaves after starting of the classes, but before closing of the admission, and if the seat consequently falling vacant is filled by another candidate before the last date of submission, the University will return the fees collected with proportionate deductions of monthly fees. If the vacant seat is not filled up as above, the fee will not be refunded. No refund will be given to a student leaving after the closing of admissions. The date of closing of admissions will be announced by the University.

12. M.TECH & P G DIPLOMA PROGRAMMES IN A NUTSHELL

DEPARTMENT: MECHANICAL ENGINEERING

M. Tech in Automotive Engineering

Automotive Engineering is now in the forefront of engineering development concerning the materials, design process, manufacturing techniques with application of computer software programs and electronic control systems. It is regarded as an exciting topic area but globally it is a highly competitive industry where engineers require a sound understanding of engineering principles and also be able to demonstrate a clear application of the principles within the automotive domain. Additionally the aspiring automotive engineer should be able to think ahead and work on the future demanding requirements of the society. India being recognized as a hub for the global players creates a demand for such a course and is deemed appropriate at this juncture.

The M.Tech is designed to satisfy the needs of the graduate engineers with appropriate background, who wish to specialise their careers towards automotive engineering and automotive system design.

Further the program provides an opportunity for the students to pursue internships in Automotive / Allied companies and in organisations such as CVRDE, NAL, HAL, ARCI and in European Universities under Indo-European initiative. In addition, students are encouraged to participate in the funded research projects sponsored by Technical partners such as ATS and organisations like DST, DRDO, ISRO and AICTE. Meritorious students will be offered teaching assistantship.

Core Courses

- Computational Mathematics
- Automotive Chassis Systems
- Internal Combustion Engines I
- Materials Engineering
- Automotive Embedded Systems I
- FEA/CAE/Computational Tools Lab
- Vehicle Dynamics
- Automotive Emissions and Control
- Automotive Manufacturing Techniques
- NVH and Refinement
- Seminar on Advanced Topics
- Transmission Systems
- Vehicle Systems Design
- Minor Project
- Dissertation

Electives

- Automotive Standards and Regulations
- Hydraulics and Pneumatics
- Design for Manufacturing, Assembly and Environment
- Vehicle Body Engineering
- Automotive Safety
- Automotive Embedded Systems II
- CAE for Automotive Applications
- Internal Combustion Engines -II
- MEMS (Micro-Electro Mechanical Systems)
- Sensor and Technologies for Automotive Applications
- Automotive HVAC, Cabin Comfort and Ergonomics
- Off-Highway Mobility
- Quality and Reliability
- Alternate Propulsion Technology
- Testing and Validation
- New Product Development
- Tribology and Preventive Maintenance

DEPARTMENT: MECHANICAL ENGINEERING

M.Tech. in Engineering Design

This program is designed to enable an engineering graduate to develop specific capabilities in design, synthesis and analysis of a wide variety of mechanical engineering systems. The program focuses on developing design methodologies which involve high degree of research orientation supplemented with practical insights. On the whole, the Masters program is committed to produce design engineers with excellent creative capabilities and caliber to solve real life problems curtailing to industry requirements, in tune with the objectives envisioned by the University.

Further the program provides an opportunity to the students for pursuing their projects in organizations such as DRDL, NAL, HAL, L&T, BHEL, ARCI, ROOTS, etc., and in European Universities under Indo-European initiative. In addition, students are encouraged to participate in the funded research projects sponsored by organizations like DRDO, ISRO and AICTE, and henceforth, get their research work published in reputed journals. Meritorious students will be offered teaching assistantship.

Core Courses

- Applied Engineering Mathematics
- Theory of Elasticity
- Fluid Dynamics
- Thermal Systems and Design
- Optimization Techniques in Engineering
- Mechanical Vibrations
- Selection of Materials & Processes
- Finite Element Methods
- Mechanical Behaviour of Engineering Materials
- Engineering Design Lab -I
- Engineering Design Lab -II
- Engineering Design Lab –III
- Seminar
- Minor Project
- Dissertation

Electives

- Continuum Mechanics
- Reliability Engineering
- Modelling, Simulation and Analysis of Engineering Systems
- Advanced Mechanism Analysis and Design
- Theory of Plasticity
- Tribology
- Product Lifecycle Management
- Fracture Mechanics
- Theory of Plates and Shellls
- Computational Fluid Dynamics
- Design for Manufacture and Assembly
- Mechanics of Composite Materials
- Random Vibrations
- Computer Aided Product Development
- Micro-Electro-Mechanical Systems
- Machine Condition Monitoring

DEPARTMENT: MECHANICAL ENGINEERING

M.Tech. in Manufacturing Engineering

This program focuses on the requirements of the manufacturing industry embracing the areas of production, planning and control, design, materials, processes, maintenance and quality control. The curriculum has been framed drawing course contents from traditional fields such as materials and processes, mechanical engineering, industrial engineering and management.The syllabus for various courses has been designed in general to introduce the application of analytical and quantitative methods in manufacturing and to train the students to develop skills in the utilization of the modern tools such as simulation, optimization, statistical data analysis and finite element analysis. During the course of study, the students will be exposed to practical problems encountered in manufacturing.

Further, the program provides an opportunity to the students for pursuing their projects in organizations such as NAL, HAL, ISRO, L&T, BHEL, ARCI and in European Universities under Indo-European initiative. In addition, students are encouraged to participate in the funded research projects sponsored by organizations like DRDO, ISRO, and AICTE. Meritorious students will be offered teaching assistantship.

