2.3.1. Student Centric Methods

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experiences

1) Pedagogical initiatives

The following teaching-learning methods are used in addition to ‘CHALK and TALK' and 'PPT'.

- Experiential Learning
- Problem-based learning
- Learning Management System (Moodle)
- Project-based Learning

a) Experiential learning:

- To improve the quality of learning, the curriculum provides laboratory courses to emphasize the concepts learned in theoretical subjects.
- In each laboratory, at least one experiment on virtual lab is introduced

Modern tools: For online classes technology is used for enhancing the learning capability of graduates. The tools used for online classes are Google meet, Zoom and Teams, etc.

b) Problem-based learning:

- Mini projects are incorporated into the curriculum
- The problem is identified based on the existing solutions gathered from a literature survey, as well as the constraints to the problems. The students solve the problem through the mini project and major projects.

c) LMS (Learning Management System):

- **Microsoft Teams**

The Microsoft team classroom is an innovative tool that is used effectively by all the departments. Faculty members share course plans, e-books, course materials, video lectures, question banks, and other materials through this platform.

d) Project-Based Learning:

Academic Projects, field trips are made a part of the curriculum and assessment. Summer-based projects are also promoted among advanced learners. The sampling techniques, methodology of the study, data collection tools and methods, analysis, testing and interpretation of information, report writing enhances practical based learning

2. E-Learning

E-learning is a structured course or learning experience that is delivered electronically and can include performance support content. The purpose of e-learning is to enable people to learn for personal fulfilment or to obtain a professional degree without physically attending a traditional university or academic setting.

- Moodle and self-learning

Moodle and Self-Learning

Moodle is used to provide students for creating personalized learning environments. Moodle is used effectively by faculty to upload syllabus, lesson plans, materials, PPTs, videos, Model question papers, assignment question papers, and also to conduct online quizzes. Students participate in MOOC Courses such as NPTEL, Coursera, Solo Learn, Data Camp, Udacity, Udemy, and Virtual labs demonstrating their self-learning abilities.

3. Collaborative learning

The college collaborates with industry and academic experts to arrange Guest Lectures/Seminars/Workshops on cutting-edge technologies and tools.

- The college has several student chapters, including IEEE, IETE Student's Forum (ISF), IE, ISTE, and CSI. All the departments frequently arrange guest lectures by experts from industry, academia, and research institutions.
- Students are also encouraged to present technical papers at conferences and project competitions.
- Industrial visits are arranged for the students to learn through interaction and observation of working methods and employment practices.
- Programs are conducted in collaboration with APSSDC, Dassault systems, ARC, Eduskills, ICT Academy, Bytexl, Hebeon Technologies to train students and faculty in industry-based technologies and novel practices.

1) Pedagogical initiatives

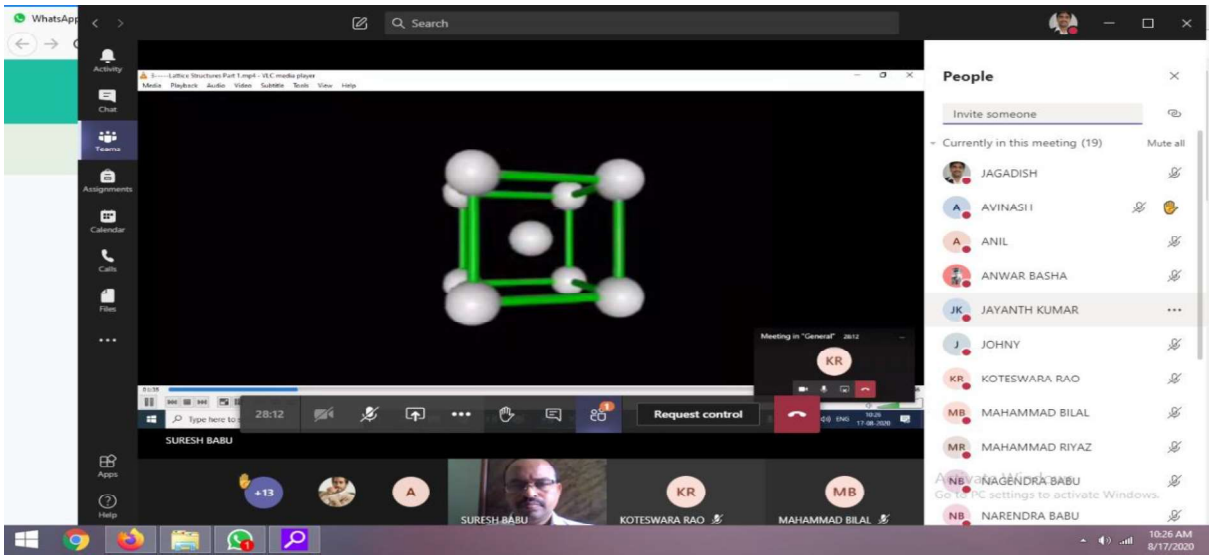
The following teaching-learning methods are used in addition to ‘CHALK and TALK' and 'PPT'.

- Experiential Learning
- Problem-based learning
- Learning Management System (Moodle)
- Project-based Learning

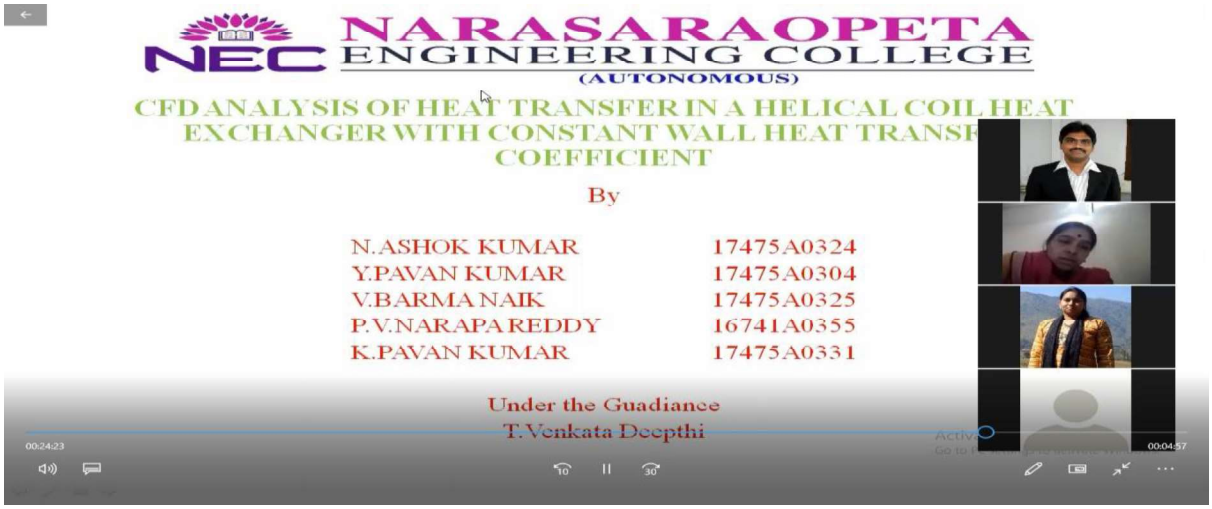
a) Experiential learning:

- To improve the quality of learning, the curriculum provides laboratory courses to emphasize the concepts learned in theoretical subjects.
- In each laboratory, at least one experiment on virtual lab is introduced

Modern tools: For online classes technology is used for enhancing the learning capability of graduates. The tools used for online classes are Google meet, Zoom and Teams, etc.



Conduction of Online Classes using Microsoft Team



Conduction of Project Viva Using Zoom

Lab Courses and Virtual Labs

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BCC1LB01	**ENGLISH COMMUNICATION SKILLS LAB-I (Common to All Branches)**						

COURSE OBJECTIVES:

- To build confidence in the students to communicate effectively in English.
- To strengthen the oral communication skills to enable them to interact with the people in various social situations.
- To enable the learners improve pronunciation through emphasis on word accent, intonation and rhythm

COURSE OUTCOMES:

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

CO 1: **Develop** various conversations skills /discourses using formal and informal expressions.
CO 2: **Apply** phonological knowledge to speak English with good pronunciation, overcoming mother tongue influence.
CO 3: **Identify** and comprehend several accents of English Language by listening to audio clips.
CO 4: **Utilize** basic communication skills in JAMS and Role plays.

UNIT– I

a. Greeting, Introducing and Taking leave
b. Pure Vowels
c. Listening - TEDx Talks (https://www.ted.com/talks/ashweetha_shetty_how-education-helped-me-rewrite-my-life?language-en#t-623369)
d. Self-Introduction

UNIT–II

a. Giving information and Asking for information
b. Diphthongs
c. Listening -TEDx Talks(https://www.youtube.com/watch?v=Dk20-E0yx_s)
d. Role Play

UNIT–III

a. Inviting, Accepting and Declining Invitations
b. Consonants
c. Listening - TEDx Talks (https://www.youtube.com/watch?v=IgAnj6r1O48)
d. JAM

UNIT-IV

a. Commands, Instructions and Requests
b. Accent and Rhythm
c. Listening -TEDx Talks(https://youtu.be/SKvMxZ284AA)
d. Tables Turned

UNIT-V

a. Suggestions and Opinions
b. Intonation
c. Listening -TEDx Talks(https://youtu.be/ov6pEGXRYZo)
d. Impromptu

TEXT BOOKS:

1. *"Strengthen Your Communication Skills",* Maruthi Publications, 2013.

REFERENCE BOOKS:

1. Meenakshi Raman, Sangeeta Sharma, *Technical Communication: Principles and Practice*, Oxford University Press, 2015
2. J.D.O Conner, *Better English Pronunciation,* Cambridge University Press 1980.
3. T.Balasubramanian, "*A Text Book of English Phonetics for Indian Students"*, Macmillan,1981
4. Penny ur *Grammar Practice Activities,* Cambridge University Press, 2010.
5. Mark Hancock, *Pronunciation in Use,* Oxford University Press 2007.

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code:19BCC1LB02	**ENGINEERING PHYSICS LAB(Common to All branches)**						

COURSE OBJECTIVES:

To impart physical measurement skills and make the students understand coherence between theoretical and practical knowledge.

COURSE OUTCOMES:

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

CO 1: **Explain** the principle of physics and interpret them in engineering field and compares the results with theoretical calculations.
CO 2: **Utilize** modern engineering physics techniques and tools in real time applications in engineering studies.
CO 3: **Identify** the characteristics and the behavior of materials in a practical manner and gain knowledge and its usage.
CO 4: **Apply** the analytical techniques and graphical analysis to the experimental data.

LIST OF EXPERIMENTS:

1. Rigidity modulus of material by wire-dynamic method (torsional pendulum)
2. Determination of wavelength of a source-Diffraction Grating-Normal incidence
3. Newton's rings –Radius of Curvature of Plano Convex Lens.
4. Determination of thickness of thin wire- Air wedge method
5. Determination of wavelength of Laser Source-single slit diffraction.
6. Determine the Numerical aperture of an optical fiber.
7. Melde's experiment – Transverse and Longitudinal modes.
8. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.
9. Verification of laws of stretched string by using Sonometer.
10. Calculate the energy loss in a given ferromagnetic material by plotting B-H Curve.
11. Energy Band gap of a Semiconductor p - n junction.
12. Characteristics of Thermistor – temperature coefficient

TEXT BOOKS:

1. Engineering Physics Lab Manual by Dr.Y. Aparna & Dr.K.Venkateswarao (V.G.S.Book links).
2.Physics Practical Manual, Lorven Publications
3. S. Balasubramanian , M.N. Srinivasan " A Text book of Practical Physics"- S Chand Publishers, 2017.

Web References:

1. https://www.youtube.com/watch?v=NDsSPtL9dyQ
2. https://www.youtube.com/watch?v=9agoJRCnu4w
3. https://www.youtube.com/watch?v=bv-lLJreyCU
4. http://vlab.amrita.edu/index.php

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BCC1LB07	**C PROGRAMMING LAB**						

COURSE OBJECTIVE:

The purpose of this course is to introduce to students to the field of language. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

COURSE OUTCOMES:

After completion of this C Programming Lab, students should be able to:

CO 1: **Analyze** logical structure of computer programming and different constructs to develop programs in C Language.

CO 2: **Compare** and contrast various data types and operator precedence.

CO 3: **Analyze** the use of conditional and looping statements to solve problems associated with conditions and repetitions.

CO4: **Analyze** simple data structures, use of pointers and dynamic memory allocation techniques.

CO 4: **Make use of** functions and file I/O operations in developing C Programs.

Exercise l

Construct Flowcharts for the following through Raptor:

i) Develop a calculator to convert time, distance, area, volume and temperature from one unit to another.

ii) Calculate simple and compound interest for various parameters specified by the user.

iii) Calculate the average of n numbers.

Exercise 2

a) Write a C Program to calculate the area of triangle using the formula Area $=(s*(s-a)*(s-b)*(s-c))^{1/2}$ where s= (a+b+c)/2.

b) Write a C Program to find the largest of three numbers using ternary operator.

c) Write a C Program to swap two numbers without using a temporary variable.

Exercise 3

a) Write a C program to find the roots of a quadratic equation.

b) Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

Exercise 4

a) Write a C program to find the sum of individual digits of a positive integer and find the reverse of the given number.

b) Draw a flow chart using Raptor and write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Exercise 5

a) Draw a flow chart using Raptor and write a C Program to print the multiplication table of a given number n up to a given value, where n is entered by the user.

b) Write a C Program to enter a decimal number, and calculate and display the binary equivalent of that number.

c) Write a C Program to check whether the given number is Armstrong number or not.

Exercise 6

a) Write a C program to interchange the largest and smallest numbers in the array.
b) Write a C program to input two m x n matrices, check the compatibility and perform addition and multiplication of them.

