

ACADEMIC YEAR (2023-2024)**J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY(AUTONOMOUS)
T.N.PALAYAM(PO),GOBI(TK)-638506, ERODE(DT).**

Metric No 1.3.2

S.No	Name of the course	course code	programme offering	project work	internship	Number of students
(2023-2024) Regulation-2017						
1	Project Work	AT8811	AUTOMOBILE ENGINEERING	✓		1
2	Engineering Metallurgy	ME8491	AUTOMOBILE ENGINEERING	✓		1
3	Composite Materials and Mechanics	ME8092	AUTOMOBILE ENGINEERING	✓		1
4	Testing of Materials	OML751	AUTOMOBILE ENGINEERING	✓		1
(2023-2024) Regulation-2021						
5	Introduction to non-destructive Testing	OML351	AUTOMOBILE ENGINEERING		✓	2
6	Computer Aided Design and Manufacturing	AU3009	AUTOMOBILE ENGINEERING		✓	3


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AUTOMOBILE ENGINEERING

2023-2024

S.NO	REG.NO	STUDENT NAME	PROJECT WORK	INTERNSHIP
1	731220102001	B.DHANALAKSHMANAN	✓	
2	731221102001	P.KAVIN		✓
3	731221102002	B.RAJKUMAR		✓
4	731222102002	V.PRADEEP KUMAR		✓
5	731222102003	K.PRAJEESH		✓
6	731222102005	P.SOORAJ		✓

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2023-2024

AUTOMOBILE ENGINEERING

S.No	Name of the Course that include experiential learning through Project Work/Internship/Field Visit
1	Project Work
2	Engineering Metallurgy
3	Composite Materials and Mechanics
4	Testing of Materials
5	Introduction to non-destructive testing
6	Computer Aided Design and Manufacturing

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PROJECT WORK

OBJECTIVE:

- To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination.

The students in a group of 3 to 4 works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department.

TOTAL: 300 PERIODS**OUTCOME:**

- On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology

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OBJECTIVE:

- To impart knowledge on the structure, properties, treatment, testing and applications of metals and non-metallic materials so as to identify and select suitable materials for various engineering applications.

UNIT I ALLOYS AND PHASE DIAGRAMS 9

Constitution of alloys – Solid solutions, substitutional and interstitial – phase diagrams, Isomorphous, eutectic, eutectoid, peritectic, and peritectoid reactions, Iron – carbon equilibrium diagram. Classification of steel and cast Iron microstructure, properties and application.

UNIT II HEAT TREATMENT 9

Definition – Full annealing, stress relief, recrystallisation and spheroidising – normalising, hardening and Tempering of steel. Isothermal transformation diagrams – cooling curves superimposed on

I.T. diagram CCR – Hardenability, Jominy end quench test - Austempering, martempering – case hardening, carburizing, Nitriding, cyaniding, carbonitriding – Flame and Induction hardening – Vacuum and Plasma hardening. .

UNIT III FERROUS AND NON-FERROUS METALS 9

Effect of alloying additions on steel- α and β stabilisers– stainless and tool steels – HSLA, Maraging steels – Cast Iron - Grey, white, malleable, spheroidal – alloy cast irons, Copper and copper alloys – Brass, Bronze and Cupronickel – Aluminium and Al-Cu – precipitation strengthening treatment – Bearing alloys, Mg-alloys, Ni-based super alloys and Titanium alloys.

UNIT IV NON-METALLIC MATERIALS 9

Polymers – types of polymer, commodity and engineering polymers – Properties and applications of various thermosetting and thermoplastic polymers (PP, PS, PVC, PMMA, PET, PC, PA, ABS, PI, PAI, PPO, PPS, PEEK, PTFE, Polymers – Urea and Phenol formaldehydes)- Engineering Ceramics – Properties and applications of Al₂O₃, SiC, Si₃N₄, PSZ and SIALON – Composites-Classifications- Metal Matrix and FRP - Applications of Composites.