Core Courses

- Applied Engineering Mathematics
- Materials Science and Engineering
- Optimization Techniques in Engineering
- Theory of Plasticity and Metal Forming
- Analysis of Machining Processes
- Manufacturing Automation
- Advanced Casting Technology
- Metrology and Sensing Systems
- Seminar I
- Production and Operations Management
- Manufacturing Engineering Lab I
- Manufacturing Engineering Lab II
- Manufacturing Engineering Lab III
- Minor Project
- Dissertation

Electives

- Computer Aided Product Development
- Finite Element Methods
- Surface Engineering
- Design of Experiments
- Advanced Welding Technology
- Embedded Systems
- Advances in Manufacturing Technology
- Logistics and Supply Chain Management
- Composite Materials and Processing
- Product Lifecycle Management
- Tool Engineering and Design
- Advances in Process Technology
- Reliability Engineering
- Financial Management
- Lean Manufacturing
- Quality Engineering

DEPARTMENT: MECHANICAL ENGINEERING

M.Tech in Thermal and Fluids Engineering

As the energy and process sector in India is in a boom, the need of the hour is engineers with strong background in thermal and fluid sciences capable of carrying out conceptual design. The program is aimed at providing sufficient theoretical knowledge in the thermal and fluid sciences combined with simulation and experimental skills applied to aerospace, power plant and gas turbines research. The program aims to equip students to perform design related to linear and non linear steady state/ transient heat transfer, steady and unsteady fluid flow, flow through porous media, open channel flow, multi phase flows, fluid structure interactions viz estimation of thermal and pressure loads and coupled field analysis. The programme provides required numerical simulation techniques for design and analysis of equipments like gas turbines and accessories, steam turbines and reactor pipes, heat exchangers, compressors, turbines, pumps, propellers, rotor stator interactions, flow separators, inlet manifolds, volutes, turbo chargers etc.,. The course also introduces the student to experimental techniques like flow visualisation, combustion diagnostics, particle characterisation and other recent imaging techniques adopted in the field of thermal research.

Core Courses

- Advanced Egineering Mathematics
- Advanced Fluid Dynamics
- Advanced Heat Transfer
- Advanced Engineering Thermodynamics
- Combustion and Propulsion
- Experimental Methods in
- Personality Development
- Computational Fluid Dynamics and Heat Transfer
- Power Plant and Thermal Systems Engineering
- Computational Methods in
- Thermal & Fluids Engineering (Lab)
- Seminar on M.Tech Project
- Communication Skills and Technical Writing
- Minor Project
- Dissertation

Electives

- Boundary Layer Theory
- Introduction to Turbulence
- Gas Dynamics
- Two-phase Flow and Heat Transfer
- Flow Induced Vibrations
- Aerodynamics
- Instrumentation and Process Control
- Design of Heat Exchanger Equipments
- Gas Turbine Theory and Design
- Turbomachines
- Design of IC Engines and Systems
- Renewable Energy
- Chemical Reactor Analysis
- Cryogenics
- Micro & Nano Scale Thermal & Fluids Engineering

DEPARTMENT: MECHANICAL ENGINEERING

M.Tech. in Thermal Sciences and Energy Systems

India is energy starved country and the per capita consumption of energy in India is one of the lowest in the world. India faces a formidable challenge in providing adequate and efficient energy supplies to users at a reasonable cost. With an average annual growth rate of 8-9 percent, it will be a great challenge to meet the energy demand, and producing it efficiently without polluting the environment. This programme is designed to enable the students to develop expertise in both theory and design of Thermal Systems, Energy Systems and Energy Management. The students also learn to simulate various fluids, thermal and energy systems using various computational tools. They also do experiments to test various thermal and energy systems.

This programme offers many career options for the youngsters in both public and private sector undertakings involved in production of energy, design and production of thermal systems and energy systems. They will also get opportunities to join various Research and Development organizations. This programme also includes courses on Micro Flows and Micro / Nano Heat Transfer, which are of great importance in electronic equipment design industry.

Core Courses

- Advanced Engineering Mathematics
- Advanced Heat Transfer
- Advance Fluid Mechanics
- Thermal Power Plant Cycles and Systems
- Computational Methods in Fluid flow and Heat Transfer
- Design and Optimization of Thermal Systems
- Energy Conversion Systems
- Energy Conservation in Thermal Systems
- Renewable Energy Systems

- Micro Flows and Heat Transfer
- Computational Lab
- Thermal and Energy Lab
- Seminar
- Minor Project
- Dissertation

Electives

- Design of Heat Exchangers
- Information Technology in Energy Management
- Fluidized bed systems
- Computational Fluid Dynamics
- Nano / Micro Heat Transfer
- Measurements in Thermal Systems
- Gas Dynamics
- Solar Energy
- Energy Modeling, economics and project management
- Fuel Technology
- Gas Turbines and Propulsion
- IC engine combustion and Pollution
- Energy and Environment
- Heat Transfer in Biological Systems
- Energy Management
- Energy Policies for Sustainable development

DEPARTMENT: ELECTRICAL & ELECTRONICS ENGINEERING

M.Tech. in Embedded Systems

Almost all Electronics, Electrical and Mechanical systems are now controlled by one or more controller, which is embedded as a part of the complete system. Such a system is called an Embedded System. Examples are Tele-communication systems, chemical-processing plants, transportation systems such as aircraft and automobile, bio-medical instruments and home appliances like microwave oven and washing machines. The characteristics of Embedded system are that they are designed to do certain specific tasks often in real time satisfying certain performance requirements. It is achieved through the controllers and software called firmware stored in read only memory of the controller.

The vast majority of control systems built today is embedded, that is, they rely on built-in, special - purpose microcontroller. Some systems contain large number of controllers. In such settings, controllers often use shared network to communicate with each other and with large numbers of sensors and activators scattered throughout the system. The design of Embedded controller and the intricate, automated communication network that support them raises many new problems - theoretical and practical - about network protocols, compatibility of operating systems, and ways to maximise the effectiveness of the embedded hardware. This course will address many such questions and aspects of embedded and networked control.

One project work, during second year is part of the programme in which each student is expected to work on a specific area involving the design, simulation, fabrication, and testing of system with embedded controller.