Exercise 7

a) Draw a flow chart using Raptor and write a C Program to find both the largest and smallest number of an array of integers
b) Write a C Program to find transpose of a matrix.

Exercise 8

Draw a flow chart using Raptor and write C programs that use both recursive and non-recursive Functions for the following

i) To find the factorial of a given integer.
ii)To find the GCD (greatest common divisor) of two given integers.

Exercise 9

a) Draw a flow chart using Raptor and write a C Program for the following To find Fibonacci sequence
b) Write C programs illustrating call by value and call by reference concepts.

Exercise 10

Write C Programs for the following string operations without using the built in functions - to concatenate two strings

a) To append a string to another string
b) To compare two strings

Exercise 11

Write C Programs for the following string operations without using the built in functions

a) To find whether a given string is palindrome or not

Exercise 12

Write a C program that uses functions to perform the following operations:

i. To insert a sub-string in to given main string from a given position.
ii.To delete n Characters from a given position in a given string.
iii. To replace a character of string either from beginning or ending or at a specified location

Exercise 13

a) Write a C Program to Implement Taylor series method
b) Write a C Program to Implement Euler's method
c) Write a C Program to Implement Runge Kutta method

Exercise 14

a) Draw a flow chart using Raptor and write a C program to implement a linear search.
b) Draw a flow chart using Raptor and write a C program to implement binary search
c) Write a C program to implement sorting of an array of elements.

Exercise 15

a) Write C Program to reverse a string using pointers
b) Write a C Program to compare two arrays using pointers
c) Write a C program to swap two numbers using pointers

Exercise 16

Examples which explores the use of structures, union and other user defined variables

Exercise 17

a) Write a C program which copies one file to another.
b) Write a C program to count the number of characters and number of lines in a file.
c) Write a C Program to merge two files into a third file. The names of the files must be entered using command line arguments.

Exercise 18

Virtual Lab: http://cse02-iiith.vlabs.ac.in/ /

Any three programs must be submitted with result from the above link

*** At the end of the semester the student has to submit a Mini-Project on Computer Programming. The list of Mini-Projects is available in the department.**

TEXT BOOKS:

1. Reema Thareja, " Programming in C", OXFORD .
2. The C programming Language by Dennis Richie and Brian Kernighan 2nd ed..

REFERENCE BOOKS:

1. Dr.E.Balaguruswamy, "Programming in ANSI C", Tata McGraw-Hill Education.
2. Hanly, "Problem Solving and Program Design in C", Koffman, 7th ed, PEARSON.
3. Forouzan, Gilberg, Prasad ,"C Programming, A Problem Solving Approach", CENGAGE.
4. Programming in C, Second Edition by Ashok N.Kamthane, Pearson.

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code:19BCC1LB04	**ENGINEERING WORKSHOP PRACTICE (COMMON TO CIVIL,MECH & EEE)**						

COURSE OBJECTIVES:

- To impart knowledge to students to develop their technical skill sets for creating entities from raw material.
- To give hands on training and practice to students for use of various tools, devices, machines.
- To develop ability of students to understand, plan and implement various processes and operations to be performed on the raw material to create object of desired shape and size.

COURSE OUTCOMES:

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

CO 1: **Make Use of** the various carpentry tools, machines, devices used in engineering practice for preparing different carpentry joints.

CO 2: **Make Use of** the various fitting tools, machines, devices used in engineering practice for preparing different Fits.

CO 3: **Develop** funnel and square box thorough knowledge of various Tin Smithy tools.

CO 4: **Demonstrate** the various house wiring connections for different house wiring connections.

- **CARPENTARY:**
  1. Preparation of T-Joint
  2. Preparation of dovetail Joint

- **FITTING:**
  1. Preparation of v-fit
  2. Preparation of square-fit

- **TIN SMITHY:**
  1. Preparation of funnel
  2. Preparation of square box

- **HOUSE WIRING:**
  1. Series bulbs connection
  2. Parallel bulbs connection
  3. Stair case connection
  4. Florescent lamp connection

IB.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	3	0	0	-	-	0	MC(0)
Code :19BCC1MC01	**ENVIRONMENTAL STUDIES (Common to all Branches)**						

COURSE OBJECTIVES:

- To make the students aware about the environment and it's inter–disciplinary, to familiarize the concept of ecosystem and their importance, basic understanding of the ecosystem and its diversity.
- Overall understanding of the natural resources.
- To bring the awareness among students about the importance of biodiversity and the need for its conservation.
- To make the students understand the adverse effects of environmental pollution, its causes and measures to control it.
- Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities. Awareness on the social issues, environmental legislation and global treaties understanding the environmental policies and regulations.

COURSE OUTCOMES:

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

CO 1: **Explain** the concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web.

CO 2: **Analyze** the natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources.

CO 3: **Explain** the biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity.

CO 4: **Distinguish** various attributes of the pollution, their impacts and measures to reduce or control the pollution along with waste management practices.

CO 5: **Define** Environmental policy, legislation, environmental assessment and the stages involved in EIA Environmental audit.

UNIT – I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness. Institutions and people in Environment.

Ecosystems:

Definitions and concepts – Characteristics of ecosystem – Structural and functional features – Producers, consumers and decomposers and food webs – Types of ecosystems – Forests, grassland, desert, crop land, pond, lake, river and marine ecosystems – Energy flow in the ecosystem – Ecological pyramids – Ecological successions.

UNIT – II

Natural Resources: Water resources–Use and over utilization of surface and natural resourced ground water–Floods, drought, conflicts over water, dams–benefits and problems on tribal population & Environment.

Forest resources: Use and over–exploitation, deforestation.

Mineral resources: Use and exploitation, tribal & environmental effects of extracting and using mineral resources.

Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer–pesticide problems, water logging, salinity–concept of sustainable agricultural methods.

Energy Resources: Renewable (wind energy, tidal energy) and non renewable energy resources (Fossil fuels, coal).

UNIT – III

Biodiversity: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity

Conservation of biodiversity: Threats to biodiversity: habitat loss, man wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: In-Situ conservation and Ex- situ conservation.

UNIT – IV

Environmental Pollution and Control Technologies: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, and nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Good Agricultural Practices – Drip irrigation, soil erosion and desertification

Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V

Environmental Policy, Legislation and Environmental Management: Environmental ethics: Issues and possible solutions. Environmental Protection Act, Legal aspects -Air (Prevention and Control of Pollution) Act. – Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation.

Impact Assessment and its significance - various stages of EIA, preparation of EMP and EIS, Environmental audit, Ecotourism.

Visit to some local Polluted Site: Study of an industrially Polluted area.

TEXT BOOKS:

1. AnubhaKaushik& C. P. Kaushik, Environmental Studies, New Age International (P) Ltd., New Delhi. Fourth edition, 2014.
2. P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani,Environmental Studies, Pearson Education, Chennai.ISBN 978-93-325-2052-3,Second edition-2014.

REFERENCE BOOKS:

1. Deekshita Dave & P. Udaya Bhaskar, Text Book of Environmental Studies Cengage Learning.
2. Shaashi Chawla, a Textbook of Environmental Studies, TMH, New Delhi.
3. Benny Joseph Environmental Studies, Tata McGraw Hill Co, New Delhi.
4. Dr.K.V.S.G. Murali Krishna, Environmental Studies VGS Publishers, Vijayawada, First Edition 2016.
5. Bharucha, E. Text book of Environmental Studies, First edition, Universities Press (India) Pvt., Ltd., Hyderabad, 2005.

Web References:

1. URL:https://www.youtube.com/watch?v=7G3eXI_DPn8
2. URL: https://www.eolss.net/sample-chapters/C09/E6-70-05-01.pdf
3. URL: https://www.youtube.com/watch?v=QuRL6NbyvEQ
4. URL: https://google/ Introduction to Environmental Studies 5JM1G2
5.URL:http://www.teacherspayteachers.com/Product/Food-Chains-Trophic-Levels-and-Ecological- Pyramids-PowerPoint Click the above
6. URL:http://iadc-dredging.com/en/371/environment/ecosystem-services/ this webinar will focus on the concept of ecosystem services
7. URL: http://mocomi.com/ presents: What is Air Pollution? Air pollution is the introduction of foreign products into the atmosphere.
8. URL: https://en.wikipedia.org/wiki/green_impact_assessment

E-books:

1. .https://faculty.psau.edu.sa/.../doc-5-pdf-d78456fce3bebc84d9320fa2f9cf9e2a-original
2. https://www.researchgate.net/.../273775623_Introduction_to_Environmental_Sciences

I B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME2LB01	**MECHANICAL WORKSHOP PRACTICE**						

COURSE OBJECTIVES:

- To impart knowledge to students to develop their technical skill sets for creating entities from raw material.
- To give hands on training and practice to students for use of various tools, devices, machines.
- To develop ability of students to understand, plan and implement various processes and operations to be performed on the raw material to create object of desired shape and size.

COURSE OUTCOMES:

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

CO 1: **Make use of** the various black smithy tools, machines, devices used in engineering practice for preparing different Black smithy shapes. .

CO 2: **Make the use** various welding tools, machines, devices used in engineering practice for preparing the different welding joints.

CO 3: **Demonstrate** the various machines and engines used in engineering practice.

CO 4: **Develop** different types of wooden patterns thorough knowledge of various foundry tools.

- **BLACK SMITHY:**
  - Preparation of square bar from round rod
  - Preparation of L-shape

- **WELDING:**
  - Preparation of Butt Joint using electrical arc welding
  - Preparation of T-Joint using electrical arc welding

- **MACHINE SHOP:**
  - Preparation of hole using bench drilling machine
  - Dismantling and assembling of Maruti car engine
  - Making internal thread cutting
  - Making external thread cutting

- **FOUNDRY:**
  - Preparation of split piece wooden pattern on wood lathe
  - Preparation of single piece wooden pattern on wood lathe

I B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code: 19BCC2LB02	**ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY (Common to Mech and Civil)**						

COURSE OBJECTIVES:

To expose the students to the operation of DC motor, Transformer and rectifiers give them Experimental skill.

COURSE OUTCOMES:

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

- **CO 1:** **Determine** the efficiency and regulation of 1-phase transformer
- **CO 2:** **Compute** the performance characteristics of transformers and DC machines through Suitable tests.
- **CO 3:** **Calculate** the ripple factor of half-wave&full-wave rectifiers.
- **CO 4:** **Gain** practical experience related to electronics circuits; stimulate more interest and Motivation for further studies of electrical circuits.

Any 5 of the following experiments to be conducted from each PART:

PART-A: Electrical Experiments:

1. Verification of Kirchhoff's law.
2. Swinburne's test and Predetermination of efficiencies as Generator and Motor
3. Brake test on DC shunt motor. Determination of performance curves
4. Speed control of D.C shunt motor by a) Armature voltage control b) Field flux control method.
5. OC & SC tests on single phase transformer (predetermination of efficiency and regulation).
6. Load test on three-phase induction motor.

PART-B: Electronics Experiments:

7. PN junction diode characteristics a) Forward bias b) Reverse bias
8. Transistor CE characteristics (input and output).
9. Half wave rectifier characteristics with and without filter
10. Full wave rectifier characteristics with and without filter
11. Characteristics of CE Amplifier.
12. Characteristics of CC Amplifier.

I B.TECH II SEMESTERS	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BCC2LB03	**ENGINEERING CHEMISTRY LAB (COMMON TO ALL BRANCHES)**						

COURSE OBJECTIVES:

- To provide the students with a solid foundation in chemistry laboratory required to solve the engineering problems.
- To expose the students in practical aspects of the theoretical concepts.
- To train the students on how to handle the instruments.

COURSE OUTCOMES:

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

CO 1: **Develop** and perform analytical chemistry techniques to address the water related problems (hardness, alkalinity, Chlorine, DO).
CO 2: **Explain** the functioning of different analytical instruments.
CO 3: **Compare** viscosity and surface tension of different oils.
CO 4: **Measure** molecular/system properties such as strength of solutions, conductance of solutions and acid number of lubricating oils, etc.

List of Experiments

Introduction to chemistry laboratory–Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis etc.

1. Estimation of NaOH using standard HCl solution
2. Determination of hardness of water sample by EDTA method
3. Determination of alkalinity of water sample
4. Determination of Dissolved Oxygen content of water sample by Winkler's method
5. Determination of Dissolved Chlorine by Mohr's method
6. Estimation of Fe^{+2} by using $KMnO_4$
7. Preparation of phenol formaldehyde resin/Urea formaldehyde
8. Conductometric titration between strong acid and strong base
9. Determination of viscosity of a liquid by Ostwald's viscometer
10. Determination of surface tension of a liquid by Stalagnometer
11. Determination of moisture content present in given coal sample
12. Determination of acid value of an oil

TEXT BOOKS:

1. N.K Bhasin and Sudha Rani "**Laboratory Manual on Engineering Chemistry**" 3/e, Dhanpat Rai Publishing Company (2007).
2. Mendham J, Denney RC, Barnes JD, Thosmas M and Sivasankar B "**Vogel's Quantitative Chemical Analysis**" 6/e, Pearson publishers (2000).
3. Sudharani, "**Lab manual on Engineering Chemistry**" Dhanpat Rai Publications, Co., New Delhi. (2009).

I B.TECH II SEMESTERS	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code:19BCC2LB07	**IT WORKSHOP**						

COURSE OBJECTIVES:

Enabling the student to understand basic hardware and software tools through practical exposure.

COURSE OUTCOME:

After completion of this course, the student should be able to :

- **CO 1:** **Demonstrate** the need of PC hardware components, applications and softwares.
- **CO 2:** **Explain** the knowledge of networks, internet and World Wide Web, Search engines, Netiquette.
- **CO 3:** **Experiment with** the installation and use of different software like Windows XP, Linux.
- **CO 4:** **Identify** and fix the defective PC and software related issues.
- **CO 5:** **Make use of** various options in Microsoft word, Excel and Power point.