UNIT V MECHANICAL PROPERTIES AND DEFORMATION MECHANISMS 9

Mechanisms of plastic deformation, slip and twinning – Types of fracture – Testing of materials under tension, compression and shear loads – Hardness tests (Brinell, Vickers and Rockwell), hardness tests, Impact test Izod and Charpy, fatigue and creep failure mechanisms.

TOTAL: 45 PERIODS**OUTCOMES**

Upon the completion of this course the students will be able to

- CO1 Explain alloys and phase diagram, Iron-iron carbide diagram and steel classification.
- CO2 Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.
- CO3 Summarize the mechanism of plastic deformation and testing mechanical properties.
- CO4 Clarify the effect of alloying elements on ferrous and non-ferrous metals.
- CO5 Differentiate different non-metallic materials.


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TEXT BOOKS:

1. Avner,, S.H., "Introduction to Physical Metallurgy", McGraw Hill Book Company, 1997.
2. Williams D Callister, "Material Science and Engineering" Wiley India Pvt Ltd, Revised Indian Edition 2014

REFERENCES:

1. Kenneth G.Budinski and Michael K. Budinski, "Engineering Materials", Prentice Hall of India Private Limited, 2010.
2. Raghavan.V, "Materials Science and Engineering", Prentice Hall of India Pvt. Ltd., 2015.
3. U.C.Jindal : Material Science and Metallurgy, "Engineering Materials and Metallurgy", First Edition, Dorling Kindersley, 2012
4. Upadhyay. G.S: and Anish Upadhyay, "Materials Science and Engineering", Viva Books Pvt. Ltd., New Delhi, 2006.



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OBJECTIVES:

- To understand the fundamentals of composite material strength and its mechanical behavior
- Understanding the analysis of fiber reinforced Laminate design for different combinations of plies with different orientations of the fiber.
- Thermo-mechanical behavior and study of residual stresses in Laminates during processing.
- Implementation of Classical Laminate Theory (CLT) to study and analysis for residual stresses in an isotropic layered structure such as electronic chips.

UNIT I INTRODUCTION, LAMINA CONSTITUTIVE EQUATIONS & MANUFACTURING 9

Definition –Need – General Characteristics, Applications. Fibers – Glass, Carbon, Ceramic and Aramid fibers; Matrices – Polymer, Graphite, Ceramic and Metal Matrices – Characteristics of fibers and matrices. Lamina Constitutive Equations: Lamina Assumptions – Macroscopic Viewpoint. Generalized Hooke's Law. Reduction to Homogeneous Orthotropic Lamina – Isotropic limit case, Orthotropic Stiffness matrix (Q_{ij}); Typical Commercial material properties, Rule of Mixtures. Generally Orthotropic Lamina –Transformation Matrix, Transformed Stiffness. Manufacturing: Bag Moulding Compression Moulding – Pultrusion – Filament Winding – Other Manufacturing Processes

UNIT II FLAT PLATE LAMINATE CONSTITUTE EQUATIONS 9

Definition of stress and Moment Resultants. Strain Displacement relations. Basic Assumptions of Laminated anisotropic plates. Laminate Constitutive Equations – Coupling Interactions, Balanced Laminates, Symmetric Laminates, Angle Ply Laminates, Cross Ply Laminates. Laminate Structural Moduli. Evaluation of Lamina Properties from Laminate Tests. Quasi-Isotropic Laminates. Determination of Lamina stresses within Laminates.

UNIT III LAMINA STRENGTH ANALYSIS 9

Introduction - Maximum Stress and Strain Criteria. Von-Misses Yield criterion for Isotropic Materials. Generalized Hill's Criterion for Anisotropic materials. Tsai-Hill's Failure Criterion for Composites. Tensor Polynomial (Tsai-Wu) Failure criterion. Prediction of laminate Failure

UNIT IV THERMAL ANALYSIS 9

Assumption of Constant C.T.E's. Modification of Hooke's Law. Modification of Laminate Constitutive Equations. Orthotropic Lamina C.T.E's. C.T.E's for special Laminate Configurations – Unidirectional, Off-axis, Symmetric Balanced Laminates, Zero C.T.E laminates, Thermally Quasi-Isotropic Laminates