Core Courses

- Probability and Random Processes
- FPGA-Based System Design
- Embedded System Programming
- Digital Signal Processing
- Analog Signal Processing and Control
- Computer Organization and Design using ARM Processor
- Networked Embedded Systems
- Sensor Networks
- Real Time Systems
- Model based Design for Embedded System

Electives

- Cryptography and Network Security
- Speech and Language Processing
- Advanced Digital Signal Processing and Processors
- Multi-Core Architectures
- Fault Tolerant System Design
- Parallel Programming
- Embedded Systems for Automotive Applications
- Advanced Mobile and Wireless Networks
- Soft Computing
- Object Oriented Analysis and Design
- Embedded Systems in Biomedical Applications
- Image and Video Processing
- Embedded Systems in Robotics
- Micro Electro Mechanical Systems
- Optimal and Adaptive Control Systems
- Hardware Software Co-Design

DEPARTMENT: ELECTRICAL & ELECTRONICS ENGINEERING

M.Tech. in Power Electronics

Power Electronics plays an important role in processing and controlling the flow of electric energy by supplying voltages and currents in forms that are optimally suited for the user loads from a few watts to several mega watts. The application areas include wide spectrum such as heating and lighting control, ac and dc power supplies, electric motor control, energy conservation, process control, factory automation, transportation, HVDC, FACTS, power quality improvement etc.

The PG program includes courses in mathematics, cultural education and the core subject areas. In core subject areas emphasis is given on power processors with emerging power switching devices, electrical machines and their control, measurement and processing of signals, signal processors, control systems and digital system design required to build any power electronic equipment with necessary controllers. The program offers electives for the students to enhance the knowledge of emerging areas of power electronics applications to optimize the designs.

The program culminates with a project work in which the students are encouraged to work on specific areas involving design, simulation, fabrication and testing of any power electronics system having research / industrial application values.

Core Courses

- Linear Algebra and Matrix Algebra
- Power Converters I
- Electrical Machine Analysis
- Analog Signal Processing and Control
- Soft Computing
- Simulation Laboratory
- Digital Signal Processing
- Power Converters II
- Electric Drives and Control
- Digital Signal Processors
- Digital Signal Design

Electives

- Flexible AC Transmission Systems
- High Voltage DC Transmission
- Power Quality Improvement
- Over Voltage in Power Systems
- Electric Power Quality
- Energy Conservation and Management
- Programmable Logic Controllers
- Power System Operation and Control
- Design for Reliability
- Optimization Theory
- Computational Optimization Theory – Linear and Non-Linear Methods
- Optimal and Adaptive Control Systems
- Special Electric Machines
- Renewable Energy Technologies
- Electromagnetic Interference and Compatibility
- Electrical Machine Analysis Using Finite Element Analysis

DEPARTMENT: ELECTRICAL & ELECTRONICS ENGINEERING

M.Tech. in Power and Energy

The electric power industry in our country is undergoing fundamental changes since the enactment of Energy Act 2003.This act has paved the way for deregulation of power industry. The power system involves the study and analysis of generation, transmission and distribution fields. But this is a conventional approach. The present day trend has been undergoing number of changes globally. This includes flexible ac transmission, two terminal and multi terminal dc links embedded in the conventional ac transmission networks etc. So conventional Power system is to be redefined and power electronic components are also to be added to the existing system. Then only the modern power system can exist in its fullest meaning. Further, as our global population and its appetite for energy rise drastically, resource depletion and global warming have become the most pressing issues facing humanity today. Scientists and experts agree that the use of renewable energy such as solar and wind power, coupled with higher efficiency and conservation, will be key factors in preserving our quality of life and paving the way to a sustainable world for future generations.

The power industry faces many new problems, with one of the highest priority issues being reliability that is bringing not only a steady, uninterruptable power supply but also ensuring a quality supply to electricity consumers. The restructuring and deregulation of electric utilities together with recent progress in technology introduce unprecedented challenges and opportunities for power & energy systems research and open up new opportunities to young Power Engineers. The energy conservation act has boosted this requirement of qualified professionals in the area of energy audit in the Country. This M.Tech program will address the above mentioned challenges of Power Industry.

Core Courses

- Applied Mathematics
- Computer Applications in Power Systems
- Advanced Control Systems
- Basic Energy Dynamics
- Seminar – I
- Seminar – II
- Power Quality
- New and Renewable Sources of Energy
- Power Electronic Converters
- Energy Conservation & Management
- High Voltage Power Transmission
- Power Systems and Power Electronics Laboratory
- Energy Systems Laboratory
- Minor Project
- Dissertation

Electives

- Digital Control Systems
- Optimization Techniques
- Applied Numerical Methods
- Soft Computing Techniques
- Operation and Control of Power Systems
- Restructured Power Systems
- Embedded Systems
- Electrical Drives and Control
- Wind Energy Conversion Systems
- Direct Energy Conversion
- Energy Systems Modelling and Analysis
- Nuclear Energy
- Energy Planning and Reliability
- Advanced Protective Relaying
- Transient Analysis in Power Systems
- Power System Stability
- Solar Energy Utilization
- Materials and Devices for Energy Systems
- Nanotechnology
- Cryogemic Engineering

DEPARTMENT: COMPUTER SCIENCE AND ENGINEERING

M.Tech. in Computer Science & Engineering

This M. Tech programme is basically envisaged as a first level research course aimed at preparing the students to take up research and development activities in core and some emerging areas in Computer Science, with a focus on AI and AI related applications in a distributed computing environment. The programme includes advanced level courses in Computer architecture, Networking, Algorithms, Data Bases, Distributed computing and Computational Intelligence. This programme will provide a strong basis in Computer Science for those who opt for a serious career in Industry or in an academic or research profession in CSE.

The overall aim of the programme is to generate human resources capable of supporting R & D activities in critical areas like automated, secured, monitoring and surveillance systems, medical diagnostics, intelligent monitoring systems etc. The programme has lot of scope in terms of research activities and industry needs. The diversity of platforms available for implementation and the huge volume of data available for analysis, knowledge mining activities associated with biological systems, medical field, data related to climate changes etc. attract employment opportunities.

