

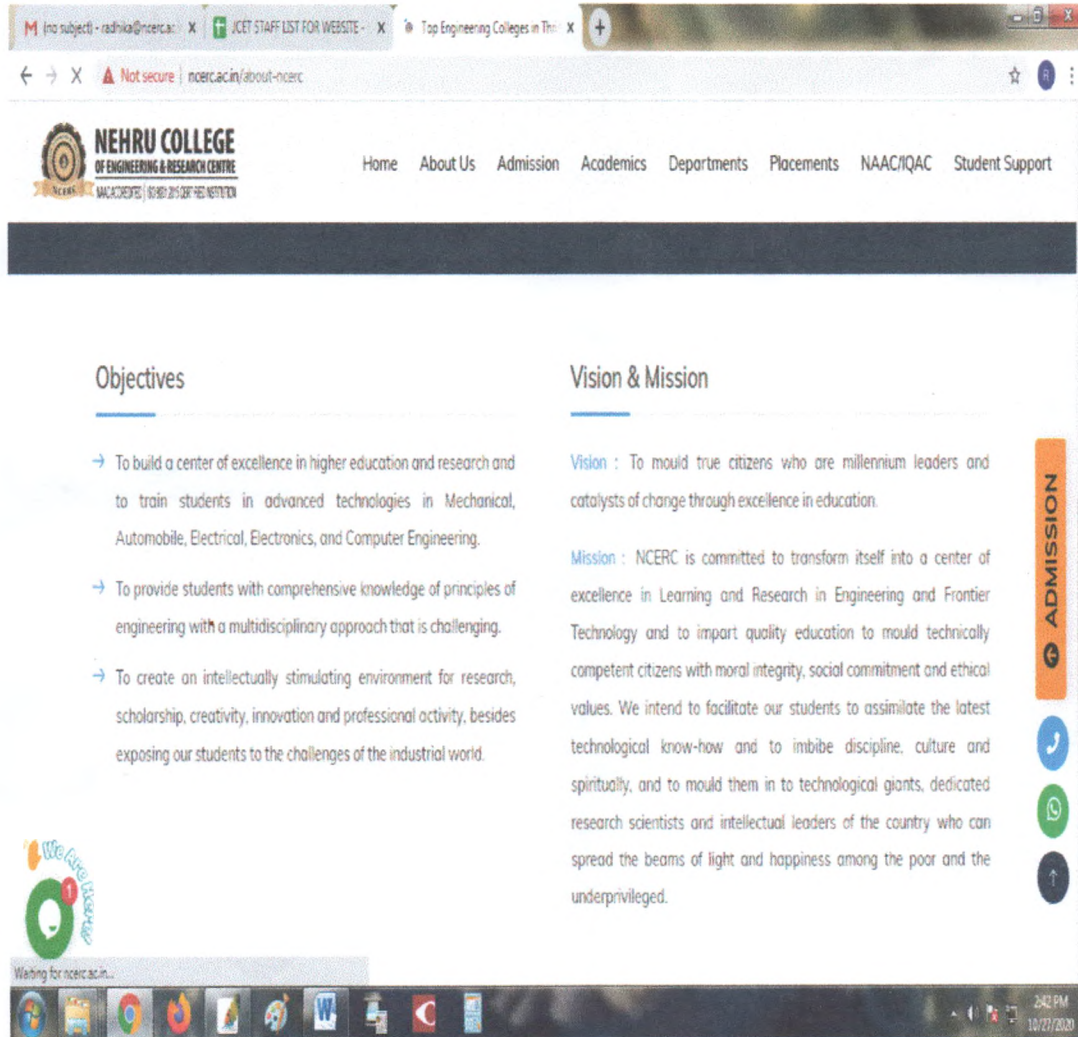


2.6.1 - Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.

S.No	DESCRIPTION	PAGE No
1	Display of Institution Vision and Mission in the website of the institution	02
2	Display of Department Vision and Mission in the website of the institution	03
3	Display of Department Vision, Mission, Program Outcomes (PO), Program Specific Outcomes (PSO)	05
4	Department Vision and Mission	09
5	Department PO, PSO, PEO	16
6	Series Test Question Paper	50
7	IQAC Meeting Minutes	68

Display of Vision & Mission

INSTITUTION VISION AND MISSION DISPLAYED IN COLLEGE WEBSITE



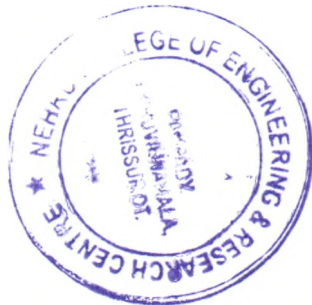
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Kerala

Department Vision Mission in website

DEPARTMENT VISION AND MISSION DISPLAYED IN COLLEGE WEBSITE : www.ncerc.ac.in

The screenshot shows the website for the Department of Computer Science and Engineering at Nehru College of Engineering & Research Centre. The page features a navigation menu with links for Home, About Us, Admission, Academics, Departments, Placements, NAAC/IQAC, and Student Support. A large image of a hand holding a graduation cap is displayed on the left. The main content area is divided into two sections: Department Vision and Department Mission. The Department Vision section states: "Producing Highly Competent, Innovative and Ethical Computer Science and Engineering Professionals to facilitate continuous technological advancement." The Department Mission section lists four points: "To Impart Quality Education by creative Teaching Learning Process.", "To promote cutting-edge Research and Development Process to solve real world problems with emerging technologies.", "To Inculcate Entrepreneurship Skills among Students.", and "To cultivate Moral and Ethical Values in their Profession." A vertical orange button labeled "ADMISSION" is located on the right side of the page. At the bottom of the page, there is a "Program Outcomes (POs)" section and a Windows taskbar showing the date as 10/27/2020 and the time as 2:44 PM.



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DEPARTMENT VISION AND MISSION DISPLAYED IN COLLEGE WEBSITE : www.ncerc.ac.in

NEHRU COLLEGE
OF ENGINEERING & RESEARCH CENTRE
NAAC ACCREDITED (B) 10/2016 (2016) INSTITUTION

Home About Us Admission Academics Departments Placements NAAC/IQAC Student Support

About

NCERC is the first institution offered the Mechatronics Engineering since 2013 (Approved by AICTE New Delhi and Accredited by NAAC and Affiliated to the University of Dr. A P J Abdul Kalam Technological University) provides a platform to create and apply knowledge by thinking and doing in this rapidly changing world. We aim to provide our students with a perfect blend of intellectual and practical experiences that helps them to be a King of industrial automation.

This program developed in direct response to industrial demand for engineers with multidisciplinary skills is a combination of Mechanical, Electronics, Computer, Telecommunications, Systems design engineering streams. Here we allow our students to design, construct and run automated processes, where they use their skills in computers, micro-controllers, programmable logic controllers, programming, industrial sensors, hydraulic, pneumatic and electronic drives, the design of mechanical structures and mechanisms and knowledge of manufacturing processes.

VISION : To mould self motivated graduates with knowledge in diverse areas of engineering and a desire for lifelong learning , who will be employable, will be conversant with ethical practices and teamwork, will excel in higher studies, proficient in research with a flair for publication of scientific findings, capable of conducting seminars and conferences, talented in developing products and processes with an intrinsic knowledge in the fundamentals of Intellectual Property Rights.

MISSION : To built a strong centre of excellence in learning and research in engineering and frontiers in technology, To felicitate students to learn and imbibe discipline, culture and spirituality besides encouraging them to assimilate the latest technological know-how to render a helping hand to the underprivileged, thereby acquiring happiness and imparting the same to others without any reservation what's ever to turn the college into a magnificent and mighty launching pad to turn out technological giants, dedicated research scientists and intellectual leaders of the society who could prepare the country for a quantum jump in all fields of science and technology.

ADMISSION

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**PHOTOGRAPHS OF DEPARTMENT VISION MISSION PO & PSO
ARE DISPLAYED IN CLASS ROOMS AND OTHER AREAS**



**NEHRU COLLEGE OF ENGINEERING
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Pampady, Thiruvilwamala - 680 588

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION

PRODUCING HIGHLY COMPETENT, INNOVATIVE AND ETHICAL COMPUTER SCIENCE AND ENGINEERING PROFESSIONALS TO FACILITATE CONTINUOUS TECHNOLOGICAL ADVANCEMENT

MISSION

- TO IMPART QUALITY EDUCATION BY CREATIVE TEACHING LEARNING PROCESS
- TO PROMOTE CUTTING-EDGE RESEARCH AND DEVELOPMENT PROCESS TO SOLVE REAL WORLD PROBLEMS WITH EMERGING TECHNOLOGIES.
- TO INCULCATE ENTREPRENEURSHIP SKILLS AMONG STUDENTS
- TO CULTIVATE MORAL AND ETHICAL VALUES IN THEIR PROFESSION



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**NEHRU COLLEGE OF ENGINEERING
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT VISION

To excel in technical education and research in the field of Electrical & Electronics Engineering by imparting innovative engineering theories, concepts and practices to improve the production and utilization of power and energy for the betterment of the Nation.

DEPARTMENT MISSION

- To offer quality education in Electrical and Electronics Engineering and prepare the students for professional career and higher studies.
- To create research collaboration with industries for gaining knowledge about real - time problems.
- To prepare students with sound technical knowledge.
- To make students socially responsible.



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Pampady, Thiruvilwamala - 686 589



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM OUTCOMES

After the successful completion of the Course, B.Tech. Computer Science and Engineering, Graduates can able to

PO 1	ENGINEERING KNOWLEDGE : Apply the knowledge of Mathematics, Science, and Computer Science and Engineering to solve complex engineering problems related to Design, Development, Testing and Maintenance of Software and System Tools.
PO 2	PROBLEM ANALYSIS : Identify, Analyse and Formulate complex Computer Science and Engineering problems to achieve significant conclusions by applying Mathematics, Natural Sciences and Computer Science and Engineering Principles and Technologies.
PO 3	DESIGN / DEVELOPMENT OF SOLUTIONS : Design and construct software system, programme, component or process to meet the desired needs within the realistic constraints.
PO 4	CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS : Use research based knowledge and research methods to perform Literature Survey, design experiments for complex problems in designing, developing and maintaining computing systems, collect data from experimental outcome, analyse and interpret the interesting patterns and to provide effective conclusions.
PO 5	MODERN TOOL USAGE : Create, select and apply appropriate state-of-the-art Tools and Techniques in designing, developing, testing and validating Computing Systems, Tools and Components.
PO 6	THE ENGINEER AND SOCIETY : Assess the societal, health, security, legal and cultural issues that might arise during Professional Practice in Computer Science and Engineering.
PO 7	ENVIRONMENT AND SUSTAINABILITY : Demonstrate the knowledge of sustainable development of Software, Components, Tools, Computing Systems and Solutions with an understanding of the impact of these engineering solutions on society and environment.
PO 8	ETHICS : Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice of Computer Science and Engineering.
PO 9	INDIVIDUAL AND TEAM WORK : Function effectively as an individual, and as a member or leader in multi - disciplinary teams, and strive to achieve common goals.
PO 10	COMMUNICATION : Communicate effectively with engineering community and society and be able to comprehend and write effective reports and documents, make effective presentations and give and receive clear instructions.
PO 11	PROJECT MANAGEMENT AND FINANCE : Apply knowledge of the Engineering and Management principles to one's own work, as a member and leader in a team, to manage projects in Multi disciplinary Teams.
PO 12	LIFE-LONG LEARNING : Recognize the need for lifelong learning to cope up with the rapidly emerging Cutting Edge Technologies in Computer Science and Engineering and its allied Engineering application domains.

PROGRAMME SPECIFIC OUTCOMES

PSO 1	ANALYSIS SKILLS : Ability to Formulate and Simulate Innovative Ideas to provide software solutions for Real-time Problems.
PSO 2	DESIGN SKILLS : Ability to Analyze and design various methodologies for facilitating development of high quality System Software Tools and Efficient Web Design Models with a focus on performance optimization.
PSO 3	PRODUCT DEVELOPMENT : Ability to Apply Knowledge for developing Codes and integrating hardware / software products in the domains of Big Data Analytics, Web Applications and Mobile Apps.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAM OBJECTIVES

1. **ENGINEERING KNOWLEDGE** : Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems.
2. **PROBLEM ANALYSIS** : Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science and engineering sciences.
3. **DESIGN AND DEVELOPMENT OF SOLUTIONS** : Design solutions for complex engineering problems and design system components or processes that meet the specific needs with appropriate considerations for public health safety and cultural, societal and environmental considerations.
4. **CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS** : Use research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
5. **MODERN TOOL USAGE** : create, select and apply appropriate techniques, resources and modern engineering and IT tools including predictions and modelling to complex engineering activities with an understanding of the limitations.
6. **THE ENGINEER AND SOCIETY** : Apply reasoning, informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practices.
7. **ENVIRONMENT AND SUSTAINABILITY** : Understand the impact of the professional engineering solutions in societal and environmental context and demonstrate the knowledge of and need for sustainable development.
8. **ETHICS** : Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **INDIVIDUAL AND TEAM WORK** : Function effectively as an individual and as a member or leader in diverse teams and in multi disciplinary settings.
10. **COMMUNICATION** : Communicate effectively on complex engineering activities with the engineering community and with the society at large such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11. **PROJECT MANAGEMENT AND FINANCE** : Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.
12. **LIFE - LONG LEARNING** : Recognize the need for, and have the preparation and ability to engage in independent and life - long learning in the broadest context of technological change.