UNIT V ANALYSIS OF LAMINATED FLAT PLATES 9 Equilibrium Equations of Motion. Energy Formulations. Static Bending Analysis. Buckling Analysis. Free Vibrations – Natural Frequencies

TOTAL: 45 PERIODS**OUTCOMES:**

Upon the completion of this course the students will be able to

- CO1 Summarize the various types of Fibers, Equations and manufacturing methods for Composite materials
- CO2 Derive Flat plate Laminate equations
- CO3 Analyze Lamina strength
- CO4 Analyze the thermal behavior of Composite laminates
- CO5 Analyze Laminate flat plates


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TEXT BOOKS:

1. Gibson, R.F., "Principles of Composite Material Mechanics", Second Edition, McGraw-Hill, CRC press in progress, 1994, -.
2. Hyer, M.W., "Stress Analysis of Fiber – Reinforced Composite Materials", McGraw Hill, 1998

REFERENCES:

1. Agarwal, B.D., and Broutman L.J., "Analysis and Performance of Fiber Composites", John Wiley and Sons, New York, 1990.
2. Halpin, J.C., "Primer on Composite Materials, Analysis", Technomic Publishing Co., 1984.
3. Issac M. Daniel and Ori Ishai, "Engineering Mechanics of Composite Materials", Oxford University Press-2006, First Indian Edition - 2007
4. Mallick, P.K., Fiber, "Reinforced Composites: Materials, Manufacturing and Design", Maneeel Dekker Inc, 1993.
5. Mallick, P.K. and Newman, S., (edition), "Composite Materials Technology: Processes and Properties", Hansen Publisher, Munish, 1990.



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OBJECTIVE:

To understand the various destructive and non destructive testing methods of materials and its industrial applications.

UNIT I INTRODUCTION TO MATERIALS TESTING 9

Overview of materials, Classification of material testing, Purpose of testing, Selection of material, Development of testing, Testing organizations and its committee, Testing standards, Result Analysis, Advantages of testing.

UNIT II MECHANICAL TESTING 9

Introduction to mechanical testing, Hardness test (Vickers, Brinell, Rockwell), Tensile test, Impact test (Izod, Charpy) - Principles, Techniques, Methods, Advantages and Limitations, Applications. Bend test, Shear test, Creep and Fatigue test - Principles, Techniques, Methods, Advantages and Limitations, Applications.

UNIT III NON DESTRUCTIVE TESTING 9

Visual inspection, Liquid penetrant test, Magnetic particle test, Thermography test – Principles, Techniques, Advantages and Limitations, Applications. Radiographic test, Eddy current test, Ultrasonic test, Acoustic emission- Principles, Techniques, Methods, Advantages and Limitations, Applications.

UNIT IV MATERIAL CHARACTERIZATION TESTING 9

Macroscopic and Microscopic observations, Optical and Electron microscopy (SEM and TEM) - Principles, Types, Advantages and Limitations, Applications. Diffraction techniques, Spectroscopic Techniques, Electrical and Magnetic Techniques- Principles, Types, Advantages and Limitations, Applications.

UNIT V OTHER TESTING 9

Thermal Testing: Differential scanning calorimetry, Differential thermal analysis. Thermo-mechanical and Dynamic mechanical analysis: Principles, Advantages, Applications. Chemical Testing: X-Ray Fluorescence, Elemental Analysis by Inductively Coupled Plasma-Optical Emission Spectroscopy and Plasma-Mass Spectrometry.

TOTAL: 45 PERIODS**OUTCOMES:**

1. Identify suitable testing technique to inspect industrial component
2. Ability to use the different technique and know its applications and limitations

TEXT BOOKS:

1. Baldev Raj, T.Jayakumar, M.Thavasimuthu "Practical Non-Destructive Testing", Narosa Publishing House, 2009.
2. Cullity, B. D., "Elements of X-ray diffraction", 3rd Edition, Addison-Wesley Company Inc., New York, 2000.
3. P. Field Foster, "The Mechanical Testing of Metals and Alloys" 7th Edition, Cousens Press, 2007.