PC Hardware:

Identification of basic peripherals, assembling a PC, installation of system software like MS Windows, device drivers. Trouble shooting Hardware and Software some tips and tricks.

Internet & World Wide Web:

Different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet, web browsers, email, newsgroups and discussion forums. Awareness of cyber hygiene (protecting the personal computer from getting infected with the viruses), worms and other cyber-attacks.

Productivity tools: Crafting professional word documents; excel spread sheets, power point presentations and personal websites using the Microsoft suite of office tools.

PC Hardware

Task 1: Identification of the peripherals of a computer. To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions. Description of various I/O Devices.

Task 2: (Optional): A Practice on disassembling the components of a PC and assembling them to back to working condition.

Task 3: Examples of Operating Systems- DOS, MS Windows, Installation of MS windows on a PC

Task 4: Introduction to Memory and Storage Devices, I/O Port, Device Drivers, Assemblers, Compilers, Interpreters, Linkers, Loaders.

Task 5: Hardware Troubleshooting (Demonstration): Identification of a problem and fixing a defective PC (improper assembly or defective peripherals).

Software Troubleshooting (Demonstration): Identification of problem and fixing the PC for any software issues.

Internet & Networking Infrastructure

Task 6: Demonstrating Importance of Networking, Transmission Media, Networking Devices-Gateway, Routers, Hub, Bridge, NIC, Bluetooth technology, Wireless Technology, Modem, DSL, and Dialup Connection.

Orientation & Connectivity Boot Camp and Web Browsing: Students are trained to configure the network settings to connect to the Internet. They are trained to demonstrate the same through web browsing (including all tool bar options) and email access.

Task 7: Search Engines & Netiquette:

Students are enabled to use search engines for simple search, academic search and any other context based search (Bing, Google etc).Students are acquainted to the principles of micro-blogging, wiki, collaboration using social networks, participating in online technology forums.

Task 8: Cyber Hygiene (Demonstration) : Awareness of various threats on the internet. Importance of Security patch updates and Anti-Virus solution Ethical Hacking, Firewalls, Multi-factors authentication techniques including Smart card Biometrics and also practiced

WORD

Task 9: MS Word Orientation: Accessing, overview of toolbars, saving files, Using help and resources, rulers, formatting, Drop Cap, Applying Text effects, Using Character Spacing, OLE in Word, using templates, Borders and Colors, Inserting Header and Footer, Using Date and Time option, security features in word, converting documents while saving.

Task 10 : Creating Project : Abstract Features to be covered:-Formatting Styles, Inserting Table, Bullets and Numbering, Changing Text Direction, Cell alignment, footnote, Hyperlink, Symbols, Spell Check, Track Changes, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs.

EXCEL

Task 11: Using spread sheet features of EXCEL including the macros, formulae, pivot tables, graphical representations.

Creating Scheduler - Features to be covered:-Gridlines, Format Cells, Summation, auto fill, Formatting Text.

LOOKUP/VLOOKUP

Task 12: Performance Analysis: Features to be covered:-Split cells, freeze panes, group and outline, Sorting, Boolean and Logical operators, Conditional Formatting.

POWER POINT

Task 13: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes:- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting –Images, Clip Art, Tables and Charts in PowerPoint.

Task 14: Focusing on the power and potential of Microsoft power point Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes:- Master Layouts (slide, template and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background , textures, Design Templates, Hidden slides, OLE in PPT.

TEXT BOOKS:

Faculty to consolidate the workshop manuals using the following references.

1. Anita Goel , Computer Fundamentals, Pearson
2. Scott. Mueller QUE , Scott Mueller's Upgrading and Repairing PCs, 18/e, Pearson, 2008

REFERENCE BOOKS:

1. Dr.N.B.Venkateswarlu, Essential Computer and IT Fundamentals for Engineering and Science Students.
2. G Praveen Babu, M V Narayana, "Information Technology Workshop", BS Publications, 3e
3. Vikas Gupta, "Comdex Information Technology", Dreamtech.

II B.TECH I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	1	-	4	40	60	100	3
Code: 19BME3TH03	MACHINE DRAWING & BASIC DESIGN ENGINEERING SOFTWARE LAB						

COURSE OBJECTIVES:

This course will give the insight into the design, creation of assembly and get the detailed drawing of machine components. To enhance the student's knowledge and skills in engineering drawing and to introduce drafting packages and commands for computer aided drawing and modelling

COURSE OUTCOMES:

At the end of the course, students will be able to identify and classify

- **CO 1:** **Explain** about sectional views, limits, fits and tolerances
- **CO 2:** **Construct** screw fasteners, Keys, Cotters and Pin joints joints, and assembly machine parts.
- **CO 3:** **Create** a model machine parts by using software packages such as. CATIA

A.MACHINE DRAWING:

1. Introduction: Full and half sectional views, limits, fits and tolerances.
2. Screwed fasteners: Screw thread nomenclature - types & classification of screw threads, Square & Hexagonal headed bolted joints.
3. Keys, Cotters and Pin joints: Saddle & Sunk Keys, Cotter Joint with sleeve, Knuckle Joint.
4. Assembly Drawings: Screw Jack, Tail Stock, Eccentric, Pipe vice, Plummer block.

B.COMPUTER AIDED DRAFTING (CAD): using CATIA

1. Introduction to CATIA: Sketcher, part design & drafting.
2. Sketcher: profile tools, operation tools, constraint tools, sketch tools.
3. Part Design: sketcher, sketch based features, dress up features.

Any Three Figures:

- **A)** BASE PLATE
- **B)** DOVETAIL STOP
- **C)** GUIDE PLATE
- **D)** SLOTTED LINK
- **E)** GLAND BLANK

Text Books:

1. Machine Drawing by K.L.Narayana, P.Kannaiah & K.Venkata Reddy, New Age International, and 3rd Edition.
2. CATIA V5-6R2015 for Engineers and Designers, 13ed Kindle Edition, Prof.sham.tickoo.

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Reference Books:

1. Machine Drawing by K.R.Gopala Krishnan, Subhas Publications, 20th Edition, 2007.
2. CATIA V5-6R2018 for Engineers and Designers, Prof.sham.tickoo, BPB Publications (2019)
3. CATIA V5 Tutorials Mechanism Design & Animation Release 20

II B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME3LB01	**FLUID MECHANICS AND HYDRAULIC MACHINERY LAB**						

COURSE OBJECTIVE:

To impart practical exposure on the performance evaluation methods of various flow measuring equipment and hydraulic turbines and pumps.

COURSE OUTCOMES:

After completion of the course students are able to:

CO 1: **Experiment with** the flow discharge measuring devices used in pipes, channels and tanks.

CO 2: **Solve** the flow equations to estimate performance of the pump

LIST OF EXPERIMENTS:

1. Impact of jets on Vanes.
2. Performance Test on Pelton Wheel.
3. Performance Test on Francis Turbine.
4. Performance Test on Kaplan Turbine.
5. Performance Test on Single Stage Centrifugal Pump.
6. Performance Test on Multi Stage Centrifugal Pump.
7. Performance Test on Reciprocating Pump.
8. Calibration of Venturimeter.
9. Calibration of Orifice meter.
10. Determination of friction factor for a given pipe line.
11. Determination of loss of head due to sudden contraction in a pipeline.
12. Turbine flow meter.

VIRTUAL LAB:

1. Verification of Bernoulli's theorem
2. Reynolds experiment for determination of different regimes of flow.

II B.TECH I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code:19BME3LB02	**MECHANICS OF SOLIDS & METALLURGY LAB**						

COURSE OBJECTIVES:

In this laboratory students will have the opportunity to apply loads to various materials under different equilibrium conditions. The student will perform tests on materials in tension, compression, torsion, and impact.

To impart practical exposure on the microstructures of various materials and their hardness evaluation. Also to impart practical knowledge on the evaluation of material properties through various destructive testing procedures

COURSE OUTCOMES:

After completion of the course students are able to:

CO 1: **Experiment with** different materials for the evaluation of material properties through various destructive testing procedures.

CO 2: **Examine** the microstructures of different materials and also identify the hardness values.

NOTE: Any 6 experiments from each section A and B.

(A) MECHNICS OF SOLIDS LAB:

1. Direct tension test-brittle and ductile materials
2. Fatigue Test
3. 3-point bend test
4. Unsymmetrical bend test
5. Specimen preparation and characterization
6. Torsion test
7. Vickers hardness Test
8. Test on springs
9. Compression test on cube
10. Impact test
11. Punch shear test
12. Brinell's and Rockwell's hardness test
13. Simply Supported beam

Virtual Lab:

1. To obtain strain measurement for Aluminium specimen by conducting creep test

(B) METALLURGY LAB:

I. Preparation and study of the Micro Structure of Ferrous materials-

a) Cast Iron

1. Grey cast iron
2. Nodular cast iron
3. White cast iron

b) Steel

4. Mild steel
5. Low carbon steel
6. High carbon Steel

II. Preparation and study of the Micro Structure of Non-Ferrous materials-

7. Brass
8. Aluminium
9. Copper
10. Hardenability of steels by Jominy End Quench Test.
11. Die penetration Test.

Virtual Lab:

1. Investigate Mechanical properties of Nano material by conducting Nano indentation test.

II B.TECH I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	3	0	0	-	-	-	0
Code: 19BCC3MC01	**QUANTITATIVE APTITUDE AND REASONING**						

COURSE OBJECTIVES:

- To train students in analyzing real life scenarios considering all factors
- To educate the students on principles of mathematical problems and problem solving methods
- To train students for campus placements
- To make students adept in applying appropriate logic and shortcuts to solve the problems in the least possible time.

COURSE OUTCOMES:

After thorough learning of Quantitative Aptitude and Reasoning, a student:

CO 1: **Prepare** well for clearing Quantitative Aptitude and Reasoning tests for campus Placements

CO 2: **Critically** evaluate various real life situations by resorting to Analysis of key issues and factors.

CO 3: **Demonstrate** various principles involved in solving mathematical problems and There by reducing the time taken for performing job functions.

APTITUD:

Unit I: Simple equations, Ratio, Proportion, Variation

1. Simple equations

a. Definition of Linear Equations
b. Formation of simple equations
c. Problems on Ages, Fractions and Digits
d. Indeterminate system of equations
e. Special cases in indeterminate system of equations

2. Ratio and proportion

a) Definition of Ratio
b) Properties of Ratios
c) Comparison of Ratios
d) Problems on Ratios
e) Compound Ratio
f) Problems on Proportion, Mean proportional and Continued Proportion

3. Variation

a) Direct variation
b) Inverse variation
c) Joint variation
d)

e) Problems on Variations

Unit II: Percentages, Partnership.

1. Percentages

a) Introduction
b) Converting a percentage into decimals
c) Converting a Decimal into a percentage
d) Percentage equivalent of fractions
e) Problems on percentages

2. Partnership

a) Introduction
b) Relation between capitals, Period of investments and Shares

Unit III: Profit And Loss

a) Problems on Profit and Loss percentage
b) Relation between Cost Price and Selling price
c) Discount and Marked Price
d) Two different articles sold at same Cost Price
e) Two different articles sold at same Selling Price
f) Gain% / Loss% on Selling Price

REASONING :

UNIT IV: Deductions & Connectives

1. Deductions

a) Finding the conclusions using Venn diagram method
b) Finding the conclusions using syllogism method

2. Connectives

a) Definition of a simple statement
b) Definition of compound statement
c) Finding the Implications for compound statements
d) Finding the Negations for compound statements

UNIT V: Analytical Reasoning puzzles

a) Problems on Linear arrangement
b) Problems on Circular arrangement
c) Problems on Double line-up
d) Problems on Selections
e) Problems on Comparisons

UNIT VI: Clocks, Calendars & Blood relations

1. **Clocks**
   a) Finding the angle when the time is given
   b) Finding the time when the angle is known
   c) Relation between Angle, Minutes and Hours
   d) Exceptional cases in clocks

2. **Calendars**
   a) Definition of a Leap Year
   b) Finding the number of Odd days
   c) Framing the year code for centuries
   d) Finding the day of any random calendar date

3. **Blood relations**
   a) Defining the various relations among the members of a family
   b) Solving Blood Relation puzzles
   c) Solving the problems on Blood Relations using symbols and notations

TEXT BOOKS:

1. GL Barrons, Mc Graw Hills, Thorpe's verbal reasoning, LSAT Materials
2. R S Agarwal, S.Chand , 'A modern approach to Logical reasoning'
3. R S Agarwal, S Chand, 'Quantitative Aptitude'
4. Quantitative Aptitude - G. L BARRONS
5. Quantitative Aptitude - Abhijit Guha Mc Graw Hills

REFERENCES:

1. www.careerbless.com/**aptitude**/qa/home.php
2. www.affairscloud.com/**quantitative-aptitude**-questions
3. www.careerafter.com/rs-aggarwal-**quantitative-aptitude**-pdf/
4. www.amazon.in/**Quantitative-Aptitude**-Competitive-Examinations.../8121924987
5. www.indiabix.com

   www.practice**aptitude**tests.com/numerical-**reasoning**-tests

II B.TECH II-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: **19BME4LB01**	**APPLIED THERMODYNAMICS LAB**						

COURSE OBJECTIVES:

- To learn the construction and working principle of I.C.Engines practically.
- To understand the working principle and performance of air compressor practically.
- To learn the heat balance test of an I.C. Engine.