Core Courses

- Modern Computer Architecture
- Advanced Algorithms and Analysis
- Operating System Design
- Advanced Computer Networks
- Distributed Systems
- Advanced Database Design
- Machine Learning
- Information Security
- Minor Project
- Dissertation

Electives

- Compiler Design
- Computational Intelligence
- Information Retrieval
- Pattern Recognition: Approaches and Applications
- Natural Language Processing
- Mobile and Wireless Networks
- Distributed Computing
- Computational Statistics
- Spatio-Temporal Databases
- Mobile Computing
- Machine Learning Applications
- Semantic Web
- High Performance Computing – Recent Trends
- Business Intelligence

DEPARTMENT: COMPUTER SCIENCE AND ENGINEERING

M. Tech in Computer Vision And Image Processing

In recent times, there is a dramatic increase of image and video data in every conceivable field due to the proliferation of digital capture devices and also due to the Internet increasingly becoming a multimedia phenomenon. There is a clear need for automatic tools that can help us handle the massive amount of visual information. Consequently, the field of Computer Vision and Image Processing has drawn huge attention due to its wide spread applications and its ability to effectively mine and manage the huge influx of image and video data. A large number of researchers have been working, in this field of specialization, to tackle the very many interesting research challenges posed by the vast amount of visual data available today. The issues and scope for research in this area of specialization are so enormous that it is vital to prepare our students with necessary expertise that will help them handle the various real-world problems where Computer Vision and Image Processing techniques might provide robust solutions.

With this as the goal, the university is offering a 2 Year Master's programme in Computer Vision and Image Processing to provide a comprehensive expertise in this area and induce in the students the ability and skill sets to pursue research.

Apart from necessary introduction to the mathematical courses, core courses offered include Digital Image Processing, Computer Graphics, Pattern Recognition and Computer Vision. This programme is course work intensive for 3 semesters followed by a fulltime project in the 4th semester. The Course work is amply supported by Labs which provide hands-on experience. Students have the opportunity to pursue their project as interns in major companies and national organizations like HCL, Honeywell, HP, ISRO and NPOL (National Physical and Oceanographic Laboratory). Students can also avail bright career opportunities in top Computer Companies.

Core Courses

- Computer Graphics
- Digital Image Processing
- Image Analysis and Compression
- Pattern Recognition & Machine Learning
- Computer Vision
- Advanced Computer Vision
- Algorithms and Data Structures for Image Processing
- Problem Solving and Programming Paradigms
- Linear Algebra
- Optimization Theory
- Minor Project
- Dissertation

Electives

- Digital Video Processing
- Multicore Architecture
- Virtual Reality and Applications
- Multidimensional Digital Signal Processing
- Principles of Multimedia Databases
- Document Image Analysis
- 3-D Modelling for Visualisation
- Video Analytics
- Medical Image Analysis
- Embedded Systems in Robotics
- Geographic Information Systems
- Cluster Analysis
- Content based Image and Video Retrieval
- Information Security
- Computational Intelligence for Image Processing
- GPU Architecture and Programming

DEPARTMENT: ELECTRONICS & COMMUNICATION ENGINEERING

M.Tech. in VLSI Design

Very Large Scale Integration (VLSI) Design is a branch of Electronics Engineering that represents a vast set of skills and methodologies necessary for integrating millions of semiconductor devices into a small area inside an integrated circuit (IC). The increasing demand for better performance and shrinking sizes of modern electronic appliances such as mobile phones and laptops is making the task of electronic design highly challenging. Currently engineers are required to bring out new designs with very short lead times. This has led to the automation of design process at all levels with a host of sophisticated software tools being used for designing and validating modern IC chips.

The M. Tech programme in VLSI Design aims to cater to the increasing demand for highly skilled VLSI professionals. A large number of our M.Tech alumni are working in leading VLSI Design houses or pursuing research programmes in many prestigious institutions in India and abroad.

The curriculum is designed to balance theoretical content and practical skills. Apart from basic courses in subjects such as Digital Integrated Circuits and Digital Design, the curriculum covers a wide range of areas such as Analog and Mixed VLSI design, Device Modeling, VLSI Testing, Low Power Design, VLSI Fabrication, VLSI Computer Aided Design, Embedded Systems etc. The curriculum includes extensive lab courses to impart training in use of modern VLSI Design Software and Implementation Technologies such as FPGAs. The students are required to do an individual project during the third and fourth semesters that has sufficient potential for an international journal publication. The Department has a dedicated VLSI Laboratory with the latest EDA software under the Synopsys University Program and the Mentor Graphics Higher Education Programme. The Lab is also equipped with Xilinx and Altera FPGA boards. Students also have opportunity to pursue their project either in-house or in reputed organizations.

Core Courses

- CMOS Digital Integrated Circuits
- Digital Signal Processing
- Computer Architecture and Processor Design
- Solid state Devices and Modeling
- Digital Design
- Analysis & Design of Analog and Mixed Signal VLSI Circuits
- Low power VLSI circuits
- Testing of VLSI circuits
- Computer Aided Design of VLSI Circuits
- Embedded Systems

Electives

- VLSI Signal Processing and Processors
- Principles of Multicarrier Communications
- Hardware Software Co-Synthesis
- VLSI Fabrication Technology
- FPGA based System Design
- Compressive Sensing for VLSI
- RFIC Devices and Modelling
- Cryptography and Applications
- Functional Verification of Digital Circuits
- Soft Computing
- Monolithic Microwave Integrated Circuits
- Wavelets and Applications
- Design for Test
- Image and Video Processing Algorithms
- Nano Electronics
- CMOS RF System Design
- Design of Semiconductor Memories
- Embedded Controller and Real Time Operating System
- Analog Subsystem Design
- Micro Electro Mechanical Systems