REFERENCES:

1. Metals Handbook: Mechanical testing, (Volume 8) ASM Handbook Committee, 9th Edition, American Society for Metals, 1978.
2. ASM Metals Handbook, "Non-Destructive Evaluation and Quality Control", American Society of Metals, Metals Park, Ohio, USA.
3. Brandon D.G., "Modern Techniques in Metallography", Von Nostrand Inc. NJ, USA, 1986.


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**MECHANICAL BEHAVIOUR OF NATURAL FIBER
HYBRID COMPOSITE MATERIAL**

PROJECT REPORT

Submitted by

DHANALAKSHMANAN B

in partial fulfillment for the award of the degree of

**BACHELOR OF ENGINEERING IN
AUTOMOBILE ENGINEERING**



**J.K.K MUNIRAJAH COLLEGE OF TECHNOLOGY
T.N. PALAYAM, GOBI-638 506.
DEPARTMENT OF AUTOMOBILE ENGINEERING
ANNA UNIVERSITY, CHENNAI**

MAY 2024

A handwritten signature in blue ink, appearing to be 'J.K.K.', is written over the printed name of the Principal.

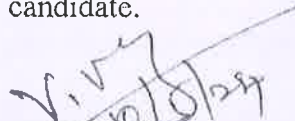
Principal

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ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Report titled **"MECHANICAL BEHAVIOUR OF NATURAL FIBER HYBRID COMPOSITE MATERIAL"** is the bonafide work of **DHANALAKSHMANAN B (Reg.No.731220102001)** who carried out the work under my supervision. Certified further that to the best of my knowledge and the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.


SIGNATURE

Mr. V.MAGESH M.E.,
HEAD OF THE DEPARTMENT

Assistant Professor

Dept of Automobile Engineering

J.K.K Munirajah College of Technology

T.N.Palayam.


SIGNATURE

Mr. V.MAGESH M.E.,
SUPERVISOR

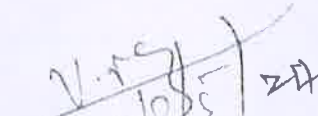
Assistant Professor


Dept of Automobile Engineering

J.K.K Munirajah College of Technology

T.N.Palayam.

Submitted for the Viva-Voce examination held on 10.5.24


Internal Examiner


External Examiner 10/5/24


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ABSTRACT

This project is focused on the evaluation of Mechanical properties of palmyra fiber reinforced hybrid composites. The composites were developed using 5% alkali treated and raw Borassus fruit fibers of 5 mm length with epoxy resin by using the hand layup and compression mould technique. Specimens were cut from the fabricated laminate according to the ASTM (American society for Testing & Materials) standards for different experiments. The mechanical testing of composite structures to obtain parameters such as strength and stiffness is a time consuming and often difficult process. Tensile test and compressive test are used to determine the mechanical properties of the materials. Also the mechanical properties were obtained by using the impact, flexural and the hardness test. The izod impact testing showed the impact strength was improved by decreasing the fiber length and by increasing the friction stress between the fiber and the matrix. Fiber morphology and the fiber/matrix interface were further characterized by Scanning Electron Microscopic (SEM) Test.

Keywords: Palmyra Fiber, Glass Fiber, Epoxy Resin, Mechanical properties,

SEM

(i)


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CHAPTER 7

CONCLUSION

The mechanical properties of composites were investigated. The impact test, flexural test, Hardness test, tensile test, and SEM analysis were conducted on the specimen and following conclusions were arrived at.

- Out of the six specimens the impact strength of T3 hybrid polymer matrix samples was found improved upto 15% than the rest of the samples.
- The flexural strength of T3 ratio samples was found improved upto 30% than the remaining sample. The flexural strength is noticed as 48.7N of this sample.
- The tensile strength of T3 specimen was found better than the other five specimen. Similarly the Eng stress values corresponding to the strain values of T3 specimen was better than other.
- The fourier transform infrared spectroscopy conformed the existence of O-H bonds at the peaks between 3000cm^{-1} to 3500cm^{-1} this indicates strong bonding strength of this composites.
- The SEM analysis revealed the good bonding strength of glass fiber with the matrix. The fiber breakage, presence of debris also confined the same.