COURSE OUTCOME:

After the completion of the course, students should be able to

CO1: **Estimate** various fuel characteristics using Internal Combustion Engines

CO2: **Evaluate** the performance parameters of refrigeration system & air compressors

LIST OF EXPERIMENTS:

1. Determination of flash point, fire point.
2. Determination of calorific value of fuel using Bomb Calorimeter.
3. Determination of viscosity of fluid.
4. I.C. Engine Valve Timing Diagram
5. I.C. Engine Port Timing Diagram
6. Determination of performance characteristics of 2-Stroke Petrol Engine.
7. I.C. Engine Performance Test on Single Cylinder 4 Stroke Diesel Engine
8. Evaluation of Engine Friction by Conducting Morse Test on 4 - Stroke Petrol Engine.
9. Evaluation of Engine Friction by Conducting Motoring/Retardation Test on Single Cylinder 4 Stroke Diesel Engine
10. Heat Balance Test on Single Cylinder 4 Stroke Diesel Engine
11. Performance Test on Variable Compression Ratio
12. Volumetric Efficiency of a Reciprocating Air Compressor

VIRTUAL LABS

1. http://vlabs.iitkgp.ernet.in/rtvlas/
2. http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/refigeration/labs/exp1/index.php

II B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: **19BME4LB02**	**METROLOGY & INSTRUMENTATION LAB**						

COURSE OBJECTIVES:

The Metrology and instrumentation Laboratory course is designed for measuring and gauging instruments for inspection of precision linear, geometric forms, angular and surface finish measurements. The student can learn the measurements with and calibration of instruments. Instrumentation lab introduces the students with the theory and methods for conducting experimental work in the laboratory and calibration of various instruments for measuring pressure, temperature, displacement, speed, etc.

COURSE OUTCOMES:

CO1: **Examine** different instruments that are available for linear, angular and roughness measurements and select and use the appropriate measuring instrument according to a specific requirement.

CO2: **Analyze** proper measuring instrument and know the requirement of calibration, errors in measurement etc.

METROLOGY LAB:

1. Measurement of lengths, heights, diameters by Vernier calipers, micrometers etc.
2. Measurement of bores by internal micrometers and dial bore indicators.
3. Use of gear tooth Vernier caliper for tooth thickness inspection and flange micro meter for checking the chordal thickness of spur gear.
2. Machine tool alignment test on the lathe, drilling & milling machines.
3. Angle and taper measurements with bevel protractor, Sine bars, rollers and balls.
4. Use of spirit level in finding the straightness of a bed and flatness of a surface.
5. Thread inspection with two wires/ three wire method & tool maker's microscope.
6. Surface roughness measurement with roughness measuring instrument.

INSTRUMENTATION LAB:

1. Calibration of pressure gauge.
2. Calibration of thermocouple for temperature measurement.
3. Calibration of Resistance Temperature Detector for temperature measurement.
4. Study and calibration of LVDT transducer for displacement measurement.
5. Calibration of strain gauge.
6. Calibration of thermistor for temperature measurement.
7. Calibration of capacitive transducer.
8. Study and calibration of photo and magnetic speed pickups.
9. Calibration of resistance temperature detector.

II B.TECH II-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: **19BME4LB03**	**MANUFACTURING TECHNOLOGY LAB**						

COURSE OBJECTIVES:

- To apply the class room knowledge to do the experiments in the lab
- To identify and solve the problems while doing the experiments of casting, metal forming & casting and welding processes.

COURSE OUTCOMES:

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

CO 1: **Experimentation** with the sand molds & welding practice.

CO 2: **Prepare** plastic molding parts, rod bends, washers and aluminum casting.

LIST OF EXPERIMENTS:

I. MOLDING PRACTICE:

1. Preparation of a green sand mould using single piece pattern.
2. Preparation of a green sand mould using multi piece pattern.
3. Sand testing: green strength, dry strength, grain fineness number, permeability etc.

II. WELDING PRACTICE:

1. Preparation of a T joint using electric arc welding.
2. Preparation of a Butt Joint using gas welding.
3. Preparation of a lap joint using spot welding.

III. PLASTIC MOLDING:

Injection Molding:

1. Preparation of a key chain by using two plate mold.

Blow Molding:

1. Preparation of a bottle by using blow molding technique.

IV. MECHANICAL PRESSES:

1. Preparation of a rod bends using hydraulic press.
2. Preparation of a washer using hydraulic press.

V. DEMONSTRATION OF STIR CASTING MACHINE:

1. Preparation of Aluminum casting with stir casting machine

VI. VIRTUAL LAB:

Metal Forming Virtual Simulation Lab (http://msvs-dei.vlabs.ac.in/)

II B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BCC4LB01	**ENGLISH COMMUNICATION SKILLS LAB-II (Common to All Branches)**						

COURSE OBJECTIVES:

- To train the students to use language effectively in various professional interactions like Group Discussions, Public Speaking, Presentations and Interviews.
- To make the students understand the importance of body language.
- To provide exposure to students to soft skills like Goal Setting, Assertiveness, Time Management, Positive Attitude and Stress Management
- To expose the students to variety of a self-instructional, learner friendly, electronic media and stimulate intellectual faculties/resources

COURSE OUTCOMES:

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

CO 1: **Utilize** Non-verbal cues and interpret nonverbal symbols.
CO 2: **Develop** presentation Skills and make formal presentations using strategies.
CO 3: **Analyze** problem solving skills effectively to participate in Group Discussions.
CO 4: **Build** interview skills for employability.

UNIT– I

Body Language

UNIT–II

Presentation Skills

UNIT–III

Group Discussions

UNIT-IV

Interviews and Telephonic Interviews

UNIT-V

Debates

TEXT BOOKS:

1. *"Strengthen Your Communication Skills",* Maruthi Publications, 2013.

REFERENCE BOOKS:

1. "*Personality Development and Soft Skills"*, Oxford University Press, New Delhi.
2. M Ashraf Rizvi, "*Effective Technical Communication skills"*, McGraw-Hill, 2005.
3. Barun K Mitra, "*Personality Development and Soft Skills",* Oxford University Press, 2011.
4. Konar N, "*Communication Skills for Professionals",* PHI Learning Private Limited, 2011.

III B.TECH-I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code : 19BME5LB01	**ENGINEERING SKILLS LAB**						

CORSE OBJECTIVES:

The course content enables students to:

- The course in intended to provide knowledge of basic 3D printing elements, control and robotics.
- Candidates are trained on the 3D printing software (viz., Thinkercad and CURA) to gain the first-hand experience of 3D printing and manufacturing.

COURSE OUTCOMES:

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

CO1: Model and manufacture mechanical components using 3D printer.

CO2: Operate a robot efficiently.

List of Experiments:

- **This lab has been divided into two streams namely 3D printing lab and Robotics lab. Robotics lab has more exposure towards pick and place operations, and operating a robot effectively and analyse the kinematic mechanisms for position control systems. 3D printing lab will give an overall exposure towards modelling and printing of any structural elements.**

3D Printing Lab

1. Experiments on Thinker Cad.
2. Pre-processing STL file using CURA software.
3. Manufacture Hexagonal Nut by using 3D Printer.
4. Manufacture Connecting rod, Piston by using 3D Printer.
5. Simulation of Delta 3D Printing Machine – Virtual Lab

Robotics Lab

1. Introduction to CProg software
2. Pick and place operation using Electromagnetic Gripper Robot.
3. Pick and place operation using Pneumatic Gripper Robot.
4. Pick and place operation by Electromagnetic Gripper Robot using Teach Pendent.
5. Collaborating Two Robots using PLC.

Virtual labs:

1. http://vlabs.iitkgp.ernet.in/mr/#

Resources:

1. https://www.srmist.edu.in/codepartment-of-mechatronics-engineeringntent/mechatronics-laboratory
2. https://www.tinkercad.com/

III B.TECH-I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME5LB02	**METAL CUTTING & MACHINE TOOLS LAB**						

COURSE OBJECTIVES:

The course content enables students to:

- To learn the step turning, taper turning and thread cutting on lathe machines
- To the operation of shaping, planning, drilling, milling and surface grinding

COURSE OUTCOMES:

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

CO 1 Illustrate the working of lathe, shaper, planner, drilling, milling and grinding machines.

CO 2 Analyze the forces acting on cutting tools for different machines.

LIST OF EXPERIMENTS:

1. Plain turning and step turning operation on Lathe.
2. Taper turning operation on lathe.
3. Thread cutting and Knurling operation on Lathe.
4. Surface grinding
5. Preparation of hexagonal nut on milling machine
6. Cutting a slot on shaper machine
7. Drilling operation
8. Force measurement using Lathe tool Dynamometer.
9. Planning operation
10. Slotting operation

VIRTUAL LAB:

Metal Cutting & Machine Tools Lab

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/machine_tools/labs/exp1/index.php
2. https://fab-coep.vlabs.ac.in/exp1/Theory.html
3. https://virtlabs.tech/metal-cutting/

III B.TECH-I-SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME5LB03	**HEAT POWER ENGINEERING LAB**						

COURSE OBJECTIVES:

The course content enables students to:

- Perform different experiments on engines for determination of performance and emissions
- Estimate the fuel property calorific value using Junkers and bomb calorimeters
- Determination of dryness fraction of given steam sample using throttling calorimeter

COURSE OUTCOMES:

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

CO1: Demonstrate the various horse powers, Calorific values, emissions of IC engines.

CO2: Determine the various efficiencies and energy balance for several types of Internal Combustions Engines and compressors.

LIST OF EXPERIMENTS:

1. Determination of Calorific Value of gaseous Fuel by Junker's Calorimeter.
2. Performance Analysis of Heat Pipe.
3. Engine Performance with Turbo Charger.
4. Emission Studies of IC Engine.
5. Performance Analysis of Vapour Compression Test Rig.
6. Economical Speed Test on Four Stroke Multi-cylinder Petrol Engine.
7. Performance Test on Solar Flat Plate Collector Test Rig.
8. Retardation Test on Single Cylinder Diesel Engine.
9. Study of Boilers.
10. Dryness fraction measurement by separating and throttling calorimeter.

Virtual Lab Experiments:

1. Torque crank angle curve of SI Engine: http://vlabs.iitkgp.ernet.in/rtvlas/#
2. Determination of Cylinder MEP: http://vlabs.iitkgp.ernet.in/rtvlas/#
3. Torsional Vibrations of an Engine: http://vlabs.iitkgp.ernet.in/rtvlas/#

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME6LB01	**HEAT TRANSFER LAB.**						

COURSE OBJECTIVES

The course content enables students to:

- Illustrate different conduction and convection heat transfer modes and estimate the rates of heat transfer
- Analyze the heat transfer in different apparatus like heat exchangers, condensers
- Theorize the method of heat transfer in radiation and other phenomena

COURSE OUTCOMES

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

CO1: Evaluate the amount of heat exchange for plane, cylindrical & spherical geometries

CO2: Compare the performance of extended surfaces and heat exchangers.

LIST OF EXPERIMENTS:

1. Determination of overall heat transfer co-efficient of a composite slab.
2. Determination of heat transfer rate through a lagged pipe.
3. Determination of heat transfer rate through a concentric sphere.
4. Determination of thermal conductivity of a metal rod.
5. Determination of efficiency of a pin-fin.
6. Determination of heat transfer coefficient in forced convection.
7. Determination of heat transfer coefficient in natural convection.
8. Determination of effectiveness of parallel and counter flow heat exchangers.
9. Determination of emissivity of a given surface.
10. Determination of Stefan Boltzmann constant.
11. Determination of heat transfer rate in drop and film wise condensation.
12. Determination of critical heat flux.
13. Study of two-phase flow.

Virtual Lab Experiments:

1. Heat Transfer by Radiation http://htv-au.vlabs.ac.in/
2. Black Body Radiation http://htv-au.vlabs.ac.in/
3. Thermo Couple Seebeck Effect http://htv-au.vlabs.ac.in/

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME6LB02	**MACHINE DYNAMICS LAB**						

COURSE OBJECTIVES

The course content enables students to:

- To study the behavior of machine elements experimentally when subjected to dynamic forces.
- Develop understanding of dynamic balancing, gyroscopic forces and moments.

COURSE OUTCOMES

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

CO1: Analyze the static and dynamic analysis by balancing

CO2: Determine the natural frequency of vibration of the vibrating system

LIST OF EXPERIMENTS:

1. Determination of the magnitude of gyroscopic couple, angular velocity of precession.
2. Static balancing using steel balls.
3. Determination of the magnitude and orientation of the balancing mass in dynamic balancing.
4. An experiment on pin-on-disc apparatus.
5. Determination of damped natural frequency of vibration of the vibrating system with different viscous oils.
6. Determination of steady state amplitude of forced vibratory system without Damping.
7. Determination of steady state amplitude of forced vibratory system with Damping
8. Determination of natural frequency of free longitudinal vibrations
9. Determination of natural frequency of free transverse vibrations
10. Determination of natural frequency of free torsional vibrations

Virtual Labs:

- **https://mdmv-nitk.vlabs.ac.in/#**

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	3	-	-	-	-	-	0
Code: 19BCC6MC01	**ADVANCED COMMUNICATION SKILLS**						

COURSE OBJECTIVES

The course content enables students to:

- To make the students conscious about their Non-Verbal communication
- Train the students to use the language effectively to face interviews and participate in Group Discussions.
- To develop effective written communication skills in academic, technical and professional contexts.
- Develop critical thinking skills necessary to become employable.

COURSE OUTCOMES

At the end of the course students will be able to:

CO 1 Use English language fluently, accurately and appropriately
CO 2 Know how body language is used in communication and interpret non-verbal symbols.
CO 3 Understand the nuances of the written language and write technical reports effectively.
CO 4 Participate in Group discussions and successfully face interviews.