PROGRAM SPECIFIC OBJECTIVES

1. Apply Science, Engineering, Mathematics through differential and Integral Calculus, Complex Variables to solve Electrical Engineering Problems.
2. Demonstrate proficiency in the use of software and hardware to be required to practice electrical engineering profession.
3. Apply the knowledge of Ethical and Management principles required to work in a team as well as to lead a team.



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Department Vision & Mission



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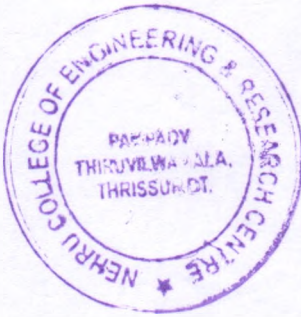
DEPARTMENT OF AUTOMOBILE ENGINEERING

DEPARTMENT VISION

Create a centre of excellence in the field of Automobile Engineering through industrial and academic research by training the learners for acceptance the modern world.

DEPARTMENT MISSION

- To work with commitment and dedication for the improvement of quality teaching.
- To conduct the innovative research by addressing the needs of Automotive Industries and Society.
- To develop professional practices among the learners to encourage life long team work and leadership.



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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

DEPARTMENT VISION

Producing Highly Competent, Innovative and Ethical Computer Science and Engineering Professionals to facilitate continuous technological advancement

DEPARTMENT MISSION

- To Impart Quality Education by creative Teaching Learning Process
- To Promote cutting-edge Research and Development Process to solve real world problems with emerging technologies.
- To Inculcate Entrepreneurship Skills among Students
- To cultivate Moral and Ethical Values in their Profession



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

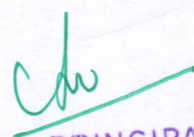
DEPARTMENT VISION

Providing Universal Communicative Electronics Engineers with corporate and social relevance towards sustainable developments through quality education.

DEPARTMENT MISSION

- Imparting Quality education by providing excellent teaching, learning environment.
- Transforming and adopting students in this knowledgeable era, where the electronic gadgets (things) are getting obsolete in short span.
- To initiate multi-disciplinary activities to students at earliest and apply in their respective fields of interest later.
- Promoting leading edge Research & Development through collaboration with academia & industry.




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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DEPARTMENT VISION

To excel in technical education and research in the field of Electrical & Electronics Engineering by imparting innovative engineering theories, concepts and practices to improve the production and utilization of power and energy for the betterment of the Nation.

DEPARTMENT MISSION

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- To create research collaboration with industries for gaining knowledge about real-time problems.
- To prepare students with sound technical knowledge.
- To make students socially responsible.



103

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DEPARTMENT OF MECHATRONICS ENGINEERING

DEPARTMENT VISION

To develop professionally ethical and socially responsible Mechatronics engineers to serve the humanity through quality professional education.

DEPARTMENT MISSION

- The department is committed to impart the right blend of knowledge and quality education to create professionally ethical and socially responsible graduates.
- The department is committed to impart the awareness to meet the current challenges in technology.
- Establish state-of-the-art laboratories to promote practical knowledge of mechatronics to meet the needs of the society



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MASTER OF BUSINESS ADMINISTRATION

DEPARTMENT VISION

To become the Centre of Excellence in Management and Innovation

DEPARTMENT MISSION

To evolve and sustain the business school as a vibrant institution of excellence in management education, for the development of talented and proficient leaders, who will be having values of entrepreneurship, uprightness and societal responsibilities.



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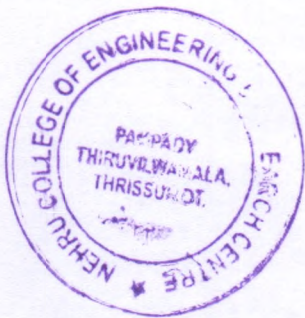
MASTERS IN COMPUTER APPLICATIONS

DEPARTMENT VISION

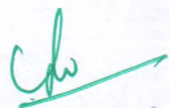
To create a school of distinction for the PG students, prepare them to be industry-ready, and achieve Academic excellence by continuous endorsement of the Faculty team in terms of Academics, Applications & Research.

DEPARTMENT MISSION

The Department of Computer Applications strives to provide quality and competency- based education and fine-tune the younger generation through curricular, co-curricular and Extra-curricular activities so as to encounter the Professional and Personnel challenges ahead with Pragmatic skills & courage , thereby 'Creating the True Citizens'.



113


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COURSE OUTCOME

COMPUTER SCIENCE AND ENGINEERING

CST 201 DATA STRUCTURES

CO1 Design an algorithm for a computational task and calculate the time/space complexities of that algorithm

CO2 Identify the suitable data structure (array or linked list) to represent a data item required to be processed to solve a given computational problem and write an algorithm to find the solution of the computational problem

CO3 Write an algorithm to find the solution of a computational problem by selecting an appropriate data structure (binary tree/graph) to represent a data item to be processed

CO4 Store a given dataset using an appropriate Hash Function to enable efficient access of data in the given set

CO5 Select appropriate sorting algorithms to be used in specific circumstances

CO6 Design and implement Data Structures for solving real world problems efficiently

CST 203 LOGIC SYSTEM DESIGN

CO1 Illustrate decimal, binary, octal, hexadecimal and BCD number systems, perform conversions among them and do the operations - complementation, addition, subtraction, multiplication and division on binary numbers

CO2 Simplify a given Boolean Function and design a combinational circuit to implement the simplified function using Digital Logic Gates

CO3 Design combinational circuits - Adders, Code Convertors, Decoders, Magnitude Comparators, Parity Generator/Checker and design the Programmable Logic Devices - ROM and PLA.

CO4 Design sequential circuits - Registers, Counters and Shift Registers.

CO5 Use algorithms to perform addition and subtraction on binary, BCD and floating point numbers



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CST 205 OBJECT ORIENTED PROGRAMMING USING JAVA

CO1 Write Java programs using the object oriented concepts - classes, objects, constructors, data hiding, inheritance and polymorphism

CO2 Utilise datatypes, operators, control statements, built in packages & interfaces, Input/Output Streams and Files in Java to develop programs

CO3 Illustrate how robust programs can be written in Java using exception handling mechanism

CO4 Write application programs in Java using multithreading and database connectivity

CO5 Write Graphical User Interface based application programs by utilising event handling features and Swing in Java.

CSL 203 OBJECT ORIENTED PROGRAMMING LAB (IN JAVA)

CO1 Implement the Object Oriented concepts - constructors, inheritance, method overloading & overriding and polymorphism in Java

CO2 Implement programs in Java which use datatypes, operators, control statements, built in packages & interfaces, Input/Output streams and Files

CO3 Implement robust application programs in Java using exception handling

CO4 Implement application programs in Java using multithreading and database connectivity

CO5 Implement Graphical User Interface based application programs by utilizing event handling features and Swing in Java

CST 281 OBJECT ORIENTED PROGRAMMING

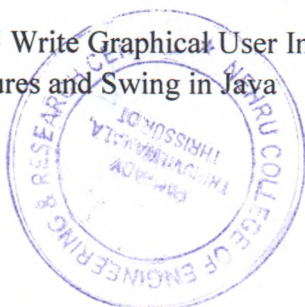
CO1 Write Java programs using the object oriented concepts - classes, objects, constructors, data hiding, inheritance and polymorphism

CO2 Utilise datatypes, operators, control statements, built in packages & interfaces, Input/Output Streams and Files in Java to develop programs

CO3 Illustrate how robust programs can be written in Java using exception handling mechanism

CO4 Write application programs in Java using multithreading

CO5 Write Graphical User Interface based application programs by utilising event handling features and Swing in Java



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CS301 THEORY OF COMPUTATION

CO1 Classify formal languages into regular, context-free, context sensitive and unrestricted languages.

CO2 Design finite state automata, regular grammar, regular expression and Myhill- Nerode relation representations for regular languages.

CO3 Design push-down automata and context-free grammar representations for context-free languages.

CO4 Design Turing Machines for accepting recursively enumerable languages.

CO5 Understand the notions of decidability and undecidability of problems, Halting problem.

CS303 SYSTEM SOFTWARE

CO1 To distinguish different software into different categories.

CO2 To design, analyze and implement one pass, two pass or multi pass assembler.

CO3 To design, analyze and implement loader and linker.

CO4 design, analyze and implement macro processors.

CO5 critique the features of modern editing /debugging tools.

CS305 Microprocessors and Microcontrollers

CO1 Describe different modes of operations of a typical microprocessor and microcontroller.

CO2 Design and develop 8086 assembly language programs using software interrupts and various assembler directives.

CO3 Interface microprocessors with various external devices.

CO4 Analyze and compare the features of microprocessors and microcontrollers.

CO5 Design and develop assembly language programs using 8051 microcontroller.

CS309 GRAPH THEORY AND COMBINATORICS

CO1 Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees.



13

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CO2 Use graphs for solving real life problems.

CO3 Distinguish between planar and non-planar graphs and solve problems.

CO4 Develop efficient algorithms for graph related problems in different domains of engineering and science

ELECTRONICS AND COMMUNICATION ENGINEERING

ECT202 ANALOG CIRCUITS

CO 1 Design analog signal processing circuits using diodes and first order RC circuit.

CO 2 Analyse basic amplifiers using BJT and MOSFET

CO 3 Apply the principle of oscillator and regulated power supply circuits.

ECT204 SIGNALS AND SYSTEMS

CO 1 Apply properties of signals and systems to classify them

CO 2 Represent signals with the help of series and transforms

CO 3 Describe orthogonality of signals and convolution integral.

CO 4 Apply transfer function to compute the LTI response to input signals.

CO 5 Apply sampling theorem to discretize continuous time signals

ECT206 COMPUTER ARCHITECTURE AND MICROCONTROLLERS

CO 1 Explain the functional units, I/O and memory management w.r.t a typical computer architecture.

CO 2 Distinguish between microprocessor and microcontroller.

CO 3 Develop simple programs using assembly language programming.


CO 4 Interface 8051 microcontroller with peripheral devices using ALP/Embedded C

CO 5 Familiarize system software and Advanced RISC Machine Architecture.

ECL202 ANALOG CIRCUITS AND SIMULATION LAB



103


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- CO 1 Design and demonstrate the functioning of basic analog circuits using discrete components.
- CO 2 Design and simulate the functioning of basic analog circuits using simulation tools.
- CO 3 Function effectively as an individual and in a team to accomplish the given task.

ECL204 MICROCONTROLLER LAB

- CO 1 Write an Assembly language program/Embedded C program for performing data manipulation.
- CO 2 Develop ALP/Embedded C Programs to interface microcontroller with peripherals
- CO 3 Perform programming/interfacing experiments with IDE for modern microcontrollers.

ECT282 MICROCONTROLLERS

- CO 1 Explain the building blocks of a typical microcomputer/microcontroller system
- CO 2 Familiarize the instruction set of 8051 and perform assembly language programming
- CO 3 Interface the various peripheral devices to the microcontroller using assembly/C programming
- CO4 Realize external communication interface to the microcontroller
- CO5 Familiarize the building blocks of RISC processors and ARM microcontrollers

ECT284 DIGITAL COMMUNICATION

- CO 1 Explain the main components in a digital communication system
- CO 2 Explain the source coding schemes
- CO 3 Explain codes for signaling
- CO 4 Apply the knowledge of digital modulation schemes in digital transmission.
- CO 5 Apply channel coding in digital transmission CO 6 Explain digital receivers

ECT201 SOLID STATE DEVICES

- CO 1 Apply Fermi-Dirac Distribution function and Compute carrier concentration at equilibrium and the parameters associated with generation, recombination and transport mechanism



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CO 2 Explain drift and diffusion currents in extrinsic semiconductors and Compute current density due to these effects.