INTERNSHIP

COURSE OBJECTIVES:

The main learning objective of this course is to prepare the students for:

- Understanding the basic importance of NDT in quality assurance.
- Imbibing the basic principles of various NDT techniques, its applications, limitations, codes and standards.
- Equipping themselves to locate a flaw in various materials, products.
- Applying apply the testing methods for inspecting materials in accordance with industry specifications and standards.
- Acquiring the knowledge on the selection of the suitable NDT technique for a given application

UNIT I INTRODUCTION TO NDT & VISUAL TESTING 9

Concepts of Non-destructive testing-relative merits and limitations-NDT Versus mechanical testing, Fundamentals of Visual Testing – vision, lighting, material attributes, environmental factors, visual perception, direct and indirect methods – mirrors, magnifiers, boroscopes and fibrosopes – light sources and special lighting.

UNIT II LIQUID PENETRANT & MAGNETIC PARTICLE TESTING 9

Liquid Penetrant Inspection: principle, applications, advantages and limitations, dyes, developers and cleaners, Methods & Interpretation.

Magnetic Particle Inspection: Principles, applications, magnetization methods, magnetic particles, Testing Procedure, demagnetization, advantages and limitations, – Interpretation and evaluation of test indications.

UNIT III EDDY CURRENT TESTING & THERMOGRAPHY 9

Eddy Current Testing: Generation of eddy currents– properties– eddy current sensing elements, probes, Instrumentation, Types of arrangement, applications, advantages, limitations – Factors affecting sensing elements and coil impedance, calibration, Interpretation/Evaluation.

Thermography- Principle, Contact & Non-Contact inspection methods, Active & Passive methods, Liquid Crystal – Concept, example, advantages & limitations. Electromagnetic spectrum, infrared thermography- approaches, IR detectors, Instrumentation and methods, applications.

UNIT IV ULTRASONIC TESTING & AET 9

Ultrasonic Testing: Types of ultrasonic waves, characteristics, attenuation, couplants, probes, EMAT. Inspection methods-pulse echo, transmission and phased array techniques, types of scanning and displays, angle beam inspection of welds, time of flight diffraction (TOFD) technique, Thickness determination by ultrasonic method, Study of A, B and C scan presentations, calibration.

Acoustic Emission Technique – Introduction, Types of AE signal, AE wave propagation, Source location, Kaiser effect, AE transducers, Principle, AE parameters, AE instrumentation, Advantages & Limitations, Interpretation of Results, Applications.

UNIT V RADIOGRAPHY TESTING 9

Sources-X-rays and Gamma rays and their characteristics-absorption, scattering. Filters and screens, Imaging modalities-film radiography and digital radiography (Computed, Direct, Real Time, CT scan). Problems in shadow formation, exposure factors, inverse square law, exposure charts, Penetrameters, safety in radiography.

TOTAL: 45 PERIODS**COURSE OUTCOMES:**

After completion of this course, the students will be able to

1. Realize the importance of NDT in various engineering fields.
2. Have a basic knowledge of surface NDE techniques which enables to carry out various inspection in accordance with the established procedures.
3. Calibrate the instrument and inspect for in-service damage in the components by means of Eddy current testing as well as Thermography testing.

4. Differentiate various techniques of UT and AET and select appropriate NDT methods for better evaluation.
5. Interpret the results of Radiography testing and also have the ability to analyse the influence of various parameters on the testing.


TEXT BOOKS:

1. Baldev Raj, T. Jayakumar and M. Thavasimuthu, Practical Non Destructive Testing, Alpha Science International Limited, 3rd edition, 2002.
2. J. Prasad and C. G. K. Nair, Non-Destructive Test and Evaluation of Materials, Tata McGraw-Hill Education, 2nd edition, 2011.
3. Ravi Prakash, "Non-Destructive Testing Techniques", 1st revised edition, New Age International Publishers, 2010.

