



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.

Academic Year 2023-2024

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	17
6	IQAC Meeting Minutes	93
	Series Test Question Paper https://ncerc.ac.in/downloads/aqar-2023-24/criteria-2/2.5.1%20Internal%20Assessment.pdf	

Display of Vision & Mission

INSTITUTION VISION AND MISSION DISPLAYED IN COLLEGE WEBSITE

The screenshot shows the website of Nehru College of Engineering & Research Centre. The header includes the college logo and navigation links: Home, About Us, Admission, Academics, Departments, Placements, NAAC/IQAC, and Student Support. The main content area is divided into two sections: Objectives and Vision & Mission.

Objectives

- To build a center of excellence in higher education and research and to train students in advanced technologies in Mechanical, Automobile, Electrical, Electronics, and Computer Engineering.
- To provide students with comprehensive knowledge of principles of engineering with a multidisciplinary approach that is challenging.
- To create an intellectually stimulating environment for research, scholarship, creativity, innovation and professional activity, besides exposing our students to the challenges of the industrial world.

Vision & Mission

Vision : To mould true citizens who are millennium leaders and catalysts of change through excellence in education.

Mission : NCERC is committed to transform itself into a center of excellence in Learning and Research in Engineering and Frontier Technology and to impart quality education to mould technically competent citizens with moral integrity, social commitment and ethical values. We intend to facilitate our students to assimilate the latest technological know-how and to imbibe discipline, culture and spirituality, and to mould them in to technological giants, dedicated research scientists and intellectual leaders of the country who can spread the beams of light and happiness among the poor and the underprivileged.

On the right side of the page, there is a vertical orange button labeled "ADMISSION" and several circular icons for social media and other services.



102


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala Thiruvananthapuram
 District Kerala

Department Vision Mission in website

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

The screenshot shows a web browser window with the URL ncerc.ac.in/computer-science-and-engineering. The page features the college's logo and navigation menu at the top. The main content area is divided into two sections: "Department Vision" and "Department Mission". The "Department Vision" section includes a photograph of a hand holding a black graduation cap in front of a building. The "Department Mission" section lists four bullet points. A vertical "ADMISSION" button is located on the right side of the page. At the bottom, there is a "Program Outcomes (POs)" section and a Windows taskbar.

NEHRU COLLEGE
OF ENGINEERING & RESEARCH CENTRE
NAAC ACCREDITED (B) NOV 2016 CENTRE FOR INNOVATION

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

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.

ADMISSION

Program Outcomes (POs)



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin - 680 597 Kerala

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

NEHRU COLLEGE
OF ENGINEERING & RESEARCH CENTRE
NAAC ACCREDITED | ISO 9001:2015 CERTIFIED 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 build 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

2:42 PM
10/07/2020



PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady, Thiruvilwamala, Thiruvananthapuram Dt
Pin - 680 597 Kerala

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



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thirissur Dt
Pin - 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

Pampady, Thiruvilwamala - 680 588



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.




PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram Dt
 Kerala - 680 588





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

Pampady, Thiruvilwamala - 686 566



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.



103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruvananthapuram Dt
Pin - 686 567 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

Panipady Thiruvilwamala - 680 597



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.



102

ch

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thrissur Dt
Pin - 680 597 Kerala

✓
Completed

1

Department Vision & Mission



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
(Approved by AICTE, Affiliated to KTU University, Kerala)



DEPARTMENT OF AUTOMOBILE ENGINEERING

DEPARTMENT VISION

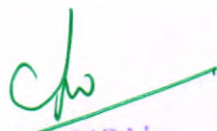
Create a centre of excellence in the field of Automobile Engineering through industrial and academic research by training the learners for acceptance the modern world.

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.



13


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt
Pin - 680 557 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
(Approved by AICTE, Affiliated to KTU University, Kerala)



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




PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thirissur Dt
Pin - 686 59; Kerala

13



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to KTU University, Kerala)



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.



Cdw
PRINCIPAL
Nehru College of
Engineering and Research Centre
Pan-pady Thiruvilwamala, Thrissur Dt
Pin 680 597 Kerala

18



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.



183

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to KTU University, Kerala)



DEPARTMENT OF MECHANICAL ENGINEERING

DEPARTMENT VISION

Producing internationally competitive Mechanical engineers with social responsibilities and sustainable employability through viable strategies as well as competent exposure oriented quality education

DEPARTMENT MISSION

- Imparting high impact education by providing conducive teaching learning environment
- Fostering effective modes of continuous learning process with moral and ethical values
- Enhancing leadership qualities with social commitment, professional attitude, unity and harmony as e spirit- de corps, and communication skill
- Introducing present scenario in research and development through collaborative efforts blended with industry and institution



13


PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thrissur Dt.
Pin 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC Accredited)

(Approved by AICTE, Affiliated to KTU University, Kerala)



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



MB

Cdh

PRINCIPAL

Nehru College of
Engineering and Research Centre
Pam-pady Thiruvilwamala, Thrissur Dt.
Pin 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
 (Approved by AICTE, Affiliated to KTU University, Kerala)



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.



AB

PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Rampady Thiruvilwamala, Thirissur Dt
 Pin - 686 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC Accredited)

(Approved by AICTE, Affiliated to KTU University, Kerala)



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


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvananthapuram Dt
 Pin - 686 592 Kerala

PO / PSO

17

15

NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
PAMPADY, THRIUVILWAMALA - 680 588
DEPARTMENT OF AUTOMOBILE ENGINEERING
PROGRAM OUTCOMES

After completion of the course, B. Tech Automobile Engineering graduates will have ability to:

PO 1	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	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	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	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6	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	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	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	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	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



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruvananthapuram
Pin - 680 587 Kerala

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO 1	Graduates able to apply principles of engineering, basic sciences and analytics including multi-variant calculus and higher order partial differential equations.
PSO 2	Graduates able to perform modelling, analysing, designing and simulating physical systems, components and processes.
PSO 3	Graduates able to work professionally on mechanical systems, thermal systems and production systems.

COURSE OUTCOMES (CO's)

MA201 LINEAR ALGEBRA & COMPLEX ANALYSIS	
201.1	To understand the basic concepts in complex analysis
201.2	To understand about conformal Transformation.
201.3	To understand the basic theory of functions of a complex variable.
201.4	To equip the students for solving particular types of real integrals with the help of theory of functions of a complex variable
201.5	equip the students with methods of solving a general system of linear equations.
201.6	To familiarize the students with the concept of Eigen values & diagonalization of a matrix which have many applications in engineering

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
201.1	3	3	3									
201.2	2	2	3									
201.3	2	2	3									
201.4	2	2	3									
201.5	2	2	2									
201.6	2	2	2									

CO	PSO1	PSO2	PSO3
201.1	2	2	
201.2	2	2	
201.3	2	2	
201.4	2	2	
201.5	2	2	
201.6	2	2	



13


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Panipady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

ME201 MECHANICS OF SOLIDS	
201.1	Understand basic concepts of stress and strain in solids and the material behavior
201.2	Understand the concepts of elastic constants and determine the torsional rigidity of engineering component
201.3	Understand the different types of beams and analyze the shear force and bending moment in different loading conditions
201.4	Analyze the bending stress conditions in different engineering sections
201.5	Determine the deflections in beams by different methods
201.6	Determine principal planes and stresses and apply the results to the combined loading case.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
201.1	3	3	1									
201.2	3	3	2									
201.3	3	3	1									
201.4	3	3	1									
201.5	3	3										
201.6	3	3										

CO	PSO1	PSO2	PSO3
201.1	2	2	2
201.2	2	2	2
201.3	2	2	2
201.4	2	2	2
201.5	2	2	2
201.6	2	2	2



103

cd
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

ME200 FLUID MECHANICS & MACHINERY	
200.1	To introduce students, the fundamental concepts related to the mechanics of fluids.
200.2	To understand the basic principles of fluid pressure measuring devices.
200.3	To understand the basic flow types and equations of motion.
200.4	To apply acquired knowledge on real life problems.
200.5	To analyze existing fluid systems.
200.6	To design new fluid systems.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
200.1	2											
200.2	3	2										
200.3	3	3										
200.4	1	3	2									
200.5	1	3										
200.6	1			3								

CO	PSO1	PSO2	PSO3
200.1	2		
200.2	1		3
200.3	2		2
200.4			3
200.5		3	
200.6			2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AU 201 SI ENGINE & COMBUSTION	
201.1	To impart basic concepts of SI engine and combustion, automotive engines
201.2	To know about basic concepts of combustion in SI engines
201.3	To understand fuel supply system and ignition control system
201.4	To know constructional details of engine components
201.5	To understand valve and valve mechanism
201.6	To understand lubrication and cooling systems in SI engines

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
201.1	2											1
201.2	2											1
201.3	2											1
201.4	2											1
201.5	2											1
201.6	2											1

CO	PSO1	PSO2	PSO3
201.1	2		2
201.2	2		2
201.3	2		2
201.4	2		2
201.5	2		2
201.6	2		2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

AU 203 AUTO CHASSIS	
203.1	Study of the Constructional details and Theory of basic automobile components.
203.2	Study of the Constructional details and Theory of important driveline.
203.3	Understand about Construction and Design of Drive Axles and Differential principles and types.
203.4	Study of the Constructional details of Suspension Systems of Automobiles.
203.5	Study of the Constructional details and Theory of Braking and Problem-Solving ability in Braking.
203.6	Study of the Constructional details of Steering and Problem-Solving ability in Steering Mechanism.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
203.1	3	1	1									
203.2	3	2	1									
203.3	3	2	2									
203.4	3	1	1									
203.5	3	2	2									
203.6	3	2	2									

CO	PSO1	PSO2	PSO3
203.1	2	2	1
203.2	2	3	1
203.3	2	2	1
203.4	2	2	1
203.5	2	2	1
203.6	2	2	1



13

[Signature]
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur District
 Pin 680 597 Kerala

ME 230 FLUID MECHANICS & MACHINES LAB	
230.1	Demonstrate the applications of flow measuring equipment.
230.2	Demonstrate the applications of gauges.
230.3	Demonstrate the applications of valves.
230.4	Demonstrate the applications of pumps.
230.5	Demonstrate the applications of Turbines.
230.6	Demonstrate the applications of Hydraulic ram, accumulator etc.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
230.1	2	3		2				1	3	1	1	1
230.2	2	3		2				1	3	1	1	1
230.3	2	3		2				1	3	1	1	1
230.4	2	3		2				1	3	1	1	1
230.5	2	3		2				1	3	1	1	1
230.6	2	3		2				1	3	1	1	1

CO	PSO1	PSO2	PSO3
230.1	1	2	2
230.2	1	2	2
230.3	1	2	2
230.4	1	2	2
230.5	1	2	2
230.6	1	2	2



13

[Signature]

PRINCIPAL

Nehru College of
Engineering and Research Centre
Panpady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

CE 230 MATERIAL TESTING LAB	
230.1	Provide knowledge on mechanical behaviour of materials.
230.2	Acquaint with the experimental methods to determine the mechanical properties of materials
230.3	Understand the causes behind metal failure and deformation
230.4	Identify the materials for various engineering applications.
230.5	Understand the behaviour of materials in engineering applications
230.6	Develop an awareness to apply the properties of materials in material design

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
230.1	2	3		2				1	3	1	1	1
230.2	2	3		2				1	3	1	1	1
230.3	2	3		2				1	3	1	1	1
230.4	2	3		2				1	3	1	1	1
230.5	2	3		2				1	3	1	1	1
230.6	2	3		2				1	3	1	1	1

CO	PSO1	PSO2	PSO3
230.1	1	2	2
230.2	1	2	2
230.3	1	2	2
230.4	1	2	2
230.5	1	2	2
230.6	1	2	2



13

cd

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

MA 202 PROBABILITY DISTRIBUTION, TRANSFORMS AND NUMERICAL METHODS	
202.1	To introduce the concept of random variable, probability distributions , specific discrete distribution with practical application in various engineering & social life situations.
202.2	To introduce the concept of specific continuous distribution with practical application in various engineering & social life situations.
202.3	To know Laplace Transforms which has wide applications in all engineering courses
202.4	To know Fourier Transforms which has wide applications in all engineering courses
202.5	To enable the students to solve various engineering problems using numerical methods
202.6	To familiarise the students with the concept of numerical differentiation & numerical integration which have many applications in engineering.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
202.1	3	2										
202.2	3	2										
202.3	3	2										
202.4	3	2										
202.5	3	2										
202.6	3	2										

CO	PSO1	PSO2	PSO3
202.1	3	2	
202.2	3	2	
202.3	3	2	
202.4	3	2	
202.5	3	2	
202.6	3	2	



132


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady Thiruvilwamala, Thrissur
 Pin 680 597 Kerala

AU 202 ADVANCED THERMODYNAMICS	
202.1	To impart knowledge to the students thermodynamic concepts.
202.2	To know Zeroth and First law which has wide applications in all engineering.
202.3	To introduce Second and Third law with practical application in various engineering & social life situations.
202.4	To impart knowledge to the students thermodynamic relations.
202.5	To make the students solve numerical problems based on laws of thermodynamics.
202.6	To make the students to solve numerical problems based on different power cycles.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
202.1	3											
202.2	2	3										
202.3	2	3	3									
202.4	3											
202.5	2	3	3									
202.6	2	3	3									

CO	PSO1	PSO2	PSO3
202.1			3
202.2			3
202.3	1	1	3
202.4			3
202.5	1	1	3
202.6	1	1	3



18


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala Thiruvananthapuram
 Pin - 680 597 Kerala

AU 204 CI ENGINES & COMBUSTION	
204.1	Students will be able to explain CI Engine and Combustion.
204.2	Students will be able to know about CI engine emissions and their treatments.
204.3	Students will be able to differentiate and analyse ideal and actual cycles.
204.4	Students will be able to diagnose FI systems in CI engines.
204.5	Understand the thermodynamics of combustion.
204.6	Know more about the emission treatments to improve engine efficiency.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
204.1	2	2										1
204.2	2	2										1
204.3	2	2										1
204.4	2	2										1
204.5	2	2										1
204.6	2	2										1

CO	PSO1	PSO2	PSO3
204.1	2		2
204.2	2		2
204.3	2		2
204.4	2		1
204.5	2		2
204.6	2		2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AU 206 AUTOMOTIVE TRANSMISSION	
206.1	To understand solving the Problems on performance of automobiles.
206.2	Study of the Constructional details of various types of gear box and Determination of gear ratios for vehicles.
206.3	To know Construction and operation of Ford – T-model gearbox, Wilson Gear box and electromagnetic transmission.
206.4	To impart the knowledge of torque converter and principle of operation.
206.5	To understand about the Need for automatic transmission and working of automatic transmission.
206.6	Study of the Constructional details and working of hydrostatic drive.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
206.1	3	2										1
206.2	3	2										1
206.3	3	2										1
206.4	3	2										1
206.5	3	2										1
206.6	3	2										1

CO	PSO1	PSO2	PSO3
206.1	2		1
206.2	2		1
206.3	2		1
206.4	2		1
206.5	2		1
206.6	2		1



12


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady, Thiruvilwamala, Thiruv
 Pin- 680 597, Kerala

AU 234 VEHICLE SYSTEMS LAB	
234.1	To study about hand tools, special purpose tools, and their uses.
234.2	To familiarize with various systems and components of an automobile.
234.3	To know about servicing of automobile components.
234.4	To know about writing technical specifications and description of all types of chassis and transmission components of automobiles, including body and interiors.
234.5	Understand the behaviour of valve time and valve timing setting.
234.6	To familiarize with tyre removal and inspection, wheel balancing and wheel alignment checking.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
234.1	2	2									1	1
234.2	2	2									1	1
234.3	2	2									2	1
234.4	2	2									2	1
234.5	2	2									2	1
234.6	2	2									1	1

CO	PSO1	PSO2	PSO3
234.1	2	1	1
234.2	2	1	1
234.3	2	1	1
234.4	2	1	1
234.5	2	1	1
234.6	2	1	1



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur U
 Pin 680 597 Kerala

ME307 MACHINE DESIGN -I	
307.1	Understand the basic components and layout of linkages in the assembly of a system/machine.
307.2	Students can analyse velocity, acceleration and forces in a mechanism.
307.3	Able to solve problems of governors and gyroscopic couples.
307.4	Students can analyse the turning moment diagram of the flywheel.
307.5	Able to draw the cam profiles.
307.6	Able to solve gear train problems.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
307.1	3	3	3	2								
307.2	2	3	3	2								
307.3	2	3	3	2	1							
307.4	3	3	2									
307.5	3	3	2									
307.6	3	3	3		1							

CO	PSO1	PSO2	PSO3
307.1	3	1	1
307.2			3
307.3	1	1	3
307.4	1		3
307.5	1	2	3
307.6	1	2	3



19


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

ME309 METALLURGY & MATERIAL SCIENCE	
309.1	Provide fundamental science relevant to materials
309.2	Provide physical concepts of atomic radius, atomic structure, chemical bonds, crystalline and non-crystalline materials and defects of crystal structures, grain size, strengthening mechanisms, heat treatment of metals with mechanical properties and changes in structure
309.3	Enable students to be more aware of the behaviour of materials in engineering applications and select the materials for various engineering applications.
309.4	Understand the causes behind metal failure and deformation
309.5	Determine properties of unknown materials and develop an awareness to apply this knowledge in material design.
309.6	Analyse fracture and fatigue mechanisms in materials and apply core concepts in materials science to solve engineering problems.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
309.1	3											
309.2	3											
309.3	3	2	1	1								
309.4	3			1								
309.5	2	1	2	1								
309.6	3	3	1	1								

CO	PSO1	PSO2	PSO3
309.1	2		
309.2	2		
309.3	2	2	2
309.4	2	2	2
309.5	2	2	2
309.6	2	2	2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

ME311 MANUFACTURING PROCESSES	
311.1	Understand types of Casting Processes and materials.
311.2	Understand types of Forging, Rolling and Drawing and applications.
311.3	Understand types of Sheet metal forming processes.
311.4	Know about of Joining processes of metals.
311.5	Understand more about non-traditional machining processes.
311.6	Know about advanced manufacturing techniques.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
311.1	3	1										1
311.2	3	1										1
311.3	3	1										1
311.4	3	1										1
311.5	3	1										1
311.6	3	1										1

CO	PSO1	PSO2	PSO3
311.1	1	1	1
311.2	1	1	1
311.3	1	1	1
311.4	1	1	1
311.5	1	1	1
311.6	1	1	1



13


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

AU307 VEHICLE BODY ENGINEERING	
307.1	To impart knowledge on the design of vehicle body to coachwork type, terms used in body building construction and basic dimension.
307.2	To impart knowledge about Aerodynamics of automobiles.
307.3	To provide knowledge about Vehicle Body Materials.
307.4	To know about the various Load distribution of vehicles.
307.5	To get knowledge about Noise and vibration of vehicles.
307.6	To discuss the methods of various technologies for design aspects.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
307.1	3	2										1
307.2	3	2	1									1
307.3	3	2		1								1
307.4	3	2		1								1
307.5	3	2	1									1
307.6	3	2	1		1							1

CO	PSO1	PSO2	PSO3
307.1	2		2
307.2	2	1	2
307.3	2		2
307.4	2		2
307.5	2	1	2
307.6	2	1	2



IB

ch

PRINCIPAL
Nehru College of
Engineering and Research Cen
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

ME367 NON-DESTRUCTIVE TESTING	
367.1	Know basic principles, techniques, equipment of NDT methods.
367.2	Understand the applications and limitations of NDT methods.
367.3	Students enable selection of appropriate NDT methods.
367.4	Identify advantages and limitations of nondestructive testing methods.
367.5	Students are aware of the developments in NDT.
367.6	Students are aware of the future trends in NDT.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
367.1	3	1										1
367.2	3	1										1
367.3	3	1										1
367.4	3	1										1
367.5	3	1										1
367.6	3	1										1

CO	PSO1	PSO2	PSO3
367.1	1	1	1
367.2	1	1	1
367.3	1	1	1
367.4	1	1	1
367.5	1	1	1
367.6	1	1	1



IB


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur L
 Pin 680 597 Kerala

AU341 DESIGN PROJECT	
341.1	To understand the engineering aspects of design with reference to simple products
341.2	To foster innovation in design of products, processes or systems
341.3	To develop design that add value to products and solve technical problems

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
341.1	3											
341.2		3	3	2	2	1	1	1	2	1	2	2
341.3		3	3	2	2	1	1	1	2	1	2	2

CO	PSO1	PSO2	PSO3
341.1	3		
341.2		3	3
341.3		3	3



13 ✓


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pattipady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

ME 333 HEAT ENGINE LAB	
333.1	Provide knowledge and give hands on experience in testing different properties of fuels and lubricants
333.2	To perform characteristic tests on petrol and diesel engines.
333.3	Understand about the Valve Timing on Four stroke Diesel/ Petrol Engine.
333.4	To know and Determination of calorific value of fuel.
333.5	To provide knowledge and perform the Morse test and Heat balance test.
333.6	To impart the knowledge and performance of flash and fire point of fuel.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
333.1	2	3		2				1	3	1	1	1
333.2	2	3		2				1	3	1	1	1
333.3	2	3		2				1	3	1	1	1
333.4	2	3		2				1	3	1	1	1
333.5	2	3		2				1	3	1	1	1
333.6	2	3		2				1	3	1	1	1

CO	PSO1	PSO2	PSO3
333.1	1	2	2
333.2	1	2	2
333.3	1	2	2
333.4	1	2	2
333.5	1	2	2
333.6	1	2	2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

ME 335 PRODUCTION ENGINEERING LAB	
335.1	Get ideas about different types of welding.
335.2	Know about different operations done on lathe.
335.3	Understand ideas about drilling.
335.4	Students will be able to perform welding.
335.5	students will be able to perform machining operations in lathe.
335.6	students will be able to perform operations in drilling machine

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
335.1	2	3		2				1	3	1	1	1
335.2	2	3		2				1	3	1	1	1
335.3	2	3		2				1	3	1	1	1
335.4	2	3		2				1	3	1	1	1
335.5	2	3		2				1	3	1	1	1
335.6	2	3		2				1	3	1	1	1

CO	PSO1	PSO2	PSO3
335.1	1	2	2
335.2	1	2	2
335.3	1	2	2
335.4	1	2	2
335.5	1	2	2
335.6	1	2	2



B

Handwritten signature of the Principal.

PRINCIPAL
Nehru College of
Engineering and Research Center
Pampady, Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

ME302 HEAT AND MASS TRANSFER	
302.1	Understand both the physics and the mathematical treatment of the topics pertaining to the modes of heat transfer.
302.2	Apply principles of heat transfer in convection.
302.3	Apply principles of heat transfer to develop mathematical models for uniform and non-uniform fins and transient heat conduction.
302.4	Analyse free and forced convection problems involving complex geometries with proper boundary conditions like heat exchangers and heat pipes.
302.5	Apply the concepts of radiation heat transfer for enclosure analysis.
302.6	Understand physical and mathematical aspects of mass transfer.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
302.1	3	1		2	1			1				1
302.2	3	2		2	1			2				1
302.3	3	1		2	2			1				1
302.4	3	1		2	2			2				1
302.5	3	1		1	1			2				1
302.6	3	1		1	1			1				1

CO	PSO1	PSO2	PSO3
302.1	2	1	1
302.2	3	1	1
302.3	1	1	1
302.4	1	2	3
302.5	2	2	2
302.6	3	1	2



B✓


PRINCIPAL
 Nehru College of
 Engineering and Research Center
 Pampady Thiruvilwamala Thiruvananthapuram
 Pin 680 597 Kerala

ME304 DYNAMICS OF MACHINERY	
304.1	Impart knowledge on static force analysis
304.2	Impart knowledge on dynamic force analysis
304.3	Understand the importance of balancing of rotating and reciprocating machines
304.4	Develop a knowledge about gyroscope and energy fluctuation in machines
304.5	Introduce the fundamentals in vibrations
304.6	Understand the physical significance and design of vibration systems with desired conditions

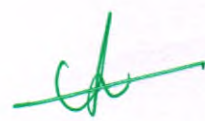
CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
304.1	3	3	2									1
304.2	3	3	2									1
304.3	3	3	2									2
304.4	3	3	1									2
304.5	3	3	1									1
304.6	3	3	1									1

CO	PSO1	PSO2	PSO3
304.1	3	2	2
304.2	3	2	2
304.3	3	2	2
304.4	3	2	2
304.5	3	2	2
304.6	3	2	2



13


PRINCIPAL
 Nehru College of
 Engineering and Research
 Pampady Thiruvilwamala Thiruv.
 Pin 680 597 Kerala

ME314 MACHINE DESIGN-II	
314.1	To introduce the design considerations needed for different types of machine components
314.2	To get knowledge about Shaft design
314.3	To understand the design concept of clutches, brakes
314.4	To design different types of bearings
314.5	Able to design different types of gear
314.6	To impart the design knowledge of IC engine parts design

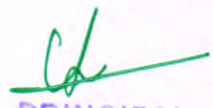
CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
314.1	3	2	1									2
314.2	3	2	1									2
314.3	3	2	1									2
314.4	3	2	1									2
314.5	3	2	1									2
314.6	3	2	1									2

CO	PSO1	PSO2	PSO3
314.1	3	2	2
314.2	3	2	2
314.3	3	2	2
314.4	3	2	2
314.5	3	2	2
314.6	3	2	2



18 ✓


PRINCIPAL
 Nehru College of
 Engineering and Research Cen
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AU302-AUTOMOTIVE ELECTRICALS AND ELECTRONICS	
302.1	To impart knowledge on the principles of operation and constructional details of various Automotive Electrical and Electronic Systems like batteries.
302.2	To impart knowledge on the principles of operation and constructional details of the Starting System.
302.3	To understand the knowledge on the principles of operation and constructional details of the Charging System.
302.4	To impart knowledge on the principles of operation and constructional details of Ignition System.
302.5	To impart knowledge on the sensors and applications in automobiles.
302.6	To familiarize the students with the concept of electronic fuel injection system.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
302.1	2	1										1
302.2	2	2										1
302.3	3	1										1
302.4	3	1										1
302.5	3	1										1
302.6	3	1	1									1

CO	PSO1	PSO2	PSO3
302.1	2		2
302.2	2		2
302.3	2		1
302.4	2		2
302.5	2		2
302.6	2		2



1B

Ch
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

HS300 PRINCIPLES OF MANAGEMENT	
300.1	To develop ability to critically analyse and evaluate a variety of management practices in the contemporary context
300.2	To understand and apply a variety of management and organizational theories in practice;
300.3	To be able to mirror existing practices or to generate their own innovative management competencies, required for today's complex and global workplace;
300.4	To be able to critically reflect on ethical theories and social responsibility ideologies to create sustainable organizations
300.5	plan and make decisions for organizations
300.6	do staffing and related HRD functions

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
300.1						3					3	
300.2						2		3	3		3	3
300.3									2		3	3
300.4						3		3	2			2
300.5						2					3	3
300.6									3		3	

CO	PSO1	PSO2	PSO3
300.1	3	2	
300.2	2	2	
300.3	2	2	
300.4	2	2	
300.5	3	2	
300.6	2	2	



LB

cd
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AU364 VEHICLE PERFORMANCE & TESTING	
364.1	To provide knowledge about various Vehicle Performance Characteristics.
364.2	To impart knowledge about Laboratory testing and Dynamometers.
364.3	To provide knowledge about Wheel balancing & Wheel alignment.
364.4	To know about the importance of NVH.
364.5	To get knowledge about road and track testing.
364.6	To understand about chassis dynamometers.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
364.1	3	1		1								1
364.2	3	1		1								2
364.3	3	1		1								2
364.4	3	1	1	1								2
364.5	3	1	1	1								2
364.6	3	1		1								1

CO	PSO1	PSO2	PSO3
364.1	2	1	2
364.2	2	1	2
364.3	2	1	2
364.4	2	1	2
364.5	3	1	2
364.6	2	1	2



13

Ch
PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pampady Thiruvilwamala, Thiruvananthapuram (T)
 Pin 680 597 Kerala

ME332 COMPUTER AIDED DESIGN & ANALYSIS LAB	
332.1	Gain working knowledge on Computer Aided Design methods and procedures
332.2	Obtain the knowledge in solid modeling software
332.3	Obtain knowledge in finite element analysis software
332.4	Design 3d engineering components using standard solid modeling software.
332.5	Create the assembled view of different components like riveted joints, Cotter joints
332.6	Simulate the solutions of structural, thermal and fluid flow problems using a standard analysis software

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
332.1	3	2			1							2
332.2	3	2			1							2
332.3	3	2			1							2
332.4	3	2			1							2
332.5	3	2			1							2
332.6	3	2			1							2

CO	PSO1	PSO2	PSO3
332.1	3		2
332.2	3		2
332.3	3		2
332.4	3		2
332.5	3		2
332.6	3		2



Handwritten signature/initials in green ink.