CO 3 Define the current components and derive the current equation in a pn junction diode and bipolar junction transistor.

CO 4 Explain the basic MOS physics and derive the expressions for drain current in linear and saturation regions.

CO 5 Discuss scaling of MOSFETs and short channel effects.

ECT 203 LOGIC CIRCUIT DESIGN

CO 1 Explain the elements of digital system abstractions such as digital representations of information, digital logic and Boolean algebra

CO 2 Create an implementation of a combinational logic function described by a truth table using and/or/inv gates/ muxes

CO 3 Compare different types of logic families with respect to performance and efficiency

CO 4 Design a sequential logic circuit using the basic building blocks like flip-flops

CO 5 Design and analyze combinational and sequential logic circuits through gate level Verilog models.

ECT205 NETWORK THEORY

CO 1 K3 Apply Mesh / Node analysis or Network Theorems to obtain steady state response of the linear time invariant networks.

CO 2 K3 Apply Laplace Transforms to determine the transient behaviour of RLC networks.

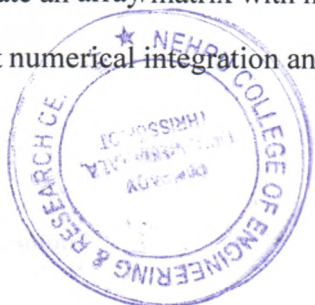
CO 3 K3 Apply Network functions and Network Parameters to analyse the single port and two port networks.

ECL 201 SCIENTIFIC COMPUTING LABORATORY

CO 1 Describe the needs and requirements of scientific computing and to familiarize one programming language for scientific computing and data visualization.

CO 2 Approximate an array/matrix with matrix decomposition.

CO 3 Implement numerical integration and differentiation.



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CO 4 Solve ordinary differential equations for engineering applications

CO 5 Compute with exported data from instruments CO 6 Realize how periodic functions are constituted by sinusoids

CO 7 Simulate random processes and understand their statistics.

ECE 305 Microprocessor & Microcontroller

CO1 Able to distinguish various types of processor architectures

CO2 Describe architectures, memory organization of 8085 microprocessor and 8051.

CO3 Develop programming skills in assembly for interfacing peripheral devices with 8051.

ECE 333 Digital Signal Processing Lab

CO1 Able to design, simulate and realize various systems related to DSP

CO2 To explore the concepts of design, simulation and implementation

ECE 301 Digital Signal Processing

CO1 To provide understanding of Digital signal processing principles, algorithms and applications.

CO2 To study the design techniques for digital filters

CO3 To give an understanding of multi-rate signal processing and its applications

CO4 To introduce the architecture of DSP processors

CO5 To understand the principle of digital signal processing and applications. The utilization of DSP to electronics engineering is also needed.

ELECTRICAL AND ELECTRONICS ENGINEERING

EET202 DC MACHINES AND TRANSFORMERS

CO 1 Acquire knowledge about constructional details of DC machines

CO 2 Describe the performance characteristics of DC generators

CO3 Describe the principle of operation of DC motors and select appropriate motor types for different applications



13


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CO 4 Acquire knowledge in testing of DC machines to assess its performance

CO 5 Describe the constructional details and modes of operation of single phase and three phase transformers

CO6 Analyse the performance of transformers under various conditions

EET204 ELECTROMAGNETIC THEORY

CO 1 Apply vector analysis and coordinate systems to solve static electric and magnetic field problems.

CO 2 Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters

CO 3 Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law.

CO 4 Apply Maxwell Equations for the solution of time varying fields

CO 5 Analyse electromagnetic wave propagation in different media.

EET206 DIGITAL ELECTRONICS

CO 1 Identify various number systems, binary codes and formulate digital functions using Boolean algebra.

CO 2 Design and implement combinational logic circuits.

CO 3 Design and implement sequential logic circuits.

CO 4 Compare the operation of various analog to digital and digital to analog conversion circuits.

CO 5 Explain the basic concepts of programmable logic devices and VHDL.

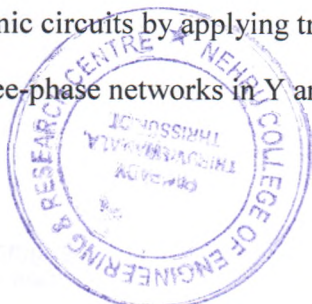
EET201 CIRCUITS AND NETWORKS


CO 1 Apply circuit theorems to simplify and solve complex DC and AC electric networks.

CO 2 Analyse dynamic DC and AC circuits and develop the complete response to excitations.

CO 3 Solve dynamic circuits by applying transformation to s-domain.

CO 4 Analyse three-phase networks in Y and Δ configurations.




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CO 5 Solve series /parallel resonant circuits.

CO 6 Develop the representation of two-port networks using network parameters and analyse.

EET203 MEASUREMENTS AND INSTRUMENTATION

CO 1 Identify and analyse the factors affecting performance of measuring system

CO 2 Choose appropriate instruments for the measurement of voltage, current in ac and dc measurements

CO 3 Explain the operating principle of power and energy measurement

CO 4 Outline the principles of operation of Magnetic measurement systems

CO 5 Describe the operating principle of DC and AC bridges, transducers based systems.

CO 6 Understand the operating principles of basic building blocks of digital systems, recording and display units.

EET205 ANALOG ELECTRONICS

CO 1 Design biasing scheme for transistor circuits.

CO 2 Model BJT and FET amplifier circuits.

CO 3 Identify a power amplifier with appropriate specifications for electronic circuit applications.

CO 4 Describe the operation of oscillator circuits using BJT.

CO 5 Explain the basic concepts of Operational amplifier (OPAMP)

CO 6 Design and develop various OPAMP application circuits.

EEL201 CIRCUITS AND MEASUREMENTS LAB

CO 1 Analyse voltage current relations of RLC circuits

CO 2 Verify DC network theorems by setting up various electric circuits

CO 3 Measure power in a single and three phase circuits by various methods

CO 4 Calibrate various meters used in electrical systems

CO 5 Determine magnetic characteristics of different electrical devices



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CO 6 Analyse the characteristics of various types of transducer systems

CO 7 Determine electrical parameters using various bridges

CO 8 Analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.

EE301 POWER GENERATION, TRANSMISSION AND PROTECTION

CO1 Know the basic aspects in the area of power generation, transmission, distribution and protection.

CO2 Design power factor correction equipment, transmission line parameters, and decide upon the various protection schemes to be adopted in various cases.

CO3 To set a foundation on the fundamental concepts of Power System Generation, Transmission, Distribution and Protection.

EE303 Linear Control Systems

CO1 To provide a strong foundation on the analytical and design techniques on classical control theory and modelling of dynamic systems

CO2 Ability to analyze the stability aspects of linear time invariant systems.

CO3 Ability to develop mathematical models of various systems.

EE305 Power Electronics

CO1 Choose appropriate power semiconductor device in converter circuits and develop their triggering circuits.

CO2 Analyze various types of power electronic converters and apply different switching techniques.

CO3 Select appropriate power converter for specific applications.

CO4 Interpret and use datasheets of power semiconductor devices for design

MECHANICAL ENGINEERING

MET202 ENGINEERING THERMODYNAMICS

CO1 Understand basic concepts and laws of thermodynamics



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CO2 Conduct first law analysis of open and closed systems

CO3 Determine entropy and availability changes associated with different processes

CO4 Understand the application and limitations of different equations of state

CO5 Determine change in properties of pure substances during phase change processes

CO6 Evaluate properties of ideal gas mixtures

MET 204 MANUFACTURING PROCESS

CO 1 Illustrate the basic principles of foundry practices and special casting processes, their advantages, limitations and applications.

CO 2 Categorize welding processes according to welding principle and material.

CO 3 Understand requirements to achieve sound welded joint while welding different similar and dissimilar engineering materials.

CO 4 Student will estimate the working loads for pressing, forging, wire drawing etc. processes

CO 5 Recommend appropriate part manufacturing processes when provided a set of functional requirements and product development constraints.

MET206 FLUID MACHINERY

CO1 Explain the characteristics of centrifugal and reciprocating pumps

CO2 Calculate forces and work done by a jet on fixed or moving plate and curved plates

CO3 Explain the working of turbines and Select a turbine for specific application.

CO4 Analyse the working of air compressors and Select the suitable one based on application.

CO5 Analyse gas turbines and Identify the improvements in basic gas turbine cycles.

CO6 Explain the characteristics of centrifugal and reciprocating pumps

MET201 MECHANICS OF SOLIDS

CO 1 Determine the stresses, strains and displacements of structures by tensorial and graphical (Mohr's circle) approaches



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CO 2 Analyse the strength of materials using stress-strain relationships for structural and thermal loading

CO 3 Perform basic design of shafts subjected to torsional loading and analyse beams subjected to bending moments

CO 4 Determine the deformation of structures subjected to various loading conditions using strain energy methods

CO 5 Estimate the strength of thin cylinders, spherical vessels and columns, and appreciate the theories of failures and its relevance in mechanical design.

MET203 MECHANICS OF FLUIDS

CO1 Define Properties of Fluids and Solve hydrostatic problems

CO2 Explain fluid kinematics and Classify fluid flows

CO3 Interpret Euler and Navier-Stokes equations and Solve problems using Bernoulli's equation

CO4 Evaluate energy losses in pipes and sketch energy gradient lines

CO5 Explain the concept of boundary layer and its applications

CO6 Use dimensional Analysis for model studies.

MET 205 METALLURGY & MATERIAL SCIENCE

CO 1 Understand the basic chemical bonds, crystal structures (BCC, FCC, and HCP), and their relationship with the properties.

CO 2 Analyze the microstructure of metallic materials using phase diagrams and modify the microstructure and properties using different heat treatments.

CO 3 How to quantify mechanical integrity and failure in materials.


CO 4 Apply the basic principles of ferrous and non-ferrous metallurgy for selecting materials for specific applications.

CO 5 Define and differentiate engineering materials on the basis of structure and properties for engineering applications.

MEL201 COMPUTER AIDED MACHINE DRAWING



102


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CO1 Apply the knowledge of engineering drawings and standards to prepare standard dimensioned drawings of machine parts and other engineering components.

CO2 Prepare standard assembly drawings of machine components and valves using part drawings and bill of materials.

CO3 Apply limits and tolerances to components and choose appropriate fits for given assemblies

CO 4 Interpret the symbols of welded, machining and surface roughness on the component drawings.

CO 5 Prepare part and assembly drawings and Bill of Materials of machine components and valves using CAD software.

MEL203 MATERIALS TESTING LAB

CO 1 To understand the basic concepts of analysis of circular shafts subjected to torsion.

CO 2 To understand the behaviour of engineering component subjected to cyclic loading and failure concepts

CO 3 Evaluate the strength of ductile and brittle materials subjected to compressive, Tensile shear and bending forces

CO 4 Evaluate the microstructural morphology of ductile or brittle materials and its fracture modes (ductile /brittle fracture) during tension test

CO 5 To specify suitable material for applications in the field of design and manufacturing.

MET281 MECHANICS OF MATERIALS

CO 1 Discuss the concepts of stress and strain in deformable bodies due to structural and thermal loading

CO 2 Analyse the behaviour of materials under shear stress due to torsional loads acting in simple structural members

CO 3 Analyse beams using graphical and analytical methods to determine slope, deflection and stress

CO 4 Transform stresses and strains for plane stress problems mathematically and graphically and determine the principal stresses and its directions



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CO 5 Analyze simple structures subjected to compound stresses, and columns subjected to buckling conditions.

MET283 FLUID MECHANICS AND MACHINERY

CO 1 Define Properties of Fluids and Solve hydrostatic problems

CO 2 Explain fluid kinematics and Classify fluid flows

CO 3 Interpret Euler's equation and Solve problems using Bernoulli's equation

CO 4 Explain the working of turbines and Select a turbine for specific application.

CO 5 Explain the characteristics of centrifugal and reciprocating pumps.

MET 285 MATERIAL SCIENCE AND TECHNOLOGY

CO 1 Understand the basic chemical bonds, crystal structures and their relationship with the properties.

CO 2 How to quantify failure of materials

CO 3 Given a hypothetical or real problem with an electronic materials device or process, explain the cause of the problem and propose solutions.