Unit-1: **Non-Verbal Communication**
Unit-2: **Resume Preparation**
Unit-3: **E-mail writing & Professional Letter writing**
Unit-4: **Essay Writing & Paragraph writing**
Unit-5: **Group discussion**
Unit-6: **Interview skills**

References:

1. Rajendra Pal, J S KorlahaHi, *Essentials of Business Communication,* Sultan Chand & Sons
2. Andrea J. Rutherford, *Basic Communication Skills for Technology,* Pearson Education Asia
3. V. Prasad, *Advanced Communication Skills,* Atma Ram Publications
4. Barun K. Mitra, *Personality Development and Soft Skills,* Oxford University Press
5. Sanjay Kumar, Pushp Lata, *Communication Skills,* Oxford University Press
6. Meenakshi Raman, Sangeeta Sharma, *Fundamentals of Technical Communication,* Oxford University Press

IV B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BME7LB01	**MECHATRONICS & SIMULATION LAB**						

COURSE OBJECTIVES

The course content enables students to:

- The course in intended to provide knowledge of basic mechatronics elements, system level integration, control and robotics.
- This lab imparts skill and knowledge on Modular Automation Production Systems by implementing the automation skills achieved from Basics of PLC
- Candidates are trained on the ANSYS and/or 3D Experience SIMULIA Modules to gain the first-hand experience of simulation and analysis of mechanical systems.
- Programmes were developed to enhance the skill set of the students on functions of engineering components and modules.

COURSE OUTCOMES:

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

CO1: Interpret and operate on PLC and mechatronic systems

CO2: Use of various analytical tools like ANSYS, Fusion 360 etc., for engineering simulation

List of Experiments:

This lab has been divided into two streams namely mechatronics lab and simulation lab. Mechatronics lab has more exposure towards PLC, actuator & sensor controls, and modelling & planning for different kinds of mechanisms for position control systems. Simulation lab will give an overall exposure towards structural analysis, thermal analysis and modal analysis.

- **Mechatronics Lab**
  1. Ladder programming on Logic gates ,Timers & counters
  2. Ladder Programming for digital & Analogy sensors
  3. Ladder programming for Traffic Light control, Water level control and Lift control Modules

  DYNA 1750 Transducers Kit
  4. Characteristics of LVDT
  5. Principle & Characteristics of Strain Gauge
  6. Characteristics of Summing Amplifier
  7. Characteristics of Reflective Opto Transducer Open loop control of Mobile robot

  AUTOMATION STUDIO software
  8. Introduction to Automation studio & its control
  9. Draw & Simulate the Hydraulic circuit for series & parallel cylinders connection
  10. Draw & Simulate Meter-in, Meter-out and hydraulic press and clamping

- **Simulation Lab (Fusion 360 Lab)**
    1. To determine the Deflection and Member forces of a given 2D truss.
    2. To find the displacement, maximum, minimum stresses induced in a given cantilever beam with uniformly distributed load and point loads and draw the shear force and bending moment diagrams by using simulation tool, also list the results according to the given loads.
    3. Estimation of natural frequencies and mode shapes Harmonic response of 2D beam.
    4. Determination of deflections component and principal and Von-mises stresses in plane stress, plane strain and Axisymmetric components.
    5. Estimation of natural frequencies and mode shapes, Harmonic response of 2D beam.
    6. Steady state heat transfer Analysis of plane and Axisymmetric components.

WEB RESOURCES:

1. https://www.srmist.edu.in/codepartment-of-mechatronics-engineeringntent/mechatronics-laboratory
2. https://cloud.academy.3ds.com/r2017x/role_smq.html
3. https://ocw.mit.edu/courses/mechanical-engineering/2-737-mechatronics-fall-2014/labs/
4. www.ansys.com

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC1LB01	**ENGLISH COMMUNICATION SKILLS LAB-I (Common to All Branches)**						

COURSE OBJECTIVES:

- To build confidence in the students to communicate effectively in English.
- To strengthen the oral communication skills to enable them to interact with the people in various social situations.
- To enable the learners improve pronunciation through emphasis on word accent, intonation and rhythm

COURSE OUTCOMES:

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

CO 1: Improve their basic communication skills to interact with peers and others in various social situations.

CO 2: Speak English with good pronunciation, overcoming mother tongue influence.

CO 3: Take part in various conversations/discourses using formal and informal expressions.

CO 4: Listen and comprehend several accents of English Language.

SYLLABUS

UNIT– I

a. Greeting, Introducing and Taking leave
b. Pure Vowels
c. Listening - TEDx Talks (https://www.ted.com/talks/ashweetha_shetty_how-education-helped-me-rewrite-my-life?language-en#t-623369)
d. Self-Introduction

UNIT–II

a. Giving information and Asking for information
b. Diphthongs
c. Listening -TEDx Talks(https://www.youtube.com/watch?v=Dk20-E0yx_s)
d. Role Play

UNIT–III

a. Inviting, Accepting and Declining Invitations
b. Consonants
c. Listening - TEDx Talks (https://www.youtube.com/watch?v=IgAnj6r1O48)
d. JAM

UNIT-IV

a. Commands, Instructions and Requests
b. Accent and Rhythm
c. Listening -TEDx Talks(https://youtu.be/SKvMxZ284AA)
d. Tables Turned

UNIT-V

a. Suggestions and Opinions
b. Intonation
c. Listening -TEDx Talks(https://youtu.be/ov6pEGXRYZo)
d. Impromptu

TEXT BOOKS:

1. *"Strengthen Your Communication Skills",* Maruthi Publications, 2013.

REFERENCE BOOKS:

1. Meenakshi Raman, Sangeeta Sharma, *Technical Communication: Principles and Practice*, Oxford University Press, 2015
2. J.D.O Conner, *Better English Pronunciation*, Cambridge University Press 1980.
3. T.Balasubramanian, "*A Text Book of English Phonetics for Indian Students"*, Macmillan,1981
4. Penny ur *Grammar Practice Activities,* Cambridge University Press, 2010.
5. Mark Hancock, *Pronunciation in Use,* Oxford University Press 2007.

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC1LB05	**ENGINEERING CHEMISTRY LAB (COMMON TO ALL BRANCHES)**						

COURSE OBJECTIVES:

- To provide the students with a solid foundation in chemistry laboratory required to solve the engineering problems.
- To expose the students in practical aspects of the theoretical concepts.
- To train the students on how to handle the instruments.

COURSE OUTCOMES:

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

CO 1: Develop and perform analytical chemistry techniques to address the water related problems (hardness, alkalinity, Chlorine, DO). [K3]

CO 2: Explain the functioning of different analytical instruments.[K2]

CO 3: Compare viscosity and surface tension of different oils.[K2]

LIST OF EXPERIMENTS

Introduction to chemistry laboratory–Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis etc.

1. Estimation of NaOH using standard HCl solution
2. Determination of hardness of water sample by EDTA method
3. Determination of alkalinity of water sample
4. Determination of Dissolved Oxygen content of water sample by Winkler's method
5. Determination of Dissolved Chlorine by Mohr's method
6. Estimation of Fe^{+2} by using $KMnO_4$
7. Preparation of phenol formaldehyde resin/Urea formaldehyde
8. Conductometric titration between strong acid and strong base
9. Determination of viscosity of a liquid by Ostwald's viscometer
10. Determination of surface tension of a liquid by Stalagnometer
11. Determination of moisture content present in given coal sample
12. Determination of acid value of an oil

TEXT BOOKS:

1. N.K Bhasin and Sudha Rani "**Laboratory Manual on Engineering Chemistry**" 3/e, Dhanpat Rai Publishing Company (2007).
2. Mendham J, Denney RC, Barnes JD, Thosmas M and Sivasankar B "**Vogel's Quantitative Chemical Analysis**" 6/e, Pearson publishers (2000).
3. Sudharani, "**Lab manual on Engineering Chemistry**" Dhanpat Rai Publications, Co., New Delhi. (2009).

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC1LB07	**C PROGRAMMING LAB (Common to CSE & IT)**						

COURSE OBJECTIVE:

- The purpose of this course is to introduce to students to the field of language. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

COURSE OUTCOMES:

After completion of this C Programming Lab, students would be able to:

CO1: Analyze logical structure of computer programming and different constructs to develop programs in C Language [K4].

CO2: Compare and contrast various data types and operator precedence [K2].

CO3: Analyze the use of conditional and looping statements to solve problems associated with conditions and repetitions [K4].

CO4: Analyze simple data structures, use of pointers and dynamic memory allocation techniques [K4].

CO5: Make use of functions and file I/O operations in developing C Programs [K3].

EXERCISE 1

Construct Flowcharts for the following through Raptor:

i) Develop a calculator to convert time, distance, area, volume and temperature from one unit to another.
ii) Calculate simple and compound interest for various parameters specified by the user.
iii) Calculate the average of n numbers.

EXERCISE 2

a) Write a C Program to calculate the area of triangle using the formula Area $=(s*(s-a)*(s-b)*(s-c))^{1/2}$ where s= (a+b+c)/2.
b) Write a C Program to find the largest of three numbers using ternary operator.
c) Write a C Program to swap two numbers without using a temporary variable.

EXERCISE 3

a) Write a C program to find the roots of a quadratic equation.
b) Write a C program, which takes two integer operands and one operator form the user, performs
the operation and then prints the result. Consider the operators +,-,*, /, % and use Switch
Statement

EXERCISE 4

a) Write a C program to find the sum of individual digits of a positive integer and find the reverse of the given number.
b) Draw a flow chart using Raptor and write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

EXERCISE 5

a) Draw a flow chart using Raptor and write a C Program to print the multiplication table of a given number n up to a given value, where n is entered by the user.
b) Write a C Program to enter a decimal number, and calculate and display the binary equivalent of that number.
c) Write a C Program to check whether the given number is Armstrong number or not.

EXERCISE 6

a) Write a C program to interchange the largest and smallest numbers in the array.
b) Write a C program to input two m x n matrices, check the compatibility and perform addition and multiplication of them.

EXERCISE 7

a) Draw a flow chart using Raptor and write a C Program to find both the largest and smallest number
of an array of integers
b) Write a C Program to find transpose of a matrix.

EXERCISE 8

Draw a flow chart using Raptor and write C programs that use both recursive and non-recursive

Functions for the following

i) To find the factorial of a given integer.
ii) To find the GCD greatest common divisor of two given integers.

EXERCISE 9

a) Draw a flow chart using Raptor and write a C Program for the following To find Fibonacci sequence

b) Write C programs illustrating call by value and call by reference concepts.

EXERCISE 10

Write C Programs for the following string operations without using the built in functions - to concatenate two strings

a) To append a string to another string
b) To compare two strings

EXERCISE 11

Write C Programs for the following string operations without using the built in functions

a) To find whether a given string is palindrome or not

EXERCISE 12

Write a C program that uses functions to perform the following operations:

i. To insert a sub-string in to given main string from a given position.
ii. To delete n Characters from a given position in a given string.
iii. To replace a character of string either from beginning or ending or at a specified location

EXERCISE 13

a) Write a C Program to Implement Taylor series method
b) Write a C Program to Implement Euler's method
c) Write a C Program to Implement Runge Kutta method

EXERCISE 14

a) Draw a flow chart using Raptor and write a C program to implement a linear search.
b) Draw a flow chart using Raptor and write a C program to implement binary search
c) Write a C program to implement sorting of an array of elements.

EXERCISE 15

a) Write C Program to reverse a string using pointers
b) Write a C Program to compare two arrays using pointers
c) Write a C program to swap two numbers using pointers

EXERCISE 16

Examples which explores the use of structures, union and other user defined variables

EXERCISE 17

a) Write a C program which copies one file to another.
b) Write a C program to count the number of characters and number of lines in a file.
c) Write a C Program to merge two files into a third file. The names of the files must be entered using command line arguments.

EXERCISE 18

Virtual Lab: http://cse02-iiith.vlabs.ac.in/ /

Any three programs must be submitted with result from the above link.

*** At the end of the semester the student has to submit a Mini-Project on Computer Programming. The list of Mini-Projects is available in the department.**

TEXT BOOKS:

1. Reema Thareja, " Programming in C", OXFORD .
2. The C programming Language by Dennis Richie and Brian Kernighan 2nd ed..

REFERENCE BOOKS:

1. Dr.E.Balaguruswamy, "Programming in ANSI C", Tata McGraw-Hill Education.
2. Hanly, "Problem Solving and Program Design in C", Koffman, 7th ed, PEARSON.
3. Forouzan, Gilberg, Prasad ,"C Programming, A Problem Solving Approach", CENGAGE.
4. Programming in C, Second Edition by Ashok N.Kamthane, Pearson.

I B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC2LB06	**ENGINEERING PHYSICS LAB** (Common to All branches)						

COURSE OBJECTIVES:

- To impart physical measurement skills and make the students understand coherence between theoretical and practical knowledge.

COURSE OUTCOMES:

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

CO1: Understand the principle of physics and interpret them in engineering field and compares the results with theoretical calculations.

CO2: Ability to use modern engineering physics techniques and tools in real time applications in engineering studies.

CO3: The student will be enabled to know about the characteristics and the behavior of materials in a practical manner and gain knowledge and its usage.

LIST OF EXPERIMENTS:

1. Rigidity modulus of material by wire-dynamic method (torsional pendulum)
2. Determination of wavelength of a source-Diffraction Grating-Normal incidence
3. Newton's rings –Radius of Curvature of Plano Convex Lens.
4. Determination of thickness of thin wire- Air wedge method
5. Determination of wavelength of Laser Source-single slit diffraction.
6. Determine the Numerical aperture of an optical fiber.
7. Melde's experiment – Transverse and Longitudinal modes.
8. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.
9. Verification of laws of stretched string by using Sonometer.
10. Calculate the energy loss in a given ferromagnetic material by plotting B-H Curve.
11. Energy Band gap of a Semiconductor p - n junction.
12. Characteristics of Thermistor – temperature coefficient

TEXT BOOKS:

1. Engineering Physics Lab Manual by Dr.Y. Aparna & Dr.K.Venkateswarao (V.G.S.Book links).
2. Physics Practical Manual, Lorven Publications
3. S. Balasubramanian , M.N. Srinivasan " A Text book of Practical Physics"- S Chand Publishers, 2017.