Handwritten signature in green ink.
PRINCIPAL
 Nehru College of
 Engineering and Research Center
 Pampady Thiruvithamala Thiruvananthapuram
 Pin 680 597 Kerala

AU332 AUTO ELECTRICAL & ELECTRONICS LAB	
332.1	Familiarize the students with the electrical system used in Automobiles.
332.2	Familiarize the students with testing of batteries.
332.3	Familiarize the students with testing the charging system.
332.4	Familiarize about the starting system.
332.5	Familiarize about the ignition system.
332.6	Impart knowledge about design and working model of lighting circuit.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
332.1	2	1	1								2	2
332.2	2	1	1								2	2
332.3	2	1	1								2	2
332.4	2	1	1								2	2
332.5	2	1	1				1				2	2
332.6	2	1	1								2	2

CO	PSO1	PSO2	PSO3
332.1	2	1	2
332.2	2	1	2
332.3	2	1	2
332.4	2	1	2
332.5	2	1	2
332.6	2	1	2



Handwritten signature in green ink.

Handwritten signature in green ink.
PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvikramala, Thiruvananthapuram
Pin 680 597 Kerala

AU352 COMPREHENSIVE EXAM	
352.1	To assess the comprehensive knowledge gained in basic courses relevant to the branch of study
352.2	To comprehend the questions asked and answer them with confidence.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
352.1	2	2					2					2
352.2	2	2					2					2

CO	PSO1	PSO2	PSO3
352.1	2		2
352.2	2		2



12


PRINCIPAL
 Nehru College of
 Engineering and Research Cent
 Pamapady, Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AUTOMOTIVE SYSTEM DESIGN	
401.1	To get knowledge about the design parameters and basic definitions.
401.2	To impart the design parameters of a multi cylinder engine.
401.3	To impart the design of valve gear.
401.4	To get the knowledge about the design of engine structure and lubricating system.
401.5	Able to design the cooling system components.
401.6	Able to design speed gearboxes.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
401.1	3	2										1
401.2	3	2										1
401.3	3	2										1
401.4	3	2										1
401.5	3	2										1
401.6	3	2										1

CO	PSO1	PSO2	PSO3
401.1	2		2
401.2	2		2
401.3	2		2
401.4	2		2
401.5	2		2
401.6	2		2



13 ✓


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Panpady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

AU403 VEHICLE DYNAMICS	
403.1	To familiarize the students with vibrating systems.
403.2	To understand the characteristics of the tires.
403.3	To understand the characteristics of suspension systems.
403.4	To know about the stability and handling characteristics of vehicles at different track
403.5	To familiarize the students with directional stability of the vehicle.
403.6	To understand the aerodynamic forces and air flow around the vehicle.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
403.1	3	2										1
403.2	2	2										1
403.3	2	2										1
403.4	2	2										1
403.5	2	2										1
403.6	2	2										1

CO	PSO1	PSO2	PSO3
403.1	2		1
403.2	2		1
403.3	2		1
403.4	2		1
403.5	2		1
403.6	2		1



B

Ch

PRINCIPAL
Nehru College of
Engineering and Research Center
Pampady Thiruvilwamala, Thiruvananthapuram
Pin - 680 597 Kerala

AU405 AUTOMOTIVE REFRIGERATION & AIR CONDITIONING	
405.1	Impart knowledge about refrigeration.
405.2	Know about air conditioning systems.
405.3	Understand the components of different air conditioning systems.
405.4	Understand the control and service of different air conditioning systems.
405.5	Understand the procedure for refrigeration.
405.6	Students will be able to do refrigeration and air conditioning load calculation.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
405.1	3	2										1
405.2	2	2										1
405.3	2	2										1
405.4	2	2										1
405.5	2	2										1
405.6	2	2										1

CO	PSO1	PSO2	PSO3
405.1	2		2
405.2	2		2
405.3	2		2
405.4	2		2
405.5	2		2
405.6	2		2




PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thrissur District
 Pin - 680 597 Kerala

AU407 ADVANCED IC ENGINES	
407.1	To impart the basic concepts of non-conventional IC engines.
407.2	To know the new concepts of automotive engine combustion technology
407.3	To understand concept of the Lean burn engines
407.4	To get the knowledge about the Gas turbine plants
407.5	To discuss about the future engine technologies
407.6	To impart the knowledge about HCCI and CAI engines.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
407.1	3	2										1
407.2	2	2										1
407.3	2	2										1
407.4	2	2										1
407.5	2	2										1
407.6	2	2										1

CO	PSO1	PSO2	PSO3
407.1	2		2
407.2	2		2
407.3	2		2
407.4	2		2
407.5	2		2
407.6	2		2



132

Ch
PRINCIPAL
 Nehru College of
 Engineering and Research Cen
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

ca

AU409 SIMULATION AND ANALYSIS OF IC ENGINE PROCESSES	
409.1	To provide an outline of the simulation methods and basics of combustion calculations.
409.2	To provide the basic concept of Simulation of SI Engine Combustion.
409.3	To provide the basic concept of Simulation of CI Engine Combustion.
409.4	To get the knowledge about the gas exchange process.
409.5	To discuss the Two stroke engine scavenging parameters and two stroke engine simulation.
409.6	To impart the knowledge about Heat Transfer and Friction in Engines.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
409.1	3	2	1	2	1							1
409.2	3	2	1	2	2							1
409.3	3	2	1	2	2							1
409.4	3	2	1	1	1							1
409.5		2	1	2	1							1
409.6	2	2	1	1								1

CO	PSO1	PSO2	PSO3
409.1	3	2	1
409.2	3	2	1
409.3	3	2	1
409.4	3	2	1
409.5	3	1	
409.6	3	2	



13 ✓


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 597 Kerala

AU410 VEHICLE TRANSPORT & FLEET MANAGEMENT	
410.1	To give the basic idea on the Mass transport system.
410.2	To understand the features of Bus depot organisation structure, and Economics of Road Transport
410.3	To understand the characteristics of Route planning and Scheduling of the transportation system.
410.4	To know about the Vehicle maintenance, supply management and budget
410.5	To familiarize the students with Fleet Management, Data Processing And Fare Structure.
410.6	To understand about Motor vehicle act.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
410.1	2	2	1									1
410.2	2	2	2									1
410.3	2	2	1									1
410.4	2	2	1	1								1
410.5	2	1	1	2								1
410.6	2	1	2									1

CO	PSO1	PSO2	PSO3
410.1	2		1
410.2	2		2
410.3	2		2
410.4	2		2
410.5	2		2
410.6	2		



13


PRINCIPAL
 Nehru College of
 Engineering and Research Cent:
 Panipady Thiruvithamala Thiruvithamala
 Pin 680 597 Kerala

AUGUST SEMINAR & PROJECT PRELIMINARY	
451.1	Identify the datas that is already done related to the topics.
451.2	Find new ideas at the engineering level.
451.3	Develop skills in doing literature survey and technical presentation.
451.4	Develop skills in report preparation.
451.5	Analyse a current topic of professional interest and present it before an audience.
451.6	Identify an engineering problem, analyse it and propose a work plan to solve it.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
451.1	2	2	2	2		1	1	2	2	2	2	2
451.2	2	2	2	2		1	1	2	2	2	2	2
451.3	2	2	2	2		1	1	2	2	2	2	2
451.4	2	2	2	2		1	1	2	2	2	2	2
451.5	2	2	2	2		1	1	2	2	2	2	2
451.6	2	2	2	2		1	1	2	2	2	2	2

CO	PSO1	PSO2	PSO3
451.1	2	3	2
451.2	2	3	2
451.3	2	3	2
451.4	2	3	2
451.5	2	3	2
451.6	2	3	2



18


PRINCIPAL
 Nehru College of
 Engineering and Research Center
 Pampady Thiruvilwamala, Thrissur District
 Pin - 680 597 Kerala

AU431 AUTOTRONICS LAB	
431.1	Familiarize the students with the various sensors used in Automobiles
431.2	Familiarize the students with testing of electronic components
431.3	Familiarize the students with testing of electric circuits used in automobiles
431.4	Familiarize about digital electronics
431.5	Impart knowledge in designing electronic circuits in automotive systems.
431.6	Impart knowledge about microcontroller and microprocessor

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
431.1	3	2										1
431.2	2	2										1
431.3	2	2										1
431.4	2	2										1
431.5	2	2										1
431.6	2	2										1

CO	PSO1	PSO2	PSO3
431.1	2		2
431.2	2		2
431.3	2		2
431.4	2		2
431.5	2		2
431.6	2		2



13

ea
PRINCIPAL
 Nehru College of
 Engineering and Research C
 Pamapady, Thiruvilwamala, Thr
 Pin: 680 597, Kerala

AU402 TWO AND THREE WHEELERS	
402.1	To understand the constructional details operating characteristics power plants used in two and three wheelers.
402.2	To know about fuel and ignition systems.
402.3	To understand the transmission system used in two and three wheelers.
402.4	To know about Chassis and subsystems - Main frame for two and three wheelers. And Front and rear suspension systems.
402.5	To get knowledge about the brakes and wheels used in two and three wheelers.
402.6	To impart the knowledge about two and three wheelers recent developments and maintenance.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
402.1	2	1										1
402.2	2	1										1
402.3	2	1										1
402.4	2	1										1
402.5	2	1										1
402.6	2	1										1

CO	PSO1	PSO2	PSO3
402.1	2		
402.2	2		
402.3	2		
402.4	2		
402.5	2		
402.6	2		



13


PRINCIPAL
 Nehru College of
 Engineering and Research Cen
 Pamapady Thiruvilwamala, Thris...
 Pin 680 597 Kerala

AU404 ENGINE & VEHICLE MANAGEMENT SYSTEMS	
404.1	To understand the principles of various electronic systems in engine and vehicle management systems.
404.2	To know about Electronic engine control
404.3	To understand the Electronic fuel control
404.4	To know about parameters affecting Fuel injection system
404.5	To get knowledge about the Electronic control transmission
404.6	To impart the knowledge about Cruise control system & Anti-lock braking system

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
404.1	3	2										1
404.2	2	2										1
404.3	2	2										1
404.4	2	2										1
404.5	2	2										1
404.6	2	2										1

CO	PSO1	PSO2	PSO3
404.1	2		
404.2	2		
404.3	2		
404.4	2		
404.5	2		
404.6	2		



M

U
PRINCIPAL
 Nehru College of
 Engineering and Research Center
 Pampady Thiruvilwamala, Thrissur
 Pin 680 597 Kerala

AU466: AUTOMOBILE MANUFACTURING TECHNOLOGY	
466.1	To know about Material selection and Manufacturing methods for Casted Engine Components.
466.2	To know about Material selection and Manufacturing methods for Forged Engine Components.
466.3	To understand the Material selection and Manufacturing methods for transmission system of automobiles.
466.4	To understand about Methods of gear manufacture.
466.5	To get knowledge about Material selection and Manufacturing methods for vehicle chassis.
466.6	To impart the knowledge about Recent Developments of an automobiles.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
466.1	2	1										1
466.2	2	1										1
466.3	2	1										1
466.4	2	1										1
466.5	2	1										1
466.6	2	1										1

CO	PSO1	PSO2	PSO3
466.1	2		
466.2	2		
466.3	2		
466.4	2		
466.5	2		
466.6	2		



13


PRINCIPAL
 Nehru College of
 Engineering and Research Center
 Pampady Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

AU486 NOISE, VIBRATION AND HARSHNESS	
486.1	Understand the basics of noise, vibration, sources of vibration and noise in automobiles.
486.2	Study the effect of noise and vibration on human beings and nature.
486.3	Understand the engine related noises.
486.4	Understand the prediction and control techniques of noise, vibration pertain to an automobile.
486.5	Understand the measurement techniques of noise, vibration pertain to an automobile.
486.6	Know about reduction of noise and vibration from an automobile.

CO's MAPPING WITH PO's AND PSO's MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
486.1	3	2										1
486.2	2	3										1
486.3	2	2										1
486.4	3	2										1
486.5	2	3										1
486.6	2	2										1

CO	PSO1	PSO2	PSO3
486.1	2		1
486.2	2		1
486.3	2		1
486.4	2		1
486.5	2		1
486.6	2		1



[Handwritten signature]

[Handwritten signature]

PRINCIPAL
Nehru College of
Engineering and Research Cent
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
 (Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAMME OUTCOMES (PO)

- Programme Outcomes describe what students are expected to know and be able to do upon the graduation.

The Program Outcomes of under Graduate program in Electrical & Electronics Engineering are:

Students will have:

- Ability to apply knowledge of mathematics, science and engineering in the field of electrical and electronics engineering.
- Ability to design and conduct experiments, analyse and interpret data and results in electrical and electronics engineering.
- Ability to design electrical and electronics systems, components, or processes to meet the desired needs within realistic constraints such as health and safety, manufacturability and sustainability with economic, environmental, social, political and ethical considerations.
- Ability to work individually as well as in multidisciplinary teams as a member or as a leader to accomplish the common goal.
- Ability to identify, analyse, formulate, and solve engineering problems
- Knowledge of professional and ethical responsibility.
- Ability to communicate effectively in any area of their field to the industry, fellow beings and society.
- Broad knowledge necessary to understand the impact of engineering solutions on individuals, organizations and society.
- Ability to engage in life-long learning to update their knowledge to keep pace with changes caused by dynamic nature of engineering field.
- Awareness of the contemporary issues that help to integrate advanced and sustainable solutions in the user environment.
- Ability to use the techniques, skills, and modern engineering tools, software and equipment to analyse and model complex engineering solutions

COURSE OUTCOME (CO)

- Course outcomes are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program.
- Identify what the learner will know and be able to do by the end of a course or program.



Handwritten signature

Handwritten signature

PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala Thiruvrithur Dt
 Pin 680 597 Kerala

FIRST SEMESTER				
University		KTU		Scheme
Sl No.	Course Code & Title	Course Outcome		PO Mapping
1	MA 101 Calculus	CO1	Students will be able to model physical phenomena involving functions of variables and parameters.	a,e,k
		CO2	Students will be able to acquire basic training in visualizing graphs and surfaces.	
		CO3	Ability to use suitable softwares for plotting graphs.	
2	PH 100 Engineering Physics	CO1	Students will be familiar with the principles of Physics.	a,e,h
		CO2	Students will be familiar significance of Physics in engineering systems and technological advances.	
3	BE101-03 Introduction to Electrical Engineering	CO1	Students will be able to know the basic laws of Electrical and Magnetic Circuits.	a,b,c,d,e,h,i,j
		CO2	Students will get an overview of ac fundamentals and complex power.	
		CO3	Students will get the basics of three phase systems.	
		CO4	Students will get knowledge of the basic concepts of wiring and necessity of earthing	
				Knowledge of mathematics
				Analyse, formulate, and solve problems
				Use the techniques, skills, and modern engineering tools, software
				Knowledge of mathematics and engineering
				Analyse, formulate, and solve problems
				Broad knowledge
				Knowledge of mathematics and engineering
				Analyse and interpret data and results.
				Design electrical and electronics components, or processes
				Multidisciplinary teams
				Analyse, formulate, and solve problems
				Broad knowledge
				Life-long learning
				Awareness of the contemporary issues



PRINCIPAL
Nehru College of
Engineering and Research
Pampady, Thiruvilwamala, Thrissur
Pin 680 597 Kerala

4	BE 103 Introduction to Sustainable Engineering	CO1	The student will be able to understand the different types of environmental pollution problems and their sustainable solutions.	d,f,h,j	Multidisciplinary teams
		CO2	The student will be able to work in the area of sustainability for research and education		Knowledge of professional and ethical responsibility
		CO3	The student will be having a broader perspective in thinking for sustainable practices by utilizing the engineering knowledge and principles gained from this course		Broad knowledge
5	ME 100 Basics of Mechanical Engineering	CO1	To understand the basic principles of thermodynamics and refrigeration systems.	b,c,e,h,j,k	Awareness of the contemporary issues
		CO2	To understand and familiarize the theory behind Engines and to get the basics of automobile field.		Analyse and interpret data and results.
		CO3	To get knowledge of the basic structure of power transmission system.		Design electrical and electronics components, or processes
		CO4	To get the basic idea of various manufacturing process		Analyse, formulate, and solve problems
		CO5	To explain the various machine tools and CNC.		Broad knowledge
6	BE 100 Engineering Mechanics	CO1	To utilize scalar and vector analytical techniques for analyzing forces in statically determinate structures.	a,b,c,d,e,i,j	Awareness of the contemporary issues
		CO2	To apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems.		Use the techniques, skills, and modern engineering tools, software
					Knowledge of mathematics and engineering
					Analyse and interpret data and results.
					Design electrical and electronics components, or processes



102

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin 680 597 Kerala

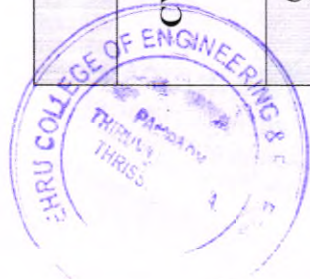
		CO3	To identify, formulate, and solve engineering problems by applying the methods learned in Engineering Mechanics.		Multidisciplinary teams
		CO4	To apply basic knowledge of mathematics and physics to solve real-world problems.		Analyse, formulate, and solve problems
		CO5	To utilize scalar and vector analytical techniques for analyzing forces in statically determinate structures.		Life-long learning Awareness of the contemporary issues
7	PH 110 Engineering Physics Lab	CO1	Ability to design and conduct experiments including electronics, optics, lasers etc.	a,b,e,g,h	Knowledge of mathematics and engineering Analyse and interpret data and results. Analyse, formulate, and solve problems Communicate effectively
		CO2	Recognize how observation, experiment and theory work together to expand the frontiers of knowledge of the physical universe.		Broad knowledge
		CO3	Communicate verbally, graphically and in writing the results of calculations and laboratory experiments in a clear and concise manner used by physicists worldwide.		
8	EE 110 Electrical Engineering Workshop	CO1	Familiarity with supply arrangements and their limitations, knowledge of standard voltages and their tolerances, safety aspects of electrical systems and importance of protective measures in wiring systems	a,b,c,d,e,h,i	Knowledge of mathematics and engineering Analyse and interpret data and results. Design electrical and electronics components, or processes Multidisciplinary teams Analyse, formulate, and solve problems Broad knowledge
		CO2	Knowledge about the types of wires, cables and other accessories used in wiring. Creating awareness of energy conservation in electrical systems		Broad knowledge
		CO3	Students should be able to wire simple lighting circuits for domestic buildings, distinguish between light and power circuits		



PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur
Pin 680 597 Kerala

		CO4	To measure electrical circuit parameters and current, voltage and power in a circuit. Familiarity with backup power supply in domestic installation		Life-long learning
9	ME 110 Mechanical Engineering Workshop	CO1	Students are able to understand the basic manufacturing methods in industries	a,b,c,h	Knowledge of mathematics and engineering
		CO2	Students will develop the technical skills regarding manufacturing		Analyse and interpret data and results.
		CO3	To develop practical skills on operating machineries.		Design electrical and electronics components, or processes
					Broad knowledge

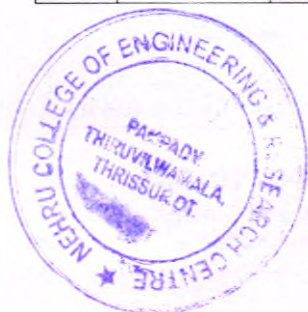
SECOND SEMESTER					
University		KTU		Scheme	2015
Sl No.	Course Code & Title	Course Outcome		PO Mapping	Justification
1	MA 102 Differential Equations	CO1	Ability to analyse physical phenomena involving differential equations	a,b,c,e,h,i	Knowledge of mathematics and engineering
					Analyse and interpret data and results.
		CO2	Ability to use differential equations in Fluid Mechanics		Design electrical and electronics components, or processes
					Analyse, formulate, and solve problems
		CO3	Ability to use Fourier series in circuits and other engineering applications		Broad knowledge
					Life-long learning
2	CY 100 Engineering Chemistry	CO1	With the syllabus and the portion proposed, it will be possible for the students to get detailed knowledge on the topics taught	a,b,c,d,e,g,h	Knowledge of mathematics and engineering
					Analyse and interpret data and results.
		CO2	It will also inculcate in students the current development in the field of Engineering Chemistry		Design electrical and electronics components, or processes
					Multidisciplinary teams



103

PRINCIPAL
Nehru College of
Engineering and Research Centre

		CO3	The student will be able to apply the knowledge of chemistry and will be equipped to take up chemistry related topics as part of their project works during higher semester of the course		Analyse, formulate, and solve problems Communicate effectively Broad knowledge
3	BE 110 Engineering Graphics	CO1	Students will be able to acquiring capacity to understand the language of Engineering Graphics to read and interpret drawings and visualize shape of objects and their relative locations.	a,c,g,i,k	Knowledge of mathematics and engineering
		CO2	Students will be able to develop skill to prepare drawings as per ISO code of practice to convey and document information about engineering objects as orthographic views or pictorial views.		Design electrical and electronics components, or processes Communicate effectively Life-long learning
		CO3	Students will be able to get introduction to computer aided drafting.		Use the techniques, skills, and modern engineering tools, software
4	BE 102 Design and Engineering	CO1	Able to appreciate the different elements involved in good designs and to apply them in practice when called for	a,b,c,d,e,f,g,k	Knowledge of mathematics and engineering
		CO2	Aware of the product oriented and user oriented aspects that make the design a success.		Analyse and interpret data and results. Design electrical and electronics components, or processes Multidisciplinary teams
		CO3	Will be capable to think of innovative designs incorporating different segments of knowledge gained in the course;		Analyse, formulate, and solve problems Knowledge of professional and ethical responsibility
		CO4	Students will have a broader perspective of design covering function, cost, environmental sensitivity, safety and other factors other than engineering analysis.		Communicate effectively Use the techniques, skills, and modern engineering tools, software



✓

PRINCIPAL
Nehru College of
Engineering and Research
Pampady Thiruvilwamala T.
Pin 680 597 Kerala

5	CE 100 Basics of Civil Engineering	CO1	The students will be able to illustrate the fundamental aspects of Civil Engineering.	a,b,d,e,f,g,h,i,j,k	Knowledge of mathematics and engineering
		CO2	The students will be able to plan and set out a building.		Analyse and interpret data and results.
					Multidisciplinary teams
					Analyse, formulate, and solve problems
					Knowledge of professional and ethical responsibility
		CO3	Students will be able to explain the concepts of surveying for making horizontal and vertical measurements.		Communicate effectively
6	EC 100 Basics of Electronics Engineering	CO1	Students can identify the active and passive components	a,b,c,e	Use the techniques, skills, and modern engineering tools, software
					Broad knowledge
		CO2	Students can setup simple circuits using diodes and transistors		Life-long learning
CO1	Ability to design and conduct experiments.	a,b,d,g,h,k	Knowledge of mathematics and engineering		
CO2	Recognize how observation, experiment and theory work together to continue to expand the frontiers of knowledge of the physical universe.		Analyse and interpret data and results.		
CO3	Communicate verbally, graphically and in writing the results of calculations and laboratory experiments in a clear and concise manner that		Multidisciplinary teams		
			Communicate effectively		
7	CY 110 Engineering Chemistry Lab	CO3			Broad knowledge



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt
Pin 680 597 Kerala

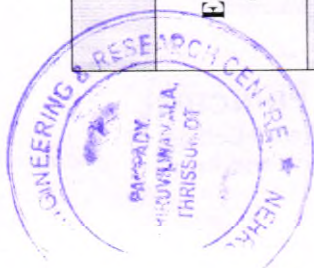
			incorporates the stylistic conventions used by chemists worldwide.		
		CO4	Use experimental techniques and measurement technology		Use the techniques, skills, and modern engineering tools, software
8	CE 110 Civil Engineering Workshop	CO1	To illustrate the common procedures regarding building construction works like setting out.	a,b,d,e,f	Knowledge of mathematics and engineering
		CO2	To explain about length, area and volume measurements of building features.		Analyse and interpret data and results.
		CO3	To illustrate the importance of brick masonry in building construction		Multidisciplinary teams
		CO4	To explain the concept of surveying for making horizontal and vertical measurements		Analyse, formulate, and solve problems
					Knowledge of professional and ethical responsibility
9	EC 110 Electronics Engineering Workshop	CO1	Student can identify the active and passive electronic components	a,b,c,e	Knowledge of mathematics and engineering
					Analyse and interpret data and results.
		CO2	Student gets hands-on assembling, testing, assembling, dismantling, fabrication and repairing systems by making use of the various tools and instruments available in the Electronics Workshop.		Design electrical and electronics components, or processes
					Analyse, formulate, and solve problems



Handwritten signature/initials in green ink.

Handwritten signature in green ink.
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala
 Pin - 680 597

THIRD SEMESTER				
University		CALICUT		Scheme
Sl No.	Course Code & Title	Course Outcome		2014
			PO Mapping	Justification
1	EN14 301 Engineering Mathematics – III	CO1	a,b,e,k	Knowledge of mathematics, science and engineering
				Design electrical and electronics components, or processes
		CO2		Analyse, formulate, and solve problems
		CO3		Use the techniques, skills to analyse and model complex engineering solutions
2	EN14 302 Computer Programming in C	CO1	a,b,c,d,e,,i,k	Knowledge of Engg,
				design and conduct experiments,
		CO2		design electrical and electronics systems, components, or processes
		CO3		multidisciplinary team solve engineering problems, engineering solutions
3	EE14 303 Electric Circuit Theory		a,b,e,h,i,k	lifelong learning,
		CO1		Use the techniques, skills, and modern engineering tools, software
		CO2		Knowledge of mathematics, science and engineering
				Design, analyse and interpret data and results
				Analyse, formulate, and solve engineering problems



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram Dt
Pin 680 597 Kerala

			solution of equations governing Electrical networks		Broad knowledge
		CO3	Students are able to model the electrical and electronic networks as a two port network using the two port parameter representation		lifelong learning
					Use the techniques, skills to analyse and model complex engineering solutions
4	EE14 304 Electrical measurements & Instrumentation Systems	CO1	Students get a clear knowledge of the basic laws governing the operation of the instruments, relevant circuits and their working.	a,b,c,d,e,h,i,j	Knowledge of mathematics, science and engineering
					Design, analyse and interpret data and results
		CO2	Students acquire knowledge on methods of measurements and about storage & display devices.		Design electrical and electronics systems, components, or processes
		CO3	Students will be aware of various types of measurements, requirements of calibrations, instruments used in measurement etc.		multidisciplinary teams
		CO4	Students get exposure to various transducers and its applications.		analyse, formulate, and solve engineering problems
5	EE14 305 Analog Electronics			a,b,c,d,e,g,h,i	Broad knowledge
					Life-long learning
					Contemporary issues
		CO1	Students will be familiarized with basic concepts of the various electronic components such as diode, BJT, FET, MOSFET, etc.		Knowledge of mathematics, science and engineering
		CO2	Students acquire knowledge on the different basic electronic circuits and their characteristics.		Design, analyse and interpret data and results
		CO3	Students will be aware of various types of amplifiers circuits based on the BJT, FET and OPAMP as the basic element and their applications.		Design electrical and electronics systems, components, or processes
		CO4	Students will be familiarized with the different OPAMP circuits and their characteristics.		multidisciplinary teams
					analyse, formulate, and solve engineering problems
					Knowledge of professional and ethical responsibility
					Broad knowledge
					Life-long learning



13

PRINCIPAL
Nehru College of
Engineering and Research
Paripady Thiruvilwamala
Pin - 686 56

6	EE14 306 Mechanical Engineering	CO1	Students shall be able to understand the basic applications of thermodynamics and solve simple problems.	a,b,c,e,k	Knowledge of mathematics, science and engineering
		CO2	Students shall be able to solve elementary heat transfer and fluid mechanics problems		Design, analyse and interpret data and results
		CO3	Students shall be familiarized with the working principles of various hydraulic machines and able solve elementary level problems in hydraulic machines.		Design systems, components, or processes
					analyse, formulate, and solve engineering problems
			Software Tool		
7	EE14 307 (P) Basic Electrical Engineering LAB	CO1	Students will be able to analyse and verify various network theorems in a dc circuit.	a,b,c,d,e,i	Knowledge of mathematics, science and engineering
		CO2	Students will be able to measure power in ac and dc circuits		Design, analyse and interpret data and results
					Design electrical and electronics systems, components, or processes
		CO3	Students will be able to analyse the properties of RLC series and parallel circuits.		multidisciplinary teams
			analyse, formulate, and solve engineering problems		
			Life-long learning		
8	EE14 308 (P) Electronics LAB	CO1	Students will be familiarised with the various electronic components, circuit models and their connections.	a,b,c,e,h,i,k	Knowledge of mathematics, science and engineering
		CO2	Students will be able to apply this knowledge for the design and analysis of basic electronic circuits.		Design, analyse and interpret data and results
					Design electrical and electronics systems, components, or processes
		CO3	Students will be able to design and conduct experiments, as well as to organize, analyze, and interpret data and to take up project works.		analyse, formulate, and solve engineering problems
			Broad knowledge		
			Life-long learning		



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram Dt
Pin - 680 597 Kerala

3	EE14 403 Electrical Machines I	CO1	Students can apply the basic knowledge gathered in the course to select a suitable rating/type of dc machine/transformer for a particular application in industry.	a,b,c,d,e,h,i,j	Knowledge of mathematics, science and engineering
		CO2	Students will have the ability to carry out the performance analysis of a dc Machine/transformer manufactured.		Design, analyse and interpret data and results
		CO3	Students will have the ability to understand/trouble shoot the technical issues in a Transformer/dc machine		Design electrical and electronics systems, components, or processes
4	EE14 404 Signals & Systems	CO1	Students will have the ability to mathematically represent a digital signal as a function of time or frequency.	a,b,c,e,h,i,k	Multidisciplinary teams
		CO2	Students will be able to apply various transformation techniques to represent time domain signals in frequency domain & vice versa		Analyse, formulate, and solve engineering problems
		CO3	Students will have the ability to apply various transformation techniques to analyze a digital signal		Broad knowledge
		CO4	Students will be able to mathematically represent the functionality of a digital system.		Life-long learning
5	EE14 405 Digital Electronics	CO1	Students will be able to understand the various number systems and simplify the logical expressions using Karnaugh map method.	a,b,c,d,e,h,i,k	Contemporary issues
					Knowledge of mathematics, science and engineering
					Design, analyse and interpret data and results



PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Panipady Thiruvilwamala, Thiruvananthapuram Dt
 Pin: 680 597 Kerala

					Design electrical and electronics systems, components, or processes
		CO2	Students will be able to understand the implementation of various combinational and sequential circuits.		Multidisciplinary teams
					Analyse, formulate, and solve engineering problems
					Broad knowledge
		CO3	Students will be able to understand the architecture and implementation of a digital computer		Life-long learning
6	EE14 406 Electro Magnetic Field Theory	CO1	Students will have ability to analyze all electrical systems in its very fundamental aspects	a,b,c,d,e,h,i	Knowledge of mathematics, science and engineering
		CO2	Students will have ability to represent fields in different coordinate systems		Design, analyse and interpret data and results
		CO3	Students will have knowledge in basic laws of electric and magnetic fields		Design electrical and electronics systems, components, or processes
		CO4	Students will have cognition on electromagnetic waves		Multidisciplinary teams
		CO5	Students will have ability to design transmission lines		Analyse, formulate, and solve engineering problems
7	EE14 407 (P) Mechanical Engineering LAB	CO1	Students will be able to understand different piping system and its components	a,b,c,h	Broad knowledge
		CO2	Students will be able to evaluate and compare different flow meters and calibration of various flow meters		Life-long learning
		CO3	Students will be able to understand the working of fluid machineries like turbines, pumps etc		Knowledge of mathematics, science and engineering
		CO4	Students will be able to understand the operating characteristics of different fluid machineries		Design, analyse and interpret data and results
					Design electrical and electronics systems, components, or processes



13/

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pattipady, Thiruvilwamala, Thiruvananthapuram
Pin - 680 597 Kerala

		CO5	Students will be able to understand the issues developed while designing the machineries		Broad knowledge	
8	EE14 408 (P) Electrical Measurements & Instrumentation Lab	CO1	Students get trained in the measurement of displacement, resistance, torque and angle etc	a,b,c,d,h,i	Knowledge of mathematics	
		CO2	Students get exposure to DC bridges		Design, analyse and interpret data and results	
					Design electrical and electronics systems, components, or processes	
		CO3	Students get exposed to the different types of calibration methods of electrical instruments.		Multidisciplinary teams	
					Broad knowledge	
					Life-long learning	

FIFTH SEMESTER					
University		CALICUT		Scheme	2009
Sl No.	Course Code & Title	Course Outcome		PO Mapping	Justification
1	EE09 501 Synchronous and Induction Machines	CO1	Students can apply the basic knowledge gathered in the course to select a suitable rating/type of AC machine for a particular application in industry.	a,b,e,i,j	Apply knowledge of mathematics, science and engineering
		CO2	Students will have the ability to carry out the performance analysis of a ac machine manufactured.		Conduct experiments, analyse and interpret data
		CO3	Students will have the ability to understand the technical issues in a ac machine		Analyse, formulate, and solve engineering problems
					Life-long learning to update their knowledge
					Awareness of the contemporary issues



IB

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram Dt
Pin - 680 597 Kerala

2	EE09 502 Power Generation Transmission and Distribution	CO1	Students will be able to understand Conventional and Non-Conventional Energy Resources	a,c,d,e,h,i,j	Knowledge of mathematics, science and engineering
		CO2	Students will be able to analyze the Performance of Transmission Lines		Design electrical and electronics systems, components
		CO3	Students will be able to understand basics of Corona, Sag and other problems arise in Transmission Lines.		Work individually as well as in multidisciplinary teams
		CO4	Students will be able to understand Power Factor improvement		Analyse and solve engineering
		CO5	Students will be able to evaluate performance of transmission lines		Broad knowledge
					Life-long learning
3	EE09 503 Linear Control Systems	CO1	Students will be able to understand how to model different systems mathematically and understand the concept of Transfer Function	a,b,c,d,e,h,I,j,k	Contemporary issues
		CO2	Students will be able to analyze the system models in time domain, understand time domain specifications, concept of steady state error and the stability requirements.		Knowledge of mathematics and engineering
		CO3	Students will gain adequate knowledge in the discrete time systems and its stability analysis.		Design and conduct experiments
		CO4	Students will be able to design compensator and controller to achieve a desired response from a system.		Design electrical and electronics systems, components, or processes
					Work individually as well as in multidisciplinary teams
					Analyse and solve engineering problems
					Broad knowledge
					Life-long learning
					Awareness of the contemporary issues
					Use of modern engineering tools, software



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady, Thiruviththamala, Thrissur Dt.
Pin 680 597 Kerala

4	EE09 504 Power Electronics	CO1	Students will be able to get in depth knowledge of various PE devices	a,b,c,e,h,k	Knowledge of mathematics and engineering
		CO2	Students will be able to analyze the various rectifier under different load conditions and to carry out their design and to understand the impact of PE converters on utility		Design, analyse and interpret data
		CO3	Students will be able to analyze the inverter circuits under different load and concepts of online and offline UPS		Design electrical and electronics systems, components, or processes
		CO4	Students will have the ability to understand the role power electronics in the improvement of energy usage efficiency		Identify, analyse, and solve engineering problems
		CO5	Students will be able to design and model basic SMPS for a particular application		Broad knowledge Modern engineering tools & software
5	EE09 505 Digital System Design	CO1	Students will be able to design a digital system for given specifications	a,b,c,d,e,h,I,j,k	Knowledge of engineering
		CO2	Students will be able to write the VHDL code for given digital system and verify the same using simulation software.		Design and conduct experiments Design electrical and electronics systems, components, or processes
		CO3	Students will be able to implement the digital system using a FPGA trainer kit		Work individually as well as in multidisciplinary teams Analyse and solve engineering problems
		CO4	Students will be proficient to use Modelsim and Xilinx software		Broad knowledge Life-long learning
		CO5	Students will be able to follow the stepwise design process starting from concept		Awareness of the contemporary issues Use of modern engineering tools, software

13



PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampany Thiruvithwamala, Thiruvananthapuram Dt
Pin 680 597 Kerala

6	EE09 506 Electrical Material Science	CO1	The students are able to identify the materials required for a particular application.	a,c,e,i,j	Knowledge of science and engineering
		CO2	The students understand the basic properties of various materials		Design electrical and electronics systems, components
		CO3	The students are able to understand the elementary concepts of solar energy materials and their applications		Identify, analyse, and solve engineering problems
		CO4	The students will be able to identify the insulators required for various applications		Life-long learning Awareness of the contemporary issues
7	EE09 507(P) Electrical Machines Lab I	CO1	Students can apply the basic knowledge gathered in the course to select a suitable DC machine for specific application in industries.	a,b,d,e,h	Knowledge of mathematics and engineering
		CO2	Students are able to analyze the performance characteristic of a transformer		Design and conduct experiments
		CO3	Students will have the ability to understand / troubleshoot the technical issues in a transformer/ dc machines		To work individually as well as in multidisciplinary teams Analyse and solve engineering problems
8	EE09 508 (P) Digital Electronics Lab	CO1	Students will get the clear idea and working of logic gates, flip flops, multiplexers, demultiplexers, microprocessor and FPGAs.	a, b, c, d, e, h, i, j, k	Broad knowledge
		CO2	Students will be able to design and implement logic circuits based on boolean functions using logic gates and multiplexer.		Knowledge of engineering
		CO3	Students will be able to design and implement different types of counter and sequencing circuits.		Design and conduct experiments Design electrical and electronics systems, components, or processes Work individually as well as in multidisciplinary teams Analyse and solve engineering problems Broad knowledge



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala Thrissur Dt
Pin 680 597 Kerala

			Students will be familiarized with the programming of 8085 microprocessor, VHDL programming for simple circuits and implementing it in FPGA.		Life-long learning
		CO4			Awareness of the contemporary issues
		CO5	Students will be able to generate various waveforms by interfacing DAC with 8085 microprocessor.		Use of modern engineering tools, software

SIXTH SEMESTER					
University		CALICUT		Scheme	2009
Sl No.	Course Code & Title	Course Outcome		PO Mapping	Justification
1	EE09 601 Microprocessors And Microcontrollers	CO1	Students will be able to write assembly program for various tasks using 8086 microprocessor/ 8051 Microcontroller	a,b,c,d,e,h,i,k	Knowledge of engineering
					Design and conduct experiments
		CO2	Students will be able to interface 8086 microprocessor with various peripheral devices		Design electrical and electronics systems, components, or processes
					Work individually as well as in multidisciplinary teams
		CO3	Students will be able to effectively utilize the 8051 microcontroller peripherals		Analyse and solve engineering problems
					Broad knowledge
CO4	Students will be able to design and implement simple embedded systems	Life-long learning			
		Use of modern engineering tools, software			
2	EE09 602 Engineering Economics & Principles Of Management	CO1	Students will be able to do creative planning	a,d,e,f,g,h,j,k	Knowledge of mathematics, science
					Multidisciplinary teams
		CO2	Students will be able to understand the importance of medium of exchange, measure of value and means of storing wealth		Analyse, and solve engineering problems
Professional and ethical responsibility.					



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram Dt
Pin 680 597 Kerala

		CO3	Students will be able to understand several steps in management and various duties of managers		Communicate effectively in any area of their field to the industry, fellow beings and society.					
		CO4	Students will be able to analyze various problems involved and suggest several remedial measures		Broad knowledge					
					Awareness of contemporary issues					
					Use the techniques and skill					
					3	EE09 603 Modern Control Theory	CO1	Students will be able to model, design and analyze control system	a,b,c,d,e,h,i,j,k	Knowledge of Mathematics & engineering
							CO2	Students will be able to understand the basic concepts of State space modeling of general systems pertaining to linear time invariant systems		Design and conduct experiments
Design electrical and electronics systems, components, or processes										
CO3	Students can understand the concept of stability and its relation with pole placements	Work individually as well as in multidisciplinary teams								
		Analyse and solve engineering problems								
CO4	Students will have the ability to use the advanced techniques, and modern engineering tools	Broad knowledge								
		Life-long learning								
					Awareness of the contemporary issues					
					Use of modern engineering tools, software					
4	EE09 604 Electric Drives	CO1	Students are able to get the concept of an electric drive and understand the various control schemes involved.	a,b,e,h,i,j,k	Knowledge of mathematics and engineering					
		CO2	Students are able to get a better understanding of a DC motor drive		Design and conduct experiments, analyse and interpret data					
		CO3	Students are able to understand the Induction motor drives and thereby get an idea of various schemes employed in the Industry.		Analyse, and solve engineering problems					
					Broad knowledge					
		CO4	Students are able to understand the basics of vector control involved in the control of Induction motors		Life-long learning					



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt
Pin - 680 597 Kerala

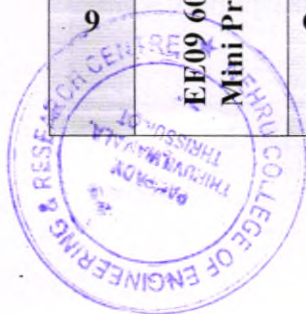
		CO5	Students get a better understanding of the different Special Machines and its control which is very relevant in the current scenario		Contemporary issues
					Modern engineering tools & software
5	EE09 605 Electrical Engineering Drawing	CO1	Students acquire graphic skills for communication of concepts and ideas of electrical equipments and systems using engineering sketches and also the usage of modern engineering tools and softwares for the same.	a,c,d,e,h,i,j	Apply knowledge of mathematics and engineering
					Design electrical and electronics systems, components
		CO2	Students know the standards applicable to engineering drawing and know a variety of electrical graphical symbols used in the drawings.		Work individually as well as in multidisciplinary teams
		CO3	Students will be able to identify and interpret the different machine types, their basic structure and the design of winding arrangements in each of them.		Identify, analyse and solve engineering
		CO4	Students can understand the basic structure and design of the transmission and distribution systems.		Broad knowledge
		CO5	Students will be able to represent the transmission system using single line diagram for the effective understanding of the system rather than showing the actual system diagram and also visualizing the actual system from the single line diagram.		Life-long learning
Awareness of the contemporary issues					
6	EE09 L02 Numerical Analysis and Optimization Techniques	CO1	Students will understand the importance of computers and the role of approximations and errors in the implementation and development of numerical methods.	a,b,d,e,h,i	Apply knowledge of mathematics
					Design and interpret data
		CO2	Students will gain sufficient information to successfully approach a wide variety of engineering problems dealing with roots of equations.		Multidisciplinary teams



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

		CO3	Students will have the ability to solve problems involving linear algebraic equations and appreciate the application of these equations in many fields of engineering		Solve engineering problems
		CO4	Students will have the ability to solve wide variety of engineering problems dealing with optimization.		Broad knowledge
		CO5	Students will have the ability to solve many numerical integration and differentiation problems and appreciate their application for engineering problem solving.		Life-long learning
7	EE09 L05 Bio- Medical Engineering	CO1	Students get acquaintance with the physiology of the heart, lung, blood circulation and respiration.	a,b,c,e,f,h,i	Knowledge of science and engineering
		CO2	Students understand the various sensing and measuring devices of electrical origin.		Analyse and interpret data
		CO3	Students get awareness of electrical safety of medical equipments		Health and safety
		CO4	Students will get ability to use different transducers for biomedical applications		Analyse and solve engineering problems
					Knowledge of professional
					Broad knowledge
					Life-long learning
8	EE09 607(P) Electrical Machines Lab II	CO1	Students get the knowledge on the performance of different types of induction motors.	a,b,d,e	Apply knowledge of mathematics and engineering
		CO2	Students get the experimental skill to obtain the performance of synchronous generator		Conduct experiments, analyse and interpret data
		CO3	Students learn the process of synchronising alternator with the mains.		Work individually as well as in multidisciplinary teams
					Identify, analyse, and solve engineering problems
9	EE09 608(P) Mini Project	CO1	Students are able to analyse a problem, identify	a, b, c, d, e, f, g, h, i, j, k	Knowledge of mathematics and Engg.
					Design and conduct experiments ,analyse and interpret data and results



13

PRINCIPAL
Nehru College of
Engineering and Research Center
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

			and define the computing requirements appropriate to its solutions		Design electrical and electronics systems, components, or processes
					Multidisciplinary teams
					Analyse, formulate, and solve engineering problems
		CO2	Students are able to function effectively on teams to accomplish a common goal		Knowledge of professional and ethical responsibility.
					communication
					Broad knowledge
					Life-long learning
					contemporary issues
		CO3	Students are able to use current techniques, skill and tools necessary for computing practices		Use the techniques, skills, and modern engineering tools, software and equipment to analyse and model complex engineering solutions

SEVENTH SEMESTER					
University		CALICUT		Scheme	2009
Sl No.	Course Code & Title	Course Outcome		PO Mapping	Justification
1	EE09 701 Power System Analysis	CO1	Students are able to model the power system under steady state operating conditions	a,b,c,e,h,i	Apply knowledge of mathematics and engineering
					To design, analyse and interpret data
		CO2	Students are able to apply different numerical methods to solve the power flow problem.		Design electrical and electronics systems, components
					Analyse and solve engineering problems
		CO3	Students are able to analyze the power system under abnormal conditions.		Broad knowledge
		CO4	Students understand the concept of stability in power system.		Life-long learning



12

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram Dt
Pin: 680 597 Kerala

2	EE09 702 Analog And Digital Communication	CO1	Students can understand the basic model of any communication system.	a,d,e,h,i,j,k	Knowledge of mathematics and engineering
		CO2	Students acquire the skill to identify and interpret various types of communication techniques.		Work in multidisciplinary teams
		CO3	Students know the basic concepts of communication techniques (both analog and digital) and can implement it in many real time communication systems.		Analyse and solve engineering problems
					Broad knowledge
					Life-long learning
					Awareness of the contemporary issues
3	EE09 703 Digital Signal Processing	CO1	Students will have the ability to mathematically represent a digital signal as a function of time or frequency.	a,b,c, e, h,i,k	Analyse and model complex engineering solutions
		CO2	Students will have the ability to apply various transformation techniques to represent and transform signals in time & frequency domain.		
		CO3	Students will have the ability to mathematically represent the functionality of a digital system and apply various transformation techniques to analyze a Digital Signal.		Apply knowledge of mathematics and engineering
		CO4	Students will have the ability to derive mathematical representation and draw realization structures for digital filter implementation from a mathematical representation of a Digital Filter.		Design, analyse and interpret data
		CO5	Students will have the ability to understand the architectural level working principles of currently existing Digital Signal Processors and their features.		Design electrical and electronics systems, components
					Analyse and solve engineering problems
					Broad knowledge
					Life-long learning
					Analyse and model complex engineering solutions



132

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvananthapuram
Date: _____

4	EE09 704 Electrical Machine Design	CO1	Students will have the ability to model small size transformers.	a, b, c, d, e, h, i	Knowledge of mathematics,
					Design analyse and interpret data
		CO2	Students will be able to design armature and field systems for D.C. machines		Design electrical and electronics systems, components
		CO3	Students will be able to design armature and field systems for alternators		Work individually as well as in multidisciplinary teams
		CO4	Students will be able to design cooling tubes for the transformer		Analyse and solve engineering problems
5	EE09 L13 High Voltage Engineering			a,b,c,d,e,h,i,j	Broad knowledge
					Life-long learning
		CO1	Students will be aware of the happenings in the high voltage and current testing and generating stations.		Knowledge of mathematics,
		CO2	Students will Gain the knowledge about the designing of different dielectric loss measurement bridges.		Design analyse and interpret data
		CO3	Students will be aware of the different instruments used in the testing of high voltage equipment.		Design electrical and electronics systems, components
6	EE09 L23 Process Control & Instrumentation	CO1	Students will learn the fundamental of instrumentation (valves, sensors, transmitters, and controllers) and Evaluate stability, frequency response, and other characteristics relevant to process control.	a,b,c,d,e,h,i,j	Work individually as well as in multidisciplinary teams
					Analyse and solve engineering problems
					Broad knowledge
					Life-long learning
					Sustainable solutions



12

4

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pipady Thiruvilwamala, Thiruvananthapuram Dt
Pin - 690 597 Kerala

		CO2	Students will understand the fundamental principles of equipment operation.		Analyse and solve engineering problems
		CO3	Students will be able to do projects in process control industry.		Broad knowledge
		CO4	Students will be able to design and maintain a process control system.		Life-long learning
		CO5	Students will be able to apply the concept of different temperature and flow measurement techniques in the industry.		Sustainable solutions
7	EE09 707(P) Power Electronics Lab	CO1	Students will be able to understand various power electronics devices such as SCR, TRIAC, DIAC, MOSFET, GTO etc	a, b, c, d, e, k	Knowledge of mathematics and engineering
		CO2	Students will be able to understand application of aforesaid power electronics devices in choppers, inverters and converters etc		Design, conduct, analyse and interpret data
					Design electrical and electronics systems, components
		CO3	Students will be able to understand control of electrical motors through dc-dc converters, ac converters etc.		Work individually as well as in multidisciplinary teams
		CO4	Students will be able to understand the use of inductors and capacitors in choppers, converters		Analyse and solve engineering problems
8	EE09 708 (P) Advanced Electrical Engineering Lab	CO1	Students will gain the knowledge to write the assembly language programs for 8086 and 8051	a, b, c, d, e, i, k	Use of software to analyse and model complex engineering solutions
		CO2	Students will gain the skills to write Matlab programs		Knowledge of mathematics and engineering
		CO3	Students will gain the knowledge to use different matlab tools		Design, conduct, analyse and interpret data
					Design electrical and electronics systems, components
					Work individually as well as in



12

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pamapady Thiruvilwamala, Thiruvananthapuram
Pin - 695 591 Kerala

					multidisciplinary teams
		CO4	Students will gain the knowledge to develop transfer function model of DC Machine		Analyse and solve engineering problems
		CO5	Students will gain the knowledge to conduct Load and Fault analysis of given power system		Life-long learning use of software to analyse and model complex engineering solutions
9	EE09 709(P) Project	CO1	Students will understand the recent development of technology related their project topic	a, b, c, d, e, f, g, h, i, j, k	Knowledge of mathematics and Engg.
					Design and conduct experiments ,analyse and interpret data and results
					Design electrical and electronics systems, components, or processes
					Multidisciplinary teams
		CO2	Students will gain the skill to write literature review for a research work		Analyse, formulate, and solve engineering problems
					Knowledge of professional and ethical responsibility.
					communication
					Broad knowledge
		CO3	Students will get exposed to presentations and exhibitions.		Life-long learning
					contemporary issues
					Use software and equipment to analyse and model complex engineering solutions



13

Handwritten signature
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pamady, Thiruvilwamala, Thrissur Dt
 Pin 680 597 Kerala

EIGHTH SEMESTER				
University		CALICUT		Scheme
Sl No.	Course Code & Title	Course Outcome		2009
			PO Mapping	Justification
1	EE09 801 Electrical System Design	CO1	a, b, c	Knowledge of mathematics and Engg.
		CO2		Design ,analyse and interpret data and results
		CO3		Design electrical and electronics systems, components, or processes
		CO4		
2	EE09 802 Power System Protection And Utilization	CO1	a,h,i,j	Knowledge of mathematics and Engg.
		CO2		Broad knowledge
		CO3		Life-long learning
		CO4		Sustainable solutions
3	EE09 L06 Special Electrical Machines	CO1	a, b, c, d, e, h, i, j	Knowledge of mathematics and engineering
		CO2		Design analyse and interpret data
		CO3		Design electrical and electronics systems, components
				Work individually as well as in multidisciplinary teams
				Analyse and solve engineering problems



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt.
Pin - 686 59, Kerala

			in the BLDC Motor and its performance and its different control schemes.		Broad knowledge
			Students will have the knowledge about Construction, principle of operation and performance of Permanent Magnet Synchronous Motor its different control schemes.		Life-long learning
		CO4			Sustainable solutions
4	EE09 L09 Renewable Energy Resources, Electricity Billing, Energy Conservation And Management	CO1	Students will aware of the different renewable energy sources available	a, b, c, d, e, h, i	Knowledge of mathematics and engineering
					Design analyse and interpret data
		CO2	Students will be able to do the energy auditing for small industries		Design electrical and electronics systems, components
					Work individually as well as in multidisciplinary teams
		CO3	Students will be able to give energy saving methods in small scale.		Analyse and solve engineering problems
5	EE09 805(P) Seminar	CO4	Students will be able to analyze the energy economics	a, b, c, d, e, h, i	Broad knowledge
					Life-long learning
		CO1	Students will develop the confidence to prepare and present a topic before the audience		Knowledge of mathematics and engineering
		CO2	Students will gain knowledge in any of the technically relevant current topics		Design electrical and electronics systems, components
		CO3	Students will develop knowledge about the recent advancements in the areas of their topic through the detailed literature survey being carried out and will be able to write a technical report		Communicate effectively
6	EE09 806(P) Project			a, b, c, d, e, f, g, h, i, j, k	Broad knowledge
		CO1	Students will understand the recent development of technology related their project topic		Life-long learning
					Knowledge of mathematics and Engg.
					Design and conduct experiments .analyse and interpret data and results



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

				Design electrical and electronics systems, components, or processes
				Multidisciplinary teams
		CO2	Students will gain the skill to write literature review for a research work	Analyse, formulate, and solve engineering problems
				Knowledge of professional and ethical responsibility.
				communication
				Broad knowledge
				Life-long learning
				contemporary issues
		CO3	Students will get exposed to presentations and exhibitions.	Use software and equipment to analyse and model complex engineering solutions

The students will be able to achieve the following graduate attributes

I) Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems.

II) Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science and engineering sciences.

III) 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.

IV) 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.

V) 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.

VI) 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.



13 ✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt.
Pin 680 597 Kerala

VII) 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.

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

IX) Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multi disciplinary settings.

X) 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.

XI) 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.

XII) 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.

Alignment of POs with GA and Justification

Graduate Attributes	PROGRAMME OUTCOMES										
	a	b	c	d	e	f	g	h	i	j	k
Engineering Knowledge	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Problem Analysis	✓	✓	✓	✓	✓					✓	✓
Design & Development of Solutions	✓	✓	✓	✓	✓					✓	✓
Conduct investigations of complex problems	✓	✓	✓	✓	✓					✓	✓
Modern Tools Usage		✓	✓	✓	✓				✓	✓	✓
The Engineer and Society			✓	✓		✓	✓	✓	✓	✓	✓
Environment & Sustainability			✓			✓		✓		✓	
Ethics			✓	✓		✓					
Individual & Team work			✓	✓		✓					
Communication			✓	✓		✓	✓	✓			



13

Principal
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala Thrissur 68
 Pin 680 597 Kerala

Project management & Finance			✓	✓		✓					
Lifelong Learning	✓	✓	✓		✓			✓	✓	✓	

Alignment of POs with GA and Justification

GRADUATE ATTRIBUTES	PO's	JUSTIFICATIONS
Engineering Knowledge	a	Apply knowledge of mathematics, science and engineering
	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	e	Identify, analyse, formulate, and solve engineering problems
	g	Communicate effectively in any area of their field
	h	Broad knowledge
	i	Life-long learning
	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Problem Analysis	a	Apply knowledge of mathematics, science and engineering
	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	e	Identify, analyse, formulate, and solve engineering problems



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur
Pin - 686 014 Kerala

	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Design & Development of Solutions	a	Apply knowledge of mathematics, science and engineering
	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	e	Identify, analyse, formulate, and solve engineering problems
	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Conduct investigations of complex problems	a	Apply knowledge of mathematics, science and engineering
	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	e	Identify, analyse, formulate, and solve engineering problems
	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Modern Tools Usage	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilvamala Thiruvananthapuram
Pin: 680 597 Kerala

	e	Identify, analyse, formulate, and solve engineering problems
--	----------	--

	i	Life-long learning
	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Engineer and Society	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	f	Ability to communicate effectively
	g	Communicate effectively in any area of their field
	h	Broad knowledge
	i	Life-long learning
	j	Awareness of the contemporary issues
	k	Ability to use the techniques, skills, and modern engineering tools, software and equipment
Environment & Sustainability	c	Design electrical and electronics systems, components, or processes
	f	Ability to communicate effectively
	h	Broad knowledge
	j	Awareness of the contemporary issues
Ethics	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pamapady Thiruvilwamala, Thiruvananthapuram
Pin - 686 552 Kerala

	f	Ability to communicate effectively
--	----------	------------------------------------

Individual & Team work	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	f	Ability to communicate effectively
Communication	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	f	Ability to communicate effectively
	g	Communicate effectively in any area of their field
	h	Broad knowledge
Project management & Finance	c	Design electrical and electronics systems, components, or processes
	d	Work individually as well as in multidisciplinary teams
	f	Ability to communicate effectively
Lifelong Learning	a	Apply knowledge of mathematics, science and engineering
	b	Design and conduct experiments, analyse and interpret data and results
	c	Design electrical and electronics systems, components, or processes
	e	Identify, analyse, formulate, and solve engineering problems
	h	Broad knowledge
	i	Life-long learning



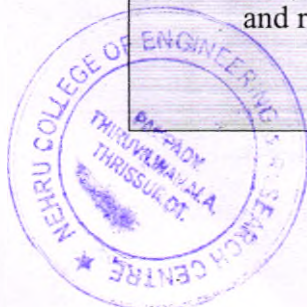
10

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala Thrissur Dt
Pin - 680 597 Kerala

	j	Awareness of the contemporary issues
--	---	--------------------------------------

Correlation between the POs and the PEOs

Programme Educational Objectives (PEO)	PROGRAMME OUTCOMES(PO)											Justifications
	a	b	c	d	e	f	g	h	i	j	k	
PEO 1 Fundamental and practical aspects of Mathematics and Engineering Sciences												Apply knowledge of mathematics, science and engineering
												Design and conduct experiments, analyse and interpret data and results
												Design electrical and electronics systems, components, or processes
	✓	✓	✓		✓						✓	✓
												Identify, analyse, formulate, and solve engineering problems
												Awareness of the contemporary issues
PEO II Latest technological developments pursue higher education and research												Ability to use the techniques, skills, and modern engineering tools, software and equipment
												Design and conduct experiments, analyse and interpret data and results
		✓	✓	✓	✓			✓	✓	✓	✓	Design electrical and electronics systems, components, or processes



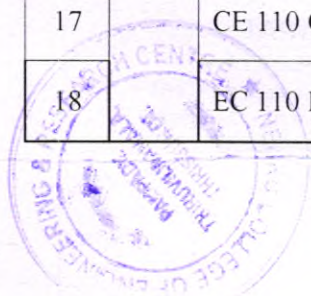
13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvikramala, Thrissur District
Pin - 686 597, Kerala

Attainment of Programme Outcomes

Mapping of Individual Courses in the current academic year 2015 – 2016 for finding the correlation