DEPARTMENT: ELECTRONICS & COMMUNICATION ENGINEERING

M.Tech. in Bio-Medical Engineering

The aim of the post graduate program in Bio-Medical Engineering is to integrate technology with the medical sciences in such a manner that the synergistic relationship between them can help evolve a better system for medical diagnosis, treatment, research and support systems. It is envisaged that at the end of the program, the student would be in a position to understand the fundamental biological and engineering processes involved as well as to develop creative ideas for the early detection and identification of various biological signals. It is also expected that the student of the program would be able to come up with algorithms for the successful and objective interpretation of biological data. The course deals with biomedical electronics, the quantitative and analytical skills required to interpret the data acquired and the processing of medical data including imaging and enhancement techniques. It is intended to equip the engineer with the skills and knowledge required to interact knowledgeably with medical practitioners so that both professions may benefit. It goes without saying that the program is interdisciplinary, drawing content from a variety of areas like chemistry, medicine, physics, electronics and mechanical engineering, to name a few.

Medical practice has become highly sophisticated, relying heavily on machines, for diagnosis and support. Modern hospitals therefore, require competent biomedical engineers, who can help the medical personnel, communicate with the highly complex equipment and make sense of the bewildering variety of information provided by them. Biomedical engineers are also in demand with equipment manufacturers, who require experts who are well versed with both the engineering and medical aspects of their equipment. Moreover, with the increase in automation and computerization of medical diagnosis and treatment, biomedical engineering offers ample scope for research in diverse areas like instrumentation, signal and image processing, biomaterials and biomechanics. As such, a student of the post graduate program in biomedical engineering can expect to have bright career prospects, be it in the industry, academia or research. Amrita University with its world-class facilities, multi-disciplinary programs, highly qualified, diverse and motivated faculty, is ideally equipped to offer an advanced program in this cutting edge area of technology.

It is expected that at the end of the program, the student would be equipped with the knowledge and the skills required to become a truly world-class biomedical engineer, ready to embark on a career in either the industry or to undertake independent research.

Core Courses

- Probability and Statistics
- Anatomy and Physiology
- Signal Processing
- Analog and Digital Electronics
- Biosoftware Engineering
- Research and Medical Ethics
- Biomedical Instrumentation
- Medical Imaging Techniques
- Embedded Systems for Biomedial Applications
- Biomaterials
- Biomedical Image Processing
- Seminar
- Internship
- Minor Projectertation
- Dissertation

Electives

- Nanomaterials for Biomedical Applications
- Biophotonics
- Diagnostic and Therapeutic Equipment
- Ergonomics
- Drug Designing and Delivery Systems
- Advanced Signal Processing
- Bio Mechanics
- Medical Informatics and Telemedicine
- Biosensors
- Virtual Instrumentation for Medical Systems
- Biofluid Mechanics
- Tissue Engineering
- Biomedical Nanotechnology
- Laser Instrumentation for Biomedical Applications
- Methods for Medical Diagnostics
- Principles of Hospital Management
- Computer Communication and Networking
- Electromagnetics for Biomedical Applications

CENTRE FOR EXCELLENCE IN COMPUTATIONAL ENGG & NETWORKING

M.Tech. in Computational Engineering and Networking

The Centre for excellence in Computational Engineering and Networking was established in the year 2003.The Post Graduate programs are M. Tech. Computational Engineering and Networking, and M. Tech Remote Sensing and Wireless Sensor Networks, which offers excellent research opportunities to the students. Computational Engineering is a broad, rapidly growing multi disciplinary area that encompasses applications in science/engineering, applied mathematics, numerical analysis and computer science. Going from application area to computational results requires domain expertise, mathematical modeling, numerical analysis, algorithm development, software implementation, visualization and validation of results. Computational Engineering makes use of the techniques of applied mathematics and computer science for the development of problem solving methodologies, which act as building blocks for solutions to scientific engineering problems of ever-increasing complexity. The centre is also actively engaged in research related with funded projects from various government agencies like ISRO, DRDO, Ministry of IT (MIT) and Ministry of Human Resources Development (MHRD). Project outlay runs into several crores of rupees.

Core Courses

- Computational Linear Algebra and its Applications
- Variational methods and Applications
- Computational Optimization Theory - Linear & Non-Linear Methods
- Advanced Data Structures and Algorithms
- Essentials of Computer Architecture and
- Software Engineering
- Wavelet Theory and Pattern Classification
- Computer Networks and High Performance Computing
- Probability and Graphical Methods
- Scientific Computing
- Minor Project
- Dissertation

Electives

- Fundamentals of Natural Language Processing
- Computational Methods for Cryptography
- Principles of Communication Engineering
- Molecular Modeling of Materials
- Speech Processing
- Special Topics in Computer Vision
- Software Defined Radio
- Understanding Molecular Simulation
- Applied Computational Linguistics
- Information Theory and Coding
- Wireless Communication
- Bimolecular Modeling and Simulation
- Computational Drug Designing and Delivery Systems
- Advanced Methods in Machine Translation
- Algorithmic Crypt Analysis
- Advanced GPU Computing for Imaging and Vision
- Control and Design of Small Unmanned Aerial Vehicles

CENTRE FOR EXCELLENCE IN COMPUTATIONAL ENGG & NETWORKING

M.Tech in Remote Sensing & Wireless Sensor Networks

Remote sensing is an art of identifying, observing, and measuring an object without coming into direct contact with it. Remote sensing imagery has many applications in mapping land-use and cover, agriculture, soils mapping, forestry, city planning, archaeological investigations, military observation and geomorphologic surveying among various other uses. The M. Tech Programs was started in May 2007 with funding from ISRO, Bangalore. This is a two year program with a total of 65 credits. The students are expected to do a major and a minor project by the end of their curriculum. Promising students are given opportunities to contribute and work in live sponsored research projects running in the centre. Integrating very diverse technologies like conventional remote sensing through satellite, in-situ remote sensing by the use of wireless sensor networks, wireless communication technology using software defined radio, geographical information systems is the whole work of this multi-disciplinary M. Tech course.