REFERENCES:

1. ASM Metals Handbook, V-17, "Nondestructive Evaluation and Quality Control", American Society of Metals, USA, 2001.
2. Barry Hull and Vernon John, "Nondestructive Testing", Macmillan, 1989.
3. Chuck Hellier, "Handbook of Nondestructive Evaluation", Mc Graw Hill, 2012.
4. Louis Cartz, "Nondestructive Testing", ASM International, USA, 1995.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
C01	2	2	2	3			2	2				2	1	2	
C02	3	1	2	2			2	2				2	2	2	1
C03	3	2	1	2			2	2				2	2	2	
CO4	3	1	2	2			2	2				2	2	2	2
CO5	3	2	2	2			2	2				2	2	2	1
Avg	2.8	1.6	1.8	2.2			2	2				2	1.8	2	1.3


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Internship

1 message

TUE 12 DEC 2023 at 3.20PM

From: MAGESHV <hodauto@jkkmct.edu.in>

Date: TUE 12 DEC 2023 at 3.20 PM

Subject: **Internship** -reg

To: QUEENINDIAENGINEERINGSERVICES <info@queenindiaengineeringservices.com >

Dear Sir,

I am requesting to be joining your **QUEEN INDIA ENGINEERING SERVICES** regarding internship from **18.12.2023 to 22.12.2023**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Refer the following students:

P.KAVIN,B.RAJKUMAR

Sincerely,

Head Of The Department,

J K K Munirajah College of Technology,

T.N.Palayam,Erode-638506,Tamilnadu.

Principal

J.K.K.Munirajah College of Technology
(Autonomous)
T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.



Internship

1 message

FRI 15 DEC 2023 at 2.10PM

From: QUEENINDIAENGINEERINGSERVICES <info@queenindiaengineeringservices.com >

Date: FRI 15 DEC 2023 at 2.10 PM

Subject: Internship-reg

To: MAGESHV <hodauto@jkkmct.edu.in>

Dear Sir,

I am writing to confirm my acceptance of your internship offer of 18.12.2023 to 22.12.2023 and to tell you how to be joining my **QUEEN INDIA ENGINEERING SERVICES**. I shall complete all insurance forms for the new intern orientation. I appreciate your confidence in me and providing the chance to work with and observe my outstanding staff.

Refer the following students:

P.KAVIN, B.RAJKUMAR

Sincerely,

The Managing Director,
Queen India Engineering Services,
Erode.


Principal
J.K.K.Munirajah College of Technology
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T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.



QUEEN INDIA
ENGINEERING SERVICES

Internship Certificate

This is to certify that **Mr. P.KAVIN (731221102001)**, III year Automobile Engineering of JKK Munirajah College of Technology has successfully completed **internship Program** on Non-Destructive Testing (NDT) from **18.12.2023** to **22.12.2023**. During the above mentioned period the attendance and conduct of the student are found to be good. We wish him every success in his life and career.

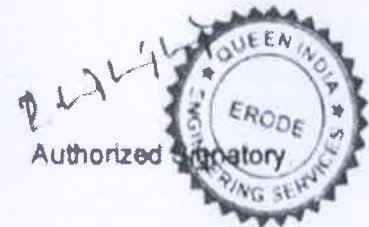
Erode

24.12.2023

FOR QUEEN INDIA ENGINEERING SERVICES,

Principal

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QUEEN INDIA
ENGINEERING SERVICES

Internship Certificate

This is to certify that **Mr. B.RAJKUMAR (731221102002)**, III year Automobile Engineering of JKK Munirajah College of Technology has successfully completed **internship Program** on **Non-Destructive Testing (NDT)** from **18.12.2023** to **22.12.2023**. During the above mentioned period the attendance and conduct of the student are found to be good. We wish him every success in his life and career.