Sl No.	Semester	Course Code & Title	Programme Outcomes										
			a	b	c	d	e	f	g	h	i	j	k
1	FIRST	MA 101 Calculus	✓				✓						✓
2		PH 100 Engineering Physics	✓				✓			✓			
3		BE101-03 Introduction to Electrical Engineering	✓	✓	✓	✓	✓			✓	✓	✓	
4		BE 103 Introduction to Sustainable Engineering				✓		✓		✓		✓	
5		ME 100 Basics of Mechanical Engineering		✓	✓		✓			✓		✓	✓
6		BE 100 Engineering Mechanics	✓	✓	✓	✓	✓				✓	✓	
7		PH 110 Engineering Physics Lab	✓	✓			✓		✓	✓			
8		EE 110 Electrical Engineering Workshop	✓	✓	✓	✓	✓			✓	✓		
9		ME 110 Mechanical Engineering Workshop	✓	✓	✓					✓			
10	SECOND	MA 102 Differential Equations	✓	✓	✓		✓			✓	✓		
11		CY 100 Engineering Chemistry	✓	✓	✓	✓	✓		✓	✓			
12		BE 110 Engineering Graphics	✓		✓				✓		✓		✓
13		BE 102 Design and Engineering	✓	✓	✓	✓	✓	✓	✓				✓
14		CE 100 Basics of Civil Engineering	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
15		EC 100 Basics of Electronics Engineering	✓	✓	✓		✓						
16		CY 110 Engineering Chemistry Lab	✓	✓		✓			✓	✓			✓
17		CE 110 Civil Engineering Workshop	✓	✓		✓	✓	✓					
18		EC 110 Electronics Engineering Workshop	✓	✓	✓		✓						



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruvananthapuram Dt
Pin - 690 597 Kerala

19	THIRD	EN14 301 Engineering Mathematics – III	✓	✓			✓					✓
20		EN14 302 Computer Programming in C	✓	✓	✓	✓	✓				✓	✓
21		EE14 303 Electric Circuit Theory	✓	✓			✓			✓	✓	✓
22		EE14 304 Electrical measurements & Instrumentation Systems	✓	✓	✓	✓	✓			✓	✓	✓
23		EE14 305 Analog Electronics	✓	✓	✓	✓	✓		✓	✓	✓	
24		EE14 306 Mechanical Engineering	✓	✓	✓		✓					✓
25		EE14 307 (P) Basic Electrical Engineering LAB	✓	✓	✓	✓	✓				✓	
26		EE14 308 (P) Electronics LAB	✓	✓	✓		✓			✓	✓	✓
27	FOURTH	EN14 401 B Engineering Mathematics – IV	✓		✓	✓	✓			✓	✓	
28		EN14 402 Environmental Science	✓		✓	✓		✓	✓			✓
29		EE14 403 Electrical Machines I	✓	✓	✓	✓	✓			✓	✓	✓
30		EE14 404 Signals & Systems	✓	✓	✓		✓			✓	✓	✓
31		EE14 405 Digital Electronics	✓	✓	✓	✓	✓			✓	✓	✓
32		EE14 406 Electro Magnetic Field Theory	✓	✓	✓	✓	✓			✓	✓	
33		EE14 407 (P) Mechanical Engineering LAB	✓	✓	✓					✓		
34		EE14 408 (P) Electrical Measurements & Instrumentation Lab	✓	✓	✓	✓				✓	✓	
35	FIFTH	EE09 501 Synchronous and Induction Machines	✓	✓			✓				✓	✓
36		EE09 502 Power Generation Transmission And Distribution	✓		✓	✓	✓			✓	✓	✓
37		EE09 503 Linear Control Systems	✓	✓	✓	✓	✓			✓	✓	✓
38		EE09 504 Power Electronics	✓	✓	✓		✓			✓		✓
39		EE09 505 Digital System Design	✓	✓	✓	✓	✓			✓	✓	✓
40		EE09 506 Electrical Material Science	✓		✓		✓				✓	✓
41		EE09 507(P) Electrical Machines Lab I	✓	✓		✓	✓			✓		

12

PRINCIPAL
Nehru College of
Engineering and Research
Panipady Thiruvananthapuram
Pin - 695 012

42		EE09 508 (P) Digital Electronics Lab	✓	✓	✓	✓	✓			✓	✓	✓	✓
43	SIXTH	EE09 601 Microprocessors And Microcontrollers	✓	✓	✓	✓	✓			✓	✓		✓
44		EE09 602 Engineering Economics & Principles of Management	✓			✓	✓	✓	✓	✓		✓	✓
45		EE09 603 Modern Control Theory	✓	✓	✓	✓	✓			✓	✓	✓	✓
46		EE09 604 Electric Drives	✓	✓			✓			✓	✓	✓	✓
47		EE09 605 Electrical Engineering Drawing	✓		✓	✓	✓			✓	✓	✓	
48		EE09 L02 Numerical Analysis and Optimisation Techniques	✓	✓		✓	✓			✓	✓		
49		EE09 L05 Bio- Medical Engineering	✓	✓	✓		✓	✓		✓	✓		
50		EE09 607(P) Electrical Machines Lab II	✓	✓		✓	✓						
51		EE09 608(P) Mini Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
52	SEVENTH	EE09 701 Power System Analysis	✓	✓	✓		✓			✓	✓		
53		EE09 702 Analog And Digital Communication	✓			✓	✓			✓	✓	✓	✓
54		EE09 703 Digital Signal Processing	✓	✓	✓		✓			✓	✓		✓
55		EE09 704 Electrical Machine Design	✓	✓	✓	✓	✓			✓	✓		
56		EE09 L13 High Voltage Engineering	✓	✓	✓	✓	✓			✓	✓	✓	
57		EE09 L23 Process Control & Instrumentation	✓	✓	✓	✓	✓			✓	✓	✓	
58		EE09 707(P) Power Electronics Lab	✓	✓	✓	✓	✓						✓
59		EE09 708 (P) Advanced Electrical Engineering Lab	✓	✓	✓	✓	✓				✓		✓
60		EE09 709(P) Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

61	EIGHTH	EE09 801 Electrical System Design	✓	✓	✓								
62		EE09 802 Power System Protection And Utilization	✓							✓	✓	✓	

IB

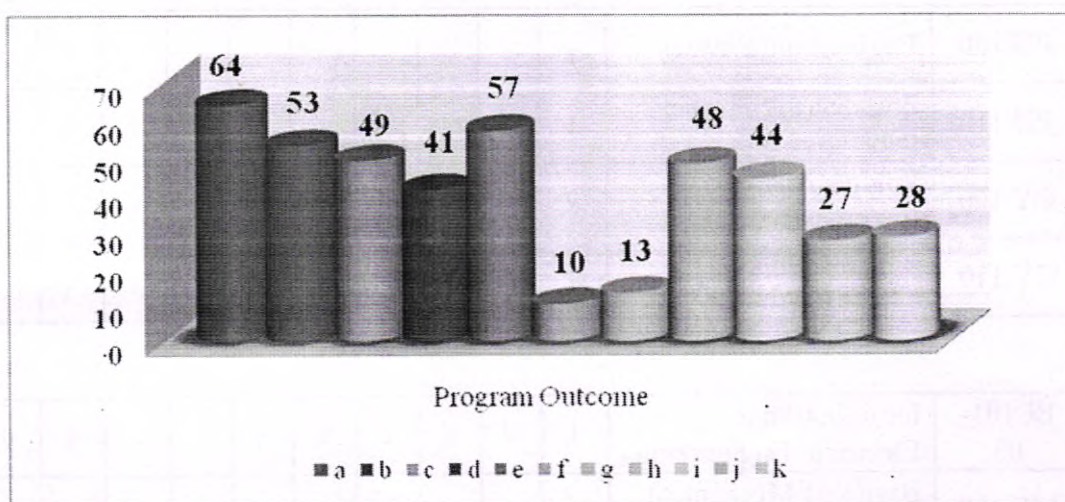
✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt
Pin - 680 507, Kerala

63	EE09 L06 Special Electrical Machines	✓	✓	✓	✓	✓			✓	✓	✓	
64	EE09 L09 Renewable Energy Resources, Electricity Billing, Energy Conservation and Management	✓	✓	✓	✓	✓			✓	✓		
65	EE09 805(P) Seminar	✓		✓		✓		✓	✓	✓	✓	
66	EE09 806(P) Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

STRENGTH OF CORRELATION

Program Outcomes	a	b	c	d	e	f	g	h	i	j	k
Strength	64	53	49	41	57	10	13	48	44	27	28



The following activities are undertaken to improve the level of attainment of the programme outcome 'g' to improve the communication skills:

- 1) Seminar
- 2) Participation in symposiums
- 3) Language Lab
- 4) Placement training Programmes

The following activities are undertaken to improve the level of attainment of the programme outcome 'f' to improve the ethical skills.

- 1) Morning prayer before starting the class for all students.
- 2) Retreat and holy mass for Catholic students and value education for others.

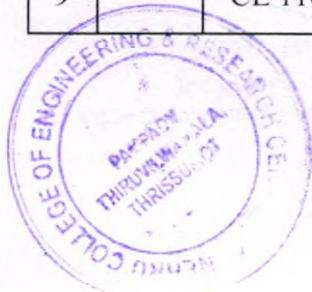


13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Panipady Thiruvilwamala, Thiruvananthapuram
 Pin - 680 59, Kerala

Strength of Correction of Course Domain to Programme Outcomes
Academic Year 2015-16

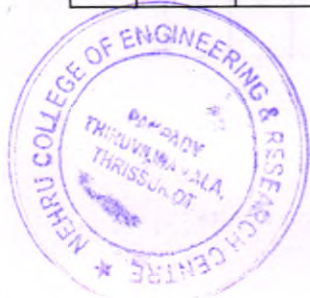
Sl.No.	Course Component	Course Code	Course Name	Semester	PROGRAMME OUTCOMES										
					a	b	c	d	e	f	g	h	i	j	k
1	Mathematics	MA 101	Calculus	1	√				√						√
2		MA 102	Differential Equations	2	√	√	√		√			√	√		
3		EN14 301	Engineering Mathematics III	3	√	√			√						√
4		EN14 401A	Engineering Mathematics IV	4	√		√	√	√			√	√		
1	Basic Sciences	PH 100	Engineering Physics	1	√				√			√			
2		PH 110	Engineering Physics Lab	1	√	√			√		√	√			
3		CY 100	Engineering Chemistry	2	√	√	√	√	√		√	√			
4		CY 110	Engineering Chemistry Lab	2	√	√		√			√	√			√
1	Basic Engineering Courses	BE101-03	Introduction to Electrical Engineering	1	√	√	√	√	√			√	√	√	
2		ME 100	Basics of Mechanical Engineering	1		√	√		√			√		√	√
3		BE 100	Engineering Mechanics	1	√	√	√	√	√				√	√	
4		EE 110	Electrical Engineering Workshop	1	√	√	√	√	√			√	√		
5		ME 110	Mechanical Engineering Workshop	1	√	√	√					√			
6		BE 110	Engineering Graphics	2	√		√				√		√		√
7		CE 100	Basics of Civil Engineering	2	√	√		√	√	√	√	√	√	√	√
8		EC 100	Basics of Electronics Engineering	2	√	√	√		√						
9		CE 110	Civil Engineering Workshop	2	√	√		√	√	√					



B

PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thiruvananthapuram
 Pin - 690 567 Kerala

10		EC 110	Electronics Engineering Workshop	2	√	√	√		√						
11		EN14 302	Computer Programming in C	3	√	√	√	√	√				√		√
1	Humanities	BE 103	Introduction to Sustainable Engineering	1				√		√		√		√	
2		BE 102	Design and Engineering	2	√	√	√	√	√	√	√				√
3		EN14 402	Environmental Science	4	√		√	√		√	√			√	
1	Breadth	EE14 306	Mechanical Engineering	3	√	√	√		√						√
2		EE14 407 (P)	Mechanical Engineering LAB	4	√	√	√					√			
3		EE09 702	Analog And Digital Communication	7	√			√	√			√	√	√	√
4		EE09 703	Digital Signal Processing	7	√	√	√		√			√	√		√
1	Professional Core	EE14 303	Electric Circuit Theory	3	√	√			√			√	√		√
2		EE14 304	Electrical measurements & Instrumentation Systems	3	√	√	√	√	√			√	√	√	
3		EE14 305	Analog Electronics	3	√	√	√	√	√		√	√	√		
4		EE14 307 (P)	Basic Electrical Engineering LAB	3	√	√	√	√	√				√		
5		EE14 308 (P)	Electronics LAB	3	√	√	√		√			√	√		√
6		EE14 403	Electrical Machines I	4	√	√	√	√	√			√	√	√	
7		EE14 404	Signals & Systems	4	√	√	√		√			√	√		√
8		EE14 405	Digital Electronics	4	√	√	√	√	√			√	√		√
9		EE14 406	Electro Magnetic Field Theory	4	√	√	√	√	√			√	√		



JB

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panpady Thiruvilwamala, Thrissur Dt
Pin 680 597, Kerala

10	EE14 408 (P)	Electrical Measurements & Instrumentation Lab	4	√	√	√	√				√	√		
11	EE09 501	Synchronous and Induction Machines	5	√	√			√				√	√	
12	EE09 502	Power Generation Transmission And Distribution	5	√		√	√	√			√	√	√	
13	EE09 503	Linear Control Systems	5	√	√	√	√	√			√	√	√	√
14	EE09 504	Power Electronics	5	√	√	√		√			√			√
15	EE09 505	Digital System Design	5	√	√	√	√	√			√	√	√	√
16	EE09 506	Electrical Material Science	5	√		√		√				√	√	
17	EE09 507(P)	Electrical Machines Lab I	5	√	√		√	√			√			
18	EE09 508 (P)	Digital Electronics Lab	5	√	√	√	√	√			√	√	√	√
19	EE09 601	Microprocessors And Microcontrollers	6	√	√	√	√	√			√	√		√
20	EE09 603	Modern Control Theory	6	√	√	√	√	√			√	√	√	√
21	EE09 604	Electric Drives	6	√	√			√			√	√	√	√
22	EE09 605	Electrical Engineering Drawing	6	√		√	√	√			√	√	√	
23	EE09 607(P)	Electrical Machines Lab II	6	√	√		√	√						
24	EE09 608(P)	Mini Project	6	√	√	√	√	√	√	√	√	√	√	√
25	EE09 701	Power System Analysis	7	√	√	√		√			√	√		
26	EE09 704	Electrical Machine Design	7	√	√	√	√	√			√	√		
27	EE09 707(P)	Power Electronics Lab	7	√	√	√	√	√						√
28	EE09 708 (P)	Advanced Electrical Engineering Lab	7	√	√	√	√	√				√		√
29	EE09 709(P)	Project	7	√	√	√	√	√	√	√	√	√	√	√
30	EE09 801	Electrical System Design	8	√	√	√								
31	EE09 802	Power System Protection And Utilization	8	√							√	√	√	



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvavala Thiruvananthapuram

32		EE09 805(P)	Seminar	8	√		√		√		√	√	√	√	
33		EE09 805(P)	Project	8	√	√	√	√	√	√	√	√		√	√
1	Electives	EE09 L02	Numerical Analysis and Optimisation Techniques	6	√	√		√	√			√	√		
2		EE09 L05	Bio- Medical Engineering	6	√	√	√		√	√		√	√		
3		EE09 L13	High Voltage Engineering	7	√	√	√	√	√			√	√	√	
4		EE09 L23	Process Control & Instrumentation	7	√	√	√	√	√			√	√	√	
5		EE09 L06	Special Electrical Machines	8	√	√	√	√	√			√	√	√	
6		EE09 L09	Renewable Energy Resources, Electricity Billing, Energy Conservation and Management	8	√	√	√	√	√			√	√		
1	Management	EE09 602	Engineering Economics & Principles of Management	6	√			√	√	√	√	√		√	√

Course Component	PROGRAMME OUTCOMES										
	a	b	c	d	e	f	g	h	i	j	k
Mathematics	S	G	G	M	S	N	N	G	G	N	G
Basic Sciences	S	S	M	G	S	N	S	S	N	N	M
Basic Engineering Courses	S	S	S	G	S	W	W	G	G	G	G
Humanities	G	M	G	S	M	S	G	M	N	G	M
Breadth	S	S	S	M	S	N	N	S	G	M	S
Professional Core	S	S	S	G	S	W	M	S	S	G	G
Electives	S	S	S	S	S	M	N	S	S	G	N
Management	S	N	N	S	S	S	S	S	N	S	S



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Thiruvilwamala, Thiruvananthapuram Dt
Pin 680 597 Kerala

S	Strong Correlation	W	Weak Correlation
G	Good Correlation	N	No Correlation
M	Moderate Correlation		

LABORATORIES IN 2009 SCHEME

Theory Course			Associated Lab		
Sl No.	Course Code	Course Name	Sl No.	Course Code	Name of the Lab
1	EN09 103	Engineering Physics	1	EN09 103 (P)	Physics Lab
2	EN09 104	Engineering Chemistry	2	EN09 104 (P)	Chemistry Lab
3	EN09 107	Basics of Electrical, Electronics & Communication Engineering	3	EN09 110 (P) & EN09 111 (P)	Mechanical Workshops & Electrical and Civil Workshops
4	EN09 106	Basics of Civil and mechanical Engg.	4		

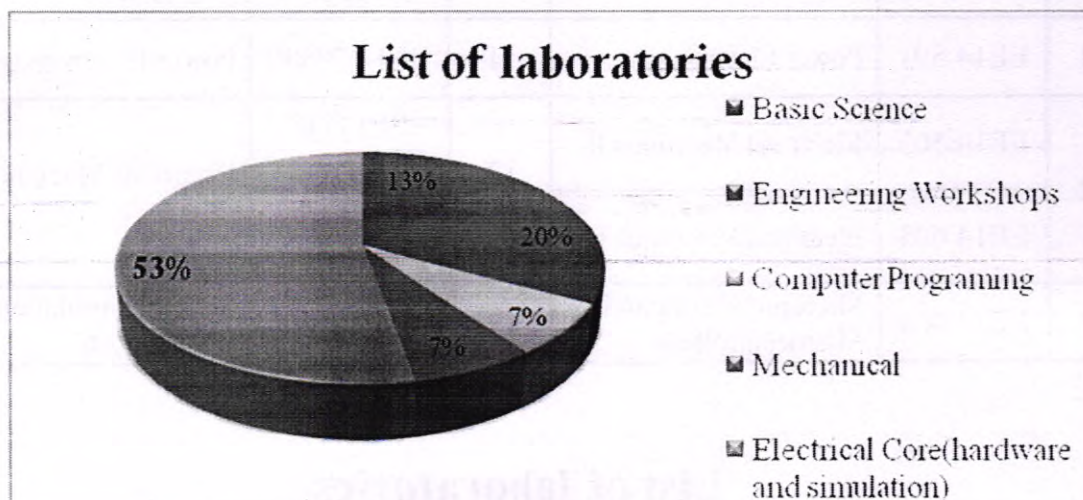
5	EE09 303	Electric Circuit Theory	5	EE09 307 (P)	Basic Electrical Engg. Lab
6	EE09 305	Analog Electronics	6	EE09 308 (P)	Analog Electronics Lab
7	EE09 306	Mechanical Engineering	7	EE09 407 (P)	Mechanical Engg. Lab
8	EE09 404	DC Machines and Transformers	8	EE09 507 (P)	Electrical Machines Lab -I
9	EE09 405	Digital Electronics	9	EE09 508 (P)	Digital Electronics Lab
10	EE09 406	Electrical Measurements & Instrumentation Systems	10	EE09 408 (P)	Electrical Measurements & Instrumentation Lab
11	EE09 501	Synchronous and Induction Machines	11	EE09 607 (P)	Electrical Machines Lab -II
12	EE09 504	Power Electronics	12	EE09 707 (P)	Power Electronics Lab



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady, Thiruvilwamala, Thiruvananthapuram Dt
Pin 680 597 Kerala

13	EE09 601	Microprocessors and Microcontrollers	13	EE09 708 (P)	Advanced Electrical Engg. Lab
----	----------	--------------------------------------	----	--------------	-------------------------------



2014 SCHEME

Theory Course			Associated Lab		
Sl No.	Course Code	Course Name	Sl No.	Course Code	Name of the Lab
1	EN14 103	Engineering Physics	1	EN14 103 (P)	Physics Lab
2	EN14 104	Engineering Chemistry	2	EN14 104 (P)	Chemistry Lab
3	EN14 107	Basics of Electrical, Electronics & Communication Engineering	3	EN14 110 (P) & EN14 111 (P)	Mechanical Workshops & Electrical and Civil Workshops
4	EN14 106	Basics of Civil and mechanical Engg.	4		
5	EE14 303	Electric Circuit Theory	5	EE14 307 (P)	Basic Electrical Engg. Lab
6	EE14 304	Electrical Measurements & Instrumentation Systems	6	EE14 408(P)	Electrical Measurements & Instrumentation Lab
7	EE14 305	Analog Electronics	7	EE14 308 (P)	Electronics Lab
8	EE14 306	Mechanical Engineering	8	EE14 407 (P)	Mechanical Engg. Lab



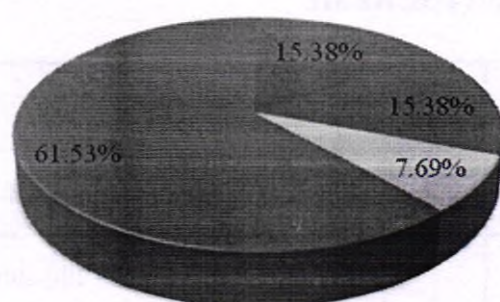
12

✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pamapady Thiruvilwamala, Thrissur Dt
Pin - 680 597 Kerala

9	EE14 403	Electrical Machines I	9	EE14 507 (P)	Electrical Machines Lab -I
10	EE14 405	Digital Electronics	10	EE14 508 (P)	Integrated Circuits Lab
11	EE14 501	Power Electronics	11	EE14 706(P)	Power Electronics Lab
12	EE14 503	Electrical Machines II	12	EE14 607 (P)	Electrical Machines Lab -II
	EE14 603	Electrical Machines III		EE14 607 (P)	
13	EE14 604	Microprocessors and Microcontrollers	13	EE14 707 (P)	System Simulation and Control Lab

List of laboratories



■ Basic Science

■ Engineering Workshops

■ Mechanical

■ Electrical
Core(hardware and
simulation)

INDIVIDUAL LAB COURSES PO MAPPING IN THE ACADEMIC YEAR

2015 – 2016

SL NO	Course Code & Course Title	PROGRAMME OUTCOMES										
		a	b	c	d	e	f	g	h	i	j	K
1	PH 110 Engineering Physics Lab	✓	✓			✓		✓	✓			
2	EE110 Electrical Engineering Workshop	✓	✓	✓	✓	✓			✓	✓		



132

PRINCIPAL
Nehru College of
Engineering and Research Center
Pampady

3	ME 110 Mechanical Engineering Workshop											
4	CY 110 Engineering Chemistry Lab	✓	✓		✓			✓	✓			✓
5	CE 110 Civil Engineering Workshop	✓	✓		✓	✓	✓					
6	EC 110 Electronics Engineering Workshop	✓	✓	✓		✓						
7	EE14 307(P) Basic Electrical Engineering Lab	✓	✓	✓	✓	✓				✓		
8	EE14 308(P) Electronics Lab	✓	✓	✓		✓			✓	✓		✓
9	EE14 407(P) Mechanical Engineering Lab	✓	✓	✓					✓			
10	EE14 408(P) Electrical Measurements & Instrumentation Lab	✓	✓	✓	✓				✓	✓		
11	EE09 507(P) Electrical Machine Lab I	✓	✓		✓	✓			✓			
12	EE09 508(P) Digital Electronics Lab	✓	✓	✓	✓	✓			✓	✓	✓	✓
13	EE09 607(P) Electrical Machines Lab II	✓	✓		✓	✓						
14	EE09 707(P) Power Electronics Lab	✓	✓	✓	✓	✓						✓
15	EE09 708(P) Advanced Electrical Engineering Lab	✓	✓	✓	✓	✓				✓		✓



12


 PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thrissur Dt
 Pin 680 597 Kerala



**NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)**

(Approved by AICTE, Affiliated to KTU University, Kerala)



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAMME OUTCOMES (PO)

- Programme Outcomes describe what students are expected to know and be able to do upon the graduation.

The Program Outcomes of under Graduate program in Electronics and Communication Engineering are:

Students will have:

- a) Ability to apply knowledge of mathematics, science and engineering in the field of electronics and communication engineering.
- b) Ability to design and conduct experiments, analyse and interpret data and results in electronics and communication engineering.
- c) Ability to design electronics and communication systems, components, or processes to meet the desired needs within realistic constraints such as health and safety, manufacturability and sustainability with economic, environmental, social, political and ethical considerations.
- d) Ability to work individually as well as in multidisciplinary teams as a member or as a leader to accomplish the common goal.
- e) Ability to identify, analyse, formulate, and solve engineering problems
- f) Knowledge of professional and ethical responsibility.
- g) Ability to communicate effectively in any area of their field to the industry, fellow beings and society.
- h) Broad knowledge necessary to understand the impact of engineering solutions on individuals, organizations and society.
- i) Ability to engage in life-long learning to update their knowledge to keep pace with changes caused by dynamic nature of engineering field.
- j) Awareness of the contemporary issues that help to integrate advanced and sustainable solutions in the user environment.
- k) Ability to use the techniques, skills, and modern engineering tools, software and equipment to analyse and model complex engineering solutions

COURSE OUTCOME (CO)

- Course outcomes are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program.



13

PRINCIPAL

Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram Dt
Pin - 680 597 Kerala

- Identify what the learner will know and be able to do by the end of a course or program.

SCHEME : 2015

FIRST SEMESTER			
University		KTU	
Sl No.	Course Code & Title	Course Outcome	
1	MA 101 Calculus	CO1	Students will be able to model physical phenomena involving functions of variables and parameters.
		CO2	Students will be able to acquire basic training in visualizing graphs and surfaces.
		CO3	Ability to use suitable softwares for plotting graphs.
2	PH 100 Engineering Physics	CO1	Students will be familiar with the principles of Physics.
		CO2	Students will be familiar significance of Physics in engineering systems and technological advances.
3	BE101-03 Introduction to Electrical Engineering	CO1	Students will be able to know the basic laws of Electrical and Magnetic Circuits.
		CO2	Students will get an overview of ac fundamentals and complex power.
		CO3	Students will get the basics of three phase systems.
		CO4	Students will get knowledge of the basic concepts of wiring and necessity of earthing



Handwritten signature/initials in green ink.

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur
Pin - 680 597 Kerala

4	BE 103 Introduction to Sustainable Engineering	CO1	The student will be able to understand the different types of environmental pollution problems and their sustainable solutions.
		CO2	The student will be able to work in the area of sustainability for research and education
		CO3	The student will be having a broader perspective in thinking for sustainable practices by utilizing the engineering knowledge and principles gained from this course
5	ME 100 Basics of Mechanical Engineering	CO1	To understand the basic principles of thermodynamics and refrigeration systems.
		CO2	To understand and familiarize the theory behind Engines and to get the basics of automobile field.
		CO3	To get knowledge of the basic structure of power transmission system.
		CO4	To get the basic idea of various manufacturing process
		CO5	To explain the various machine tools and CNC.
6	BE 100 Engineering Mechanics	CO1	To utilize scalar and vector analytical techniques for analyzing forces in statically determinate structures.
		CO2	To apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems.
		CO3	To identify, formulate, and solve engineering problems by applying the methods learned in Engineering Mechanics.
		CO4	To apply basic knowledge of mathematics and physics to solve real-world problems.
		CO5	To utilize scalar and vector analytical techniques for analyzing forces in statically determinate structures.



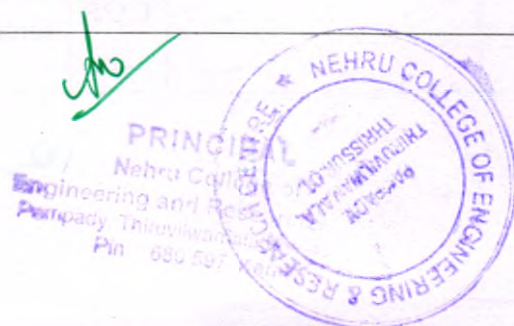
103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvikramala, Thrissur Dt
Pin 680 597 Kerala

7	PH 110 Engineering Physics Lab	CO1	Ability to design and conduct experiments including electronics, optics, lasers etc.
		CO2	Recognize how observation, experiment and theory work together to expand the frontiers of knowledge of the physical universe.
		CO3	Communicate verbally, graphically and in writing the results of calculations and laboratory experiments in a clear and concise manner used by physicists worldwide.
8	EE 110 Electrical Engineering Workshop	CO1	Familiarity with supply arrangements and their limitations, knowledge of standard voltages and their tolerances, safety aspects of electrical systems and importance of protective measures in wiring systems
		CO2	Knowledge about the types of wires, cables and other accessories used in wiring. Creating awareness of energy conservation in electrical systems
		CO3	Students should be able to wire simple lighting circuits for domestic buildings, distinguish between light and power circuits
		CO4	To measure electrical circuit parameters and current, voltage and power in a circuit. Familiarity with backup power supply in domestic installation
9	ME 110 Mechanical Engineering Workshop	CO1	Students are able to understand the basic manufacturing methods in industries
		CO2	Students will develop the technical skills regarding manufacturing
		CO3	To develop practical skills on operating machineries.