CO 4 Understand how materials interact at the nanoscale

CO 5 Define and differentiate engineering materials on the basis of structure and properties for engineering applications

MECHATRONICS ENGINEERING

MRT 202 THERMODYNAMICS

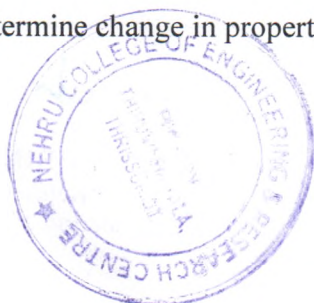
CO1 Understand basic concepts and laws of thermodynamics

CO2 Conduct first law analysis of open and closed systems

CO3 Determine entropy and availability changes associated with different processes

CO4 Understand the application and limitations of different equations of state

CO5 Determine change in properties of pure substances during phase change processes



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CO4 Apply cutting mechanics to metal machining based on cutting force and power consumption.

CO5 Understand the use of various machine tools and their fields of application.

CO6 Understand the principle and applications of grinding and super finishing operations.

CO7 Get a basic knowledge on the importance of digital manufacturing.

MASTER OF BUSINESS ADMINISTRATION

20MBA101 INTRODUCTION TO BUSINESS

CO 1 Evaluate the importance of Planning and Organising in an Enterprise

CO 2 Analyse the role of Staffing, formation of teams and performance

CO 3 Appraise the effectiveness of communication

CO 4 Inculcate the foundation of sound decision making

CO 5 Evaluate the means of control in an enterprise

20MBA103 QUANTITATIVE TECHNIQUES FOR MANAGERS

CO 1 Examine the basics of descriptive statistics for managers

CO 2 Identify the practical applications of probability theory

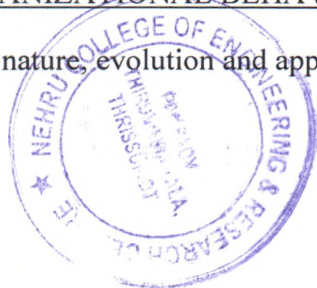
CO 3 Solve business problems with the help of fundamental statistical and theoretical backgrounds

CO 4 Formulate various testing methods using statistical backgrounds in business problems for managerial decision making

CO 5 Determine the suitability of using correlation and regression analysis in solving business problems

20MBA105 ORGANIZATIONAL BEHAVIOUR

CO 1 Understand nature, evolution and approaches to organizational behaviour



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CO6 Evaluate properties of ideal gas mixtures

MRT 204 SENSORS AND ACTUATORS

CO 1 Get an exposure to sensors and actuators and its importance in the real world.

CO 2 Explain the working of magnetic sensors and its applications in real time scenario

CO 3 Model linear actuators and differentiate various solenoids

CO 4 Explain the working principle of different types of rotary actuators

CO 5 Understand the basic idea on the controls in NC machine and fluidic system.

MRT206 MICROPROCESSOR & EMBEDDED SYSTEMS

CO 1 Understand the basic concepts of 8085 microprocessor

CO 2 Understand the basic concepts of 8085 interfacing with input output devices and memory device

CO 3 Understand the overview of an Embedded Systems

CO 4 Interpret the basic concepts of 8051 microcontroller

CO 5 Interface peripheral devices with 8051 microcontrollers CO 6 Write C/Assembly Program for a microcontroller

ME301 MECHANICS OF MACHINERY

CO1 Able to solve practical problems related to kinematics of mechanisms

CO2 To provide knowledge on kinematics of selected mechanisms, design of cams, theory and analysis of gears, gear trains and synthesis of mechanisms.

ME303 MACHINE TOOLS AND DIGITAL MANUFACTURING

CO1 Analyze various machining process and calculate relevant quantities such as velocities, forces and powers.

CO2 Identify and explain the function of the basic components of a machine tool.

CO3 Understand the limitations of various machining process with regard to shape formation and surface texture.



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CO 4 Assess performance of a company using various techniques of Management Accounting

CO 5 Analyze performance of a company using various techniques of cost Accounting

20MBA113 ETHICS, GOVERNANCE AND CORPORATE RESPONSIBILITY

CO 1 Examine the importance of ethics in business

CO 2 Apply ethical decision making in business management

CO 3 Analyze the importance of corporate governance

CO 4 Assess the developments in Corporate governance

CO 5 Create the sense of corporate social responsibility within oneself

20MBA115 LEGAL SYSTEMS FOR BUSINESS

CO1 Examine fundamental legal principles of business contracts

CO2 Analyse the legal aspects in the formation, running and winding up of business

CO3 Analyze the scope and the issues associated with partnerships, negotiable instruments and cyber law

CO4 Evaluate and analyse the scope and application of sale of goods act and consumer protection act.

CO5 Equip the students with insights on different labour regulations in India

20MBANC1 EMPLOYABILITY ENHANCEMENT PROGRAMME

CO 1 Enhance the skills of communication and problem solving

CO 2 Develop job searching, CV writing, interview skills and enterprenurial skills

CO 3 Practicing Interpersonal skills, Negotiation and Self-Management

CO 4 Develop Team building & Leadership skills through practice

CO 5 Attain hands on experience in the areas of Creativity and Critical Thinking



103

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CO 2 Analyse individual differences and to change others behaviour through the process of perception, personality, learning and motivation

CO 3 Develop team building and leadership skills

CO 4 Apply conflict management techniques for improved problem solving and better interpersonal relations

CO 5 Enhance individual and organizational productivity through managing stress, culture and change

20MBA107 BUSINESS ECONOMICS

CO 1 Evaluate the importance of Economics in Business Decisions.

CO 2 Analyse the Demand and Demand Elasticity in varying market conditions.

CO 3 Appraise the Production and Cost Curve in the Short Run and Long Run.

CO 4 Explain Price and Output determination in different Market Structures

CO 5 Evaluate the impact of Monetary Policy Measures and Fiscal Policy Measures and Pricing Strategies of Small and Large Business Firms.

20MBA109 Information Systems for Managers

CO 1 Demonstrate familiarity with the basic concepts of information systems

CO 2 Identify database models and explain the concept of informed decision-making

CO 3 Appraise the integration of business processes with IT

CO 4 Apply data and information concepts in enterprise business processes

CO 5 Analyse the information security and ethical issues in modern IT environments and methods of tackling them

20MBA111 ACCOUNTING FOR MANAGERS

CO 1 Understand the financial transactions, Accounting concepts and principles.

CO 2 Examine and prepare the financial statements of a company.

CO 3 Analysis and comparison of financial statements.



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- CO 3 Solve problems in almost every conceivable discipline using graph models
- CO 4 Solve the linear system of equations and Calculate the eigen values and eigen vectors of matrices.
- CO 5 Apply the principles of correlation and regression in practical problems.

20MCA103 DIGITAL FUNDAMENTALS & COMPUTER ARCHITECTURE


- CO 1 Apply the basics of digital electronics to design and realize simple combinational logic circuits
- CO 2 Apply the digital electronics principles to design sequential logic circuits.
- CO 3 Understand the different design features of computer architecture, Five key components of a computer, processor and memory making technologies, addressing modes & instruction formats.
- CO 4 Understand Processor logic design conventions and data path, pipelining and hazards, I/O organization, Interrupts and direct memory access
- CO 5 Understand and different types of memories - RAM, ROM, Cache memory, virtual memory etc. Apply the different memory design techniques.
- CO 6 Understand the concept of single board computers like Arduino, Raspberry Pi etc. and apply the same in practical applications.

20MCA105 ADVANCED DATA STRUCTURES

- CO 1 Remember the Basic Data Structures and understand the Set Data Structure and its implementation.
- CO 2 Understand Advanced Tree Structures for the design of efficient algorithms
- CO 3 Understand Advanced Heap Structures suitable for solving Computational problems involving Optimisation and analysing these data structures using amortised analysis.
- CO 4 Understand Advanced Graph algorithms suitable for solving advanced computational problems
- CO 5 Understand the basic operation of Block chaining along with the data structures used in it and the challenges in Blockchain data



12


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20MBA102 MARKETING MANAGEMENT

- CO 1 Evaluate the importance of Marketing Concepts in an Enterprise
- CO 2 Analyse the Buyer Behaviour in a marketing Ecosystem
- CO 3 Appraise the Product and pricing Decisions
- CO 4 Develop capability to make Distribution Decisions and Promotion Decisions.
- CO 5 Evaluate the Marketing Control Techniques and Modern Trends in marketing.

20MBA104 FINANCIAL MANAGEMENT

- CO 1 Understand the concept, functions and objectives of Financial Management.
- CO 2 Examine the sources of business finance and their significance.
- CO 3 Analyze projects on their risk and financial feasibility.
- CO 4 Assess the impact of working capital.
- CO 5 Analyze the dividend policy of a firm

20MBA106 HUMAN RESOURCE MANAGEMENT

- CO 1 Understand the core concepts of HRM in an organization
- CO 2 Acquire insights on the process of HR planning
- CO 3 Familiarize the importance of T&D and Performance Management in an organisation
- CO 4 Analyze the practice of Talent management and Compensation Management
- CO 5 Apply HRM in maintaining good Employee relations

MASTER OF COMPUTER APPLICATIONS

20MCA101 MATHEMATICAL FOUNDATIONS FOR COMPUTING

- CO 1 Understand mathematical reasoning in order to read, comprehend and construct mathematical arguments
- CO 2 Count or enumerate objects and solve counting problems and analyze algorithms



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20MCA107 ADVANCED SOFTWARE ENGINEERING

CO 1 Get a full view of the Software life cycle

CO 2 Gain a deep knowledge of Software Planning, Analysis and Design and Software Engineering Models

CO 3 Have a great comprehension of Coding Practices, Version Control using 'git' and Software Quality

CO 4 Acquire ample grasp of Design Patterns

CO 5 Get deeply familiarized with Software Testing and its automation

CO 6 Start using Agile Methodology

CO 7 Begin to apply CI/CD techniques in Software development

20MCA131 PROGRAMMING LAB

CO 1 Understands basics of Python Programming language including input/output functions, operators, basic and collection data types

CO 2 Implement decision making, looping constructs and functions

CO 3 Design modules and packages - built in and user defined packages

CO 4 Implement object-oriented programming and exception handling.

CO 5 Create files and form regular expressions for effective search operations on strings and files

20MCA162 APPLIED STATISTICS

CO 1 Apply the concept of discrete probability distributions in determining the parameters of the distribution and hence to solve different problems

CO 2 Apply the concept of continuous probability distribution in solving different problems

CO 3 Apply the principles of correlation and regression in practical problems.

CO 4 Develop confidence intervals for various problems.



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CO 5 Test the given hypothesis on the basis of known criteria.

20MCA164 ORGANIZATIONAL BEHAVIOUR

CO 1 Identify managers challenges and opportunities in applying OB concepts.

CO 2 Analyse various characteristics of individual behaviour and its impact on organizational performance.

CO 3 Acquire knowledge about the complexities associated with management of individual behaviour in the organization.

CO 4 Understand group behaviour and develop inter-personal skills and group dynamics.

CO 5 Understand organizational structures and analyze the behavioral implications of different organizational designs.

20MCA166 FUNCTIONAL PROGRAMMING

CO 1 Understand the principles of functional programming

CO 2 Write purely functional programs, using recursion, pattern matching, and higher- order functions


CO 3 Design immutable data structures like lists.

CO 4 Understand generic types for functional programs

CO 5 Write programs using Haskell



13


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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

PROGRAM OUTCOMES

Engineering Graduates will be able to:

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

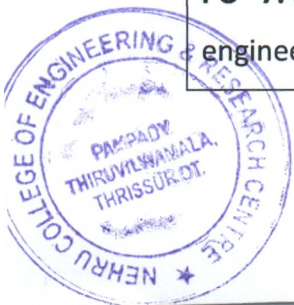
PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the



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knowledge of, and need for sustainable development.

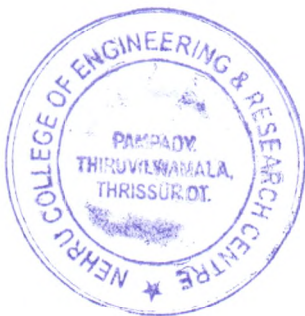
PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.




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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAM OUTCOMES(POs)

Engineering Graduates will be able to:

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.



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PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

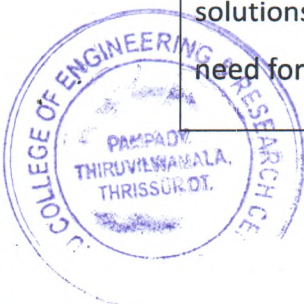
PROGRAM OUTCOMES

Engineering Graduates will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

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8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAM OUTCOMES

Engineering Graduates will be able to:

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

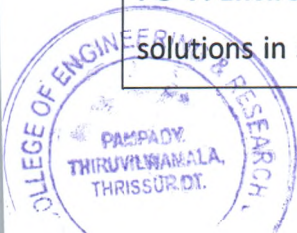
PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need



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for sustainable development.

PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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DEPARTMENT OF MECHATRONICS ENGINEERING

PROGRAM OUTCOMES

Engineering Graduates will be able to:

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.



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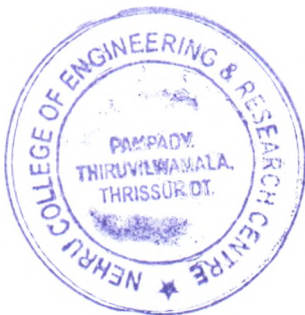
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PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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MASTER OF BUSINESS ADMINISTRATION

PROGRAM OUTCOMES

Nehru school of Management's MBA programme is a two year Post Graduate programme suitable for students from variety of backgrounds. The objective of the programme is to provide hands on learning experiences combined with practical classroom instruction to help the students develop with the essential business skills needed to effectively manage and lead organizations.

The programme will also help students to develop analytical ability along with management perspective and skills which is needed to provide leadership to organizations competing in a world increasingly characterized by diversity in the workforce, rapid technological change and a fiercely competitive global market place. The programme is designed to prepare students for careers in management and leadership in both private and public sectors. They will also be able to develop analytical tools for decision making.



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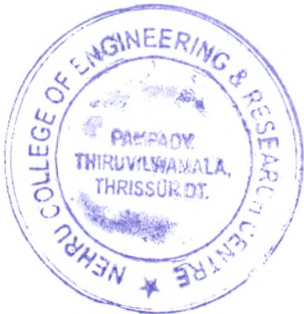
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MASTER OF COMPUTER APPLICATION

PROGRAM OUTCOMES

Course structure aimed to achieve creative outcomes:

- a. Results produced by the department were always good and rated above University average.
- b. Interpersonal skills and student bondage are excellent.
- c. Faculty- student monitoring always reaped successful results.
- d. Intercollegiate Festivals were conducted in a grand way.
- e. Technical Magazines published, with 100% making by students.
- f. Industrial visits organized with high end enthusiasm
- g. Celluloid projects released with good standards
- h. Increasing Alumni participation boosts the department value.



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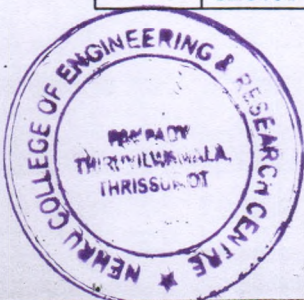
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SERIES TEST - I



Semester: S8	Programme: B. TECH	Max.Mark:50	Date:
Course Code & Name	EE474 Energy Management and Auditing	Duration: 2 Hours	SET: One
Knowledge Level (KL)	K1: Remembering	K3: Applying	K5: Evaluation
Course Outcome (COL)	K2: Understanding	K4: Analysing	K6: Creating
Part A Answer ALL questions 4x5=20Marks			
1.	Explain different types of industrial loads and enumerating examples of each?	K2/CO1	
2.	What is Optimal Load Scheduling? Explain	K2/CO1	
3.	What is meant by loading of motor? Why does the efficiency of motor reduce when it operates at lower loading? List down any 2 steps to improve the operating efficiency of under-loaded motors	K3/CO2	
4.	What are the energy management opportunities in lighting?	K1/CO3	
Part B Answer ALL Questions 3x10=30Marks			
5	Enumerate the peak demand control methodologies used in energy management planning	K4/CO1	
OR			
6	Define Energy Management. What are the objectives of energy management? Also discuss the steps involved	K2/CO1	
7	An energy audit was conducted in the draft fan motor of a boiler system. The motor is rated for 40 kW, 415V, 80A, 0.89pf. Using electrical power analyser, the operating values are found to be 412V, 62A, 0.75 pf The energy audit team proposed to replace the existing motor by a 30kW energy efficient motor with 92% efficiency. a) Determine the rated efficiency and the loading of the existing motor. b) Calculate the loading with energy efficient motor c) Calculate kW saved by replacing the motor with new efficient motor. Consider motor efficiency to	K5/CO2	



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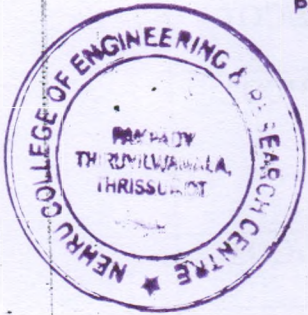
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	remain constant between 52 –100 % loading OR	
8	Explain in detail the losses in induction motors and list any 5 energy management opportunities in electric motors. What are the energy management opportunities in electrolytic processes?	K3/CO2
9	What is a boiler system? What are the major components of a boiler system? OR	K2/CO3
10	What is meant by steam traps? Explain the operation of thermostatic steam trap.	K2/CO3

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Question paper quality assessment using Blooms taxonomy

RUBRICS

Blooms taxonomy Definitions	Scale
Remembering	1
Understanding	2
Applying	3
Analyzing	4
Evaluating	5
Creating	6

Questions to Blooms taxonomy mapping

Question Number	Marks	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
1	5		√				
2	5		√				
3	5			√			
4	5	√					
5	10				√		
6	10		√				
7	10					√	
8	10			√			
9	10		√				
10	10		√				



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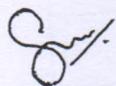
EVALUATION OF QUALITY OF QUESTION PAPER USING BLOOMS TAXONOMY

Blooms taxonomy definitions	Scale	Marks	Rating (out of 6)
Remembering	1	5	2.75
Understanding	2	40	
Applying	3	15	
Analyzing	4	10	
Evaluating	5	10	
Creating	6		

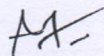
CO MAPPING WITH QUESTIONS

COs	T1	T2	T3	A1	A2
C474.1	Q (1), Q (2), Q (5), Q (6)				
C474.2	Q (3), Q (7), Q (8)				
C474.3	Q (4), Q (9), Q (10)				
C474.4					
C474.5					
C474.6					

APPROVED BY



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SCRUTINY COMMITTEE MEMBER

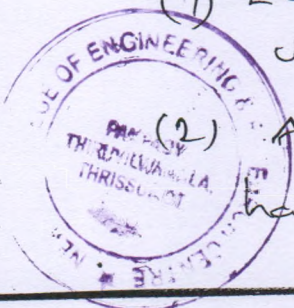


SCRUTINY COMMITTEE CHAIRMAN

REMARKS:

(1) EQUAL WEIGHTAGE FOR ALL MODULES FOUND TO BE UNSATISFIED.

(2) AVOID USING WHAT, WHY, WHEN, WHERE AS WE have to follow BLOOM'S TAXONOMY 13



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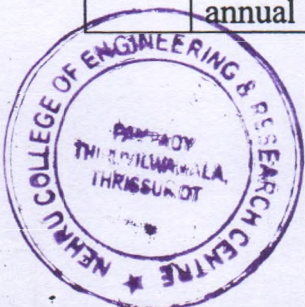
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SERIES TEST - I



Semester: S8	Programme: B. TECH	Max.Mark:50	Date:
Course Code & Name EE474 Energy Management and Auditing		Duration: 2 Hours	SET: Two
Knowledge Level (KL)	K1: Remembering	K3: Applying	K5: Evaluation
Course Outcome (COL)	K2: Understanding	K4: Analysing	K6: Creating
Part A Answer ALL questions 4x5=20Marks			
1.	Define Energy Management and list its Objectives	K2/CO1	
2.	Explain different types of industrial loads and enumerating examples of each?	K3/CO1	
3.	Explain in detail the losses in induction motors and list any 5 energy management opportunities in electric motors.	K4/CO2	
4.	List down any five methods of energy conservation opportunities in a furnace and steam system	K3/CO3	
Part B Answer ALL Questions 3x10=30Marks			
5	What are the main steps in the energy management planning? Explain.	K2/CO1	
OR			
6	A paper manufacturing company has a contract demand of 5000 kVA with the power supply company. The average maximum demand of the plant is 3800 kVA/month at a power factor of 0.95. The maximum demand is billed at the rate of Rs.500/kVA/month. The minimum billable maximum demand is 75% of the contract demand. An incentive of 0.5% reduction in energy charges component of electricity bill is provided for every 0.01 increase in power factor over and above 0.95. The average energy charge component of the electricity bill per month for the plant is Rs. 20lakhs. The plant decides to increase the power factor to unity by installing capacitor banks. Find the annual reduction in demand component charges and energy	K5/CO1	

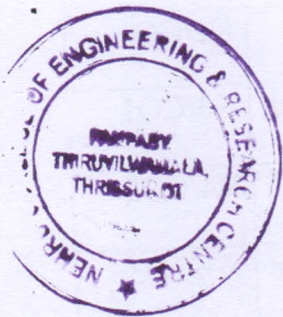


102

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	component charges? Find the kVAR required to improve the power factor from 0.95 to unity?	
7	Explain the energy management opportunities in electric heating systems.	K2/CO2
	OR	
8	Explain how standards and labelling scheme introduced by BEE is helpful as a demand side management strategy.	K4/CO2
9	What are the two sources of feed water in a boiler system? What is the need for feed water treatment?	K3/CO3
	OR	
10	What is meant by waste heat recovery? What are the direct and indirect benefits of waste heat recovery?	K2/CO3



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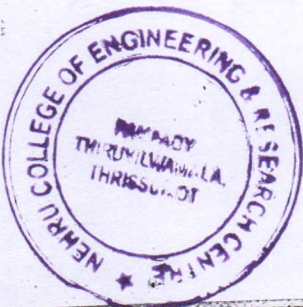
Question paper quality assessment using Blooms taxonomy

RUBRICS

Blooms taxonomy Definitions	Scale
Remembering	1
Understanding	2
Applying	3
Analyzing	4
Evaluating	5
Creating	6

Questions to Blooms taxonomy mapping

Question Number	Marks	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
1	5		√				
2	5			√			
3	5				√		
4	5			√			
5	10		√				
6	10					√	
7	10		√				
8	10				√		
9	10			√			
10	10		√				



103

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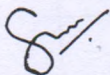
EVALUATION OF QUALITY OF QUESTION PAPER USING BLOOMS TAXONOMY

Blooms taxonomy definitions	Scale	Marks	Rating (out of 6)
Remembering	1		3.0
Understanding	2	35	
Applying	3	20	
Analyzing	4	15	
Evaluating	5	10	
Creating	6		

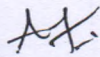
CO MAPPING WITH QUESTIONS

COs	T1	T2	T3	A1	A2
C474.1	Q (1), Q (2), Q (5), Q (6)				
C474.2	Q (3), Q (7), Q (8)				
C474.3	Q (4), Q (9), Q (10)				
C474.4					
C474.5					
C474.6					

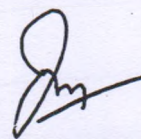
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SCRUTINY COMMITTEE MEMBER



SCRUTINY COMMITTEE CHAIRMAN

REMARKS:

(1) Equal weightage for all modules found to be satisfied.