WEB REFERENCES:

1. https://www.youtube.com/watch?v=NDsSPtL9dyQ
2. https://www.youtube.com/watch?v=9agoJRCnu4w
3. https://www.youtube.com/watch?v=bv-lLJreyCU
3. http://vlab.amrita.edu/index.php

I B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC2LB07	**IT WORKSHOP** (Common to CSE & IT)						

COURSE OBJECTIVES:

- Enabling the student to understand basic hardware and software tools through practical exposure.

COURSE OUTCOME:

After completion of this course, the student should be able to

CO1: Demonstrate the need of PC hardware components, applications and software [K2].

CO2: Explain the knowledge of networks, internet and World Wide Web, Search engines, Netiquette [K2].

CO3: Experiment with the installation and use of different software like Windows XP, Linux [K3]

CO4: Identify and fix the defective PC and software related issues [K3].

CO5: Make use of various options in Microsoft word, Excel and Power point [K3].

PC Hardware:

Identification of basic peripherals, assembling a PC, installation of system software like MS Windows, device drivers, Trouble shooting Hardware and Software, some tips and tricks.

Internet & World Wide Web:

Different ways of hooking the PC on to the internet from home and workplace and effectively use the internet, web browsers, email, newsgroups and discussion forums. Awareness of cyber hygiene protecting the personal computer from getting infected with the viruses, worms and other cyber-attacks.

Productivity tools: Crafting professional word documents; excel spread sheets, power point presentations and personal websites using the Microsoft suite of office tools.

PC Hardware

Task 1: Identification of the peripherals of a computer. To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions. Description of various I/O Devices.

Task 2: A Practice on disassembling the components of a PC and assembling them to back to working condition.

Task 3: Examples of Operating Systems- DOS, MS Windows, and Installation of MS windows on a PC

Task 4: Introduction to Memory and Storage Devices, I/O Port, Device Drivers, Assemblers, Compilers, Interpreters, Linkers, Loaders.

Task 5: Hardware Troubleshooting Demonstration: Identification of a problem and fixing a defective PC(improper assembly) or defective peripherals.

Software Troubleshooting Demonstration: Identification of problem and fixing the PC for any software issues.

Internet & Networking Infrastructure

Task 6: Demonstrating Importance of Networking, Transmission Media, Networking Devices- Gateway, Routers, Hub, Bridge, NIC, Bluetooth technology, Wireless Technology, Modem, DSL, and Dialup Connection.

Orientation & Connectivity Boot Camp and Web Browsing: Students are trained to configure the network settings to connect to the Internet. They are trained to demonstrate the same through web browsing (including all tool bar options) and email access.

Task 7: Search Engines & Netiquette:
Students are enabled to use search engines for simple search, academic search and any other context based search (Bing, Google etc).Students are acquainted to the principles of micro-blogging, wiki, collaboration using social networks, participating in online technology forums.
Task 8: Cyber Hygiene (Demonstration) : Awareness of various threats on the internet. Importance of Security patch updates and Anti-Virus solution Ethical Hacking, Firewalls, Multi-factors authentication techniques including Smart card Biometrics and also practiced

WORD

Task 9: MS Word Orientation: Accessing, overview of toolbars, saving files, Using help and resources, rulers, formatting, Drop Cap, Applying Text effects, Using Character Spacing, OLE in Word, using templates, Borders and Colors, Inserting Header and Footer, Using Date and Time option, security features in word, converting documents while saving.
Task 10 : Creating Project : Abstract Features to be covered:-Formatting Styles, Inserting Table, Bullets and Numbering, Changing Text Direction, Cell alignment, footnote, Hyperlink, Symbols, Spell Check, Track Changes, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs.
Task 10A: Create a document using Google Docs, Create a Survey Form using Google Forms, Create a document using Google Docs with voice typing, Translate Document from one language to another language.

EXCEL

Task 11: Using spread sheet features of EXCEL including the macros, formulae, pivot tables, graphical representations.
Creating Scheduler - Features to be covered:-Gridlines, Format Cells, Summation, auto fill, Formatting Text.
LOOKUP/VLOOKUP
Task 12: Performance Analysis: Features to be covered:-Split cells, freeze panes, group and outline, Sorting, Boolean and Logical operators, Conditional Formatting.

POWER POINT

Task 13: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes:- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting –Images, Clip Art, Tables and Charts in PowerPoint.

Task 14: Focusing on the power and potential of Microsoft power point Help them learn best practices in designing and preparing power point presentation. Topic covered during this week includes:- Master Layouts (slide, template and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background , textures, Design Templates, Hidden slides, OLE in PPT.

Task 14A: Create a Power point Presentation with audio recording and video recording, Create an animation video using Plotogon Tool.

TEXT BOOKS:

Faculty to consolidate the workshop manuals using the following references.

1. Anita Goel , Computer Fundamentals, Pearson
2. Scott. Mueller QUE , Scott Mueller's Upgrading and Repairing PCs, 18/e, Pearson, 2008

REFERENCE BOOKS:

1. Dr.N.B.Venkateswarlu, Essential Computer and IT Fundamentals for Engineering and Science Students.
2. G Praveen Babu, M V Narayana, "Information Technology Workshop", BS Publications, 3e
   Vikas Gupta, "Comdex Information Technology", Dreamtech.

I B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCI2LB09	**PYTHON PROGRAMMING LAB** (Common to CSE & IT)						

COURSE OBJECTIVE:

- To introduce programming through Visual programming tool - Scratch
- To teach problem solving through Flow charting tool - Raptor
- To elucidate problem solving through python programming language
- To introduce function-oriented programming paradigm through python
- To train in development of solutions using modular concepts
- To teach practical Pythonic solution patterns

COURSE OUTCOMES:

After successful completion of this course, the students would be able to:

CO1: Develop interactive visual programs using Scratch.[K3].
CO2: Develop Python programs for numerical and text based problems. [K3].
CO3: Develop graphics and event based programming using Python. [K3].
CO4: Develop Python programs on object oriented programming and regular expressions. [K3].

LABORATORY EXPERIMENTS

Design a script in Scratch to make a sprite to draw geometrical shapes such as Circle, Triangle, Square, Pentagon.

1. Design a script in Scratch to make a sprite to ask the user to enter two different numbers and an arithmetic operator and then calculate and display the result.
2. Design a Memory Game in Scratch which allows the user to identify positions of similar objects in a 3 x 3 matrix.
3. Design a Python script to convert a Binary number to Decimal number and verify if it is a Perfect number.
4. Design a Python script to determine if a given string is a Palindrome using recursion
5. Design a Python script to sort numbers specified in a text file using lists.
6. Design a Python script to determine the difference in date for given two dates in YYYY:MM:DD format 0 <= YYYY <= 9999, 1 <= MM <= 12, 1 <= DD <= 31 following the leap year rules.
7. Design a Python Script to determine the Square Root of a given number without using inbuilt functions in Python.
8. Design a Python Script to determine the time difference between two given times in HH:MM:SS format. 0 <= HH <= 23, 0 <= MM <= 59, 0 <= SS <= 59
9. Design a Python Script to find the value of Sine, Cosine, Log, PI, e*g* of a given number using infinite series of the function.
10. Design a Python Script to convert a given number to words
11. Design a Python Script to convert a given number to roman number.
12. Design a Python Script to generate the frequency count of words in a text file.
13. Design a Python Script to print a spiral pattern for a 2 dimensional matrix.

14. Design a Python Script to implement Gaussian Elimination method.
15. Design a Python script to generate statistical reportsMinimum, Maximum, Count, Average, Sum etc) on public datasets.
16. Design a Python script using the Turtle graphics library to construct a turtle bar chart representing the grades obtained by N students read from a file categorising them into distinction, first class, second class, third class and failed.
17. Write a Python program to match a string that contains only upper and lowercase letters, numbers, and underscores.
18. Write a Python program to convert a date of yyyy-mm-dd format to dd-mm-yyyy format.
19. Write a Python program to replace all occurrences of space, comma, or dot with a colon.
20. Write a Python program to check that a string contains only a certain set of characters in this case a-z, A-Z and 0-9
21. Write a Python program to find the occurrence and position of the substrings within a string.
22. Design a Python script on oop's concepts: Class variables and instance variable
    i) Robot ii) ATM Machine
23. Virtual Lab: http://ps-iiith.vlabs.ac.in/

Any three programs must be submitted with result from the above link.

TEXT BOOKS:

1. Kenneth Lambert, "Fundamentals of Python: First Programs" , ISBN-13: 978-1337560092,cengage learning publishers, first edition,2012.
2. Allen B. Downey, "think python: how to think like a computer scientist", ISBN-13: 978-1491939369, O'reilly, 2nd edition, 2016.
3. Reema Thareja, "Python Programming using Problem Solving Approach", ISBN-13:978-0-19-948017-3, Oxford University Press, 2017.

REFERENCE BOOKS:

1. Vamsi kurama, "Python programming : A modern approach", ISBN-978-93-325-8752-6,pearson,2018.
2. Mark Lutz , "Learning python", ISBN: 1-56592-464-9,Orielly, 4th edition, 1999 .
3. W.Chun, "Core python programming", ISBN-13: 978-0132269933, pearson, 2nd edition, 2016.

WEB RESOURCES:

1. https://raptor.martincarlisle.com/
2. http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf
3. https://zhanxw.com/blog/wp-content/uploads/2013/03/BeautifulCode_2.pdf
4. http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf
5. https://www.cse.msu.edu/~stockman/ITEC/Scratch/BGC2011Scratch-Rev1.pdf
6. https://nostarch.com/scratchplayground
7. http://fusecontent.education.vic.gov.au/9f79537a-66fc-4070-a5ce-e3aa315888a1/scratchreferenceguide14.pdf

II B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCI3LB01	**DATA STRUCTURES LAB (Common to CSE & IT)**						

COURSE OBJECTIVES:

- To teach efficient storage mechanisms of data for an easy access
- To design and implementation of various basic and advanced data structures.
- To introduce various techniques for representation of the data in the real world.
- To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures

COURSE OUTCOMES:

After the completion of this course the student should be able to

CO 1: Analyze algorithms, Searching, Sorting and hashingTechniques [K4].

CO 2: Make use of elementary data structures such as stacks, Queues and linked list to develop their applications.

CO 3: Examine different tree traversal techniqes.

CO 4: Experiment with different graph traversal techniques.

LABORATORY EXPERIMENTS

WEEK - 1

a) Write a recursive Python program which computes the nth Fibonacci number, for appropriate values of n.

b) Write recursive Python programs for the following
   i) Factorial of a given number
   ii) GCD Computation
   iii) Towers of Hanoi

WEEK - 2

a) Write a Python program that use both recursive and non-recursive functions to perform linear search.

b) Write a Python program that use both recursive and non-recursive functions to perform binary search.

WEEK - 3

a) Write a Python program to implement Bubble sort.

b) Write a Python program to implement Insertion sort.

c) Write a Python program to implement Selection sort.

WEEK - 4

a) Write a Python program to implement Quick sort.
b) Write a Python program to implement Merge sort.
c) Write a Python program to implement Heap sort.

WEEK - 5

a) Write a Python program to implement Stack operations using arrays
b) Write a Python program to implement Queue operation using arrays.

WEEK – 6

a) Write a Python program to convert infix expression into postfix expression using Stack.

WEEK - 7

a) Write a Python program to implement Stack operation using Linked list.
b) Write a Python program to implement Queue operations using Linked lists.

WEEK - 8

Write a Python program to implement the following operations on a singly linked using functions

i) Insertion
ii) Deletion
iii) Displaying
iv) Reversing

WEEK - 9

a) Write a Python program to store a polynomial expression in memory using linked list
b) Write a Python program to representation the given sparse matrix using arrays.

WEEK - 10

a) Write a Python program to implement following Operations on a Binary Tree
i) Create
ii) In-order traversal
iii) Pre-order traversal
iv) Post-order traversal
b) Write a Python program to implement following Operations a Binary Search Tree
i) Create
ii) Insert
iii) Delete

WEEK - 11

a) Write a Python program to compute the shortest path of a graph using Dijkstra's algorithm
b) Write a Python program to find the minimum spanning tree using Warshall's Algorithm.

WEEK - 12

Virtual Lab: http://cse01-iiith.vlabs.ac.in/
Any three programs must be submitted with result from the above link.

II B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCI3LB02	**FRONT END WEB TECHNOLOGIES LAB (Common to CSE & IT)**						

COURSE OBJECTIVES:

- This course provide students with theoretical and practical skills in the design and development of web pages using HTML5,CSS, JS and jQery.

COURSE OUTCOMES:

After Completion of this course, students would be able to:

CO 1: Develop static html pages [K3].