13



SECOND SEMESTER			
University		KTU	
Sl No.	Course Code & Title	Course Outcome	
1	MA 102 Differential Equations	CO1	Ability to analyse physical phenomena involving differential equations
		CO2	Ability to use differential equations in Fluid Mechanics
		CO3	Ability to use Fourier series in circuits and other engineering applications
2	CY 100 Engineering Chemistry	CO1	With the syllabus and the portion proposed ,it will be possible for the students to get detailed knowledge on the topics taught
		CO2	It will also inculcate in students the current development in the field of Engineering Chemistry
		CO3	The student will be able to apply the knowledge of chemistry and will be equipped to take up chemistry related topics as part of their project works during higher semester of the course
3	BE 110 Engineering Graphics	CO1	Students will be able to acquiring capacity to understand the language of Engineering Graphics to read and interpret drawings and visualize shape of objects and their relative locations.
		CO2	Students will be able to develop skill to prepare drawings as per ISO code of practice to convey and document information about engineering objects as orthographic views or pictorial views.

1B

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur
Pin 680 597 Kerala



		CO3	Students will be able to get introduction to computer aided drafting.
4	BE 102 Design and Engineering	CO1	Able to appreciate the different elements involved in good designs and to apply them in practice when called for
		CO2	Aware of the product oriented and user oriented aspects that make the design a success.
		CO3	Will be capable to think of innovative designs incorporating different segments of knowledge gained in the course;
		CO4	Students will have a broader perspective of design covering function, cost, environmental sensitivity, safety and other factors other than engineering analysis.

5	CE 100 Basics of Civil Engineering	CO1	The students will be able to illustrate the fundamental aspects of Civil Engineering.
		CO2	The students will be able to plan and set out a building.
		CO3	Students will be able to explain the concepts of surveying for making horizontal and vertical measurements.
		CO4	They will able to illustrate the uses of various building materials and explain the method of construction of different components of a building.



12

PRINCIPAL
Nehru College of
Engineering and Research
Panipady Thiruvilwamala
Pin 680 597 Kerala

6	EC 100 Basics of Electronics Engineering	CO1	Students can identify the active and passive components
		CO2	Students can setup simple circuits using diodes and transistors
		CO3	Students will get fundamental idea about basic communication systems and entertainment electronics
7	CY 110 Engineering Chemistry Lab	CO1	Ability to design and conduct experiments.
		CO2	Recognize how observation, experiment and theory work together to continue to expand the frontiers of knowledge of the physical universe.
		CO3	Communicate verbally, graphically and in writing the results of calculations and laboratory experiments in a clear and concise manner that incorporates the stylistic conventions used by chemists worldwide.
		CO4	Use experimental techniques and measurement technology
8	CE 110 Civil Engineering Workshop	CO1	To illustrate the common procedures regarding building construction works like setting out.
		CO2	To explain about length, area and volume measurements of building features.
		CO3	To illustrate the importance of brick masonry in building construction
		CO4	To explain the concept of surveying for making horizontal and vertical measurements
9	EC 110 Electronics Engineering Workshop	CO1	Student can identify the active and passive electronic components
		CO2	Student gets hands-on assembling, testing, assembling, dismantling, fabrication and repairing systems by making use of the various tools and instruments available in the Electronics Workshop.

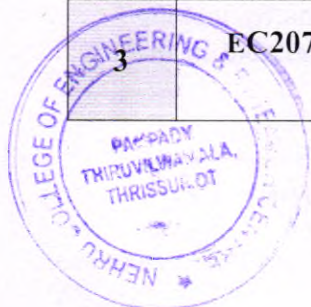


102

103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala Thiruvananthapuram
Pin - 680 597 Kerala

THIRD SEMESTER			
University		CALICUT	
Sl No.	Course Code & Title	Course Outcome	
1	EC14 303 NETWORK ANALYSIS AND SYNTHESIS	CO1	Analyze circuits using various electrical network theorems and methods
		CO2	Solve simple networks using analytical method as well as Pspice simulator
		CO3	Apply s domain analysis to evaluate parameters of electrical networks
		CO4	Analyze pole-zero plots and obtain the time domain response from the plot
		CO5	Synthesize electrical networks from a given network function
2	EC14 304 SOLID STATE DEVICES	CO1	analyze different band structure of materials
		CO2	Apply the knowledge for manufacturing the components
		CO3	Design the instruments properly which are used for home appliances
		CO4	Modify the components by understanding the drawback of each components
		CO5	create an insight in to the working of different conventional electronic devices
3	EC207: Logic Circuit Design	CO1	Compare various positional number systems and binary codes (Understand, Analyze)



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur Dt
Pin - 680 597 Kerala

		CO2	Apply Boolean algebra in logic circuit design(Apply)
		CO3	Develop combinational circuits(Apply)
		CO4	Develop sequential circuits(Apply)
		CO5	Explain logic families and compare their characteristics(Understanding)
		CO6	Develop digital systems using basic programmable blocks(Apply)
4	EC205 Electronics circuits	CO1	Students will able to analyse and design the different circuits using discrete electronics equipments.
5	EC209 Analog electronics	CO1	Students will get knowledge on electronic elements and their characteristics.
6	MA201 Linear algebra and complex analysis	CO1	Solve any given system of linear equations
		CO2	Find the eigen values of a matrix and how to diagonalize a matrix.
		CO3	Identify analytic functions and harmonic functions.
		CO4	Evaluate real definite integrals as application of residue theorem.



103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin - 686 597 Kerala

		CO5	Identify conformal mappings
		CO6	Find regions that are mapped under certain transformations.
7	EC231 Electronic devices and circuit lab	CO1	Design and demonstrate functioning of various discrete analog circuits.
		CO2	Function effectively as an individual and in a team to accomplish the given task.
8	EC233 Electronics design automation lab	CO1	An ability to apply knowledge of computer science, and engineering to the analysis of electrical and electronic engineering problems.
		CO2	An ability to design systems include hardware and software components.
9	EC235 Analog electronics laboratory	CO1	The student will be able to understand the working of electrical devices and their performance characteristics.

FOURTH SEMESTER

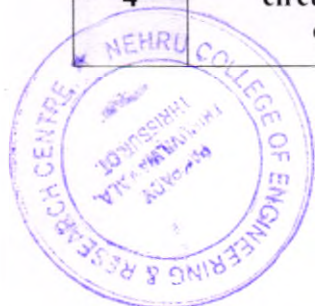
1	EC202: Signals & Systems	CO1	Define, represent, classify and characterize basic properties of continuous and discrete time signals and systems. (Understanding)
		CO2	Represent the CT signals in Fourier series and interpret the properties of Fourier transform, Laplace transform (Applying)



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pamipady Thiruvithamala Thiruvananthapuram
Pin - 695 191 Kerala

		CO3	Outline the relation between convolutions, correlation and to describe the orthogonality of signals.
		CO4	Illustrate the concept of transfer function and determine the Magnitude and phase response of systems.
		CO5	Explain sampling theorem and techniques for sampling and reconstruction.
		CO6	Determine z transforms, inverse z transforms signals and analyze systems using z transforms.
2	EC204 ANALOG INTEGRATED CIRCUITS	CO1	Understanding of operational amplifiers.
		CO2	Able to design circuits using operational amplifiers for various applications.
3	EC206 COMPUTER ORGANISATION	CO1	Understand the functional units of a computer.
		CO2	Identify the different types of instructions.
		CO3	Understand the various addressing modes.
		CO4	Understand the I/O addressing system.
		CO5	Categorize the different types of memories.
4	EC212 Linear integrated circuits and digital electronics	CO1	Students will learn to know about the IC's and their application, digital circuits, combinational and sequential circuits.



113


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Lady, Thrissurwamala, Thrissur Dt
 Pin - 680 597 Kerala

5	MA202 Probability distributions, transforms and numerical methods	CO1	Discrete and continuous probability density functions and special probability distributions.
		CO2	Laplace and fourier transforms and apply them in their engineering branch.
		CO3	Numerical methods and their applications in solving engineering problems.
6	EC230 Logic circuit design lab	CO1	Design and demonstrate functioning of various combination circuits.
		CO2	Design and demonstrate functioning of various sequential circuits.
		CO3	Function effectively as an individual and in a team to accomplish the given task.
7	EC232 Analog integrated circuit lab	CO1	Design demonstrate functioning of various analog circuits.
		CO2	Able to analyse and design various applications of analog circuits.
8	EC234 Linear integrated circuits and digital electronics laboratory	CO1	Design simple circuits like amplifiers using op-amps.
		CO2	Design waveform generating circuits.
		CO3	Understand digital concepts.
		CO4	Logically explain the concepts of combinational and sequential circuits.



13

✓
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady Thiruvilwamala, Thiruvilwamala
 Pin - 686 552 K

9	EC208 Analog communication engineering	CO1	Understand the different analog modulation schemes.
		CO2	Understand the fundamental ideas of noises and effects in communication systems.
		CO3	Explain the principle and working of analog transmitters and receivers.
		CO4	Know the basic idea of telephone systems.

FIFTH SEMESTER

1	EC 301 Digital signal processing	CO1	The student will understand the principle of digital signal processing and applications.
		CO2	The utilization of DSP to electronics engineering.
2	EC303 Applied electromagnetic theory	CO1	To develop a solid foundation and a fresh perspective in the analysis and application of electromagnetic fields.
		CO2	To analyse the propagation of electromagnetic waves in different media.
		CO3	To analyze the characteristics of transmission lines.
		CO4	To solve the different transmission line problem using smith chart.
		CO5	To understand the different modes of propagation in waveguides.
3	EC305: Microprocessors and Microcontrollers	CO1	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.



103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Anapady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

4	EC307 Power electronics and instrumentation	C01	To understand the concept of power electronics and various applications.
		C02	To get an insight on various electronic instruments, their configuration and measurements using them.
		C03	To understand the principle of operation of transducers.
5	EC361 DIGITAL SYSTEM DESIGN	C01	To analyze and design clocked sequential circuits.
		C02	To analyse and design asynchronous sequential circuits.
		C03	To apply their knowledge in diagnosing faults in digital circuits, PLA.
		C04	To interpret architecture of CPLDs and FPGA.
6	EC 363 Optimization techniques	C01	The students will have a thorough understanding of optimization techniques.
		C02	Students will be able to formulate and solve the engineering optimization problems.
7	EC365 Biomedical engineering	C01	To understand diagnosis and therapy related equipments.
		C02	To understand the problem and identify the necessity of equipment for diagnosis and therapy.
		C03	To understand the importance of electronics engineering in medical field.
		C04	To understand the importance of telemetry in patient care.
8	EC367 Soft Computing	C01	Identify and describe soft computing techniques and their roles in building intelligent Machines



12

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin - 695 05, Kerala

		CO2	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
		CO3	Recognize the feasibility of applying a soft computing methodology for a particular Problem
		CO4	Apply neural networks to pattern classification and regression problems.
		CO5	Apply genetic algorithms to combinatorial optimization problems
9	EC333 Digital Signal Processing Lab	CO1	Design, simulate and realize various systems related to DSP.
10	EC 335 Power Electronics & Instrumentation Lab	CO1	Design and demonstrate basic power electronic circuits.
		CO2	Use transducers for application.
		CO3	Function effectively as an individual and in a team to accomplish the given task.

SIXTH SEMESTER

1	EC302 Digital Communication	CO1	Illustrate the Digital representation of analog source
		CO2	Apply the knowledge of ISI problems in Digital communication to derive Nyquist criteria for zero ISI
		CO3	Analyse the need for introducing ISI in Digital Communication in a controlled manner

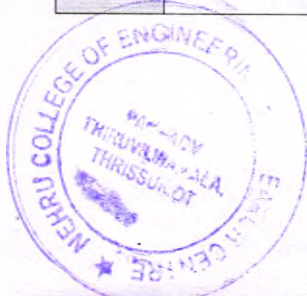


13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panpady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

		CO4	Construct signal space representation of signal using Gram Schmidt orthonormalisation procedure
2	EC304 VLSI	CO1	The students will be able to design and analyse various MOSFET and CMOS logic circuits.
3	EC306 Antenna & Wave Propagation	CO1	The basic working of antennas
		CO2	Various antennas, arrays and radiation patterns of antennas
		CO3	Various techniques involved in various antenna parameter measurements.
		CO4	The propagation of radio waves in the atmosphere.

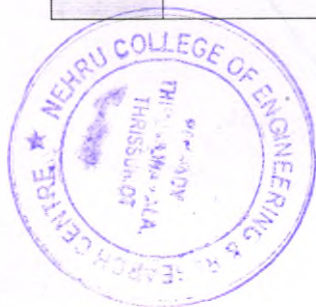
4	EC308 Embedded Systems	CO1	Understand the basics of an embedded system
		CO2	Develop program for an embedded system.
		CO3	Design, implement and test an embedded system.
5	EC362 Modelling & Simulation of Communication Systems	CO1	The students will be able to apply modeling and computational techniques to problems in the communication field
6	EC366 Real Time Operating Systems	CO1	The students will be familiar with operating systems. They will have an in depth knowledge about the real time operating systems and its applications



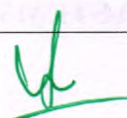
12

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvikramamala, Thirissur Dt
Pin 680 597 Kerala

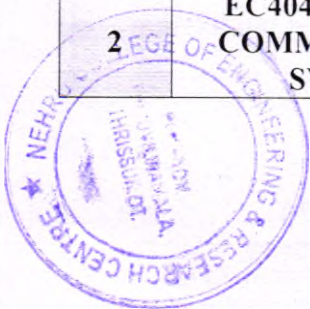
7	EC332 Communication Engineering Lab	C01	The students will be able to understand the basic concepts of circuits used in communication systems.
8	EC334 Microcontroller Lab	C01	Program Micro controllers.
		C02	Interface various peripheral devices to Micro controller.
		C03	Function effectively as an individual and in a team to accomplish the given task.
SEVENTH SEMESTER			
1	EC401 Information theory and coding	C01	Students will be able to understand the concept of information and entropy
		C02	Students will be able to design a lossless transmission system on the basis of channel capacity and source coding theorem.
		C03	Students will be able to understand the basics of gaussian channel and Shannon's limit.
		C04	Students will be able to analyse error correction and detection using linear block codes.
2	EC403 Microwave and radar energy	C01	The students will be able to understand the basics of microwave engineering and radar systems.
		C02	To study the various microwave hybrid circuits and formulate their S matrices.
		C03	To understand the basic concepts, types, working of radar and introduce to radar transmitters and receivers.
		C04	To introduce the various microwave sources, their principle of operation and measurement of various parameters
3	EC405 OPTICAL COMMUNICATION	C01	Know the working of optical source and detectors.
		C02	Compare the performance of various optical modulation schemes.



12


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Panigady Thiruvilwamala, Thiruvananthapuram
 Pin 680 597 Kerala

		CO3	Apply the knowledge of optical amplifiers in the design of optical link.
		CO4	Analyse the performance of optical amplifiers.
		CO5	Know the concept of WDM
		CO6	Describe the principle of FSO and LiFi
4	EC407 COMPUTER COMMUNICATION	CO1	Different types of network topologies and protocols.
		CO2	The layers of the OSI model and TCP/IP with their functions.
		CO3	The concept of subnetting and routing mechanisms.
5	EC409 CONTROL SYSTEMS	CO1	Represent mathematically a systems and deriving their transfer function model
		CO2	Analyse the time response and frequency response of the systems for any input
		CO3	Design a control system with suitable compensation techniques
6	EC461 MICROWAVE DEVICES AND CIRCUITS	CO1	The Students will be able to understand with active & passive microwave devices & components used in microwave communication systems and analyse microwave networks.
7	EC431 COMMUNICATION SYSTEMS LAB	CO1	To provide practical experience in design, testing, and analysis of few electronic devices and circuits used for microwave and optical communication engineering.
EIGHT SEMESTER			
1	EC402 NANO ELECTRONICS	CO1	The students will be able to understand basic concepts of nanoelectronic devices and nano technology.
2	EC404 ADVANCED COMMUNICATION SYSTEMS	CO1	The students will be able to understand the basics and technology of advanced communication system



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala Thiruvananthapuram
Pin 686 56 Kerala

3	EC466 CYBER SECURITY	CO1	The students will be able to understand cyber-attacks, types of cybercrimes, cyber laws and also how to protect them self and ultimately the entire Internet community from such attacks
4	EC468 SECURE COMMUNICATION	CO1	Exposed to the different approaches that handle security and the algorithms in use for maintaining data integrity and authenticity.
		CO2	Enabled student to appreciate the practical aspects of security features design and their implementation

KTU SCHEME 2015: CO-PO Matrix

FIRST AND SECOND SEMESTER

BE101-04	INTRODUCTION TO ELECTRONICS ENGINEERING													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
BE101-04.1	3	2	2	1	-	-	1	-	1	1	-	1	1	1
BE101-04.2	3	2	2	1	-	-	1	-	1	1	-	1	-	-
BE101-04.3	3	3	3	2	-	-	-	-	1	1	-	1	-	-
BE101-04.3	3	1	1	1	-	1	-	-	1	1	-	1	1	1
BE10104	3	2	2	1	-	0	1	-	1	1	-	1	1	1

BE102	DESIGN AND ENGINEERING														
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
BE102.1	2	-	-	-	-	2	2	-	1	-	-	3	2	2	
BE102.2	2	-	-	2	-	2	2	-	1	-	-	3	2	2	
BE102.3	2	2	2	2	2	3	3	2	1	2	2	3	2	2	
BE102.4	2	2	2	2	2	3	3	2	2	3	3	3	3	3	
BE102.5	2	2	2	2	2	3	3	3	2	3	3	3	3	3	
BE102.6	2	3	3	2	2	3	3	2	3	3	3	3	3	3	
BE102	2	2	2	2	1	3	3	2	2	2	2	3	3	3	




PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur Dt
 Pin 680 597 Kerala

THIRD AND FOURTH SEMESTER

EC202	SIGNALS AND SYSTEMS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2
EC202.1	3	2	2	-	2	-	-	-	1	-	-	3	1	1
EC202.2	3	3	3	3	2	-	-	-	1	-	-	3	1	1
EC202.3	3	2	2	-	2	-	-	-	1	-	-	3	1	-
EC202.4	3	3	3	3	2	-	-	-	1	-	-	3	1	1
EC202.5	3	3	3	3	2	-	-	-	1	-	-	3	1	1
EC202.6	3	3	3	3	2	-	-	-	1	-	-	3	1	1
EC202	3	3	3	3	2	-	-	-	1	-	-	3	1	1

EC207	LOGIC CIRCUIT DESIGN													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2
EC207.1	3	3	2	3	-	-	-	-	-	1	-	2	1	2
EC207.2	3	3	3	3	3	1	-	-	-	1	-	2	1	2
EC207.3	3	3	3	3	3	1	-	-	1	1	-	2	1	2
EC207.4	3	3	3	3	3	-	-	-	1	1	-	2	1	2
EC207.5	2	2	1	-	-	-	-	-	-	1	-	2	1	2
EC207.6	3	3	2	-	-	-	-	-	-	1	-	2	1	2
EC207	3	3	2	3	3	-	-	-	-	1	-	2	1	2

FIFTH AND SIXTH SEMESTER

EC305	MICROPROCESSORS AND MICROCONTROLLERS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
EC305.1	3	1	1	-	-	-	-	-	-	-	-	-	-	-
EC305.2	3	3	3	3	3	-	-	-	-	-	2	-	1	2
EC305.3	3	2	3	3	3	-	-	-	-	-	1	-	2	3
EC305.4	2	2	3	3	3	-	-	-	1	2	2	1	3	3
EC305.5	3	3	3	3	3	1	1	-	2	2	2	1	3	3
EC305.6	3	3	3	3	3	2	-	-	3	2	3	1	3	3
EC305	3	2	3	3	3	1	-	-	1	1	2	1	2	2

EC308	EMBEDDED SYSTEM													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC308.1	3	1	-	-	-	-	-	-	-	-	-	-	-	-
EC308.2	1	3	2	2	-	2	-	-	-	-	-	-	-	3
EC308.3	3	2	-	-	3	-	-	-	-	-	-	-	1	-
EC308.4	2	3	1	-	3	-	-	-	-	-	-	-	-	2
EC308.5	2	2	1	-	3	-	-	-	-	-	-	-	2	3
EC308	2	2	1	2	3	-	-	-	-	-	-	-	1	2



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram
Pin - 680 597 Kerala

SEVENTH AND EIGHTH SEMESTER

EC409	CONTROL SYSTEMS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC409.1	3	2	-	-	3	-	-	-	-	-	-	2	-	3
EC409.2	3	3	3	2	3	-	-	-	-	-	-	1	-	3
EC409.3	3	3	3	2	-	-	-	-	-	-	-	1	-	3
EC409.4	3	3	3	2	-	-	-	-	-	-	-	1	-	3
EC409.5	3	2	3	2	-	-	-	-	-	-	-	1	-	3
EC409.6	3	3	3	2	-	-	-	-	-	-	-	1	-	3
EC409	3	3	3	2	3	-	-	-	-	-	-	1	-	3

EC402	NANO ELECTRONICS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC402.1	3	-	-	-	-	-	-	-	-	-	-	2	2	2
EC402.2	3	-	2	-	-	-	-	-	-	-	-	2	2	2
EC402.3	3	-	2	-	2	-	-	-	-	-	-	2	2	2
EC402.4	3	-	-	-	-	-	-	-	-	-	-	1	2	2
EC402.5	3	-	-	-	-	-	-	-	-	-	-	1	2	2
EC402.6	3	3	2	-	2	-	-	-	-	-	-	2	2	2
EC402	3	1	1	-	1	-	-	-	-	-	-	2	2	2



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Panagady Thiruvilwamala, Thrissur Dt.
 Pin 680 597 Kerala

KTU SCHEME:Program level Course-PO matrix of all courses INCLUDING first year courses

Sl No	COURSE CODE	SUBJECT CODE	PO												PSO	
			1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	C101	MA101	3	3	2	1	-	-	2	-	-	-	-	3	-	-
2	C102	PH100	3	2	2	-	2	3	2	-	-	-	-	3	-	-
3	C103	BE110	2	1	1	1	3	1	1	1	2	1	-	2	-	-
4	C104	BE101-04	3	2	2	1	-	1	1	-	1	1	-	1	2	2
5	C105	BE103	3	2	-	-	-	3	2	3	3	3	2	3	-	-
6	C106	EE100	3	2	2	-	-	-	-	-	-	-	-	3	-	-
7	C107	PH110	3	-	-	1	3	-	-	-	-	-	-	-	-	-
8	C108	EC110	3	-	2	1	2	2	-	-	1	1	-	2	3	3
9	C109	EE110	3	1	1	1	-	-	1	-	2	1	-	3	-	-
10	C110	MA102	3	3	2	1	-	-	2	-	-	-	-	3	-	-
11	C111	CY100	3	-	1	-	1	1	1	-	-	-	2	1	-	-
12	C112	BE102	2	2	2	2	1	3	3	2	2	2	2	3	3	3
13	C113	CE100	3	2	2	-	1	1	1	1	1	1	1	2	-	-
14	C114	ME100	2	2	2	1	-	1	1	1	1	-	-	2	-	-
15	C115	CY110	-	1	-	1	-	-	1	-	1	1	1	-	-	-
16	C116	CE110	3	2	3	1	2	1	2	2	3	2	2	2	-	-
17	C117	ME110	1	1	1	1	-	1	1	1	2	1	-	2	-	-
18	C201	MA201	3	3	2	1	-	-	2	-	-	-	-	3	-	-
19	C202	EC201	3	3	3	3	-	-	-	-	1	-	-	2	-	3
20	C203	EC203	3	3	1	1	-	-	-	-	1	1	-	2	-	2
21	C204	EC205	3	3	3	3	3	1	-	-	1	-	-	3	3	3
22	C205	EC207	3	3	2	3	3	-	-	-	-	1	-	2	2	3
23	C206	HS200	2	2	2	1	2	1	1	3	3	2	3	3	3	3
24	C207	EC231	3	3	3	-	-	1	-	-	2	1	-	2	-	2
25	C208	EC233	2	2	2	-	3	-	-	-	2	-	-	-	3	-
26	C209	MA204	3	3	2	1	-	-	2	-	-	-	-	3	-	-
27	C210	EC202	3	3	3	3	2	-	-	-	1	-	-	3	2	2
28	C211	EC204	3	3	3	3	2	2	-	-	2	2	-	3	3	3
29	C212	EC206	2	1	2	-	2	-	-	-	-	-	-	-	3	2

113



PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvananthapuram
Pin: 695 012

30	C213	EC208	2	2	1	3	2	2	2	2	1	2	1	2	-	3
31	C214	HS210	-	1	1	1	1	1	1	1	1	2	-	3	-	3
32	C215	EC232	3	2	2	2	2	-	-	-	1	1	-	-	-	-
33	C216	EC230	2	2	2	-	2	-	-	-	2	1	-	1	3	3
34	C301	EC301	3	2	2	3	3	-	-	-	1	-	-	2	2	2
35	C302	EC303	3	3	1	3	3	1	1	-	1	2	-	2	3	3
36	C303	EC305	3	2	3	3	3	1	-	-	1	1	2	1	3	3
37	C304	EC307	2	2	3	3	2	3	1	-	1	2	-	3	3	3
38	C305	HS300	2	2	2	2	2	2	2	2	3	3	3	3	3	3
39	C306.1	EC361	2	2	3	2	1	-	-	-	1	-	-	2	3	3
40	C306.2	EC365	3	1	-	1	-	2	-	1	-	1	-	3	-	3
41	C307	EC341	2	2	1	2	3	1	1	-	1	1	1	1	2	3
42	C308	EC333	3	3	2	3	3	-	-	-	3	2	-	2	2	3
43	C309	EC335	3	-	1	-	2	-	-	-	1	1	-	2	3	3
44	C310	EC302	3	2	2	3	2	-	-	-	-	-	-	2	2	2
45	C311	EC304	2	2	3	3	3	-	-	-	2	-	-	2	3	3
46	C312	EC306	1	2	-	3	3	-	-	-	-	-	-	-	-	-
47	C313	EC308	2	2	1	2	3	-	-	-	-	-	-	-	2	3
48	C314	EC312	1	-	2	2	3	-	-	-	-	-	1	3	3	3
49	C315.1	EC368	3	3	3	2	1	-	-	-	-	-	-	-	3	3
50	C315.2	EC370	3	2	2	1	2	1	-	-	1	-	-	3	3	3
51	C316	EC332	1	1	-	2	2	-	-	-	1	1	-	-	-	-
52	C317	EC334	2	2	2	2	3	-	-	-	-	-	-	-	3	3
53	C318	EC352	2	2	3	3		1	1	-	3	3	3	2	3	3
54	C401	EC401	3	3	2	3	1	-	-	-	1	-	-	2	2	3
55	C402	EC403	3	3	1	2	3	2	2	-	2	2	-	1	3	3
56	C403	EC405	2	2	-	-	-	-	-	-	-	-	-	-	2	3
57	C404	EC407	3	2	2	-	-	2	-	1	-	-	-	3	3	3
58	C404	EC409	3	3	3	2	3	-	-	-	-	-	-	1	-	3
59	C405	EC465	3	1	1	-	-	-	-	-	-	1	-	-	-	-
60	C406	EC451	2	2	2	2	3	2	1	1	2	3	-	3	3	3
61	C407	EC431	3	1	1	2	3	1	1	1	-	1	-	-	3	3
62	C408	EC402	3	1	1	-	1	-	-	-	-	-	-	2	3	3
63	C409	EC404	3	1	-	-	-	-	-	-	-	-	-	-	2	-
64	C410.1	EC464	3	2	1	2	-	2	-	-	-	-	-	1	2	-
65	C410.2	EC468	2	1	-	1	-	2	-	1	-	-	-	2	2	2
66	C411	EC492	2	2	3	3	3	1	1	-	3	3	3	2	3	3

KTU SCHEME: 2014

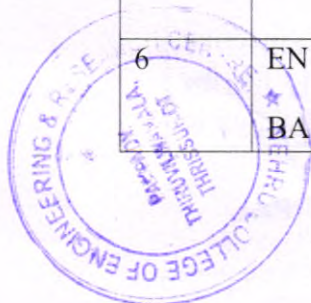
SL NO.	COURSE CODE AND TITLE	COURSE OUTCOMES	
1	EN14101 ENGINEERING MATHEMATICS I	CO1	To provide an avenue to scientific knowledge which opens new vistas of mental activity. A sound knowledge of engineering mathematics is a "sine qua non" for the modern engineer to attain new heights in



M3

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala
Pin 680 597 Kerala

			all aspects of engineering practice
		CO2	To provide the student with plentiful opportunities to work with and apply the concepts, and to build skills and experience in mathematical reasoning and engineering problem solving.
2	EN14102 ENGINEERING MATHEMATICS II	CO1	To apply the subject at the proper place and time, while keeping him/her aware to the needs of the society where he/she can lend his/her expert service, and also to those who can be useful to the community without even going through the formal process of drilling through rigorous treatment of mathematics.
3	EN 14 103: ENGINEERING PHYSICS	CO1	To impart the basic concepts and ideas in physics.
		CO2	To develop scientific attitudes and enable the students to correlate the concepts of physics with the core programmes.
4	EN 14 104: ENGINEERING CHEMISTRY	CO1	To familiarize the students on application oriented themes like the chemistry of materials used in engineering discipline
		CO2	To focus the students on the chemistry of compounds resulting from pollution, waste generation and environmental degradation and to apply the knowledge in solving these current environmental problems effectively.
5	EN 14 105: ENGINEERING MECHANICS	CO1	To acquaint with general approach of solving engineering problems.
		CO2	To illustrate the application of the theory learned in Mechanics in practical engineering problems.
6	EN 14 106: BASICS OF CIVIL	CO1	To give a basic knowledge of the topics in Civil Engineering.