The basic course starts with a strong foundation in mathematics. It is strengthened by courses in image processing, pattern recognition and a specific course on sensor technology, remote sensing, wireless networking and geographical information systems. The theoretical framework is supplemented by lab exercises.

Core Courses

- Computational Linear Algebra and its Applications
- Image Processing Methods for Remote Sensing
- Computational Optimization Theory - Linear & Non-Linear Methods
- Advanced Data Structures and Algorithms
- Principles of Remote Sensing
- Wavelet Theory and Pattern Classification
- Probability and Graphical Methods
- Measurement Techniques in Remote Sensing
- Geographical Information Systems and Global Positioning Systems: Principles and Applications
- Minor Project
- Dissertation

Electives

- Satelite Remote Sensing Astrodynamics
- Adaptive Digital Signal Processing using FPGA
- Hyper Spectral Imaging Systems
- Biochemical Sensors and Applications
- Signal Processing and Optimization for Transceiver Systems
- Compressed Sensing in Communication and Radar Systems
- Control and Design of Small Unmanned Aerial Vehicles

TIFAC CORE IN CYBER SECURITY

M.Tech. in Cyber Security

The Centre for Cyber Security was identified by TIFAC (Department of Science and Technology, Govt. of India) as a CORE in Cyber Security in September 2005. The TIFAC CORE gives significant thrust to the frontier areas of Cyber Security, including technology, practice, management, and policy issues. Research areas of the TIFAC CORE are organized into four broad categories, namely: Enterprise Wide Security, Data Center Security, Language-Based Security, and Hardware and Embedded Systems Security. These categories represent four horizontal layers of security in a typical information system /network that a practitioner would normally encounter in today's industrial settings and corporate environments. CORE also focuses on theory and practice of authentication, authorization, and access control techniques.

This M.Tech program provides a good blend of theory and industrial practice; necessary theoretical background, insight into general and technical aspects of Cyber Security, analytical methods and management practices in the field of Cyber Security are the areas receiving detailed attention. It aims at moulding the student into an Information Security professional. Practicing industry professionals and enterprise experts with little or no knowledge in Cyber Security too can benefit from this program.

- Various short and semester long courses in emerging areas of Cyber Security offered by eminent scientists from DRDO (India) and Professors from US and Other Foreign countries.
- Student exchanges as part of European Union East-Web, Erasmus Mundus programs and India4EU
- Govt. sponsored research grants for more than Rs. 3 Crores
- Industry partners: HP and IBM, Symantec, RSA

Core Courses

- Mathematical Foundations
- Design and Analysis of Algorithms
- Data Mining and Machine Learning
- Secured Coding
- Internetworking - Protocols and Security
- Modern Cryptography
- Cryptographic Protocols and Standards
- Database Security
- Operating Systems Concepts and Security

Elective Courses

- Mobile & Wireless Networks and Security
- Programming Languages
- Network Security
- Information Hiding
- Information Security and Risk Management
- Digital Forensics
- Coding and Information Theory
- HDL and Cryptographic Applications
- Digital Watermaking
- Cryptanalysis
- Logical Foundations for Access Control
- Boolean Functions

CENTRE FOR WIRELESS NETWORKING AND APPLICATIONS

M.Tech in Wireless Networks and Applications

This M-Tech programme is intended to generate trained academic and research personnel in the highly demanding, useful and emerging area of wireless networks. The programme includes core subjects from Wireless Communications, Computer Science, Computer networks, advanced topics in wireless communications, mobile computing, sensor networks, embedded systems, signal processing, multimedia systems and applications such as landslide detection, environmental monitoring, etc. Building on a very successful joint project called WINSOC with about a dozen international partners, this new M-Tech program was introduced with a view to strengthen the academic and research activities in this highly advanced topics: Wireless Networks and Applications.

Students, when they graduate, will be well trained to enter into a broad spectrum of industries such as computers, communication networks, earth sciences, environmental sciences, disaster management, health care, e-governance activities, bio and nanotechnologies, VLSI and embedded systems, agriculture and chemical industries and strategic planning.

Core Courses

- Design and Analysis of Algorithms
- Basics of Digital Signal Processing
- Probablity and Graph Theory
- Advanced Computer Networks
- Fundamentals of Wireless Communications
- Advanced Computer Networks Lab
- Wireless Sensor Netwoks
- Wireless Netwoks and Security
- Embedded System Design
- Wireless Sensor Netwoks Laboratory
- Seminar
- Advanced Wireless Networks
- Mobile Communication Works

Electives

- Cryptography
- Advanced Database Design
- Distributed Systems
- Multimedia Systems
- Information Theory & Applications
- Random Processes and Queueing Models
- Wireless Networks Applications
- Smart Grid Communication and Networking
- Security in Wireless Networks
- Introduction to Machine Learning
- Pattern Recognition
- Distributed Algorithms

AMRITA CENTER FOR CYBERSECURITY SYSTEMS AND NETWORKS

M.Tech. in Cybersecurity Systems and Networks

About the Center: With the phenomenal growth of internet, cyber security has become a fast growing global issue and an ever growing market. The advancements on the technological front has made the potential of every device in the daily life to be hooked to the cyber world communicating and passing critical data ranging from personal house hold activities to critical areas in health care, automotive, banking and finance, defense communication systems, educational and research fields, etc. According to an estimate by the Govt. of India, the field of cyber security will require 5 Lakhs additional professionals. The need is to bring out a highly effective full-fledged program on cyber security, designed for the students keeping in mind the niche technical advancements on this field and its practical applications across all the domains in today's world.

About the programme: The program aims at moulding the student into an Information Security professional. Practicing industry professionals and enterprise experts with little or no knowledge in Cyber Security too, can benefit form the course.