172

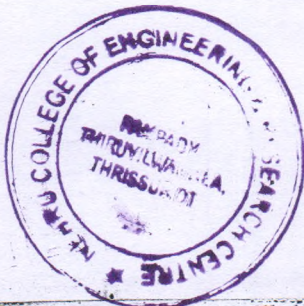
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SERIES TEST - I



Semester: 8	Programme: B.TECH ECE	Max.Mark: 50	Date:
Course Code & Name: EC 402 NANO ELECTRONICS		Duration: 2 Hours	SET : ONE
Knowledge Level (KL)	K1 : Remembering	K3:Applying	K5: Evaluating
Course Outcome Level(COL)	K2: Understanding	K4: Analysing	K6: Creating
PART A (Answer ALL Questions 4 x 5 = 20 Marks)			
Sl.No	Questions	KL/COL	
1	Illustrate the impact of nanotechnology on electronics	K4/CO1	
2	Describe parabolic quantum well.	K2/CO2	
3	Differentiate between evaporation and sputtering	K3/CO2	
4	Compare optical microscope and Electron Microscope	K3/CO2	
PART B (Answer ALL Questions 3 x 10 = 30 Marks)			
5	Explain the different characteristic lengths in mesoscopic systems.	K2/CO1	
OR			
6	Explain the classification of nanostructures according to the dimensionality	K2/CO1	
7	Explain the different phases of Epitaxy. Explain the molecular beam epitaxy	K2/CO2	
OR			
8	List out the methods used for the fabrication of nano particles. Explain any one methods	K2/CO2	
9	Explain with neat diagram different types of specimen interactions taking place in a sample during SEM	K2/CO3	
OR			
10	Explain the working of XRD analyzer and how it can be used to analyze a crystal.	K4/CO3	



113
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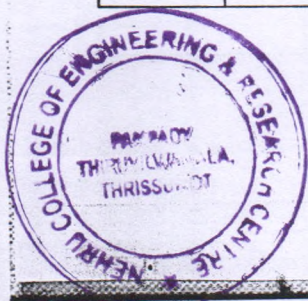
Question paper quality assessment using Blooms taxonomy

RUBRICS

Blooms taxonomy Definitions	Scale
Remembering	1
Understanding	2
Applying	3
Analyzing	4
Evaluating	5
Creating	6

Questions to Blooms taxonomy mapping

Question Number	Marks	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
1	5				✓		
2	5		✓				
3	5			✓			
4	5			✓			
5	10		✓				



113

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6	10		✓				
7	10		✓				
8	10		✓				
9	10		✓				
10	10				✓		

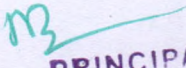
EVALUATION OF QUALITY OF QUESTION PAPER USING BLOOMS TAXONOMY

Blooms taxonomy definitions	Scale	Marks	Rating (out of 6)
Remembering	1		2.5
Understanding	2	55	
Applying	3	10	
Analyzing	4	15	
Evaluating	5		
Creating	6		

CO MAPPING WITH QUESTIONS

COs	T1	T2	T3	A1	A2
E402.1	Q1 (5), Q2 (5), Q5 (10), Q6 (10)				

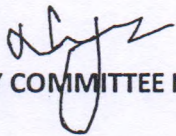


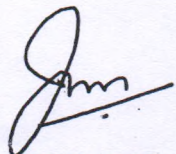

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E402.2	Q3 (5), Q2 (5), Q4 (5), Q7 (10), Q8 (10)				
E402.3	Q4 (5), Q9 (10), Q10 (10)				
E402.4					
E402.5					
E402.6					

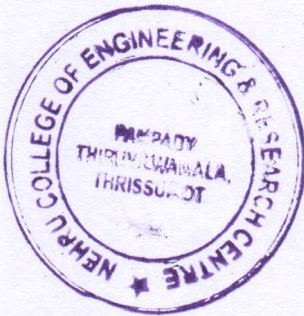
APPROVED BY


HOD


SCRUTINY COMMITTEE MEMBER


SCRUTINY COMMITTEE CHAIRMAN





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SERIES TEST - I

ANSWER KEY



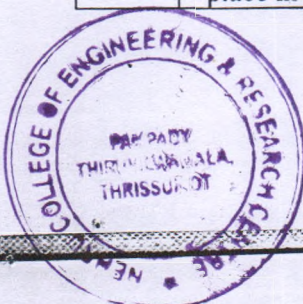
Semester: 8	Programme: B.TECH ECE	Max.Mark: 50	Date:
Course Code & Name: EC 402 NANO ELECTRONICS		Duration: 2 Hours	SET : ONE
Knowledge Level (KL)	K1 : Remembering	K3:Applying	K5: Evaluating
Course Outcome Level(COL)	K2: Understanding	K4: Analysing	K6: Creating

PART A
(Answer ALL Questions 4 x 5 = 20 Marks)

Sl.No	Questions	KL/COL
1	Illustrate the impact of nanotechnology on electronics 10 POINTS:5 MARKS	K4/CO1
2	Describe parabolic quantum well. Figure :2 marks,Explanation :3 marks	K2/CO2
3	Differentiate between evaporation and sputtering 8 points:5 marks	K3/CO2
4	Compare optical microscope and Electron Microscope 10 points:5 marks	K3/CO2

PART B
(Answer ALL Questions 3 x 10 = 30 Marks)

5	Explain the different characteristic lengths in mesoscopic systems. 5 mesoscopic system:explanation with equation:10 marks	K2/CO1
	OR	
6	Explain the classification of nanostructures according to the dimensionality Explanation with figure;3+7 marks	K2/CO1
7	Explain the different phases of Epitaxy. Explain the molecular beam epitaxy Epitaxy different methods:with neat figure:3+7marks	K2/CO2
	OR	
8	List out the methods used for the fabrication of nano particles. Explain any one methods 2 methods explain with neat figure:5+5 marks	K2/CO2
9	Explain with neat diagram different types of specimen interactions taking place in a sample during SEM	K2/CO3



M3

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	Specimen interactions :figure with explanation:2+8 marks	
	OR	
10	Explain the working of XRD analyzer and how it can be used to analyze a crystal. Figure:3 marks,explanation:7 marks	K4/CO3



182

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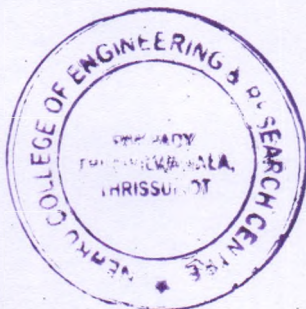
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SERIES TEST - I



Semester: VIII	Programme: BTech ECE	Max.Marks: 50	Date:
Course Code & Name: EC404 ADVANCED COMMUNICATION SYSTEM		Duration: 120 min	SET : 2
Knowledge Level (KL)	K1 : Remembering	K3:Applying	K6:Creating
Course Outcome (COL)	K2: Understanding	K4: Analyzing	K5:Evaluation
Part – A, Answer All Questions. 5X4= 20 Marks			
S.No	Questions	KL/COL	
1	Describe frequency modulated microwave radio system with suitable diagram.	K2/CO1	
2	Give a brief description on free space path loss ,determine the the path loss for 3.5 GHz signal propagating 20,000m.	K2/CO2	
3	Compare hot stand by and diversity protection switching arrangement of a microwave radio system.	K5/CO2	
4	Describe the effect of non spherical shape of earth on a satellite orbit.	K1/CO3	
Part – B, Answer all Questions. 3X10= 30 Marks			
5	Explain FM microwave radio repeater station. OR	K2/CO1	
6	Explain microwave communication system.	K2/CO1	
7	Discuss DCT and JPEG. OR	K2/CO2	
8	Explain compression of moving pictures(MPEG)	K2/CO2	
9	Explain with the block diagram transponder system. OR	K2/CO3	
10	Examine EIRP Required, a satellite TV signal occupies the full transponder bandwidth of 36 MHz and it must provide a C/N ratio at the destination earth station of 22dB .Given that the total transmission loss is 210 db and the destination earth station G/T ratio is 31db/K.GIVEN k=228.6db	K4/CO3	



M.B.

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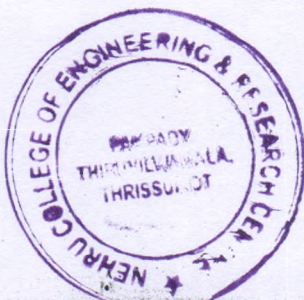
Question paper quality assessment using Blooms taxonomy

RUBRICS

Blooms taxonomy Definitions	Scale
Remembering	1
Understanding	2
Applying	3
Analyzing	4
Evaluating	5
Creating	6

Questions to Blooms taxonomy mapping

Question Number	Marks	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
1	5		✓				
2	5		✓				
3	5					✓	
4	5	✓					
5	10		✓				



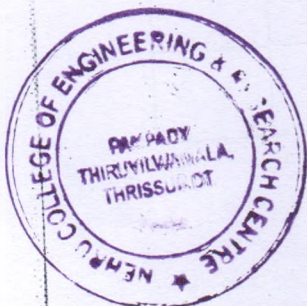
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6	10		✓				
7	10		✓				
8	10		✓				
9	10		✓				
10	10				✓		

EVALUATION OF QUALITY OF QUESTION PAPER USING BLOOMS TAXONOMY

Blooms taxonomy definitions	Scale	Marks	Rating (out of 6)
Remembering	1	5	2.37
Understanding	2	60	
Applying	3		
Analyzing	4	10	
Evaluating	5	5	
Creating	6		

12




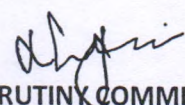
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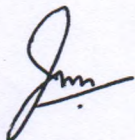
CO MAPPING WITH QUESTIONS

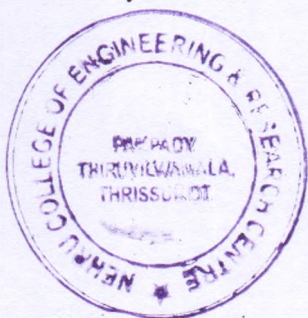
COs	T1	T2	T3	A1	A2
C404.1		Q1(5), Q5(10) Q6(10)			
C404.2		Q2(5) Q3(5) Q7(10) Q8(10)			
C404.3		Q4(5) Q9(10) Q10(10)			
C404.4					
C404.5					
C404.6					


APPROVED BY


MODULE CO-ORDINATOR


SCRUTINY COMMITTEE


HOD
Chairman




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INTERNAL QUALITY ASSURANCE CELL - NCERC



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 35th (IQAC) MEETING AC.YR:2022-23

Agenda-

1. AQAR submission 21-22- status - further actions
2. NIRF submission -2024 -
3. KTU Internal Audit (External)-ODD semester 2022-23
4. International conference- Academic yr.2022-23 preparations
5. KTU - funded FDP -
6. Research funding application status
7. Other funding- status
8. Placement- status
9. Application for Academic Autonomy -status
10. Any other matter with the permission of the chair..

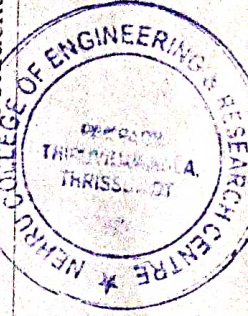
Board Room, Aryabhata

Date:20th April -2023

Time - 3p.m

IQAC Members

- | | |
|--|---|
| 1. Prof. (Dr.) Karibasappa Kwadiki,-Chairperson IQAC | 10. Ms.Deepa A-Member Internal |
| 2. Dr.Sobha Manakkal-Director IQAC | 11. Dr.N Shankar- Member Internal |
| 3. Mr.David E-Cordinator IQAC | 12. Mr.Vipin K.M-Member Internal |
| 4. Mr.M.Srinivas-Management Representative | 13. Mr.Santhosh K-Parent Representative |
| 5. Mr.R.Ambikadas-Senior Administrative Officer | 14. Mr.Ragesh P R-Member Alumni |
| 6. Ms.Vini Ummikrishnan-Local society Representative | 15. Ms.Ambika A S-Member student |



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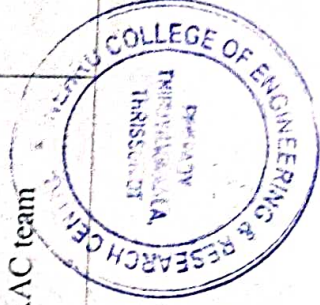
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7. Mr.Ragesh P R-Alumni Representative	16. Mr.Rakesh P R-Member Internal		
8. Mr.P Sivanandan-Professional Body Representative	17. Mr.Maheswaran K-Member Internal		
9. Mr. Hari S-Industry Representative	18. Ms.Sajitha A S-Member Internal		
	19. Ms.Thushara -Member Internal		
The meeting began at 3p.m. Principal welcomed all the members of IQAC He directed Dr.Sobha Manakkal, Director IQAC to go ahead with the proceedings.			
Director IQAC started the presentation by listing the action taken report (ATR) of previous meeting. The minutes and ATR of previous meeting was passed. New members were introduced during the meeting			
Sl.no	Item	Action by	Target date
1.	Principal remarked on the absenteeism of a few external members. He advised that the meeting should be conducted with full attendance and presence of representatives from Industry, professional body and also alumni has great significance since we can gather inputs from these members which will be supportive in improving the quality of the Institution. Principal advised IQAC to ensure the same in the next meeting.	IQAC	Next IQAC meeting
2.	Meeting reviewed status of submission of AQAR 21-22. It was decided that the pending works are to be completed immediately. Auditor utilization certificate to be received from accounts section for	Office Suptd./IQAC/NAAC coordinator, NAAC team	April 25 th



Sobha Manakkal

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	completion of Criterion 4 works	IQAC members/HoDs/faculty	As needed
3.	Meeting discussed the NIRF ranking status of the college. Principal advised departments to encourage faculty to engage more seriously into research works and generate quality publication which is the mandate for getting good scoring by NIRF. Principal also advised to improve the Teaching - Learning process and ensure improved results for the University examination. Good results can yield better placement which can also add credits to improve NIRF scores	IQAC	As needed
4.	Meeting reviewed the feedback and comments from KTU internal audit. It was seen that no major defects are noted. However suggestions to improve are to be taken care off. Meeting also decided to conduct the second internal audit in the month of June since the external audit is expected in the month of June	IQAC	June 2023
5.	Meeting reviewed the preparations for International conference. Meeting observed that the Grant has been approved from AICTE (Limited to Rs 4 Lakh) - However the official email is yet to be received by the coordinator . Follow up in this matter is needed. Other preparations as inviting papers, arranging keynote sessions and Guests were found to be in progress	Conference team to follow up and conduct weekly meeting	As needed