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala Thiruvananthapuram
Pin - 690 592 Kerala

	AND MECHANICAL ENGG.		
7	SECTION 2: BASICS OF MECHANICAL ENGINEERING	CO1	Gives an introduction as well as an overview on the concepts and applications of Mechanical Engineering
8	EN14 107: BASICS OF ELECTRICAL, ELECTRONICS & COMMUNICATION ENGINEERING	CO1	This course provides a quick overview of the concepts and results in Basic analysis that may be useful in engineering. Also it gives an introduction to Very basic concept and theory of Electrical Engineering

THIRD SEMESTER			
SL.NO	COURSE CODE AND TITLE	COURSE OUTCOMES	
1	EN14 301 ENGINEERING MATHEMATICS III	CO1	This course provides a quick overview of the concepts and results in complex analysis that may be useful in engineering.
		CO2	it gives an introduction to linear algebra and Fourier transform which are wealth of ideas and results with wide area of application
2	EN14 302: COMPUTER PROGRAMMING IN C	CO1	To impart the basic concepts of computer and information technology
		CO2	To develop skill in problem solving concepts through learning C programming in practical approach
3	EC14 303 NETWORK ANALYSIS & SYNTHESIS	CO1	To expose the students to the basic concepts of electric circuits and their analysis in time and frequency domain
		CO2	To introduce the concept of filter circuits and design of passive filters



113

[Signature]
PRINCIPAL
 Nehru College of
 Engineering and Research
 Thiruvilwamal
 Pin 680 597

		CO3	To introduce the techniques of network synthesis
4	EC14 304: SOLID STATE DEVICES	CO1	To impart the basic concepts of semiconductor Physics
		CO2	To create an insight into the working of different conventional electronic devices
5	EC14 305 ELECTRONIC CIRCUITS I	CO1	To impart the basic idea of constructing passive devices
		CO2	To develop the skill of analysis and design of various circuits using electronic devices
6	EC14 306 ELECTRICAL ENGINEERING	CO1	To study the operation, performance and characteristics of different types of electrical machines
		CO2	To familiarise various electrical measuring instruments.
7	EC 14 307(P) BASIC ELECTRONICS LAB	CO1	Implementation of basic Electronic circuits
8	EC14 308 (P) ELECTRICAL ENGINEERING LAB	CO1	To Familiarise various electrical measurement equipments and measurement methods.
		CO2	To obtain the performance characteristics of dc and ac machines
FOURTH SEMESTER			
1	EN14 401B: ENGINEERING MATHEMATICS IV	CO1	To inculcate the students an adequate understanding of the basic concepts of probability theory.
		CO2	To make them develop an interest in the area which may find useful to pursue



123

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvithamoor
Pin - 686 040

			their studies
		CO3	To stimulate the students understanding of the z-transform
		CO4	To make the student get acquainted with the basics of PDE
2	EN14 402 ENVIRONMENTAL SCIENCE	CO1	To understand the problems of pollution, deforestation, solid waste disposal, degradation of environment, loss of biodiversity and other environmental issues at local and global levels.
		CO2	To create awareness among the students to address these issues and conserve the environment in a better way.
3	EC14 403 SIGNALS AND SYSTEMS	CO1	To introduce the student to the idea of signals , system analysis and its characterization.
		CO2	To provide a foundation to numerous other courses that deal with signal and System concepts directly or indirectly: viz: communication, control, instrumentation etc.
4	EC14 404 ELECTRONIC CIRCUITS II	CO1	To develop the skill of analysis and design of various circuits using electronic devices
5	EC14 405 DIGITAL ELECTRONICS	CO1	This paper exposes the students to digital fundamentals
		CO2	Through learning this paper students are expected to gain knowledge in designing combinational as well as synchronous sequential circuits



Handwritten signature in green ink.

Handwritten signature in green ink.
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pan-pady Thiruvilwamala, Thrissur Dt
 Pin 680 597 Kerala

6	EC14 406 ANALOG COMMUNICATION	CO1	To impart the basic concepts of analog modulation schemes
		CO2	To develop understanding about performance of analog communication systems
7	EC14 407(P): DIGITAL ELECTRONICS LAB	CO1	To provide experience on design, testing, and analysis of digital electronic circuits
8	EC14408(P) ELECTRONIC CIRCUITS LAB	CO1	To design and setup circuits
FIFTH SEMESTER			
1	EC14 501: COMPUTER ORGANISATION AND ARCHITECTURE	CO1	To impart the basic idea of memory and system organisation and architecture of Computers.
2	EC14 502: LINEAR INTEGRATED CIRCUITS	CO1	To develop the skill of analysis and design of various circuits using operational amplifiers
		CO2	To develop design skills to design various circuits using different data conversion systems
3	EC14 503 DIGITAL COMMUNICATION	CO1	To impart the basic concepts of various digital modulation schemes
		CO2	To develop understanding about digital transmitters & Receivers
4	EC14504: ELECTROMAGNETIC FIELD THEORY	CO1	To impart the knowledge of electric, magnetic fields and the equations governing them as well as time varying field
		CO2	To develop understanding about guided waves & transmission lines
5	EC14505: MICROPROCESSORS	CO1	To introduce the student with knowledge about architecture, interfacing and programming with 8086



103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvikramamala Thiruvananthapuram

	AND MICROCONTROLLERS		microprocessors and 8051 microcontrollers. It gives a brief introduction to ARM 7 and ARM 9 micro controllers.
		CO2	After studying this subject, the student should be able to design microprocessor/controller based system for any relevant applications.
6	EC14506 QUANTITATIVE TECHNIQUESAND MANAGERIAL DECISIONS	CO1	To impart basic ideas on various quantitative techniques for managerial decision making
7	EC14 507(P) ANALOG COMMUNICATION LAB	CO1	To design and setup circuits for Analog communication
SIXTH SEMESTER			
1	EC14 601: RADIATION AND PROPAGATION	CO1	To impart the basic concepts of radiating structures and their arrays
		CO2	To give understanding about analysis and synthesis of arrays
		CO3	To give idea about basic propagation mechanisms
2	EC14 602 OPTICAL COMMUNICATION	CO1	To provides the basic theory of optical fibres and principle of various components in optical communication system.
		CO2	To give basic idea about system aspects and design concepts of fiber optical system
3	EC14 603 VLSI DESIGN	CO1	To study the issues in devices used for VLSI design
		CO2	To introduce the various steps in IC fabrication , starting from the raw material to the finished product as well

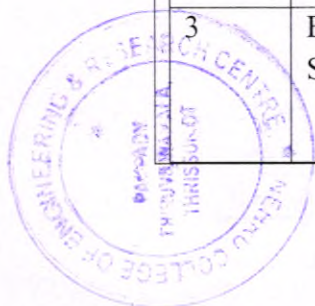


13

PRINCIPAL
Nehru College of
Engineering and Research
Thiruvananthapuram
Pin

13/07/2019

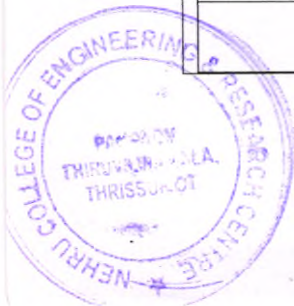
			as physical principles involved in these processes
4	EC14 604: DIGITAL SIGNAL PROCESSING	CO1	To impart basic ideas (i) in the transforms used in digital domain (ii) in the design and hardware realization of digital filters
5	EC14 605: CONTROL SYSTEMS	CO1	To impart the basic theory behind the analysis of continuous and discrete Systems in time and frequency domains
		CO2	To introduce concepts about the state space modeling of systems.
6	EC14 606 SATELLITE COMMUNICATION	CO1	To impart the basic concepts of satellite communication and systems
		CO2	To develop understanding about the link design and the latest trends in satellite communication
SEVENTH SEMESTER			
1	EC14 701 INFORMATION THEORY AND CODING	CO1	To. provide basic concepts of Information theory
		CO2	To enable the students to propose, design and analyse suitable coding/decoding scheme for a particular digital communication application
2	EC14 702 MICROWAVE ENGINEERING	CO1	To give the basic ideas about the characteristics and applications of microwave frequency bands
		CO2	To understand the working of various microwave passive and active devices and circuits.
3	EC14 703: DIGITAL SYSTEM DESIGN	CO1	After learning this subject students must be able to simulate and implement typical digital circuits



13

PRINCIPAL
Nehru College of
Engineering and Research
Pimpri

4	EC14 704(A) INTERNET TECHNOLOGY	CO1	To make the student aware of the various protocols used in internet.
5	EC14 704(B) TELEVISION AND RADAR ENGINEERING	CO1	To give the basic ideas & operating principles of different types of b/w as well as color CTV and radar (both transmitter and receiver) and their uses.
		CO2	To create the awareness about the different standards of TV systems used in different countries and their basic principles.
6	EC14 704(C) EMBEDDED SYSTEMS	CO1	To give ideas about embedded systems and system development
		CO2	To impart knowledge about real time operating systems and microcontrollers
7	EC14 704(D): NANOTECHNOLGY	CO1	To provide basic knowledge about nano/microdevices, mathematical modeling of electromechanical systems and applications
8	EC14 704(E) IMAGE AND VIDEO PROCESSING	CO1	To give ideas & techniques of image & video processing
		CO2	To impart knowledge about image filtering, restoration & reconstruction
9	EC14 705(A) SOFT COMPUTING	CO1	To acquaint the students with the important soft computing methodologies- neural networks, fuzzy logic, genetic algorithms and genetic programming
10	EC14 705(B) HIGH SPEED DIGITAL DESIGN	CO1	To give the basic ideas involved in high speed digital design
		CO2	To understand the transmission line effects and cross talk and the effects of terminations & vias
EIGHTH SEMESTER			



113

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

1	EC14 801 DATA AND COMMUNICATION NETWORKS	CO1	To give the basic ideas of data communication networks-queuing theory, architecture and protocol
		CO2	To understand the concept of switching networks
2	EC14 802 ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT	CO1	The prime objective of the Engineering Economics course is to make students familiar with the economic way of thinking.
		CO2	This course provides the students with the foundations of economic theory, tools and techniques for use in the process of efficient economic decision-making in their engineering and managerial profession.
3	EC14 803 WIRELESS MOBILE COMMUNICATION	CO1	To provide a strong background in the basics of wireless mobile communication
		CO2	To impart knowledge about the existing GSM and CDMA mobile communication technology
4	EC14 804(A) INTRODUCTION TO MEMS	CO1	To prepare students for a career as power system engineers with a basic understanding of modern tools and practices
		CO2	To impart an understanding of the activities in load dispatch centers
		CO3	To instill an awareness of current research topics
5	EC14 805(A) MULTIMEDIA COMMUNICATION SYSTEMS	CO1	To impart knowledge in audio/video standards and different types of multimedia networks and technology.



13

✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thrissur
Pin 680 567 Kerala

2014 SCHEME : CO-PO MATRIX

EC14 303	NETWORK ANALYSIS AND SYNTHESIS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC14 303.1	3	3	3	3	-	-	-	-	-	-	-	2	1	2
EC14 303.2	3	3	3	3	-	-	-	-	-	-	-	2	1	2
EC14 303.3	3	3	3	3	2	-	-	-	-	-	-	2	1	2
EC14 303.4	3	3	3	3	2	-	-	-	-	1	-	2	1	2
EC14 303	3	3	3	3	2	-	-	-	-	1	-	2	1	2

EC14 404	ELECTRONIC CIRCUITS II													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC14 404.1	3	3	3	3	3	-	1	-	-	-	-	-	3	2
EC14 404.2	3	3	3	3	3	1	1	-	-	1	-	2	3	3
EC14 404.3	3	3	3	3	3	1	1	-	-	1	-	2	3	3
EC14 404.4	3	3	3	3	3	1	-	-	-	1	-	-	3	2
EC14 404	3	3	3	3	3	1	1	-	-	1	-	2	3	3

EC14 503	DIGITAL COMMUNICATION													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC14 503.1	3	3	3	3	3	-	1	-	-	-	-	2	3	3
EC14 503.2	3	3	3	3	3	1	-	-	-	1	-	-	3	3
EC14 503.3	3	3	3	3	3	1	1	-	-	1	-	2	3	3
EC14 503.4	3	3	3	3	3	1	1	-	-	1	-	-	3	3
EC14 503	3	3	3	3	3	1	1	-	-	1	-	2	3	3

EC14 601	RADIATION AND PROPAGATION													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC14 601.1	3	3	3	3	3	-	1	-	-	1	-	-	3	3
EC14 601.2	3	3	3	3	3	1	-	-	-	1	-	2	3	3
EC14 601.3	3	3	3	3	3	1	1	-	-	-	-	2	3	3
EC14 601.4	3	3	3	3	3	1	1	-	-	1	-	-	3	3
EC14 601	3	3	3	3	3	1	1	-	-	1	-	2	3	3

EC14 702	MICROWAVE ENGINEERING													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC14 702.1	3	3	3	3	2	1	-	-	-	1	-	-	2	1
EC14 702.2	3	3	3	3	2	1	1	-	-	1	-	2	2	-
EC14 702.3	3	3	3	3	-	-	1	-	-	1	-	2	-	-
EC14 702.4	3	3	3	3	-	1	1	-	-	-	-	-	-	1
EC14 702	3	3	3	3	2	1	1	-	-	1	-	2	3	1

KTU SCHEME: Program level Course-PO matrix of all courses INCLUDING first year courses



102

PRINCIPAL
Nehru College of
Engineering and Research Centre
Thiruvananthapuram
Kerala

Sl No	COURSE CODE	SUBJECT CODE	PO												PSO	
			1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	C101	EN14 101	3	3	2	1			2					3		
2	C102	EN14 102	3	3	2	1			2					3		
3	C103	EN14 103	3	3	2	1			2					3		
4	C104	EN14 103(P)	3	3	3	3	3			1	3	3	1	3		
5	C105	EN14 104	2	1					1					2		
6	C106	EN14 104(P)	3	3	3	3	3			1	3	3	1	3		
7	C107	EN14 105	3	3	2	1			2					3		
8	C108	EN14 106	3	3	2	1			2					3		
9	C109	EN14 107	3	3	2	1			2					3		
10	C110	EN14 108	3	3	2	1			2					3		
11	C111	EN14 109	3	3	2	1			3	3		3		3		
12	C112	EN14 110(P)	3	3	3	3	3			1	3	3	1	3		
13	C113	EN14 111(P)	3	3	3	3	3			1	3	3	1	3		
14	C201	EN14 301	3	3	2	1			2					3	2	2
15	C202	EN14 302	3	3	3	2	3	1	1		2	1	1	2	3	3
16	C203	EC14 303	3	3	3	3	2					1		2	1	2
17	C204	EC14 304	3	3	3	3	1					1		2	2	1
18	C205	EC14 305	3	3	3	3	3	1	1			1		2	3	2
19	C206	EC14 306	3	3	3	3								2		
20	C207	EC14 307(P)	3	3	3	3	3	2			3	2	1	2	3	3
21	C208	EC14 308(P)	3	3	3	3	3	2			3	2	1	2	3	3
22	C209	EC14 401B	3	3	2	2			1					3	2	2
23	C210	EC14 402	2	2	2	1		3	3	2	1	2		2		1
24	C211	EC14 403	3	3	3	3	3	1				1		2	3	2
25	C212	EC14 404	3	3	3	3	3	1	1			1		2	3	3
26	C213	EC14 405	3	3	3	3	3	1	1			1		2	3	3
27	C214	EC14 406	3	3	3	3	3	1	1			1		2	3	3
28	C215	EC14 407(P)	3	3	3	3	3	2			3	2	1	2	3	3
29	C216	EC14 408(P)	3	3	3	3	3	2			3	2	1	2	3	3
30	C301	EC14 501	3	3	3	3	3	1	1			1		2	3	3
31	C302	EC14 502	3	3	3	3	3	1	1			1		2	3	3
32	C303	EC14 503	3	3	3	3	3	1	1			1		2	3	3
33	C304	EC14 504	3	3	3	3	3	1	1			1		2	3	3
34	C305	EC14 505	3	3	3	3	3	1	1			1		2	3	3
35	C306	EC14 506	2	2	2	2	2	2	2	1	2	3	3	3	2	3
36	C307	EC14 507(P)	3	3	3	3	3	2			3	2	1	2	3	3
37	C308	EC14 508(P)	3	3	3	3	3	2			3	2	1	2	3	3
38	C309	EC14 601	3	3	3	3	3	1	1			1		2	3	3
39	C310	EC14 602	3	3	3	3	2	1	1			1		2	2	1
40	C311	EC14 603	3	3	3	3	3	1	1			1		2	3	3
41	C312	EC14 604	3	3	3	3	3	1	1			1		2	3	3

13

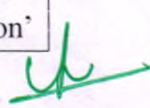
PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 686 597, Kerala

42	C313	EC14 605	3	3	3	3	3	1	1			1		2	3	3
43	C314	EC14 606	3	2	2	1		1	1			1		2	2	
44	C315	EC14 607(P)	3	3	3	3	3	2			3	2	1	2	3	3
45	C316	EC14 608(P)	3	3	3	3	3	3	2	1	3	2	2	3	3	3
46	C401	EC14 701	3	3	3	3	3	1	1			1		2	2	1
47	C402	EC14 702	3	3	3	3	2	1	1			1		2	2	1
48	C403	EC14 703	3	3	3	3	2	1	1			1		2	2	2
49	C404.1	EC14 704(B)	3	2	2	2		1	1			1		1	2	1
50	C404.2	EC14 705E	3	2	1	1		2	1			1		2	2	1
51	C406	EC14 706(P)	3	3	3	3	3	2			3	2	1	2	3	3
52	C407	EC14 707(P)	3	3	3	3	3	3	2	1	3	2	2	3	3	3
53	C408	EC14 708(P)	3	3	3	3	3	3	2	1	3	2	2	3	3	3
54	C409	EC14 801	3	2	1	1		1				1		2	2	1
55	C410	EC14 802	2	2	2	2	2	2	2	2	3	3	3	3		
56	411	EC14 803	3	2	1	1		1				1		2	2	1
57	C412.1	EC14 804(D)	3	2	1	1		1	1		0	1		2	2	1
58	C412.2	EC14 805(B)	3	3		3	3						1			
59	C413	EC14 806(P)	3				1			1	1	3		2	2	2
60	C414	EC14 807(P)	3	3	3	3	3	3	3	2	3	3	3	3	3	3
61	C415	EC14 808(P)	3	2	2	2	2	3	2	1	2	3	1	3	3	2

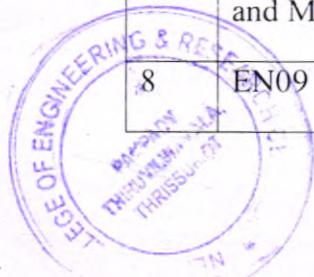
SCHEME 2009

SL NO.	COURSE AND TITLE	CODE	COURSE OUTCOMES
1	EN09 101: Engineering Mathematics I	CO1	This course is addressed to those who intend to apply the subject at the proper place and time, while keeping him/her aware to the needs of the society where he/she can lend his/her expert service, and also to those who can be useful to the community without even going through the formal process of drilling through rigorous treatment of mathematics.
2	EN09 102: Engineering Mathematics II	CO1	Mathematics is a necessary avenue to scientific knowledge which opens new vistas of mental activity. A sound knowledge of engineering mathematics is a 'sine qua non'



PRINCIPAL 
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin 690 597 Kerala

			for the modern engineer to attain new heights in all aspects of engineering practice.
		CO2	This course provides the student with plentiful opportunities to work with and apply the concepts, and to build skills and experience in mathematical reasoning and engineering problem solving.
3	EN09 103: Engineering Physics	CO1	To impart the basic concepts and ideas in physics
		CO2	To develop scientific attitudes and enable the students to correlate the concepts of physics with the core programmes
4	EN09 103(P) : Physics Lab	CO1	To develop scientific and experimental skills of the students
		CO2	To correlate the theoretical principles with application based studies.
5	EN09 104: Engineering Chemistry	CO1	To familiarise the students on application oriented themes like the chemistry of materials used in engineering discipline
		CO2	To focus the students on the chemistry of compounds resulting from pollution, waste generation and environmental degradation and to apply the knowledge in solving these current environmental problems effectively.
6	EN09 105: Engineering Mechanics	CO1	To acquaint with general method of solving engineering problems.
		CO2	To illustrate the application of the methods learned in Mechanics in practical engineering problems.
7	EN 09 106: Basics of Civil and Mechanical Engg.	CO1	To give a basic knowledge of the topics in Civil Engineering.
8	EN09 107: Basics of	CO1	To provide the basic concepts and an



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvithankal
Thiruvananthapuram
Kerala

	Electrical, Electronics & Communication Engineering		overview of Electrical Engineering.
9	EN09 108: Engineering Graphics	CO1	Understand systems of drawing.
		CO2	Produce orthographic drawing of points, lines and solids.
		CO3	Produce isometric views of any object.
10	EN09 109(P): Computer Programming in C	CO1	To impart the basic concepts of computer and information technology
		CO2	To develop skill in problem solving concepts through learning C programming in practical approach.

THIRD SEMESTER

SL NO.	COURSE CODE AND TITLE	COURSE OUTCOMES	
1	EN09 301: Engineering Mathematics III	CO1	This course provides a quick overview of the concepts and results in complex analysis that may be useful in engineering
		CO2	Also it gives an introduction to linear algebra and Fourier transform which are wealths of ideas and results with wide area of application
2	EN09 302: HUMANITIES AND COMMUNICATION SKILLS	CO1	To identify the most critical issues that confronted particular periods and locations in history;
		CO2	To identify stages in the development of science and technology;



1B

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin - 680 597, Kerala

3	EC09 303: NETWORK ANALYSIS & SYNTHESIS	CO1	To expose the students to the basic concepts of electric circuits and their analysis in time and frequency domain
		CO2	To introduce the concept of filter circuits and design of passive filters
4	EC09 304: SIGNALS AND SYSTEMS	CO1	To give basic ideas about different signals and systems
		CO2	To impart basic knowledge about the representations and transforms of the signals
5	EC09 305 DIGITAL ELECTRONICS	CO1	THIS SUBJECT EXPOSES THE STUDENTS TO DIGITAL FUNDAMENTALS
		CO2	AFTER STUDYING THIS SUBJECT THE STUDENT WILL BE ABLE TO DESIGN, ANALYZE AND INTERPRET COMBINATIONAL AND SEQUENTIAL DIGITAL CIRCUITS OF MEDIUM COMPLEXITY.
6	EC09 306 ELECTRICAL ENGINEERING	CO1	To Study the, operation, performance and characteristics of different dc and ac machines
		CO2	To familiarise various electrical measuring instruments
7	EC09 307(P) DIGITAL ELECTRONICS LAB	CO1	To provide experience on design, testing, and analysis of digital electronic circuits

FOURTH SEMESTER

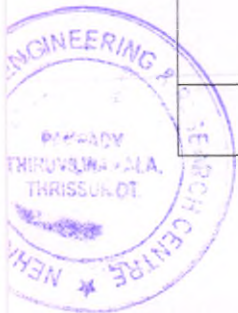
1	EN09 401B: Engineering Mathematics IV	CO1	Objective of this course is to inculcate the students an adequate understanding of the basic concepts of probability theory to make them develop an interest in the area which may find useful to pursue their
---	---------------------------------------	-----	--



18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur (K)
Pin 680 597 Kerala

			studies
		CO2	Also it is intended to stimulate the students understanding of the Ztransform. A study of some important partial differential equations is also included to make the student get acquainted with the basics of PDE.
2	EN09 402: ENVIRONMENTAL SCIENCE	CO1	To understand the problems of pollution, loss of forest, solid waste disposal, degradation of environment, loss of biodiversity and other environmental issues and create awareness among the students to address these issues and conserve the environment in a better way.
3	EC09 403: ELECTRONIC CIRCUITS	CO1	To impart the basic idea of constructing passive devices
		CO2	To develop the skill of analysis and design of various circuits using electronic devices.
4	EC09 404: ANALOG COMMUNICATION	CO1	To impart the basic concepts of basic analog modulation schemes.
		CO2	To develop understanding about performance of analog communication system.
5	EC09 405: Computer Organization and Architecture	CO1	To impart the basic idea of memory & system organisation and architecture of computers.
		CO2	To develop the basic understanding & programming concepts of 8085 microprocessor.
6	EC09 406: SOLID STATE DEVICES	CO1	To impart the basic concepts of semiconductor Physics.
		CO2	To create an insight into the working of different conventional electronic devices.
FIFTH SEMESTER			



103

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala, Thiruvananthapuram
Pin 680 597 Kerala

1	EC09 501: Digital Signal Processing	CO1	To impart basic ideas (i) in the transform used in digital domain (ii) in the design and hardware realization of digital filters
2	EC09 502: Quantitative Techniques for Managerial Decisions	CO1	To impart basic ideas on various quantitative techniques for managerial decision making
3	EC09503: Electromagnetic Field Theory	CO1	To impart the knowledge of electric, magnetic fields and the equations governing them as well as time varying field
		CO2	To develop understanding about guided waves & transmission lines
4	EC09 504: Digital Communication	CO1	To impart the basic concepts of various digital modulation schemes
		CO2	To develop understanding about digital transmitters & Receivers
5	EC09505: Microprocessors and Microcontrollers	CO1	To introduce the student with knowledge about architecture, interfacing and programming with 8086 microprocessors and 8051 microcontrollers. It gives a brief introduction to ARM 7 and ARM 9 micro controllers.
		CO2	After studying this subject, the student should be able to design microprocessor/controller based system for any relevant applications.
6	EC09 506: Linear Integrated Circuits	CO1	To develop the skill of analysis and design of various circuits using operational amplifiers
		CO2	To develop design skills to design various circuits using different data conversion systems
SIXTH SEMESTER			



13 ✓

PRINCIPAL
Nehru College of
Engineering and Research
Pampady Thiruvilwamala
Pin 680 597

1	EC09 601: VLSI DESIGN	CO1	To study the issues in devices used for VLSI design
		CO2	To introduce the various building blocks and test methods in a digital integrated circuit design
2	EC09602: ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT	CO1	Impart fundamental economic principles that can assist engineers to make more efficient and economical decisions.
3	EC09 603: RADIATION & PROPAGATION	CO1	To impart the basic concepts of radiating structures and their arrays
		CO2	To give understanding about analysis and synthesis of arrays
4	EC09 604: CONTROL SYSTEMS	CO1	To impart the basic theory behind the analysis of continuous and discrete control systems in time and frequency domains
		CO2	To introduces concepts about the state space modelling of systems.
5	EC09 605: Optical Communication	CO1	To provides the basic theory of optical fibres and principle of various components in optical communication system.
		CO2	To give basic idea about system aspects and design concepts of fiber optical system.