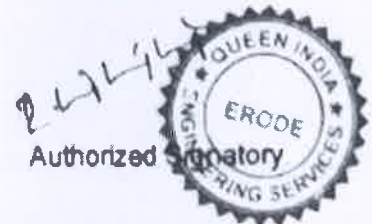
Erode

24.12.2023

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INTERNSHIP

COURSE OBJECTIVE:

The objective of this course is to provide the students with the knowledge in computer aided design and manufacturing (CAD/CAM) techniques, product specification, CAD/CAM integration, CNC programming using manual method, generation of CNC codes using CAM software,

UNIT I COMPUTER AIDED DESIGN (CAD) 9

Overview of 2D drawings, work area customization, constraints and parameters, sketching tools, geometrical modifications, converting 2D drawings to 3D models, modeling features and tools, dimensioning and annotations, materials and appearances, file import/export.

UNIT II COMPUTER AIDED MANUFACTURING (CAM) 9

Overview of machining processes, work setup, cutting tool selection, calculation of feeds and speeds, CAM cycles, cutting planes selection, toolpath setup, post-processing of G-codes, file import/export.

UNIT III CAD AND CAM INTEGRATION 9

Introduction - Networking - Techniques, components, interface cards, network standards, Graphics standards - Graphical kernel system, Data exchange format - IGES and STEP. Process planning, Computer Aided Process Planning (CAPP), Product life cycle management (PLM), Enterprise resource planning (ERP).

UNIT IV FUNDAMENTAL OF CNC AND PART PROGRAMMING 9

Introduction to NC systems and CNC - Machine axis and Co-ordinate system- CNC machine tools-Principle of operation CNC- Construction features including structure- Drives and CNC controllers- 2D and 3D machining on CNC- Introduction of Part Programming, types - Detailed Manual part programming on Lathe & Milling machines using G codes and M codes- Cutting Cycles, Loops, Sub program and Macros- Introduction of CAM package.

UNIT V ADDITIVE MANUFACTURING 9

Rapid Prototyping: Introduction, Classification of RP Processes, Advantages & disadvantages. RP Applications; in Design, Concept Models, Form & fit checking, Functional testing, CAD data verification, Rapid Tooling, and bio fabrication. Working Principle, Application, Advantages & disadvantages: of Stereolithography Apparatus (SLA) Selective Laser Sintering (SLS), 3D Printing, Fused Deposition Modeling (FDM), and Laminated Object Manufacturing (LOM)

TOTAL: 45 PERIODS**COURSE OUTCOMES:**

At the end of the course, the student will be able to

1. Creation of part drawings and 3D models using CAD techniques.
2. Create the CAM Toolpath for specific given operations
3. Ability to develop a product from conceptualization to reality and to make collaboration between product design and manufacturing.
4. Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
5. Illustrate understanding of various cost effective alternatives for manufacturing products.

TEXT BOOKS:

1. Ibrahim Zeid "Mastering CAD CAM" Tata McGraw-Hill PublishingCo.2007
2. Mikell.P.Groover "Automation, Production Systems and Computer Integrated Manufacturing", Prentice Hall of India, 2008.
3. Radhakrishnan P, SubramanyanS.andRaju V., "CAD/CAM/CIM", 2nd Edition, New Age International (P) Ltd, New Delhi,2000.

Principal

J.K.K.Munirajah College of Technology

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T.N.Palayam, Gobi (Tk),

REFERENCES

1. Chris McMahon and Jimmie Browne "CAD/CAM Principles", "Practice and Manufacturing management " Second Edition, Pearson Education, 1999.
2. Donald Hearn and M. Pauline Baker "Computer Graphics". Prentice Hall, Inc,1992.
3. Foley, Wan Dam, Feiner and Hughes - "Computer graphics principles & practice" Pearson Education -2003
4. William M Neumann and Robert F.Sproul "Principles of Computer Graphics", McGraw Hill Book Co. Singapore, 1989.

CO-PO Mapping:

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2	1	2	2	3	-	1	-	-	2	-	2	2	3	3
2	1	-	1	2	3	-	1	-	-	2	-	2	2	3	3
3	1	1	3	2	3	1	1	-	-	2	-	2	2	3	3
4	-	-	1	2	3		1	-	-	2	-	2	2	3	3
5	1	1	2	2	3	1	1	-	-	2	-	2	2	3	3
Avg.	1	1	2	2	3	1	1	-	-	2	-	2	2	3	3



Principal

J.K.K.Munirajah College of Technology
(Autonomous)
T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.