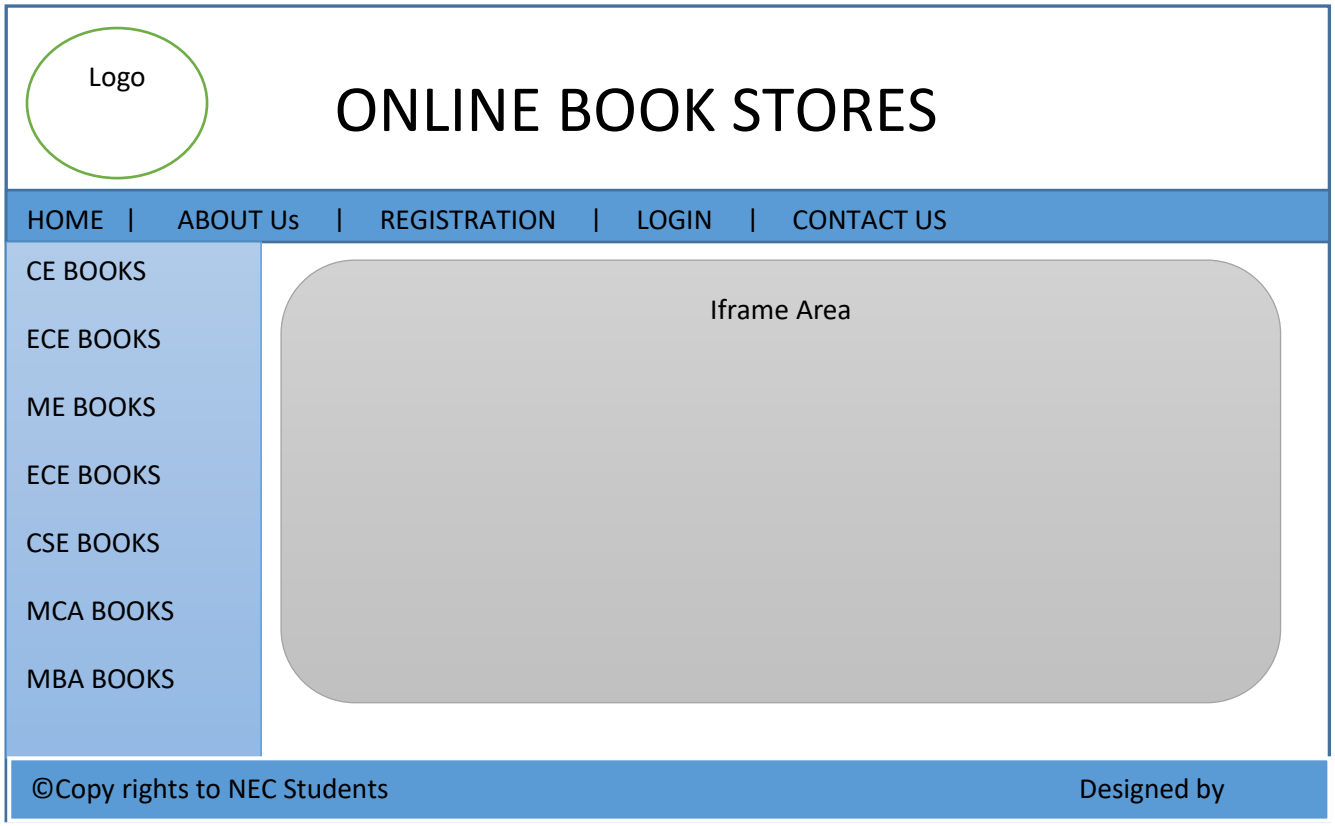
CO 2: Develop Interactive Web Pages with different styles and client side validations[K3].

CO 3: Make use of JQuery programming to develop Web pages [K3].

CO 4: Apply JQuery UI to HTML pages [K3].

LIST OF PROGRAMS:

Lab 1: Create the following web



1. Welcome.html
   It explain about website
   (Hint: Heading the website (Preferable H1, Describe website) it includes minimum two paragraphs)
2. Aboutus.html
   (Hint: About owner of website)
3. Contactus.html
4. List.html
   (Hint: Mention List of courses)

Lab 2:

a. Create web pages for each course. Example cse.html (Hint: It contains Heading and List of subjects in tabular form)
   Example

SNo	Title Book	Author	Publisher	Price	Image
--	--	--	--	--	--

b. Create Registration and Login forms
   Registration Form: It contains Student Name, Roll Number, Password, Gender, Email ID, Phone
   Number, opted course and languages known.
   Login Form: It contains roll number as User ID, password, submit button and cancel button.

Lab 3: Apply CSS 3 on web-pages created on Lab 1 and Lab2.
Make use of the selectors like class, id, html elements, pseudo classes and elements

Lab 4:

a. Apply validation on Registration and Login forms.
b. In contactus.html web-page add Google maps.

Lab 5:

a. Design HTML5 web page by embedding Audio, Video elements.
b. Write HTML5 and JavaScript code to draw Arc, Circle, Rectangle and Triangle using Canvas.

Lab 6: Bootstrap Concepts on Grid System, Menus

Lab 7: Create index.html page and design it as shown in above screen (Hint: Use Bootstrap Grid System, Horizontal and vertical menus, footer, table etc.)

Lab 8: Write a jQuery code to make draggable Rectangle

Lab 9: Write jQuery code to demonstrate the usage of important options disabled, delay, distance and clone in the drag function of jQuery UI.

Lab 10: Write jQuery code to demonstrate three options addClass, disable and tolerance in the drop function of jQuery UI.

Lab 11: Write jQuery code to demonstrates the use of two options delay and distance of selectable() method.

Lab 12: Write jQuery code to demonstrate Accordion and Date Picker.

II B.TECH ISEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCI3LB03	**JAVA PROGRAMMING LAB**						

COURSE OBJECTIVE:

- The course provides user interface and application development program implementation using core java principles.

COURSE OUTCOMES:

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

CO1 : Develop java programs by using OOP concepts [K3].
CO2 : Make use of interfaces, threads, applets in developinging JAVA programmes [K3].
CO3 : Make use of exception handling and collections in Java Programming[K3].
CO4 : Develop java components [K3].

LIST OF PROGRAMS:

1. Write a JAVA program to display default value of all primitive data types of JAVA.
2. Write a JAVA program to display the Fibonacci sequence
3. Write a JAVA program give example for command line arguments.
4. Write a JAVA program to sort given list of numbers.
5. Write a JAVA program to search for an element in a given list of elements (linear search).
6. Write a JAVA program to search for an element in a given list of elements using binary search mechanism.
7. Write a JAVA program to determine multiplication of two matrices.
8. Write a JAVA program to sort an array of strings
9. Write a JAVA program to check whether given string is palindrome or not.
10. Write a JAVA program to give the example for ‘this’ operator. And also use the ‘this’ keyword as return statement.
11. Write a JAVA program to demonstrate static variables, methods, and blocks.
12. Write a JAVA program using StringTokenizer class, which reads a line of integers and then displays each integer and the sum of all integers.
13. Write a JAVA program to give the example for ‘super’ keyword.
14. Write a JAVA program that illustrates simple inheritance.
15. Write a JAVA program to maintain Student Grading Database using multilevel inheritance. Student is Super class, which contains roll no, name, address. Marks derived from Student class, which contains subject names and respective marks. Result is derived from Marks class, which contains total, grade.
16. Write a JAVA program demonstrating the difference between method overloading and method overriding.
17. Write a JAVA program demonstrating the difference between method overloading and constructor overloading.
18. Write a JAVA program that describes exception handling mechanism.
19. Write a JAVA program for example of try and catch block. In this check whether the given array size is negative or not.
20. Write a JAVA program for creation of user defined exception.

21. Write a JAVA program to illustrate creation of threads using runnable interface (start method start each of the newly created thread. Inside the run method there is sleep() for suspend the thread for 500 milliseconds).
22. Write a JAVA program to create a class MyThread in this class a constructor, call the base class constructor, using super and starts the thread. The run method of the class starts after this. It can be observed that both main thread and created child thread are executed concurrently.
23. Write a JAVA program illustrating multiple inheritance using interfaces.
24. Write a JAVA program to create a package named pl, and implement this package in Ex class.
25. Write a JAVA program to create a package named mypack and import it in Circle class.
26. Write a JAVA program to create an abstract class named Shape, that contains an empty method named numberOfSides ().Provide three classes named Trapezoid, Triangle and Hexagon, such that each one of the classes contains only the method numberOfSides (), that contains the number of sides in the given geometrical figure.
27. Write a JAVA program that describes the life cycle of an applet.
28. Write a JAVA program to create a border layout control.
29. Write a JAVA program to create a grid layout control.
30. Write a JAVA program to create a simple calculator.
31. Write a JAVA program that displays the x and y position of the cursor movement using Mouse.
32. Write a JAVA program that displays number of characters, lines and words in a text file.
33. Write a JAVA program that allows user to draw lines, rectangles and ovals.
34. Write a Java Program to Implement HashMap API.
35. Write a Java Program to Implement HashSet API.
36. Write a Java Program to Implement ArrayList API.
37. Write a Java Program to Implement TreeSet API.
38. Write a Java Program to Implement TreeMap API.
39. Virtual Lab: http://ps-iiith.vlabs.ac.in/

Any three programs must be submitted with result from the above link.

II B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	**-**	**3**	**20**	**30**	**50**	**1.5**
SUBCODE: 19BCS4LB03	**MOBILE APPLICATION DEVELOPMET LAB**						

COURSE OBJECTIVES:

- To enlighten the student with knowledge base in Android Applications Development.

COURSE OUTCOMES:

On successful completion of this course, the students will be able to:

CO1 : Demonstrate various components of Android Framework.[K2].
CO2 : Develop user Interfaces for the Android Application.[K3].
CO3 : Develop Android Applications using Android API and Services.[K3].
CO4 : Develop Android Applications which access data from Internet.[K3].

LIST OF EXPERIMENTS

1. Create Hello World Android App using **Android Studio** and explain each step in detail.
2. Create an Activity that receive name form the user and displays **Hello Name** to the user using Android Studio.
3. Create an Activity that demonstrates the Life Cycle of an Activity.
4. Create an Android Application which receives URL form the user and open appropriate page in the system browser with the help of Implicit Intents using Android Studio.
5. Create an Android App which receives name form the user and displays welcome name in Second Activity.
6. Create Login Screen Application which shows Home screen if Login success otherwise displays error message using Android Studio.
7. Write an Android application program that demonstrate the use of

a. RelativeLayout.
b. LinearLayout.
c. GridLayout.
d. TableLayout.

8. Write an Android application program that demonstrates the use ImageView.
9. Write an Android application program that demonstrates the use of ListView and ArrayAdapter.
10. Write an Android application program that demonstrates how to create Custom ListView and Custom Adapters.
11. Write an Android application program that demonstrates the use of SQLite Database and Cursor.
12. Write an Android application program that demonstrates the use AsyncTask.
13. Write an Android application program that demonstrates Notifications.
14. Write an Android application program that demonstrates Shared Preferences.
15. Write an Android application program that connect to the internet, gets JSON data and displays the result in UI by parsing JSON data.

ONLINE REFERENCES:

1. https://developer.android.com/index.html
2. http://nptel.ac.in/courses/106106147/10
3. https://www.edx.org/course/introduction-mobile-application-hkustx-comp107x-2
4. https://www.coursera.org/specializations/android-app-development

II B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCC4LB01	**ENGLISH COMMUNICATION SKILLS LAB-II (Common to All Branches)**						

COURSE OBJECTIVES:

- To train the students to use language effectively in various professional interactions like Group Discussions, Public Speaking, Presentations and Interviews.
- To make the students understand the importance of body language.
- To provide exposure to students to soft skills like Goal Setting, Assertiveness, Time Management, Positive Attitude and Stress Management
- To expose the students to variety of a self-instructional, learner friendly, electronic media and stimulate intellectual faculties/resources

COURSE OUTCOMES:

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

CO 1: Know the importance of Non-verbal communication and interpret nonverbal symbols.
CO 2: Make formal presentations using strategies.
CO 3: Participate in Group Discussions using analytical and problem solving skills effectively.
CO 4: Face job interviews confidently for employability.

UNIT– I

Body Language

UNIT–II

Presentation Skills

UNIT–III

Group Discussions

UNIT-IV

Interviews and Telephonic Interviews

UNIT-V

Debates

TEXT BOOKS:

1. *"Strengthen Your Communication Skills",* Maruthi Publications, 2013.

REFERENCE BOOKS:

1. "*Personality Development and Soft Skills"*, Oxford University Press, New Delhi.
2. M Ashraf Rizvi, "*Effective Technical Communication skills"*, McGraw-Hill, 2005.
3. Barun K Mitra, "*Personality Development and Soft Skills",* Oxford University Press, 2011.
4. Konar N, "*Communication Skills for Professionals",* PHI Learning Private Limited, 2011.

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II B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
SUBCODE: 19BCI4LB02	**DATABASE MANAGEMENT SYSTEMS LAB (Common to CSE & IT)**						

COURSE OUTCOMES:

After Completion of this course student must be able to

CO1 : Apply SQL commands like DDL,DML,DCL to perform different Database operations [K3].
CO2 : Develop PL/SQL block statements, control statements and cursors [K3].
CO3 : Develop PL/SQL programs using functions and procedures [K3].
CO4 : Develop PL/SQL programs using packages and Triggers [K3].

PROGRAMS LIST:

1. Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date).

3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
   Example:- Select the roll number and name of the student who secured fourth rank in the class.

5. i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
   ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.

9. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

TEXT BOOKS:

1. SCOTT URMAN, "ORACLE DATA BASE LOG PL/SQL Programming", Tata Mc-Graw Hill.

REFERENCES:

1. Benjamin Rosenzweig, Elena Silvestrova "ORACLE PL/SQL by example", Pearson Education 3/e
2. Dr.P.S. Deshpande, "SQL & PL/SQL for Oracle 10g", Black Book
3. Pranab kumar Das Gupta, P Radha Krishna, "Data Base Management System, Oracle SQL and PL/SQL" , PHI

III B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
CODE:19BCS5LB01	OS & UML LAB						

COURSE OBJECTIVES:

- To enlighten the student with knowledge base in Operating Systems and Compiler Design Applications.
- To learn importance of modelling in Software Development Life Cycle.
- To know about different diagrams and relationships.
- To develop a unified application for a system.

COURSE OUTCOMES:

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

CO 1: Apply various scheduling, page replacement and Deadlock avoidance algorithms for effective utilization of the CPU. [K3]
CO 2: Demonstrate various Memory Management Techniques. [K2]
CO 3: Build use case diagrams that specify requirements for a software system. [K3]
CO 4: Develop class diagrams that demonstrate design model of a software system. [K3]
CO 5: Make use of interaction diagrams to model the dynamic aspects of a software System. [K3]
CO 6: Develop various applications using unified modelling language. [K3]

LIST OF EXPERIMENTS

1. Simulate the following CPU scheduling algorithms.
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate all file allocation strategies.
   a) Sequential b) Indexed c) Linked.
3. Simulate Bankers Algorithm for Dead Lock Avoidance and Prevention
4. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU
5. Learning the usage of Rational Rose Software and different tools that are helpful to implement UML.
6. Create UML for Library Management system
7. Create UML for ATM system
8. Create UML for Online Railway Reservation system.
9. Create UML for Banking System.
10. Create UML for Student Information System.