SEVENTH SEMESTER

1	EC09 701: Information Theory and Coding	CO1	To provide basic concepts of Information.
		CO2	To enable the students to propose, design and analyse suitable coding/decoding scheme for a particular digital communication application.
2	EC09 702: Microwave	CO1	To give the basic ideas about the characteristics and applications of



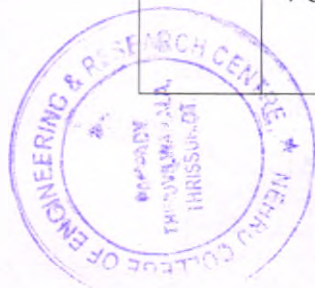
113

PRINCIPAL
Nehru College of
Engineering and Research Centre
Thiruvananthapuram, Thiruvananthapuram
Pin - 680 597 Kerala

	Engineering		microwave frequency bands.
		CO2	To understand the working of various microwave passive and active devices and Circuits.
3	EC09 703: ANALOG & MIXED MOS CIRCUITS	CO1	To impart the concepts of analog & mixed circuit design using MOS transistors.
4	EC09 704: Digital System Design	CO1	After learning this subject students must be able to simulate and implement typical combinational and sequential digital systems in PLDs and express the design in VHDL.
5	EC09 709(P): PROJECT	CO1	To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

EIGHTH SEMESTER

1	EC09 801: Data and Communication Networks	CO1	To give the basic ideas of data communication networks-queuing theory, architecture and protocol
		CO2	To understand the concept of switching networks
2	EC09 802: Wireless Mobile Communication	CO1	To provide a strong background in the basics of wireless mobile communication
		CO2	To impart knowledge about the existing GSM and CDMA mobile communication technology
3	EC09 807(P): Viva-Voce	CO1	To examine the knowledge acquired by the student during the B.Tech. course, through an oral examination



12

✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamali
Dist. Thiruvananthapuram

4	EC09 SEMINAR	805(P): +CO1.	To assess the ability of the student to study and present a seminar on a topic of current relevance in electronics/communication/computer science. Or allied areas.
---	--------------	---------------	---

SCHEME 2009: CO-PO MATRIX

EC09 305	DIGITAL ELECTRONICS													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 305.1	3	3	2	2	-	-	-	-	-	1	-	2	3	-
EC09 305.2	3	3	3	3	3	1	-	-	-	1	-	2	-	3
EC09 305.3	3	3	3	3	3	1	1	-	-	1	-	2	3	3
EC09 305.4	3	3	3	3	-	-	-	-	-	1	-	2	-	3
EC09 305.5	2	2	1	-	-	-	-	-	-	1	-	2	-	-
EC09 305	3	3	3	3	3	1	1	-	-	1	-	2	3	3

EC09 404	ANALOG COMMUNICATION													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 404.1	3	-	3	3	-	-	1	-	-	1	-	-	3	-
EC09 404.2	3	3	-	2	-	1	-	-	-	1	-	2	3	3
EC09 404.3	3	3	3	3	-	1	1	-	-	1	-	2	-	3
EC09 404.4	3	-	-	3	-	-	-	-	-	1	-	2	3	3
EC09 404	3	3	3	3	-	1	1	-	-	1	-	2	3	3

EC09 503	ELECTROMAGNETIC FIELD THEORY													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 503.1	3	3	3	3	3	-	1	-	-	1	-	-	3	3
EC09 503.2	3	3	3	3	3	1	-	-	-	1	-	2	3	3
EC09 503.3	3	3	3	3	3	1	1	-	-	-	-	2	3	3
EC09 503.4	3	3	3	3	3	1	1	-	-	1	-	-	3	3
EC09 503	3	3	3	3	3	1	1	-	-	1	-	2	3	3



113

PRINCIPAL
Nehru College of
Engineering and Research Centre
Panipady Thiruvilwamala Thiruvananthapuram Dt
Pin - 680 557 Kerala

EC09 605	OPTICAL COMMUNICATION													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 605.1	3	3	3	3	2	-	1	-	-	1	-	-	2	1
EC09 605.2	3	3	3	3	2	1	-	-	-	1	-	2	2	1
EC09 605.3	3	3	3	3	2	1	1	-	-	-	-	2	2	1
EC09 605.4	3	3	3	3	2	1	1	-	-	1	-	-	2	1
EC09 605	3	3	3	3	2	1	1	-	-	1	-	2	2	1

EC09 801	DATA AND COMMUNICATION NETWORK													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 801.1	3	3	2	-	-	2	-	-	-	-	-	3	3	2
EC09 801.2	3	-	-	-	-	2	-	-	-	-	-	2	2	2
EC09 801.3	3	-	-	-	-	2	-	-	-	-	-	2	2	2
EC09 801.4	3	-	-	-	-	3	-	2	-	-	-	2	3	2
EC09 801	3	3	2	-	-	2	-	2	-	-	-	2	3	2

EC09 805(P)	SEMINAR													
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EC09 805(P).1	3	3	-	1	2	2	-	1	2	3	-	2	3	2
EC09 805(P).2	3	3	-	1	-	2	-	-	2	2	-	2	-	2
EC09 805(P).3	3	3	3	2	2	2	-	1	3	2	-	2	3	3
EC09 805(P).4	3	2	2	1	2	2	-	1	3	2	-	2	3	3
EC09 805(P).5	-	-	-	-	-	-	-	2	3	3	-	2	-	2
EC09 805(P)	3	3	3	1	2	2	-	1	3	2	-	2	3	2

KTU SCHEME:Program level Course-PO matrix of all courses INCLUDING first year courses

13



PRINCIPAL
Nehru College of
Engineering and Research Centre
Panapady Thuvittampala - Thrissur Dt
Pin - 686 561, Kerala

Sl No	COURSE CODE	SUBJECT CODE	PO												PSO	
			1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	C101	EN09 101	3	3	2	1			2					3		
2	C102	EN09 102	3	3	2	1			2					3		
3	C103	EN09 103	3	3	2	1			2					3		
4	C104	EN09 103(P)	3	3	3	3	3			1	3	3	1	3		
5	C105	EN09 104	2	1					1					2		
6	C106	EN09 104(P)	3	3	3	3	3			1	3	3	1	3		
7	C107	EN09 105	3	3	2	1			2					3		
8	C108	EN09 106	3	3	2	1			2					3		
9	C109	EN09 107	3	3	2	1			2					3		
10	C110	EN09 108	3	3	2	1			2					3		
11	C111	EN09 109(P)	3	3	2	1						3		3	2	2
12	C112	EN09 110(P)	3	3	3	3	3			1	3	3	1	3		
13	C113	EN09 111(P)	3	3	3	3	3			1	3	3	1	3		
14	C201	EN09 301	3	3	2	1			2					3	2	2

15	C202	EN09 302	3	3	2	1			3	3		3		3	2	2
16	C203	EC09 303	3	3	3	3	2					1		2	1	2
17	C204	EC09 304	3	3	3	3	3	1				1		2	3	2
18	C205	EC09 305	3	3	3	3	3	1	1			1		2	3	3
19	C206	EC09 306	3	3	3	3								2		
20	C207	EC09 307(P)	3	3	3	3	3	2			3	2	1	2	3	3
21	C208	EC09 308(P)	3	3	3	3	3	2			3	2	1	2	3	3
22	C209	EN09 401(B)	3	3	2	2			1					3	2	2
23	C210	EN09 402	2	2	2	1		3	3	2	1	2		2		1
24	C211	EC09 403	3	3	3	3	3	1	1			1		2	3	2
25	C212	EC09 404	3	3	3	3	3	1	1			1		2	3	3
26	C213	EC09 405	3	3	3	3	3	1	1			1		2	3	3
27	C214	EC09 406	3	3	3	3	1					1		2	2	1
28	C215	EC09 407(P)	3	3	3	3	3	2			3	2	1	2	3	3
29	C216	EC09 408(P)	3	3	3	3	3	2			3	2	1	2	3	3
30	C301	EC09 501	3	3	3	3	3	1	1			1		2	3	3
31	C302	EC09 502	2	2	2	2	2	2	2	1	2	3	3	3	2	3
32	C303	EC09 503	3	3	3	3	3	1	1			1		2	3	3
33	C304	EC09 504	3	3	3	3	3	1	1			1		2	3	3
34	C305	EC09 505	3	3	3	3	2	1	1			1		2	3	3
35	C306	EC09 506	3	3	3	3	3	1	1			1		2	3	3
36	C307	EC09 507(P)	3	3	3	3	3	2			3	2	1	2	3	3
37	C308	EC09 508(P)	3	3	3	3	3	2			3	2	1	2	3	3
38	C309	EC09 601	3	3	3	3	3	1	1			1		2	3	3
39	C310	EN09 602	2	2	2	2	2	2	2	2	3	3	3	3		
40	C311	EC09 603	3	3	3	3	3	1	1			1		2	3	3
41	C312	EC09 604	3	3	3	3	3	1	1			1		2	3	3
42	C313	EC09 605	3	3	3	3	2	1	1			1		2	2	1
43	C314	EC09 L05	3	2	2	1		1	1			1		2	2	
44	C315	EC09 607(P)	3	3	3	2	3	2			3	2		2	3	3
45	C316	EC09 608(P)	3	3	3	3	3	3	2	1	3	2	2	3	3	3
46	C401	EC09 701	3	3	3	3	3	1	1			1		2	2	1
47	C402	EC09 702	3	3	3	3	2	1	1			1		2	2	1
48	C403	EC09 703	3	3	3	3	3	1	1			1		2	3	2
49	C404	EC09 704	3	3	3	3	2	1	1			1		2	2	2
50	C405.1	EC09 L15	3	2	2	2		1	1			1		1	2	1
51	C405.2	EC09 L25	3	2	1	1		2	1			1		2	2	1
52	C406	EC09 707(P)	3	3	3	3	3	2			3	2	1	2	3	3
53	C407	EC09 708(P)	3	3	3	3	3	2			3	2	1	2	3	3
54	C408	EC09 709(P)	3	3	3	3	3	2	1	3	2	2	3	3	3	3
55	C409	EC09 801	3	2	1	1					1			2	2	1
56	C410	EC09 802	3	2	1	1					1			2	2	1
57	C411.1	EC09 L20	3	2	1	1		1	1		0	1		2	2	1
58	C411.2	AI09 L25	3	3		3	3						1			
59	C412	EC09 805(P)	3				1			1	1	3		2	2	2
60	C412	EC09 806(P)	3	3	3	3	3	3	3	2	3	3	3	3	3	3
61	C413	EC09 807(P)	3	2	2	2	2	3	2	1	2	3	1	3	3	2



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady Thiruvilwamala, Thiruvananthapuram Dt
Pin - 680 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



13 ✓

✓

PRINCIPAL

Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 686 897, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



Handwritten signature

Handwritten signature

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 557, K. 33



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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


PRINCIPAL
Nehru College of
Engineering and Research Centre
Thiruvilwamala, Thiruvrithur, Kerala
Pin - 686 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



MB

U

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thuvuvilamala, Thrissur Dt.
Pin - 680 507, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



13

PRINCIPAL
NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
PAMPADY, THIRUVIVAMALA, THIRISSUR DISTRICT, KERALA
PIN - 686 557



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



103


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 557, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.

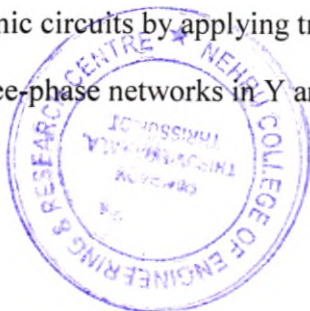
EET201 CIRCUITS AND NETWORKS

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.



12


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pamoady, Thiruvilwamala, Thirissur Dt.
Pin - 680 567, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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

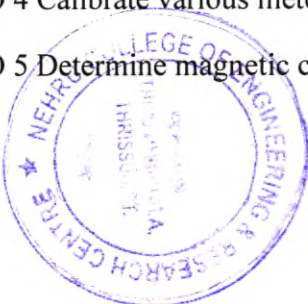
CO 1 Analyse voltage current relations of RLC circuits

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



13

Signature

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruv. Dt.
Pin : 620 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



Handwritten signature in green ink.

Handwritten signature in green ink.

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin : 689 597 Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



13


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvananthapuram, Kerala
 Pin - 695 007



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



13

13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruvārūr District,
Kerala - 689 567



**NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)**

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



13 ✓

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



B ✓


PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Thiruvilwamola, Thiruvārur
 Dist. - 620 007, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



IB

ck

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pannady, Thiruvilwamala, Thiruvananthapuram
Pin - 695 557, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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

JK

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala



**NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)**

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



18

18

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thiruvananthapuram
Pin - 686 557, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 557, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



Handwritten signature

Handwritten signature

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur
Pin - 686 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



13

Signature

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvananthapuram District,
Pin - 695 847, Kerala



**NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)**

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruppunjavalu, Thrissur Dt.
Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin - 680 597, Kerala

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.




PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur Dt.
 Pin - 680 597, Kerala





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



13

14

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala

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.



13

40

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.

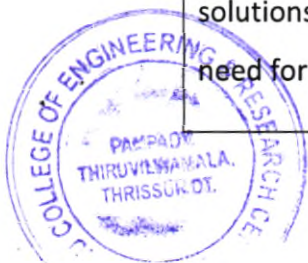
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

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.



1/3

Udr

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala

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.



13

14

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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



13

PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur
Pin - 680 597, Kerala

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.



B

Ch
PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur Dt.
 Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE
(NAAC Accredited)
 (Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)



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.



13

13

PRINCIPAL
 Nehru College of
 Engineering and Research Centre
 Pampady, Thiruvilwamala, Thrissur Dt
 Pin - 680 597, Kerala

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.



13


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin - 680 597, Kerala



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.



18


PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt.
Pin - 680 597, Kerala

(NAAC Accredited)

(Approved by AICTE, Affiliated to APJ Abdul Kalam Technological University, Kerala)

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.



PRINCIPAL
Nehru College of
Engineering and Research Centre
Pampady, Thiruvilwamala, Thrissur Dt
Pin - 680 597, Kerala



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in



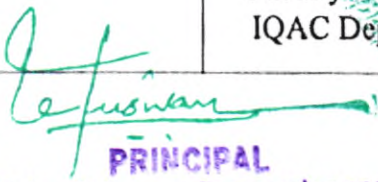
NCERC/IQAC/2023

Date: 08.08.2023

NOTIFICATION

Constitution of Internal Quality Assurance Cell (IQAC) for the Academic Year 2023-24

Sl. No.	Name & Designation	Role in IQAC
1.	Dr. Karibasappa Kwadikki Principal, NCERC	Chairman
2.	Dr. Sobha Manakkal Prof. & Head, Dept. of EEE NCERC	Director
3	Mr.M.Srinivas Principal Coordinator – Statutory Works, Nehru Group of Institutions	Management Representative
4	Mr. Vysak Valsan Asst. Prof., Dept. of ECE, NCERC	IQAC- Coordinator
5	Ms. Rajeenamol P T Asst. Prof., Dept. of EEE, NCERC	NAAC Coordinator
6	Ms. Silja Varghese Asst. Prof., Dept. of CSE, NCERC	NBA Coordinator
7	Dr. Deepa A Asst. Prof., Dept. of MCA, NCERC	Faculty Representative & IQAC Dept. Coordinator
8	Ms. Sajitha A S Asst. Prof., Dept. of ECE, NCERC	Faculty Representative & IQAC Dept. Coordinator
9	Ms. Neethu M Asst. Prof., Dept. of MTR, NCERC	Faculty Representative & IQAC Dept. Coordinator
10	Ms. Sruthy M R Asst. Prof., Dept. of CSE, NCERC	Faculty Representative & IQAC Dept. Coordinator
11	Ms. Roshini A R Asst. Prof., Dept. of MBA, NCERC	Faculty Representative & IQAC Dept. Coordinator
12	Mr. Rakesh K Asst. Prof., Dept. of CSE, NCERC	Faculty Representative & IQAC Dept. Coordinator


PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in



Sl. No.	Name & Designation	Role in IQAC
13	Mr. Rakesh P R Asst. Prof., Dept. of ME, NCERC	Faculty Representative & IQAC Dept. Coordinator
14	Mr. Maheshwaran K Asst. Prof., Dept. of EEE, NCERC	Faculty Representative & IQAC Dept. Coordinator
15	Dr. Praveen H Asst. Prof., Dept. of Applied Science, NCERC	Faculty Representative & IQAC Dept. Coordinator
16	Ms. Dincy George Sr. Consultant in Quality Engineering Deloitte India Pvt Ltd.	Alumni Representative
17	Dr. Rahul Satheesh Assistant Professor, School of Artificial Intelligence, Center for Computational Engineering and Networking (CEN), Amrita Vishwa Vidyapeetham, Coimbatore / Treasurer &YPAC IEEE PES Kerala Chapter	Professional Body Representative
18	Shri. Nandakumar R Scientist D & Team Lead (VLSI Design Group), NIELIT Calicut	Industry Representative
19	Mr. R. Ambikadas Senior Administrative Officer Academic Office, NCERC	Member from Academic Office
20	Mr. Santhosh K F/O Mr. Alok C Unni S5 EEE (2021-25 Batch)	Parent Representative
21	Ms. Malavika S Madhavan S5 ECE (2021-25 Batch)	Student Member
22	Ms. Vini Unnikrishnan Ward Member – Pampady Thiruvilwamala Grama Panchayath	Local society Representative



[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588

[Signature]
PRINCIPAL



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL –NCERC



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 36th (IQAC) MEETING AC.YR 2023-24

Agenda–

1. Discussion on action points arising out of the previous meeting
2. Placement- status 2023 pass out batch
3. Application for Academic Autonomy -status
4. Application for Research Centre -status
5. Action Plan 2023-24-proposed –Discussion
6. Suggestions from members
7. Any other matter with the permission of the chair.

Board Room, Aryabhata

Date:21st September -2023

Time – 10.30 AM

IQAC Members

- | | |
|---|--|
| 1. Prof. (Dr.) Karibasappa Kwadiki,-Chairperson IQAC | 12. Ms. Silja Vargheese – Coordinator, NBA |
| 2. Dr.Sobha Manakkal-Director IQAC | 13. Ms.Deepa A-Member Internal |
| 3. Mr. Vysak Valsan -Cordinator IQAC | 14. Ms.Sruthy M R- Member Internal |
| 4. Mr.M.Srinivas-Management Representative | 15. Ms.Roshini A R - Member Internal |
| 5. Mr.R.Ambikadas-Senior Administrative Officer | 16. Mr.Rakesh K -Member Internal |
| 6. Ms.Vini Unnikrishnan-Local society Representative | 17. Mr.Rakesh P R -Member Internal |
| 7. Ms.Dincy George -Alumni Representative | 18. Ms.Neethu--Member Internal |
| 8. Dr.Rahul Sateesh -Professional Body Representative | 19. Mr.Maheswaran K-Member Internal |
| 9. Mr.Nandakumar R -Industry Representative | 20. Ms.Sajitha A S-Member Internal |
| 10. Mr.Santhosh K-Parent Representative | 21. Dr.Praveen H -Member Internal |
| 11. Ms Rajeenamol PT– Coordinator, NAAC | 22. Ms.Malavika S Madhavan -Member student |

The meeting began at 10.30 AM. 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. IQAC action plan for this academic year was presented and discussion was done on the proposed action plan.

PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



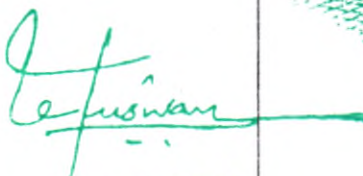
NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL –NCERC



Sl.no	Item	Action by	Target date
1.	Principal (Chairperson IQAC) suggested identifying alumni from all departments and including them as members of IQAC for the current academic year. Also suggested to have NAAC and NBA coordinators as special invitees in further meetings	IQAC	Next IQAC meeting
2.	Principal informed that the Institution is waiting for the approval of applications submitted for academic autonomy to UGC and formation of KTU research Centre. He also conversed that the Institution is looking forward to acquire the ' Distinct University ' status. This will enable the curriculum to be re- designed such that added focus can be given to practical sessions, encourage open ended experiments and offer micro projects for each core subject which can be further developed as a research work.	Institution	As needed
3.	An elaborate discussion on strengthening the research culture in campus was done and the following suggestions were evolved Principal suggested the following - Joint publications by students and faculty based on student projects - Joint publications by faculty of various colleges under NGI - Extending fiscal support for good undergraduate /postgraduate student projects through SEED money from Management Mr.Nandakumar R (Industry representative) - Opened discussion about POs, PSO and PEOs and need for strengthening the alumni interactions to ensure improved attainment of POs, PSO and PEOs	Professors and faculty  PRINCIPAL Nehru College of Engineering and Research Centre (Autonomous) Nila Gardens, Pampady Thiruvilwamala, Thrissur - 680588	As needed



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL – NCERC

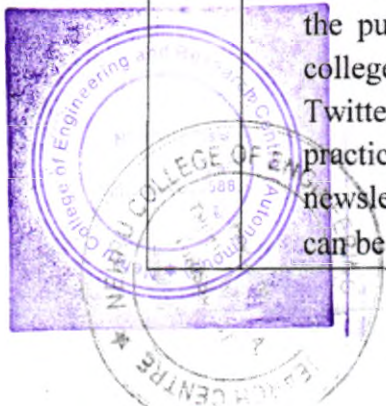


- Emphasized on need for faculty to be aware of various academic tools including Reference Management Software, GitHub to teach the present generation students
- Ensured all support to link with NIELIT to provide one week Boot Camp on Drone Technology' with no charges for three batches in parallel with 30 students in each batch.
- Briefed on 'Chip to Start' certification programme by MeitY which can be utilized by students as well as faculty
- Explained on Digital Workforce Management System (K-DISC & Kerala Knowledge Economy Mission (KKEM)) which can be can be utilized for Placement (NCERC Enrolled)
- Suggested to have Project based learning implemented – Capstone Project
- Opined that all students must be encouraged to undergo internship with AICTE/K-DISC / KKEM
- Suggested college to utilize Remote Lab facility by NIELIT for securing access to online journals

Dr.RahulSateesh(Professional Body representative) proposed the following

- Meaning full Internship- utilizing Karyashala – DST initiative Government Industries and Research Institutions can be identified
- Social Assistive Technology Development Sector another area which can be focused which will help the community and enhance the image of the Institution
- Create a webmaster role in campus for reaching the public and needed society for publicity of college events and news using LinkedIn and Twitter social medial handles can be made practice rather than using conventional styles of newsletters, website etc. Better and easier reach can be ensured using these techniques

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Palamoor,
Thiruvilwamala, Thrissur - 686566





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

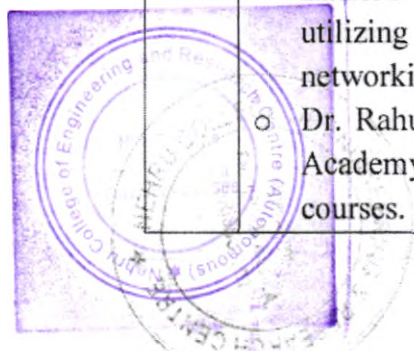
(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL –NCERC



	○ Interdisciplinary research can be promoted with faculty team comprising various departments and also joint efforts of faculty from various colleges including Medical, paramedical etc can be promoted. Typical example was stated as field of Bioinformatics Mr.Srinivas M (Management representative) suggested for ○ Better utilization of seed funds ○ Overall development of faculty fraternity to promote growth of institution Dr. Sudheer Marar (HOD/MBA) ○ He pointed out that the MCA PG projects are done through internships from reputed firms. ○ He also explained the activities of IIC Dr. Mredhula L (HOD ECE & HOD i/c CSE) ○ She said that the Dept. of ECE has a committee which identified the Thrust Areas and ensured that she will extend the same at Institution level		
4.	Members offered the following suggestions for the placement activities ○ Principal suggested for more illustrative data on placement statistics requiring presenting the placement data indicating the number of students placed in each company even if numbers are small. ○ Dr.Rahul Sateesh opined that the department placement coordinator shall be a dynamic and self-motivated person with good network. He also insisted on core area placement improvement, utilizing professional bodies for the better networking and improving interdisciplinary skills ○ Dr. Rahul Satheesh also informed about the ICT Academy -IIT Roorke offering good certification courses. He also suggested Placement Officer to	Professors, faculty and placement cell <i>[Signature]</i> PRINCIPAL Nehru College of Engineering and Research Centre (Autonomous) Nila Gardens, Pampady Thiruvilwamala, Thrissur - 680586	As needed





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL –NCERC



	get connect with firms at Coimbatore for an Industry – Institute collaboration. He stated the example of Lakshmi Mills Mr.Gopinathan , placement officer briefed on the various training programs arranged by the college. He also stated said that placement cell is under NCPIR with main office at Coimbatore campus. More opportunities are produced using this collaboration.		
5.	Mr. Santhosh (Parent Representative) gave the following general remarks - Definition for Quality in education to be more precise and made clear to staff and students - Students lack in self-confidence – need to be improved - Practical knowledge in the subject is more important than theory lectures – more laboratory hours to be provided - Leadership quality and decision making ability among students to be improved through workshops and active interaction with faculty members - All departments must work in a collaborative way Principal informed that a Counselor will be joining the campus for motivating students and improving their self confidence	Institution	As needed
6.	The following concluding remarks were made by the Principal - Explained the significance of experiential learning and also conversed that the practice of laboratory presentation has been introduced for all classes after conducting the experiment. - He shared his experience he had while interacting with current first year students when he extended guidance to set their vision and mission. - He briefed on the preparations made by	For information <i>[Signature]</i> PRINCIPAL Nehru College of Engineering and Research Centre (Autonomous) Nila Gardens, Pambady Thiruvilwamala, Thrissur - 680588	



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(NAAC 'A' Accredited)

(Approved by AICTE, Affiliated to KTU, Kerala)

INTERNAL QUALITY ASSURANCE CELL – NCERC



	Institution in view of the possible academic autonomy including curriculum development with the help of department heads for the various programs in which added weightage has been given to practical classes. He remarked it as an Academic Evolution.		
--	--	--	--

MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC
COORDINATOR

IQAC DIRECTOR



PRINCIPAL, NCERC

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 686588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTN | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



ACTION TAKEN REPORT OF THE IQAC MEETING NO 36 HELD ON 21st SEPTEMBER, 2023 (APPROVED IN THE MEETING HELD ON 26th MARCH 2024)

Sl. No	Item	Action by	Action taken	Remarks
1.	Including alumni from all departments	IQAC	Special invitees as subject experts	Completed
2.	Academic autonomy and formation of research Centre of the campus,	Management/Principal	Institution has been granted autonomy for ten years as per clause 7.5 of the UGC (Conferment of Autonomous Status Upon Colleges and Measures for Maintenance of Standards in Autonomous Colleges) Regulations, 2023.	Completed
3.	Curriculum to be re- designed -added focus to practical sessions, encourage open ended experiments and offer micro projects for each core subject.	Principal/HoDs/DAC/ Alumni/IQAC/BoS	Curriculum re-design in progress	In Process
4.	Joint publications by students and faculty based on student projects .Joint publications by	Departments	Research conclave being organized with all NGI colleges, SEED money – included in budget of	Continuing



INTERNAL QUALITY ASSURANCE CELL – NCERC
36th Meeting (21.06-9.2023) Action Taken Report
Approved on 26.03.2024

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nile Gardens, Pampady
Thiruvilwamala, Thrissur - 686588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRUVARUR DT., KERALA - 680508

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in



	faculty of various colleges under NGI,SEED money from Management		this next financial yr.	
5.	Improved attainment of POs, PSO and PEOs, faculty to be aware of various academic tools including Reference Management Software, GitHub to teach the present generation students through internships from reputed firms.	Institution	Possibilities being explored	Procuring suitable Software in consideration
6.	link with NIELIT to provide one week Boot Camp on Drone Technology' . 'Chip to Start' certification programme by MeitY	Institution	Pending – due to extensive programs in campus	To be considered in the next academic year
7.	Digital Workforce Management System (K-DISC & Kerala Knowledge Economy Mission (KKEM)) which can be can be utilized for Placement	Placement cell	Enrolled	Completed
8.	More illustrative data on placement statistics requiring presenting the placement data indicating the number of students placed in each company even if numbers are small.	Placement cell	Placement data prepared accordingly	Complied with



INTERNAL QUALITY ASSURANCE CELL – NCERC
36th Meeting (21.06-9.2023) Action Taken Report
Approved on 26.03.2024

Leifunian

PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thiruv. - 680508



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in

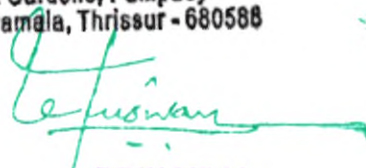


Moulding True Citizens

9.	Preparation of OBE manual and training of faculty on CO & PSO attainment computation target fixation and identification of curricular gaps	IQAC	Draft copy prepared	New manual for Tier 1 institutions to be prepared
PREPARED BY DIRECTOR IQAC NCERC				
APPROVED BY PRINCIPAL NCERC				


IQAC DIRECTOR


PRINCIPAL NCERC
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588


PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588

INTERNAL QUALITY ASSURANCE CELL - NCERC
36th Meeting (21.06-9.2023) Action Taken Report
Approved on 26.03.2024





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 37th IQAC MEETING AC.YR. 2023-24

Agenda-

1. Discussion on action points arising out of the previous meeting
2. Granting of Academic Autonomy, NCERC - prospective plan
3. Scheme for UG, PG programs autonomous college -NCERC
4. Team syllabus discussion with subject experts
5. Concluding remarks
6. Any other matter with the permission of the chair.