Souvisanayapa

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6.	Meeting evaluated the status of conduct of KTU sponsored faculty development programs. It was noted that all approved FDPs have been conducted as per schedule. It was decided to submit applications to KTU for FDPs once called for. Principal opined that FDPs when conducted should ensure that participants are attending all sessions without fail	All departments	Applications to be submitted once called for
7.	Meeting examined the status of funded projects. Principal advised departments to encourage students to take up quality projects and apply for funding from Governments and research organizations	All departments	Applications to be submitted once called for
8.	IQAC reviewed the status of application for the academic autonomy for the Institution. It was decided to formulate Academic and Administrative Audit (AAA) committee to control and maintain high standards in the field of Higher Education. Composition of the same is to be examined and formulated as needed	IQAC	Immediate
9.	Meeting also decided to hold the next IQAC meeting in the month of July 2023	IQAC	July 2023
MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR			

[Signature]
IQAC DIRECTOR



[Signature]
PRINCIPAL NCERC

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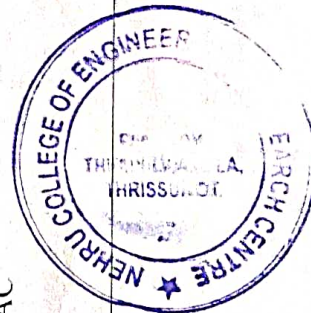
INTERNAL QUALITY ASSURANCE CELL - NCERC



ACTION TAKEN REPORT OF THE IQAC MEETING NO 34 HELD ON 12th January 2023

(APPROVED IN THE MEETING HELD ON 20th April 2023)

Sl.no	Item	Action by	Action taken	Remarks
1.	Meeting reviewed status of submission of AQAR 20-21 and 21-22. AQAR 20-21 has been successfully submitted. DVV if any is to be replied in time	IQAC/NAAC coordinator	AQAR 20-21 successfully submitted	. DVV -Nil
	The team for AQAR 21-22 is formulated and concerned members started the works	NAAC team	Review meeting conducted on 17 th and 18 th April. Incomplete documents to be completed on or before 25 th April	Criterion 1: Verification pending Criterion 2: NCC report, samples from dept. pending Criterion 3: Verification pending Criterion 4: Auditor utilization certificate to be received from accounts section Criterion 5: Verification pending Criterion 6: Verification pending Criterion 7: Verification pending
2.	Meeting reviewed the status of NIRF - 2023 submission. Announced as ready for submission	IQAC	Clarifications received from NIRF checked and found correct	Waiting for ranking announcements



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3.	Meeting reviewed the feedback and comments from KTU external audit. It was seen that no major defects are noted. However suggestions to improve is to be taken care off	IQAC/All departments / administration	Suggestions incorporated for the internal audit format	Internal audit ensured that changes are incorporated
4.	Meeting reviewed the conduct of National and International conferences. National conference was reported to be completed successfully. The funding request to AICTE for International conference successfully submitted.,Cordinator to follow-up	Dr.Gireesh ME HoD	Grant approved from AICTE (Limited to Rs 4 Lakh) -	Preparations in progress Dates -May 25th &26th 2023May 2023
5.	Meeting evaluated the status of conduct of KTU sponsored faculty development programs. MBA dept was found to completed successfully and EEE scheduled from January 16 th onwards. MTR in the last week of January. EC dept. dates are to be finalized	FDP coordinators	KTU funded FDP - successfully conducted by (EC/EE/MTR/MBA)	Application for FDPs to be submitted as and when open



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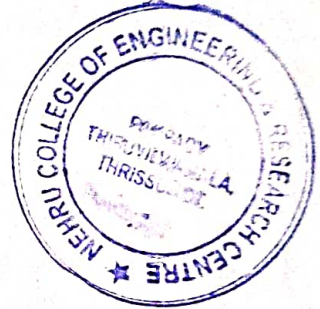
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6.	IQAC director informed that the NAAC funded one day national seminar has been successfully completed and the report submitted to NAAC	For information	Conducted by IQAC - December 2022-Role and reach of NEP 2020 in technical education	Can apply for more of such events
7.	IQAC reviewed the status of application for the academic autonomy for the Institution. It was decided that all committee formation and other preliminary works related to the autonomous functioning are to be in place	IQAC	Committee formation to be discussed further and formulated	As needed
PREPARED BY DIRECTOR IQAC NCERC				
APPROVED BY PRINCIPAL NCERC				


DIRECTOR IQAC




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INTERNAL QUALITY ASSURANCE CELL (IQAC)**



To

All members of IQAC

Dear Sir/Madam,

Sub: Call for 34th meeting of IQAC NCERC reg:

The next meeting (34th) of IQAC is scheduled on 12th January-2023 at 3p.m. at Board Room, Aryabhata Block. As a member of the IQAC you are cordially invited to attend the meeting and participate in the deliberations.

Agenda

1. Discussion on action points arising out of the previous meeting
2. AQAR submission 20-21 & 21-22- status
3. NIRF submission -2023
4. KTU Audit (External)-ODD semester 2022-23
5. National /International conference- Academic yr.2022-23 preparations
6. KTU - funded seminars
7. Seminar - NAAC funded
8. Application for Academic Autonomy status
9. Any other matter with the permission of the chair.


IQAC DIRECTOR


PRINCIPAL

PS: email IDs: iqac@ncerc.ac.in

Copy to all members



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INTERNAL QUALITY ASSURANCE CELL - NCERC



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 34th (IQAC) MEETING AC.YR.2022-23

Agenda-

1. Discussion on action points arising out of the previous meeting
2. AQAR submission 20-21 & 21-22- status
3. NIRF submission -2023
4. KTU Audit (External)-ODD semester 2022-23
5. National/International conference- Academic yr.2022-23 preparations
6. KTU - funded seminars
7. Seminar - NAAC funded
8. Application for Academic Autonomy status
9. Any other matter with the permission of the chair.

Board Room, Aryabhata

Date: 12th January-2023

Time - 3p.m

IQAC Members

- | | |
|--|---|
| 1. Prof.(Dr.)Ambikadevi Amma T-Chairperson IQAC | 10. Ms.Deepa A-Member Internal |
| 2. Dr.Sobha Manakkal-Director IQAC | 11. Dr.N Shankar- Member Internal |
| 3. Mr.David E-Coordinator IQAC | 12. Mr.Vipin K M-Member Internal |
| 4. Mr.M.Srinivas-Management Representative | 13. Mr.Santhosh K-Parent Representative |
| 5. Mr.R.Ambikadas-Senior Administrative Officer | 14. Mr.Midhunraj P K-Member Internal |
| 6. Ms.Vini Unnikrishnan-Local society Representative | 15. Ms.Ambika S-Member student |
| 7. Mr.Ragesh P R-Alumni Representative | 16. Mr.Sabarish C S-Member Internal |



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8. Mr.P Sivanandan-Professional Body Representative	17. Mr.Maheswaran K-Member Internal		
9. Mr. Hari S-Industry Representative	18. Ms.Sajitha A S-Member Internal		
	19. Ms.Thushara K M -Member Internal		
The meeting began at 3p.m.. Principal welcomed all the members of IQAC and the new members were introduced before the committee. She requested Dr.Sobha Manakkal, Director IQAC to go ahead with the proceedings			
Director IQAC started the presentation by listing the action taken report (ATR) of previous meeting. The minutes and ATR of previous meeting was passed			
Sl.no	Item	Action by	Target date
1.	Meeting reviewed status of submission of AQAR 20-21 and 21-22. AQAR 20-21 has been successfully submitted. DVV if any is to be replied in time The team for AQAR 21-22 is formulated and concerned members started the works.	IQAC/NAAC coordinator NAAC team	As needed February 13 th
2.	Meeting reviewed the status of NIRF -2023 submission. Announced as ready for submission.	IQAC	January 13 th
3.	Meeting reviewed the feedback and comments from KTU external audit. It was seen that no major defects are noted. However, suggestions to improve is to be taken care off.	All departments / administration	Immediate



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4.	Meeting reviewed the conduct of National and International conferences. National conference was reported to be completed successfully. The funding request to AICTE for International conference successfully submitted., Coordinator to follow-up.	Dr.Gireesh, ME HoD	May 2023
5.	Meeting evaluated the status of conduct of KTU sponsored faculty development programs. MBA dept was found to completed successfully and EEE scheduled from January 16 th onwards. MTR in the last week of January. ECE dept. dates are to be finalized.	FDP coordinators	As needed. All FDPs to be completed before March end
6.	IQAC director informed that the NAAC funded one day national seminar has been successfully completed and the report submitted to NAAC	For information	December 14 th -
7.	IQAC reviewed the status of application for the academic autonomy for the Institution. It was decided that all committee formation and other preliminary works related to the autonomous functioning are to be in place	Departments/IQAC	As needed
MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR			


IQAC DIRECTOR



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ACTION TAKEN REPORT OF THE IQAC MEETING NO 33 HELD ON 2nd NOVEMBER 2022

(APPROVED IN THE MEETING HELD ON 12th January-2023)

Sl.no	Item	Action by	Action Taken	Remarks
1.	Meeting reviewed the preparations made by the college for the submission of AQAR 20-21 and 21-22. It was observed that the AQAR 20-21 preparation has been completed and under review by the Principal. The team for AQAR 21-22 was decided to be formulated and concerned members to be informed.	IQAC Principal's office	Submission to be done by December 31 st Team formulated	Pending -Nil-
2.	Meeting reviewed internal academic reports and the readiness for forthcoming KTU academic audit. Preparations were found to be adequate. Updating of all documents to be continued by departments.	HoD's & faculty, Principals Office, Administration	Internal audit conducted and found in compliance with requirements	KTU audit expected in November 2022
3.	Meeting reviewed the preparations for the National level and international level conferences proposed to be conducted in the academic year. It was decided to apply for AICTE funding for the international conference i. National Conference - November -24th -25th 2022 ii. International Conference -May 25th -26th 2023	IQAC/Dr.Gireesh -HoD Mechanical	National conference preparations completed. International conference - applying for AICTE funds	Pending -Nil



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4.	Meeting evaluated the status of conduct of KTU sponsored faculty development programs. It was decided to conduct the same in the month of January so as to ensure maximum faculty participation. It was decided that resource persons are to be finalized and maximum publicity has to be given.	FDP coordinators	Preparations completed	Proposed in the month of January-February
5.	IQAC director informed that the NAAC funded one day national seminar preparations are in progress and the resource persons have been finalized. It was also decided that the program will be in hybrid mode to ensure better involvement from participants.	For information	December 14 th -	Preparations completed
6.	IQAC reviewed the status of application for the academic autonomy for the Institution. It was decided that all committee formation and other preliminary works related to the autonomous functioning are to be in place.	Departments/IQAC	As needed	In progress
PREPARED BY DIRECTOR IQAC NCERC				
APPROVED BY PRINCIPAL NCERC				

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IQAC DIRECTOR

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PRINCIPAL NCERC



**NEHRU COLLEGE OF ENGINEERING AND
RESEARCH CENTRE
(NAAC 'A' Accredited)
(Approved by AICTE, Affiliated to KTU, Kerala)
INTERNAL QUALITY ASSURANCE CELL (IQAC)**



To

All members of IQAC

Dear Sir/Madam,

Sub: Call for 33rd meeting of IQAC NCERC reg:

The next meeting (33rd) of IQAC is scheduled on 2nd November-2022 at 2p.m. at Board Room, Aryabhata Block. As a member of the IQAC you are cordially invited to attend the meeting and participate in the deliberations.

Agenda

1. Discussion on action points arising out of the previous meeting
2. AQAR submission 20-21 & 21-22- status
3. KTU Audit (External)-ODD semester 2022-23
4. National /International conference- Academic yr.2022-23 preparations
5. KTU - funded seminars
6. Seminar - NAAC funded
7. Application for Academic Autonomy status
8. Any other matter with the permission of the chair.


IQAC DIRECTOR


PRINCIPAL

PS: email IDs: iqac@ncerc.ac.in

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INTERNAL QUALITY ASSURANCE CELL - NCERC



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 33RD (IQAC) MEETING AC.YR.2022-23

Agenda-

1. Discussion on action points arising out of the previous meeting
2. AQAR submission 20-21 & 21-22 - status
3. KTU Audit (External)-ODD semester 2022-23
4. National/International conference- Academic yr.2022-23 preparations
5. KTU - funded seminars
6. Seminar - NAAC funded
7. Application for Academic Autonomy status
8. Any other matter with the permission of the chair.