The program provides a good blend of theory and industry practices. Necessary theoretical background, insights into general and technical aspects of Cyber Security, analytical methods and management practices in the field of Cyber Security are the areas that are covered in detail.

This M.Tech. programme aims to train the students in the cyber security discipline, through a well designed combination of course-ware and its application on real-world scenarios. The programme has a strong emphasis on foundational courses such as mathematics for security applications, advanced algorithms, networks etc., in addition to diverse subject core areas such as cryptography, operating systems & security, cloud security, security of cyber-physical systems etc.

Students will be exposed to real-world problems, open-ended problems, and simulated real-life scenarios with active guidance from domain experts in this field. The program will help the students to:

1. Comprehend the various security threats and vulnerabilities of the cyber world keeping in line with the industrial trends.
2. Scale up to the demand form multiple industrial sectors on the cyber world to promote effective methods, practices and tools to counter the cyber crimes.

Ultimately, this programme will yield next generation cyber security leaders who can be successfully employed in various sectors of industries, business firms, Government departments, financial bodies, educational institutions, etc., and these sectors generate huge demand for well-trained, professional people to be employed on cyber security front and they are always on the look-out professionally trained people in the area of cyber security.

Core Courses

- Mathematical Foundations of Computer Science - I
- Operating System and Security
- Advanced Algorithms And Analysis
- Advanced Computer Networks
- Cryptography
- Programming Concepts: Practical
- Mathematical Foundations of Computer Science - II
- Distributed Systems
- Network Security
- Elective-I

Electives

- Security in the Cloud
- Formal Methods
- Principles of Security Engineering
- Security of Cyber Physical Systems
- Wireless Security
- Security in the enteprise
- Cyber Crimes, Cyber Laws and Cyber Forensics
- Principles of Machine Learning
- Information Security and Risk Management
- Software Protection

Core Courses

- Elective-II
- Case Study
- Databases and Applications Security
- Elective-III
- Elective-IV
- Minor Project
- Dissertation
- Mathematical Foundations of Computer Science - I
- Mathematical Foundations of Computer Science - II
- Advanced Algorithms And Analysis
- Advanced Computer Networks
- Distributed Systems
- Operating System and Security
- Databases and Applications Security
- Case-Study
- Network Security
- Programming Concepts: Practical
- Cryptography

Electives

- Biometrics for Security
- Digital Watermarking
- Minor Project
- Dissertation

DEPARTMENT: ELECTRICAL & ELECTRONICS ENGINEERING

Post Graduate Diploma in Wind Power Development

Wind energy conversion is a fast developing interdisciplinary engineering sector that involves aerodynamics, electrical machines, electric power system, instrumentation and control engineering. This programme will provide sufficient insight into these key areas imparting knowledge at such levels that match the requirements of wind power industry.

Indian wind power industry needs engineers/managers capable of planning and developing wind power projects. Academic exposures to wind power utilization methods, resource assessment, techno-economic feasibility study, modeling techniques, etc. are the components devised for the capacity building envisaged through this propgramme. The curriculum also involves practical training in wind energy laboratory and dissertation/project work in the field/industry or lab.

This Post Graduate Diploma Program will serve as a significant value addition to basic engineering degrees making the graduates fit for direct employment with windfarm developers, wind mill/generator manufacturers, Government and non-Government agencies working in energy sector etc.

The programme duration is two semesters. The maximum student intake is 15. There is no course/tuition fee applicable to this programme; it is funded by Centre for Wind Energy Technology (C-WET), Chennai, under Ministry of New & Renewable Energy (MNRE), New Delhi. Indian Wind Turbine Manufacturers Association provides a sholarship worth Rs 45000 per student, and also assists placement of the students who successfully complete the programme.

Courses

- Renewable Energy Resources
- Wind Resource Assessment
- Aerodynamics and Wind Turbines
- Electrical Power System
- Environment and Safety
- Energy Economics
- Wind Power Laboratory I
- Wind farm Development and Operation
- Applied Computational Fluid Dynamics
- Project Planning & Management
- Wind Electric Generators
- Power Electronics and Instrumentation
- Wind Power Laboratory II
- Project

DEPARTMENT: ELECTRICAL & ELECTRONICS ENGINEERING

Post Graduate Diploma in Wind Resource Assessment

Wind resource assessment is a prerequisite for wind power planning and development. At present there is high demand for Wind analysts globally and nationally. This programme puts emphasis on wind regime analysis and wind resource assessment. Training on related software packages is included in the curriculum. The curriculum also involves practical training in wind energy laboratory besides dissertation/project work in the field under the able guidance of field experts.

The programme duration is two semesters. The maximum student intake is 15. There is no course/tuition fee applicable to this programme; it is funded by Centre for Wind Energy Technology (C-WET), Chennai, under Ministry of New & Renewable Energy (MNRE), New Delhi. Indian Wind Turbine Manufacturers Association provides a sholarship worth Rs 45000 per student, and also assists placement of the students who successfully complete the programme.

Courses

- Renewable Energy Resources
- Wind Resource
- Aerodynamics
- Computer Programming and Modeling
- Electronics and Instrumentation
- Project Planning & Organisation
- Measurements & Survey Practice
- Wind farm Development and Operation
- Applied Computational Fluid Dynamics
- Wind Energy Conversion Systems
- Wind Resource Modeling
- Electrical Power
- Wind Electric Laboratory
- Project

AMRITA
VISHWA VIDYAPEETHAM
U N I V E R S I T Y
Established u/s 3 of UGC Act 1956

श्रद्धावान् लभते ज्ञानम्

AMRITA SCHOOL OF ENGINEERING

Amritapuri **Bangalore** **Coimbatore**

Preference of Specialisation and Campus For M Tech & PG Diploma

(All entries to be made in BLOCK LETTERS)

Refer Page No.3 for the various programmes offered in our campuses and indicate the preference of specialization and campus in the boxes below:

Preference No.	M.Tech / PG Diploma	Specialisation	Campus
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Application No.