Seminar Hall , Aryabhata

Date:26th March 2024

Time - 10.00 AM

IQAC Members

- | | |
|--|---|
| 1. Prof. (Dr.) Karibasappa Kwadiki,-Chairperson IQAC | 11. Ms. Malavika S Madhavan -Member Student |
| 2. Dr.Sobha Manakkal-Director IQAC | 12. Dr. Deepa A-Member Internal |
| 3. Mr. Vysak Valsan -Cordinator IQAC | 13. Ms. Silja Varghese - Member Internal |
| 4. Mr. M.Srinivas-Management Representative | 14. Mr. Alex K - Member Internal |
| 5. Mr. R.Ambikadas-Senior Administrative Officer | 15. Mr. Rakesh K -Member Internal |



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nira Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in



6. Ms. Vini Unnikrishnan-Local Society Representative	16. Mr. Rakesh P R -Member Internal
7. Ms. Dincy George -Alumni Representative	17. Ms. Neethu M--Member Internal
8. Dr.Rahul Sateesh -Professional Body Representative	18. Mr.Maheswaran K-Member Internal
9. Mr.Nandakumar R -Industry Representative	19. Ms.Anooja B -Member Internal
10. Mr.Santhosh K-Parent Representative	20. Ms. Anitha P -Member Internal
Special invitees	
1. Dr.Radhakrishnan-Advisor -NGIK	6. Dr Krishna Kumar T PProf. & HOD, Dept. of MBA
2. Dr. Mredhula L ,Prof & HOD, Dept. of ECE	7. Dr. Sudheer S Marar Prof. & HOD, Dept. of MCA
3. Dr.D. Vijayakumar, Prof. & HOD, Dept. of Mechatronics	8. Ms. .Silja Varghese, HoD in charge – Dept. of CSE
4. Dr. Appadurai M, Asso. Prof. & HOD(i/c), Dept. of ME	9. Prof Sajitha , HoD in charge – Dept. of CSE (AI & ML)
5. Dr Jalaja K, Prof. & HOD Department of Applied Science	10. Mr. Gopinathan C Placement Officer
Subject Experts	
Name and designation	Domain of expertise



INTERNAL QUALITY ASSURANCE CELL – NCERC
37th Meeting Minutes
26.03.2024

Principal

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR ST., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



Building True Citizens

1. Mr. Vidyasagaran P Rtd. Vice President Engineering, MultiTech Software Systems., Rtd. Director, Ericsson India	Electrical & Electronics Engineering
2. Dr Anand R , Assistant Professor,ECE,Amrita School of Engineering, Coimbatore	Electronics & Communication
3. Mr. Vishnukumar V Chief Officer, Embedded Systems & IoT,V-Guard Industries Ltd., Cochin	Computer Science & Artificial Intelligence
4. Mr. Sreejith K R&D Engineer-Luminar Technolab, Cochin	Computer Application
5. Mr.Jimmy J Nalappat ,Retd.AGM, HR & Vigilance, ITI Ltd, Palakkad	Business Applications
6. Mr. Karthikeyan Thiyagarajan ,Deputy Manager Quality,Orbinox India Pvt. Ltd.,Coimbatore, Tamil Nadu.	Mechanical Engineering
The meeting began at 10.30 a.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 and special invitees were introduced. The main agenda for the meeting was 'Fine tuning of curricula and syllabi for autonomous college, NCERC	



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

[Signature]
PRINCIPAL
 Nehru College of Engineering and
 Research Centre (Autonomous)
 Nile Gardens, Pampady
 Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



Principal NCERC announced that the Institution has been granted autonomy for ten years as per clause 7.5 of the UGC (Conferment of Autonomous Status Upon Colleges and Measures for Maintenance of Standards in Autonomous Colleges) Regulations, 2023. He briefed on the prospective plan of the Institution to implement a learning curriculum most suitable for Industry with support from experts from Industry and in compliance with NEP 2020. The meeting was announced to be dispersed for the morning session for each department to have separate detailed discussion on syllabus with subject experts from Industry.

The following are the major discussion outcome reported by departments.

Sl.no	Item	Action by	Target date
1.	Subject Expert for CSE department Ms.Dincy George Senior Consultant, Deloitte Systems, Bangalore gave the following suggestion i. Include Standard programming guide lines in different programming languages ii. Include more industry based problem statements as experiments in practical sessions for programming languages	CSE department i. Standard programming guide lines included in the syllabus ii. Included one practical session for software project development	As needed- Implementation shall be subject to approval from BoS

INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nile Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in



Moulding True Citizens

	Subject Expert for CSE department Mr. Vishnu Kumar V Chief Officer, Embedded Systems & IoT, V-Guard Industries Ltd, Cochin gave the following suggestion i. Include basic microcontroller concepts ii. Include more topics based on neural networks	i. Included 8051 microcontroller ii. Included deep learning subjects



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nilg Garden, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



2.	Subject Expert for EEE department Mr. Vidyasagaran P., Rtd. Director, Ericsson India gave the following suggestion i. Emphasis on basics of Electrical Engineering must be ensured in framing the syllabus ii. Simulation exercises / realization of micro projects for core engineering subjects need to be implemented to enable them to have hand-on experience iii. Kits shall be replaced with convention breadboard and connecting wires to have a better understanding of circuit design and debugging	EEE department	
	Subject Expert for EEE department Dr. Rahul Sateesh, Department of Artificial Intelligence, Amrita School of Artificial Intelligence, Coimbatore (IQAC member) gave the following suggestion i. Special Electrical Machines including robotics, drone autonomous vehicle to be included in the syllabus ii. Electrical Measurements to be included as a core	EEE department	As needed- Implementation shall be subject to approval from BoS



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

Leifunian

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680508

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTH | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



	subject as it is a basic essential in Industry iii. Concept of Bring Your Device (BYD) ,where each student having his own kit of breadboard, arduino boards, lab components to be introduced which will help them to realize their circuit ideas even beyond class hours.		
3.	Subject Expert for ECE department Mr. Vidyasagaran P.,Rtd. Director, Ericsson India and Dr. Anand R, Assistant Professor, ECE, Amrita School of Engineering, Coimbatore gave the following suggestion i. Implementation of Circuit Simulation, utilizing Physical Hardware within Electronics Circuits and Network Theory tutorials ii. In Signals and Systems and Digital Signal Processing, assignments, integration of simulation exercises utilizing Python and MATLAB, alongside the incorporation of TMS hardware kits within DSP studies iii. Integration of FPGA programming into the Digital	ECE department	As needed- Implementation shall be subject to approval from BoS



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

[Signature]
PRINCIPAL

Nehru College of Engineering and
 Research Centre (Autonomous)
 Nhe Gardens, Pampady
 Thiruvilwamala, Thrissur - 680508



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

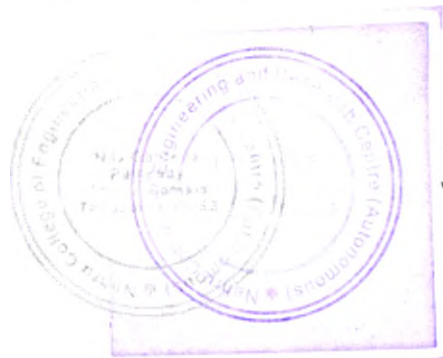
NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



	System Design lab, emphasizing familiarity with industry-standard concepts such as TTL, fan-in, and fan-out iv. In the Linear Integrated Circuits Lab, provision of opportunities for each student to interface with op-amp circuits using a single power supply, while also gaining proficiency in current driver circuits, mirror circuits, etc v. Expansion of Microcontroller studies to encompass modern controllers within the syllabus, with a particular emphasis on peripherals and interrupts. vi. Introduction of Python-based simulations in Principles of Communication coursework. vii. In Control Systems, inclusion of activities involving the construction and implementation of PID controllers. viii. To combine Electromagnetic Field Theory and Antenna theory as a single course		
--	---	--	--



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

[Signature]
PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in



4.	Subject Expert for ME/MTR departments Mr. Karthikeyan Thiyagarajan ,Deputy Manager Quality,Orbinox India Pvt. Ltd.,Coimbatore, Tamil Nadu gave the following suggestion - The syllabus must be in line with the current Industry needed - The syllabus should be framed with new technologies which is used in industries - Specialized subjects like industry management , Quality concepts and Operation research can be included in the syllabus - Mechatronics engineering can be included with sensors and pneumatic concepts. - For Mechanical engineering instrumentation concepts can be included	ME/MTR departments	As needed- Implementation shall be subject to approval from BoS
5.	Mr. Sreejith K,R&D Engineer, Luminar Technolab, Cochin gave the following suggestion Domain Expertise Workshop shall include Aptitude Test Questions & HR Round Mock-ups -Industry	MCA dept. with support from Industry	As needed- Implementation shall be subject to approval from BoS



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

Leifusman
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVITWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTB | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



	can help the department to develop modules in Aptitude/HR sessions ii. Linked In profiles shall be initiated for ALL students which needs to be updated by the projects/activities during the MCA program Industry can aid to provide samples and also evaluate the Professional Profile of the students iii. Add-on Training of 20-30hr duration shall be offered during Sem4 beginning, organized combine by Industry and Institute Industry shall train the Faculty to lead basic sessions through Train-the-Trainer programs and directly lead the core-sessions to student groups iv. The MCA with SPECIALISATION is definitely a novel concept, and should choose the courses and content accordingly Industry can contribute towards the intellect structure and applications of the course contents		
--	---	--	--



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nile Gardens, Pampady
Thiruvitwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

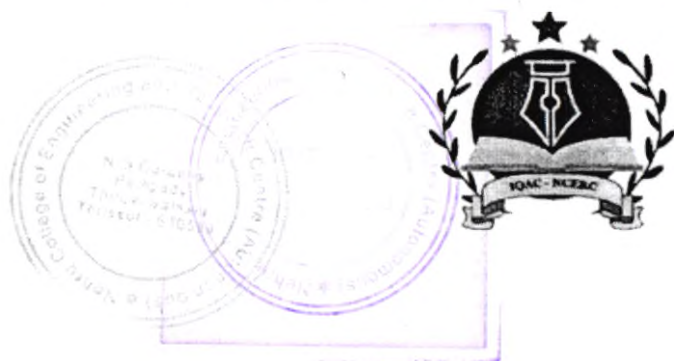
ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



Building True Citizens

6.	Mr. Jimmy J Nalappat, Retd. AGM, HR & Vigilance, ITI Ltd, Palakkad gave the following suggestion - Ethics concepts need to be included in Business Environment paper not in Business Communication as 3 Modules with Business Environment and 2 Modules with Ethics. - Application aspects need to be concentrated more as practical component and to be implemented. - In Finance Papers especially Financial Engineering electives, it was suggested to add/update new concepts - adapt the reality aspects of management through industry exposure. - Inclusion of Recruitment and selection, retention, deferred payment, stock options, and retention bonus as compensation connected with IT Industry for Organizational Behavior Paper. - Few modules in Human Resource Planning and Training and Development needs to be interchanged	MBA Department	As needed- Implementation shall be subject to approval from BoS
----	--	----------------	--



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024

Principal
PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

NEA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in

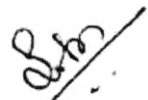


Moulding True Citizens

vii.	concentrate on recent trends and few statutory compliance such as PF Act, Bonus and Gratuity.		
viii.	include some more disruptions in Industry 4.0 paper.		

Further to department level syllabus discussion, the IQAC members and subject experts assembled to have the concluding remarks. The subject experts appreciated the effort done by departments in drafting advanced syllabus and ensured continued support to Institution for implementation of academic autonomy.

MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR


DIRECTOR IQAC ,NCERC

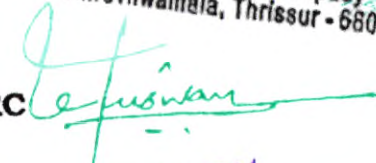



PRINCIPAL

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting Minutes
26.03.2024


PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B TECH CSE, B TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



INTERNAL QUALITY ASSURANCE CELL - NCERC

ACTION TAKEN REPORT OF THE IQAC MEETING NO. 37 HELD ON 26th MARCH 2024

(APPROVED IN THE 38th MEETING HELD ON 26th APRIL 2024)

Sl. No	Item	Action by	Action taken	Remarks
1.	AY 2023-24 Even Semester Internal Audit - I	IQAC	Scheduled and completed	Completed
2.	Fine tuning of curricula and syllabi for autonomous college	HOD	Subject Experts Meeting held on 26 th March 2024 organized by IQAC	Work going on
PREPARED BY DIRECTOR IQAC NCERC				
APPROVED BY PRINCIPAL NCERC				

IQAC DIRECTOR NCERC



INTERNAL QUALITY ASSURANCE CELL - NCERC
37th Meeting ATR
Approved on 26.04.2024

PRINCIPAL NCERC

Nehru College of Engineering and
Research Centre (Autonomous),
Nha Gardens, Pampady
Thiruvilwamala, Thiruvananthapuram - 680588

Nehru College of Engineering and
Research Centre (Autonomous)
Nha Gardens, Pampady
Thiruvilwamala, Thiruvananthapuram - 680588





NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680508

NBA ACCREDITED PROGRAMMES - B TECH CSE, B TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 38th IQAC MEETING AC.YR.2023-24

Agenda-

1. Discussion on action points arising out of the previous meeting
2. Scheme for UG,PG programs autonomous college -NCERC
3. Syllabus fine tuning progress
4. Internal Audit and External Audit
5. Any other matter with the permission of the chair.

Online Mode

Date:26th April 2024

Time - 11:00 AM

IQAC Members

- | | |
|--|---|
| 1. Prof. (Dr.) Karibasappa Kwadiki,-Chairperson IQAC | 11.Ms.Malavika S Madhavan -Member Student |
| 2. Dr.Sobha Manakkal-Director IQAC | 12.Dr.Deepa A-Member Internal |
| 3. Mr. Vysak Valsan -Cordinator IQAC | 13.Ms.Silja Varghese - Member Internal |
| 4. Mr.M.Srinivas-Management Representative | 14.Mr. Alex K - Member Internal |
| 5. Mr.R.Ambikadas-Senior Administrative Officer | 15.Mr.Rakesh K -Member Internal |
| 6. Ms.ViniUnnikrishnan-Local Society Representative | 16.Mr.Rakesh P R -Member Internal |
| 7. Ms.Dincy George -Alumni Representative | 17.Ms.Neethu M--Member Internal |



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024

[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680508



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

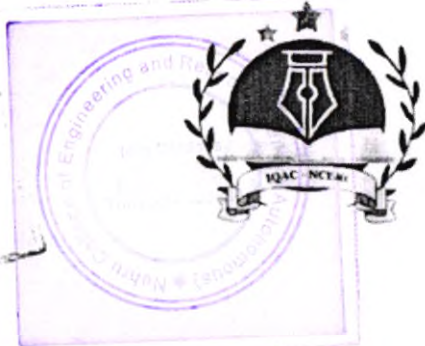
NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



8. Dr RahulSateesh -Professional Body Representative	18.Mr.Maheswaran K-Member Internal
9 Mr.Nandakumar R -Industry Representative	19.Ms.Anooja B -Member Internal
10.Mr.Santhosh K-Parent Representative	20.Ms. Anitha P -Member Internal
Special invitees	
1 Dr Radhakrishnan-Advisor -NGIK	6. Dr Krishna Kumar T PProf & HOD, Dept. of MBA
2 Dr Mredhula L ,Prof & HOD, Dept. of ECE	7. Dr. Sudheer S Marar Prof. & HOD, Dept. of MCA
3. Dr D. Vijayakumar, Prof. & HOD, Dept. of Mechatronics	8. Ms. .Silja Varghese,HoD in charge – Dept. of CSE
4. Dr. Appadurai M,Asso. Prof. & HOD(i/c), Dept. of ME	9. Prof Sajitha,HoD in charge – Dept. of CSE (AI & ML)
5. Dr Jalaja K, Prof. & HOD Department of Applied Science	10.Mr. Gopinathan C Placement Officer
The meeting began at 11:00 AM Principal welcomed all the members of IQAC He directed Dr.SobhaManakkal, 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. The main agenda for the meeting was to discuss the progress on fine tuning of curricula and syllabi for autonomous college as per the suggestions given by the subject experts in the previous meeting.	



INTERNAL QUALITY ASSURANCE CELL – NCERC
38th Meeting Minutes
26.04.2024

[Signature]
PRINCIPAL
 Nehru College of Engineering and
 Research Centre (Autonomous)
 Nila Gardens, Pampady
 Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



The following are the major discussion outcome reported by departments.

Sl.no	Item	Action by	Target date
1.	Changes done by Dept. of CSE	CSE department - Standard programming guide lines included in the syllabus - Included one practical session for software project development - Included 8051 microcontroller - Included deep learning subjects	As needed- Implementation shall be subject to approval from BoS
2.	Changes done by Dept. of EEE	- Emphasis given to basics of Electrical Engineering - Simulation exercises / realization of micro projects for core engineering subjects implemented to enable them to have hand-on experience - Kits replaced with convention breadboard and connecting wires to have a better understanding of circuit design and debugging. - Special Electrical Machines including robotics, drone autonomous vehicle included in the syllabus	As needed-



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024

PRINCIPAL
 Nehru College of Engineering and
 Research Centre (Autonomous)
 Nila Gardens, Pampady
 Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



		v. Electrical Measurements included as a core subject as it is a basic essential in Industry vi. Concept of Bring Your Device (BYD) ,where each student having his own kit of breadboard, arduino boards, lab components introduced which will help them to realize their circuit ideas even beyond class hours.	Implementation shall be subject to approval from BoS
3.	Changes done by Dept of ECE	i. Implementation of Circuit Simulation, utilizing Physical Hardware within Electronics Circuits and Network Theory tutorials ii. In Signals and Systems and Digital Signal Processing, assignments, integration of simulation exercises utilizing Python and MATLAB, alongside the incorporation of TMS hardware kits within DSP studies iii. Integration of FPGA programming into the Digital System Design lab, emphasizing familiarity with industry-standard concepts such as TTL, fan-in, and fan-out iv. In the Linear Integrated Circuits Lab, provision of opportunities for each student to interface with op-amp circuits using a single power supply, while	As needed- Implementation shall be subject to approval from BoS



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024

Principal
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680508

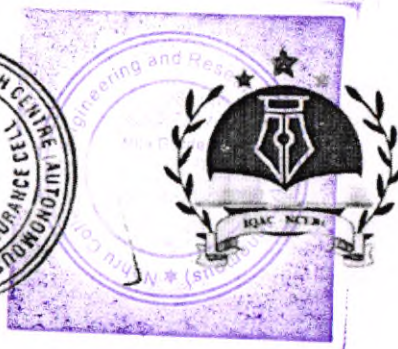
NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



		also gaining proficiency in current driver circuits, mirror circuits, etc v. Expansion of Microcontroller studies to encompass modern controllers within the syllabus, with a particular emphasis on peripherals and interrupts. vi. Introduction of Python-based simulations in Principles of Communication coursework. vii. In Control Systems, inclusion of activities involving the construction and implementation of PID controllers. viii. Combined Electromagnetic Field Theory and Antenna theory as a single course	
4.	Changes done by Dept.of ME/MTR	i. Specialized subjects like industry management , Quality concepts and Operation research can be included in the syllabus ii. Mechatronics engineering can be included with sensors and pneumatic concepts. iii. For Mechanical engineering instrumentation concepts can be included	As needed- Implementation shall be subject to approval from BoS



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024

[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre
Pampady, Thiruvilwamala,
Thiruvananthapuram - 680508



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT. KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



5.	Changes done by Dept. of MCA	i. Domain Expertise Workshop shall include Aptitude Test Questions & HR Round Mock-ups -Industry can help the department to develop modules in Aptitude/HR sessions ii. Linked In profiles shall be initiated for ALL students which needs to be updated by the projects/activities during the MCA program Industry can aid to provide samples and also evaluate the Professional Profile of the students iii. Add-on Training of 20-30hr duration shall be offered during Sem4 beginning, organized combine by Industry and Institute Industry shall train the Faculty to lead basic sessions through Train-the-Trainer programs and directly lead the core-sessions to student groups iv. The MCA with SPECIALISATION is definitely a novel concept, and should choose the courses and content accordingly Industry can contribute towards the intellect structure and applications of the course contents	As needed- Implementation shall be subject to approval from BoS
----	------------------------------	---	--



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024

[Signature]
PRINCIPAL
 Nehru College of Engineering and
 Research Centre (Autonomous)
 Nilgiri Gardens, Pampady
 Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES : B.TECH CSE, B.TECH MTR NAAC RE-ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



6.	Changes done by Dept. of MBA	- Ethics concepts need to included in Business Environment paper not in Business Communication as 3 Modules with Business Environment and 2 Modules with Ethics. - Application aspects needs to be concentrated more as practical component and to be implemented. - In Finance Papers especially Financial Engineering electives, it was suggested to add/update new concepts - adapt the reality aspects of management through industry exposure. - Inclusion of Recruitment and selection, retention, deferred payment, stock options, and retention bonus as compensation connected with IT Industry for Organizational Behavior Paper. - Few modules in Human Resource Planning and Training and Development needs to interchanged - concentrate on recent trends and few statutory compliance such as PF Act, Bonus and Gratuity. - Include some more disruptions in Industry 4.0 paper.	As needed- Implementation shall be subject to approval from BoS
----	------------------------------	---	--



INTERNAL QUALITY ASSURANCE CELL – NCERC
38th Meeting Minutes
26.04.2024

[Signature]
PRINCIPAL
 Nehru College of Engineering and
 Research Centre (Autonomous)
 Nila Gardens, Pampady
 Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR NAAC RE-ACCREDITED WITH 'A' GRADE
ISO 9001:2015 CERTIFIED APPROVED BY AICTE AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
www.ncerc.ac.in | principal@ncerc.ac.in

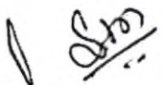


7.	BoS Meeting	Principal as per the approval from University	May 2024 (exact date pending)
8.	Internal and External Audit	As per academic calendar	Internal audit to complete by 5 th July 2024
Principal verified the syllabus and given suggestion for final submission in the BoS meeting to be scheduled in the Month of May 2024.			
MEETING CONCLUDED WITH THE THANKS GIVING FROM IQAC COORDINATOR			


DIRECTOR IQAC, NCERC



INTERNAL QUALITY ASSURANCE CELL - NCERC
38th Meeting Minutes
26.04.2024


PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR | NAAC RE-ACCREDITED WITH A GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in



INTERNAL QUALITY ASSURANCE CELL – NCERC

ACTION TAKEN REPORT OF THE IQAC MEETING NO. 38 HELD ON 26th APRIL 2024

(APPROVED IN THE 39th MEETING HELD ON 22nd JULY 2024)

Sl No	Item	Action by	Action taken	Remarks
1.	AY 2023-24 Even Semester Internal Audit - II	IQAC	Scheduled and completed	Completed
2.	Fine tuning of curricula and syllabi for autonomous college as per BoS suggestions.	HOD	BoS Meeting completed in the month of May, June 2024	Completed
PREPARED BY DIRECTOR IQAC NCERC				
APPROVED BY PRINCIPAL NCERC				

My
DIRECTOR IQAC NCERC
Dr. M. K. S. S. S.



INTERNAL QUALITY ASSURANCE CELL – NCERC
38th Meeting ATR
Approved on 22.07.2024

Letuwan

CHAIRMAN-IQAC/PRINCIPAL
PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588

Letuwan
PRINCIPAL

Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THIRISSUR DT., KERALA - 680588

MBA ACCREDITED PROGRAMMES - B.TECH CSE, B.TECH MTR - NAAC RE ACCREDITED WITH A GRADE

ISO 9001:2015 CERTIFIED - APPROVED BY AICTE - AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in

MINUTES OF THE INTERNAL QUALITY ASSURANCE CELL 39th IQAC MEETING AC.YR. 2023-24

Agenda-

1. Discussions on the commencement of S1 (2024 Admissions) and S3 (2023 Admissions) Batches
2. Any other matter with the permission.

Offline Mode,
Seminar Hall, Aryabatta Block

Date: 22nd July 2024

Time - 02:00 PM

Attendees: IQAC Members

- | | |
|---|--|
| 1. Prof. Dr. K. G. Viswanadhan Principal, NCERC & IQAC Chairman | 14. Dr. Rahul Sateesh - Professional Body Representative |
| 2. Dr. Mredhula L. Prof. & HOD, Dept. of ECE & Director IQAC | 15. Mr. Nandakumar R - Industry Representative |
| 3. Dr. Krishna Kumar T P, Prof. & HOD, Dept. of MBA | 16. Mr. Santhosh K - Parent Representative |
| 4. Dr. Sudheer S Marar, Prof. & HOD, Dept. of MCA | 17. Mr. Vysak Valsan - Coordinator IQAC |
| 5. Dr. Sobha Manakkal, Prof. & HOD, Dept. of EEE | 18. Mr. Pramod K - Member Internal/MCA |
| 6. Dr. Justin Jose, Prof. & HOD, Dept. of CSE | 19. Ms. Silja Varghese - Member Internal/CSE |
| | 20. Mr. Alex K - Member Internal/MBA |



INTERNAL QUALITY ASSURANCE CELL - NCERC
39th Meeting Minutes
22.07.2024



Page 1 of 4

[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY THIRUVILWAMALA THRISSUR DT. KERALA 680588

NBA ACCREDITED PROGRAMMES B TECH CSE B TECH MTR NAAC RE ACCREDITED WITH A GRADE

ISO 9001:2015 CERTIFIED APPROVED BY AICTE AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in

- | | |
|---|---|
| 7. Dr. Anto Francis Cherussery, Prof. & HOD, Dept. of Mechatronics | 21. Ms. Sajitha A S - Member Internal/CSE-AI&ML |
| 8. Dr. Appadurai M, Asso. Prof. & HOD (i/c), Dept. of ME | 22. Mr. Rakesh P R - Member Internal/ME |
| 9. Dr. Jalaja K, Asso. Prof. & HOD (i/c), Department of Applied Science | 23. Ms. Neethu M - Member Internal/MTR |
| 10. Mr. M Srinivas - Management Representative | 24. Mr. Maheswaran K - Member Internal/EEE |
| 11. Mr. R. Ambikadas - Senior Administrative Officer | 25. Ms. Anooja B - Member Internal/ECE |
| 12. Ms. Vini Unnikrishnan - Local Society Representative | 26. Ms. Anitha P - Member Internal/BSH |
| 13. Ms. Dincy George - Alumni Representative | 27. Ms. Malavika S Madhavan - Member Student |

The meeting began at 2:00 PM. Principal welcomed all the members of IQAC. He directed Dr. Mredhula L, Director IQAC to go ahead with the proceedings

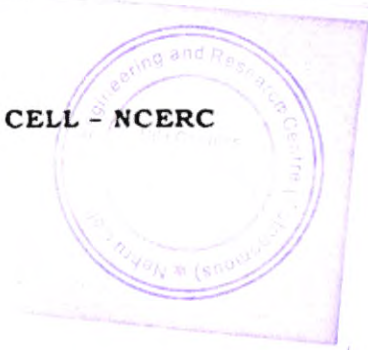
Director IQAC started the presentation by listing the action taken report (ATR) of previous meeting. The minutes and ATR of previous meeting was passed. The following are the major outcome reported during the 39th IQAC Meeting.

Sl. No	Item	Discussion Points/Action
1	Adoption of KTU Curriculum for S1 B Tech & M Tech/MBA/MCA	The IQAC reviewed the minutes of the BOS meeting held in the month May-June 2024 of all departments in connection with the syllabus setting under autonomous scheme.

Page 2 of 4



INTERNAL QUALITY ASSURANCE CELL - NCERC
39th Meeting Minutes
22.07.2024



[Signature]

Neelima G. Engineering and Research Centre (Autonomous)
Nile Gardens, Pampady
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY, THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

NBA ACCREDITED PROGRAMMES : B.TECH CSE, B.TECH MTR | NAAC RE ACCREDITED WITH 'A' GRADE

ISO 9001:2015 CERTIFIED | APPROVED BY AICTE | AFFILIATED TO APJ ABUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in

(2024-25 Admission):

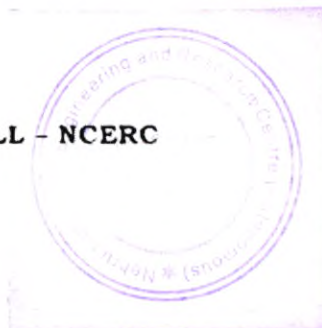
- KTU has introduced new curriculum and scheme from 2024 onwards for UG which was not available during the time of BOS meeting mentioned.
- IQAC has reviewed and discussed the new KTU curriculum 2024 and noted that regress changes and possibilities for student enhancement.
- IQAC recommends to modify the KTU 2024 structure for the B. Tech 2024-28 Batch (admitted under autonomous).
- For MBA/MCA, IQAC suggested to compare the syllabus of KTU and the already approved syllabus by Academic Council held on 31st May 2024 & 7th June 2024 before the commencement of the first semester classes of the 2024 admission. For M. Tech it is seen that the latest revision of KTU was in 2022 and thus decided to follow the syllabus of autonomous college already approved by BoS, Academic Council and Governing Body.

Continuation of S3 (2023-24 Admission) in KTU Scheme:

- After careful consideration, IQAC recommends to continue with the KTU Curriculum for the 2023 admission for B. Tech and M. Tech/MBA/MCA as they have completed their S1 and S2 under the same and appeared for the S2 university examinations.
- The S1 results are published by the KTU for the above batch of students. Adopting autonomous curriculum for these batch will affect in issuance of certificate.
- So IQAC recommends to continue the above B. Tech and M.



INTERNAL QUALITY ASSURANCE CELL - NCERC
39th Meeting Minutes
22.07.2024



Page 3 of 4

Leifuswan
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nilavilam, Pampady,
Thiruvilwamala, Thrissur - 680588



NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(AUTONOMOUS INSTITUTION)

PAMPADY THIRUVILWAMALA, THRISSUR DT., KERALA - 680588

MBA ACCREDITED PROGRAMMES: B.TECH CSE, B.TECH MTR, NAAC RE ACCREDITED WITH A GRADE

ISO 9001:2015 CERTIFIED APPROVED BY AICTE AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

www.ncerc.ac.in | principal@ncerc.ac.in

Tech/MBA/MCA (2023-24 Admission) batches in the ongoing KTU Curriculum

3. Decisions Taken.

- IQAC recommends to BoS on modifying the curriculum / syllabus for B.Tech programme 2024-28 batch Admission
- Ensure the 2023 Admissions of B.Tech and S3 M.Tech/MBA/MCA continues under the current KTU Scheme

MEETING CONCLUDED WITH THE THANKS GIVING FROM DIRECTOR-IQAC AT 04:00 PM

[Signature]
DIRECTOR IQAC, NCERC



[Signature]
CHAIRMAN-IQAC/PRINCIPAL

PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588

Page 4 of 4



INTERNAL QUALITY ASSURANCE CELL - NCERC
39th Meeting Minutes
22.07.2024



[Signature]
PRINCIPAL
Nehru College of Engineering and
Research Centre (Autonomous)
Nila Gardens, Pampady
Thiruvilwamala, Thrissur - 680588