Internship

1message

FRI 22 DEC 2023 at 10.15AM

From: MAGESHV <hodauto@jkkmct.edu.in>

Date: FRI 22 DEC 2023 at 10.15AM

Subject: Internship -reg

To: profenaatechnologiespvtltd <profenaa.cbe@gmail.com>

Dear Sir,

I am requesting to be joining your **PROFENAA TECHNOLOGIES PVT LTD** regarding internship from **2.1.2024 to 6.1.2024**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Refer the following student: **(V.PRADEEP KUMAR, K.PRAJEESH, P.SOORAJ)**

Sincerely,

Head Of The Department,

J K K Munirajah College of Technology,

T.N.Palayam, Erode-638506, Tamilnadu.



Principal

**J.K.K.Munirajah College of Technology
(Autonomous)
T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.**



Internship

1 message

THU 28 DEC 2023 at 5.30PM

From: profenaatechnologiespvtltd<profenaa.cbe@gmail.com>

Date: THU 28 DEC 2023 at 5.30PM

Subject: Internship-reg

To: MAGESHV<hodauto@jkkmcet.edu.in>

Dear Sir,

I am writing to express my sincere gratitude for the opportunity to intern at Profenaa Technologies Pvt Ltd. I am thrilled to accept the offer for the internship, beginning on 2.1.2024 and ending on 6.1.2024. Thanks for choosing the company regarding internship. I give the assurance for gaining knowledge after the internship program. Kindly inform your students to come with proper dress code and college ID card and definitely must follow company rules and regulations at that time.

Students Name list:

V.PRADEEP KUMAR, K.PRAJEESH, P.SOORAJ

Sincerely,
The Managing Director,
Profenaa Technologies Private Ltd,
Coimbatore.



Principal

J,K,K.Munirajah College of Technology
(Autonomous)
T.N.Palayam, Gobi (Tk),
Erode (Dt) - 638 506.


09.01.2024

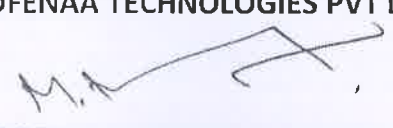
TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. V. Pradeep Kumar** (**731222102002**) II-Year Automobile Engineering of J.K.K. Munirajah College of Technology has successfully completed **internship program** from **02.01.2024** to **06.01.2024**. During the above mentioned period the attendance and conduct of the student are found to be good. We wish him every success in his life and career.

Thank You

FOR PROFENAA TECHNOLOGIES PVT LTD


Principal
J.K.K.Munirajah College of Technology
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PROFENAA TECHNOLOGIES
Industrial Training Placement Engineering Services
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Raja Mill Road, Pollachi, Coimbatore - 642 001
B.O : K.R.S. Complex, Kinathukadavu - 642 109
Ohm Sakthi Complex, Udumalpet - 642 126
Ph : 9944897638 | 9698730528

CONTACT US

Email : profenaa.cbe@gmail.com website : www.profenaagroups@gmail.com Phone no: +919944897638 , +919944643567
corporate office : 43/1, Agni amman complex, rajamill road, pollchi, Coimbatore our franchises: Pollachi, Kinathukadavu, Udumalpet, Coimbatore Madurai, Karaikudi, Neyveli, Hosur, Sivakasi, Dindigul, OMR Chennai , Tiruppur, Thirunelveli, Erode , Mettupalayam, Mallumichmapatti


09.01.2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. K. Prajeesh (731222102003)** II-Year Automobile Engineering of J.K.K. Munirajah College of Technology has successfully completed **internship program** from **02.01.2024 to 06.01.2024**. During the above mentioned period the attendance and conduct of the student are found to be good. We wish him every success in his life and career.

Thank You

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09.01.2024


TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. P. Sooraj (731222102005) II - Year Automobile Engineering of J.K.K. Munirajah College of Technology has successfully completed internship program from 02.01.2024 to 06.01.2024. During the above mentioned period the attendance and conduct of the student are found to be good. We wish him every success in his life and career.

Thank You

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