AMRITA VISHWA VIDYAPEETHAM
UNIVERSITY
Established u/s 3 of UGC Act 1956

श्रद्धावान् लभते ज्ञानम्

AMRITA SCHOOL OF ENGINEERING

Amritapuri Bangalore Coimbatore

APPLICATION FOR ADMISSION TO M.TECH./PG DIPLOMA COURSE - 2013

(All entries to be made in BLOCK LETTERS – enclose only copies of certificates)

1. Name of the candidate in CAPITAL letters as given in Degree or HSC certificate (leave blank space between name and initials)

Gender : (Male /Female) _ _ _ _ _ _ _ _ Blood Group: _ _ _ _ _ _ _ _ _ _

Date of Birth (DD/MM/YYYY) _ _ _ _ _ _ _ _ Native Place: _ _ _ _ _ _ _ _ _

Native District: _ _ _ _ _ _ _ _ State: _ _ _ _ _ _ _ _ _

Mother Tongue : _ _ _ _ _ _ _ _ Nationality: _ _ _ _ _ _ _ _ _

Religion: _ _ _ _ _ _ _ _ Caste: _ _ _ _ _ _ _ _ _

*Community: _ _ _ _ _ _ _ _ Marital status: _ _ _ _ _ _ _ _

(SC, ST, MBC, BC, OBC, OC)

Affix Recent Passport size Colour Photograph

*(If the certificate is in vernacular, an English version of the same duly attested by a Notary Public should be attached)

Father's Name: _

Age: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Date of Birth: _

Occupation: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Annual income: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Mother's Name: _

Age: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Date of Birth: _

Occupation: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Annual income: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

In the case of married female candidates, please fill up this portion:

Husband's Name: _

Age: _ Date of Birth: _

Occupation: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Annual income: _

2.Academic Record – Branch of study: _____

Semester / Year Wise Marks / Grades in Qualifying Examination										
Semester/Year #	I	II	III	IV	V	VI	VII	VIII	IX	X
Scored										
Maximum										
Percentage										

- if annual pattern is followed, modify the columns suitably and enter the marks

3.Class obtained : _____

4.Month and Year of Passing : _____ /awaiting result (please give details)

5.University: _____ College : _____

6.GATE percentile :(if applicable) _____ Year: _____

8.Professional Experience:

S.No.	Period		Designation	Nature of work	Organization
	From	To			

9.Name of sponsoring organization, if applicable: _____

(A sponsorship certificate is to be submitted in the format enclosed)

10(a) Address for Communication: _____

_____

P.O _____ Taluk: _____

District: _____ State: _____ PIN Code: | | | | | | |

Phone No. with STD Code: _____ e-mail: _____

Mobile: _____

10(b) Permanent address: _____

P.O _____ Taluk: _____

District: _____ State: _____ PIN Code: | | | | | | |

Phone No. with STD Code : _____ e-mail: _____

10(c) Name and address of Local guardian:: _____

P.O _____ Taluk: _____

District: _____ State: _____ PIN Code: | | | | | | |

Phone No. with STD Code : _____ e-mail: _____

Relationship with the student: _____

11. How did you come to know about AMRITA?

12. Why are you choosing AMRITA for higher studies?

DECLARATION

I, _____ Son / Daughter of _____ _____ hereby declare that the particulars given by me in the application are true. I shall produce the original certificate at the time of admission or on demand. If, in future, any information is found to have been furnished falsely or incorrectly or any information suppressed to secure admission, I shall withdraw from the programme without any claim or consideration. I further state that I have read and understood the contents of the instructions and the brochure given with the application before filling the application.

Place: _____ Signature of the Applicant:

Date: _____ Name: _____

SPONSORSHIP CERTIFICATE

M.Tech candidates Only

(To be issued by the Head of the Institution where the candidate is working)

This is to certify that _____

has been working as _____ in the Department of

_____ of this institution / Organization since

_____. He/She is sponsored for M.Tech Automotive Engineering / Biomedical Engineering / Computational Engineering & Networking / Computer Science and Engineering / Computer Vision & Image Processing / Cyber Security / Embedded System / Engineering Design / Manufacturing Engineering / Power Electronics / Power and Energy / Remote Sensing and Wireless Sensor Networks / Thermal and Fluids Engineering / VLSI Design / Wirless Networks & Applications / Cyber Security Systems & Networks / Thermal Science & Energy Systmes at Amrita School of Engineering, Amritapuri, Bangalore,Ettimadai.

It is certified that he/she will not be withdrawn by us from the programme during the period of the course.

Place: _____ Signature:

Date: _____ Name: _____

Designation: _____

Seal

(Head of the Institution)

LIST OF ENCLOSURES TO ACCOMPANY THE APPLICATION:

(please do not send originals.)

1. 10th Class or Equivalent Certificate
2. 12th Class Certificate
3. Degree / Provisional Certificate (if available)
4. Mark Sheets for all the Semesters / Years (if available)
5. Valid GATE Score card for GATE qualified candidates (for M.Tech only)
6. Transfer Certificate and Conduct Certificate from the Institute last attended (if available)
7. Community Certificate for SC/ST Candidates only.
8. Sponsorship Certificate duly filled, if applicable (for M.Tech only)
9. The candidate should submit the completed application to the respective campuses according to the first preference / choice of campus. The addresses of all the three campuses are as follows:

The Admission Co-ordinator,
Amrita School of Engineering,
Amrita Vishwa Vidyapeetham,
Amritapuri, Clappana (P.O),
Kollam 690 525, Kerala.
Phone: 0476 – 280 9400 /9402
E-mail : admissions@am.amrita.edu

The Admission Co-ordinator,
Amrita School of Engineering,
Amrita Vishwa Vidyapeetham,
Kasavanahalli, Carmelaram (P.O),
Bangalore 560 035, Karnataka.
Phone: 080 – 25183700
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