Board Room, Aryabhata

Date: 2nd November 2022

Time - 2:00PM

IQAC Members

1. Prof.(Dr.)Ambikadevi Amma T-Chairperson IQAC
2. Dr.Sobha Manakkal-Director IQAC
3. Mr.David E-Coo rdinator IQAC
4. Mr.M.Srinivas-Management Representative
5. Mr.R.Ambikadas-Senior Administrative Officer
6. Ms.Vini Unnikrishnan-Local society Representative
7. Mr.Ragesh P R-Alumni Representative
8. Mr.P Sivanandan-Professional Body Representative

10. Ms.Deepa A-Member Internal
11. Dr.N Shankar- Member Internal
12. Mr. Vipin K M-Member Internal
13. Mr.Santhosh K-Parent Representative
14. Mr.Midhunraj P K-Member Internal
15. Ms.Ambika S-Member student
16. Mr.Sabarish C S-Member Internal
17. Mr.Maheswaran K-Member Internal



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Sl.no	Item	Action by	Target date
9.	Mr. Hari S-Industry Representative	18. Ms.Sajitha A S-Member Internal 19. Ms.Thushara K M -Member Internal	
	The meeting began at 2p.m.. Principal welcomed all the members of IQAC and the new members were introduced before the committee. She requested Dr.Sobha Manakkal, Director IQAC to go ahead with the proceedings		
	Director IQAC started the presentation by listing the action taken report (ATR) of previous meeting. The minutes and ATR of previous meeting was passed		
1.	Meeting reviewed the preparations made by the college for the submission of AQAR 20-21 and 21-22. It was observed that the AQAR 20-21 preparation has been completed and under review by the Principal. The team for AQAR 21-22 was decided to be formulated and concerned members to be informed.	IQAC Principal's office	November 2022
2.	Meeting reviewed internal academic reports and the readiness for forthcoming KTU academic audit. Preparations were found to be adequate. Updating of all documents to be continued by departments.	HoD's & faculty, Principals Office, Administration	November 10 th -
3.	Meeting reviewed the preparations for the National level and international level conferences proposed to be conducted in the academic year. It was decided to apply for AICTE funding for the international conference.	IQAC/Dr.Gireesh -HoD Mechanical	November



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	i. National Conference - November -24th -25th 2022 ii. International Conference -May 25th -26th 2023		
4.	Meeting evaluated the status of conduct of KTU sponsored faculty development programs. It was decided to conduct the same in the month of January so as to ensure maximum faculty participation. It was decided that resource persons are to be finalized and maximum publicity has to be given	FDP coordinators	January 2023
5.	IQAC director informed that the NAAC funded one day national seminar preparations are in progress and the resource persons have been finalized. It was also decided that the program will be in hybrid mode to ensure better involvement from participants	For information	December 14 th -
6.	IQAC reviewed the status of application for the academic autonomy for the Institution. It was decided that all committee formation and other preliminary works related to the autonomous functioning are to be in place	Departments/IQAC	As needed
MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR			

IQAC DIRECTOR

PRINCIPAL NCERC



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ACTION TAKEN REPORT OF THE IQAC MEETING NO 32 HELD ON 16TH AUGUST 2022 (APPROVED IN THE MEETING HELD ON 2nd NOVEMBER 2022)				
Sl.no	Item	Action by	Action taken	Remarks
1.	Meeting reviewed the preparations made by the college for the newly introduced UG program in the department of CS. - Artificial Intelligence and Machine Learning. The arrangements for AICTE/KTU inspections are to be made	IQAC	All arrangements completed and classes commenced as scheduled	Completed
2.	Meeting reviewed the faculty appointments needed for the newly introduced program and was found appropriate	Administration	Faculty appointed as needed	Completed
3.	Meeting reviewed the preparations for the forthcoming ODD semester and the dates for class commencement (UG and PG). i. Timetable work was found in progress ii. Academic Calendar preparation in progress iii. Question paper preparation – two sets for each internal examination	Timetable committee / Principal Office / Faculty members	Completed all preparations in time	Completed
4.	Principal informed faculty team to ensure timely submission of question papers from their departments for better scrutiny. The format needs to be changed accordingly. Question papers should be prepared as per university norms and	IQAC	Scrutiny format changed and scrutiny completed	Completed

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	as prescribed by the syllabus.			
5.	The results of NBA inspection were announced in the meeting. UG programs (Computer Science and Mechatronics)- Accredited for three years -(Academic years 2022-2023 to 2024-2025)-up to 30-06-2025.	For information	-	-
6.	IQAC reviewed the results of NBA Inspection and marks allotted for each department criteria wise. It was decided to have more emphasis on academic results, research and consultation for improving the programs.	Departments/IQAC	Internal audit formats changed to comply with NBA requirements	Completed
7.	Decided the dates for Internal audit – ODD semester 2022-23 as i. First internal Audit – November 7 th -10 th -2022 ii. Second Internal audit – December 16 th -18 th 2022	IQAC	Completed as scheduled	Completed
8.	Reviewed the status of conferences 2022-23 and finalized the dates i. National Conference – November -24 th -25 th 2022 ii. International Conference – May 25 th -26 th 2023	ECE (with support from CSE) ME (With support from MTR)	Work in progress	In progress





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	Prof. Neethu.M.-MTR dept.	Approved - Dates to be finalized To be conducted on or before April 30 th 2023	Works in progress
9.	Reviewed the status of KTU funded FDP for 2022-23 i. Recent Trends of AI in Biomedical Engineering ii. Social Entrepreneurship Management iii. Innovative Facts of Internet of things (IoT) iv. IoT Applications in smart grids	Dr.R.Suriakala-MBA dept Prof.P.Rajkumar -ECE dept Dr.SobhaManakkal (EEE)	
10.	Reviewed the status of NAAC funded FDP for 2022-23 Role and Reach of National Educational Policy (NEP) - 2020 in Technical Education-approved by NAAC	IQAC	Preparations completed
11.	Reviewed the status of AQAR submission - AQAR2020-21	IQAC/NAAC coordinators	Submission date extended by NAAC
12.	Suggested to introduce the SEED money scheme for Under graduate projects. Proposal to be submitted through Research wing.	IQAC/Research wing	Pending
PREPARED BY DIRECTOR IQAC NCERC			
APPROVED BY PRINCIPAL NCERC			

IQAC DIRECTOR

PRINCIPAL NCERC



**NEHRU COLLEGE OF ENGINEERING AND
RESEARCH CENTRE
(NAAC 'A' Accredited)
(Approved by AICTE, Affiliated to KTU, Kerala)
INTERNAL QUALITY ASSURANCE CELL (IQAC)**



To

All members of IQAC

Dear Sir/Madam,

Sub: Call for 32nd meeting of IQAC NCERC reg:

The next meeting (32nd) of IQAC is scheduled on **16th August-2022 at 3p.m. at Board Room, Aryabhata Block.** As a member of the IQAC you are cordially invited to attend the meeting and participate in the deliberations.

Agenda

1. Discussion on action points arising out of the previous meeting
2. Introduction of New UG program- preparedness for inspections
3. Preparedness for commencement of classes – Academic Yr.2022-23
4. AQAR submission – further suggestions
5. Internal Audit –ODD semester 2022-23
6. National /International conference- Academic yr.2022-23 preparations
7. Research & Development activities –
8. KTU – funded seminars
9. Seminar – NAAC funded
10. Any other matter with the permission of the chair.

IQAC DIRECTOR


11/08/22
PRINCIPAL

PS: email IDs: iqac@ncerc.ac.in

Copy to all members



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INTERNAL QUALITY ASSURANCE CELL - NCERC



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MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 32nd (IQAC) MEETING AC.YR.2022-23

Agenda-

1. Discussion on action points arising out of the previous meeting
2. Introduction of New UG program- preparedness for inspections
3. Preparedness for commencement of classes – Academic Yr.2022-23
4. AQAR submission – further suggestions
5. Internal Audit –ODD semester 2022-23
6. National /International conference- Academic yr.2022-23 preparations
7. Research & Development activities.
8. KTU – funded seminars
9. Seminar – NAAC funded
10. Any other matter with the permission of the chair.

Board Room, Aryabhata

Date:16th August 2022

Time – 11:30AM

IQAC Members

1. Prof.(Dr.)Ambikadevi Amma T-Chairperson IQAC
2. Dr.Sobha Manakkal-Director IQAC
3. Mr.David E-Cordinator IQAC
4. Mr.M.Srinivas-Management Representative
5. Mr.R.Ambikadas-Senior Administrative Officer
6. Ms.Vini Ummikrishnan-Local society Representative

10. Ms.Deepa A-Member Internal
11. Dr.N Shankar- Member Internal
12. Mr.Vipin K M-Member Internal
13. Mr.Santhosh K-Parent Representative
14. Mr.P Sivanandan- Industry Representative
15. Ms.Ambika S-Member student



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7. Mr.Ragesh P R-Alumni Representative	16. Mr.Sabarish C S -Member Internal		
8. Mr.P Sivanandan-Professional Body Representative	17. Mr.Maheswaran K-Member Internal		
9. Mr. Hari S-Industry Representative	18. Ms.Sajitha A S-Member Internal		
	19. Ms.Thushara K M -Member Internal		
<p>The meeting began at 11:30am. Principal welcomed all the members of IQAC and the new members were introduced before the committee. She requested Dr.Sobha Manakkal, Director IQAC to go ahead with the proceedings</p> <p>Director IQAC started the presentation by listing the action taken report (ATR) of previous meeting. The minutes and ATR of previous meeting was passed</p>			
Sl.no	Item	Action by	Target date
1.	Meeting reviewed the preparations made by the college for the newly introduced UG program in the department of CS. - Artificial Intelligence and Machine Learning. The arrangements for AICTE/KTU inspections are to be made	IQAC	August/September 2022
2.	Meeting reviewed the faculty appointments needed for the newly introduced program and was found appropriate	For information	-
3.	Meeting reviewed the preparations for the forthcoming ODD semester and the dates for class commencement (UG and PG). <ol style="list-style-type: none"> Timetable work was found in progress Academic Calendar preparation in progress Question paper preparation - two sets for each internal 	<ol style="list-style-type: none"> Timetable committee Principal Office Faculty members 	<ol style="list-style-type: none"> August 25th 2022 Sept.12th 2022 Sept. 20th 2022

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examination			
4. Principal informed faculty team to ensure timely submission of question papers from their departments for better scrutiny.. The format need to be changed accordingly Question papers should be prepared as per university norms and as prescribed by the syllabus	IQAC	Immediate	
5. The results of NBA inspection were announced in the meeting. UG programs (Computer Science and Mechatronics)-Accredited for three years -(Academic years 2022-2023 to 2024-2025)-up to 30-06-2025	For information	-	
6. IQAC reviewed the results of NBA Inspection and marks allotted for each department criteria wise. It was decided to have more emphasis on academic results, research and consultation for improving the programs	Departments/IQAC	As needed	
7. Decided the dates for Internal audit – ODD semester 2022-23 as i. First internal Audit – November 7 th -10 th -2022 ii. Second Internal audit – December 16 th -18 th 2022	IQAC	November 7 th -10 th December 16 th -18 th	
8. Reviewed the status of conferences 2022-23 and finalized the dates i. National Conference – November -24 th -25 th 2022	i. ECE (with support from CSE)	As needed	



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9.	ii. International Conference – May 25 th -26 th 2023 Reviewed the status of KTU funded FDP for 2022-23 i. Recent Trends of AI in Biomedical Engineering ii. Social Entrepreneurship Management iii. Innovative Facets of Internet of things(IoT) iv. IoT Applications in smart grids	ii. ME(With support from MTR)	
10	Reviewed the status of NAAC funded FDP for 2022-23 Role and Reach of National Educational Policy (NEP) – 2020 in Technical Education-approved by NAAC	i. Prof. Neethu.M.-MTR dept. ii. Dr.R.Suriakala-MBA dept iii. Prof.P.Rajkumar –EC dept iv. Dr.Sobha Manakkal(EC dept)	Approved – Dates to be finalized To be conducted on or before April 30 th 2023
11	Reviewed the status of AQAR submission –	IQAC	December 15 th 2022
12	Suggested to introduce the SEED money scheme for Under graduate projects. Proposal to be submitted through Research wing.	IQAC/NAAC coordinators	Ready for submission August 31 st 2022 September 12 th 2022
MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR			

S. S. S.

IQAC DIRECTOR

J. J.

PRINCIPAL NCERC