REFERENCE BOOKS:

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.

WEB REFERENCES:

1. https://www.udemy.com/uml-fundamentals/
2. https://www.youtube.com/watch?v=OkC7HKtiZC0&list=PLGLfVvz_LVvQ5G-LdJ8RLqe-ndo7QITYc
3. https://www.youtube.com/watch?v=RRXe1omEGWQ&list=PLD4EF3E3AD055F3C7

III B. TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
CODE:19BCS5LB02	ADVANCED JAVA AND WEB TECHNOLOGIES LAB						

COURSE OBJECTIVES:

- Gain the knowledge of Server side programming languages and techniques associated with the World Wide Web.
- Understand how to use Server side scripting for creating dynamic web pages.

COURSE OUTCOMES:

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

CO 1: Experiment with the installation of Web Servers. [K3]
CO 2: Make use of servlets in dynamic web pages. [K3]
CO 3: Develop web applications using JSP for effective data management. [K3]
CO 4: Construct the web based applications in PHP using effective data base access with rich client interaction. [K3]

LIST OF EXPERIMENTS

1. Install TOMCAT webserver and Apache- MySQL.
2. Write a servlet program which receives data from HTML forms and respond it.
3. Create one Servlet to retrieve "ServletContext Initialization Parameters " which you have given in the web.xml file.
4. Write a servlet program to authenticate four users using cookies.
5. Write a servlet that, on entry of a *student rollno*, displays the full details of that students details(Using student table with rollno,Name,Address,date of birth, course fields).
6. Write JSP program to register a student using registration form using student table.
7. Write JSP program for authenticating user by his password using login form. Create suitable tables.
8. Create table to store the details of book(book name, price, author, publisher) and extract data from table and display all books using JSP and JDBC.
9. Write PHP programs that uses arrays and functions in PHP.
10. Write example PHP program for creating login form and validate users.
11. Write example PHP program for to display all students in cse using student table.
12. Create tables in database which contains the details of book .Extract data from tables and display them using PHP.

WEB REFERENCES:

1. https://www.coursera.org/learn/html-css-javascript-for-web-developers
2. https://www.coursera.org/learn/web-applications-php
3. https://www.udemy.com/javawebtut/
4. https://www.coursera.org/learn/desenvolvimento-agil-com-java-avancado/lecture/LUXm0/criando-java-servlets.

III B. TECH I SEMESTER (PE-I LAB)	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	3	20	30	50	1.5
Code: 19BCS5LB03	**DATA MINING LAB**						

COURSE OBJECTIVES:

- Exposure to real life data sets for analysis and prediction.
- Practical exposure on implementation of well-known data mining tasks.
- Learning performance evaluation of data mining algorithms in a supervised and an unsupervised setting.
- Handling a small data mining project for a given practical domain.

COURSE OUTCOMES:

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

CO 1: Apply data preprocessing techniques on the given data.[K3]
CO 2: Construct classification model for the given data.[k3]
CO 3: Identify Association Rules for the given data.[K3]
CO 4: Apply the clustering techniques on the given data.[K3]

LIST OF EXPERIMENTS

1. Demonstration of preprocessing on dataset student.arff
2. Demonstration of preprocessing on dataset labor.arff
3. Demonstration of Association rule process on dataset contactlenses.arff using apriori algorithm
4. Demonstration of Association rule process on dataset test.arff using apriori algorithm
5. Demonstration of classification rule process on dataset student.arff using j48 algorithm
6. Demonstration of classification rule process on dataset employee.arff using j48 algorithm
7. Demonstration of classification rule process on dataset employee.arff using id3 algorithm
8. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm
9. Demonstration of clustering rule process on dataset iris.arff using simple k-means
10. Demonstration of clustering rule process on dataset student.arff using simple k-means

ONLINE REFERENCES:

1. https://weka.waikato.ac.nz/dataminingwithweka/preview
2. https://www.class-central.com/tag/weka

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	-	-	2	20	30	50	1.5
Code: 19BCS6LB01	CRYPTOGRAPHY AND NETWORK SECURITY LAB						

COURSE OBJECTIVES:

- Learn to implement the algorithms DES, RSA, MD5,SHA-1
- Learn to use network security tools like GnuPG, KF sensor, Net Strumbler

COURSE OUTCOMES:

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

CO1: Analyse security concepts and type of attacks and network security algorithms. [K4]
CO2: Apply symmetric and asymmetric key cryptography technique to encrypt and decrypt text. [K4]
CO3: Apply Cryptography Hash Function for message authentication and to solve other applications. [K3]

List of Programs

1. Write a program that contains a string (char pointer) with a value 'Hello World'. The program should AND or and XOR each character in this string with 127 and display the result
2. Implement the Caesar Cipher substitution technique.
3. Implement the Playfair Cipher substitution technique.
4. Implement the Hill Cipher substitution technique.
5. Implement the Vigenere Cipher substitution technique.
6. Implement the Rail fence (row & Column Transformation) Transposition Technique.
7. Implement Data Encryption Standard (DES) Symmetric Encryption Algorithm.
8. Implement RSA Public Key Encryption Algorithm
9. Implement Diffie- Hellman Key Exchange Public Key Encryption Algorithm

ADDITIONAL PROGRAMS

- use network security tools like GnuPG, KF sensor, Net Strumbler

TEXT BOOKS

1. William Stallings "Cryptography and Network Security Principles and Practice", 6th Edition, Pearson Publications.

WEB REFERENCES

1. http://kgr.ac.in/beta/wp-content/uploads/2018/09/NS-CRYPTO-LAB-Final.pdf
2. https://www.vvitengineering.com/lab/odd/CS6711-Security-Lab-Manual.pdf
3. https://btech.mit.asia/files/btech/departments/cse/Labmanuals/cns-manual-no-source-code.pdf

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code: 19BCS6LB02	**BIG DATA ANALYTICS LAB**						

COURSE OBJECTIVES:

- Introducing Java concepts required for developing map reduce programs.
- Optimize business decisions and create competitive advantage with Big Data analytics.
- Derive business benefit from unstructured data.
- Imparting the architectural concepts of Hadoop and introducing map reduce paradigm.
- To introduce programming tools PIG & HIVE in Hadoop echo system.

COURSE OUTCOMES:

After successful completion of the course, student will be able to:

CO 1: Experiment with installation of Hadoop and develop applications using MapReduce framework. [K3]
CO 2: Experiment with installation of Spark and develop applications. [K3]
CO 3: Analyze Hadoop data with PIG. [K4]
CO 4: Develop NoSQL structures like Hive for processing and aggregating logs in the database. [K3]

LIST OF EXPERIMENTS

1. (i) Perform setting up and Installing Hadoop in its three operating modes: Standalone, Pseudo distributed, and fully distributed mode.
   (ii) Use web based tools to monitor your Hadoop setup.
2. Implement the following file management tasks in Hadoop:
   - Adding files and directories
   - Retrieving files
   - Deleting files

   Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.
3. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.
4. Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record-oriented.
5. (i) Perform setting up and Installing SPARK.
   (ii)Use web based tools to monitor your SPARK setup.
6. Run a basic Word Count Map Reduce program using SPARK.
7. Write a SPARK program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis, since it is semi structured and record-oriented.
8. Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.
9. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and indexes

WEB REFERENCES:

1. http://hadoop.apache.org/
2. https://cwiki.apache.org/confluence/display/Hive/Home
3. http://pig.apache.org/docs/r0.7.0/tutorial.html

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code: 19BCS6LB03	**R PROGRAMMING LAB**						

COURSE OBJECTIVES:

- To make the student to get a clear understanding of the core concepts of R like import data in various formats for statistical computing, data manipulation, business analytics etc.
- To implement various functions, data structures.

COURSE OUTCOMES:

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

CO 1: Apply the all basic operators on various data types.[K3]
CO 2: Develop programs using Conditional Statements and various types of loops.[K3]
CO 3: Develop programs using Matrices, Lists and Frames.[K3]
CO 4: Develop programs using Functions, Math functions and Statistical functions in R.[K3]
CO 5: Analyze the real word datasets presented in different formats using R libraries to perform exploratory data analysis and visualization.[K3]

LIST OF EXPERIMENTS

EXERCISE 1:

a) Write a program to illustrate basic Arithmetic in R
b) Write a program to illustrate Variable assignment in R
c) Write a program to illustrate data types in R

EXERCISE 2:

a) Write a program to illustrate if-else-else if in R
b) Write a Program to illustrate While and For loops in R
c) Write a program to illustrate Logical & and Logical | operators in R.

EXERCISE 3:

a) Write a program to illustrate creating and naming a vector in R
b) Write a program to illustrate create a matrix and naming matrix in R
c) Write a program to illustrate Add column and Add a Row in Matrix in R
d) Write a program to illustrate Selection of elements in Matrixes in R
e) Write a program to illustrate Performing Arithmetic of Matrices

EXERCISE 4:

a) How to Create a Matrix in R
b) Print dimension of the matrix with dim()
c) Construct a matrix with 5 rows that contain the numbers 1 up to 10 and byrow = FALSE
d) Print dimension of the matrix with dim()
e) Add a Column to a Matrix with the cbind()
f) Slice a Matrix
g) Write a program to illustrate Compare Matrices and Compare vectors

EXERCISE 5:

a) Write a program to illustrate Factors in R
b) Case study of why you need use a Factor in R
c) Write a program to illustrate Ordered Factors in R

EXERCISE 6:

a) How to Create a Data Frame
b) Slice Data Frame
c) Append a Column to Data Frame
d) Select a Column of a Data Frame
e) Subset a Data Frame
f) Write a program to illustrate Data Frame Selection of elements in a Data frame
g) Write a program to illustrate Sorting a Data frame
h) Merge Data Frames in R: Full and Partial Match

EXERCISE 7:

a) Write a program to illustrate List ? Why would you need a List
b) Write a program to illustrate Adding more elements into a List

EXERCISE 8:

a) Write a program to illustrate Function inside function in R
b) Write a program to illustrate some built in Mathematical Functions.
c) Write a program to calculate mean, mode, SD, variance.

EXERCISE 9:

Cleaning data in R:

a) Characteristics of Clean Data and Messy Data
b) Load Data into R with readxl
c) View the Data with tidyr::glimpse()
d) Looking to Data Types
e) Comparing to read.csv()
f) Combining Datasets
g) Clean Up Column Names with magrittr Magic!
h) The Pipe Operation

EXERCISE 10:

Data visualization in R:

a) Histogram
b) Bar / Line Chart
c) Box plot
d) Scatter plot
e) Heat Map
f) Mosaic Map
g) Map Visualization
h) 3D Graphs
i) Correlogram
j) Write a program to illustrate Customizing and Saving to Graphs in R.

TEXT BOOKS:

1. Robert I. Kabacoff, R in Action-Data analysis and graphics with R, 2e, Manning Publications
2. David Dietrich, Barry Heller, and Beibei Yang, Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education Services, John Wiley & Sons, Inc.

REFERENCE BOOKS:

1. Garrett Grolemund, Hands-On Programming with R, Orielly. 2. Paul Teetor, R Cookbook, O'Reilly

WEB REFERENCES:

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2. https://b-ok.asia/ireader/2604048
3. https://d1b10bmlvqabco.cloudfront.net/attach/ighbo26t3ua52t/igp9099yy4v10/igz7vp4w5su9/OReilly_HandsOn_Programming_with_R_2014.pdf
4. https://www.guru99.com/r-matrix-tutorial.html
5. https://www.guru99.com/r-data-frames.html
6. https://www.guru99.com/r-sort-data-frame.html
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8. https://www.guru99.com/r-merge-data-frames.html
9. https://www.guru99.com/r-functions-programming.html
10. https://www.dataquest.io/blog/load-clean-data-r-tidyverse/
11. https://www.analyticsvidhya.com/blog/2015/07/guide-data-visualization-r/

III B.TECH II SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code: 19BCS6LB04	**ARTIFICIAL INTELLIGENCE LAB**						

COURSE OBJECTIVES:

- To make the student to get a clear understanding of the core concepts of preprocessing techniques, classification and regression techniques using python.

COURSE OUTCOMES:

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

CO 1: Apply various preprocessing Techniques on the given data.[K3]
CO 2: Construct regression models for a given data.[K3]
CO 3: Build classification models for a given data.[K3]

LIST OF EXPERIMENTS

1. Apply Binarization data pre-processing technique on sample data.
2. Apply Mean Removal data pre-processing technique on sample data.
3. Apply Min and Max scaling on sample data.
4. Apply normalization data pre-processing technique on real estate data.
5. How to encode the labels and show the performance of encoded labels.
6. Using Pandas perform the following
   a. Handling.
   b. Slicing.
   c. Extracting statistics from Time Series Data.
7. Use the sklearn package and implement classification.
8. Using python program build a Linear Regression.
9. Laboratory Equipment/Software/Tools Required

Open source scripting language, Python IDLE, Anaconda

TEXT BOOKS:

1. Aurélien Géron, “Handson machine learning with scikit learn and tensorflow”

IV B.TECH I SEMESTER	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
Code: 19BCS7LB02	**MACHINE LEARNING LAB**						

COURSE OBJECTIVES:

- To make the student to get a clear understanding of the core concepts of python like import data in various formats for statistical computing, data manipulation, business analytics, machine learning algorithms and data visualization etc.

COURSE OUTCOMES:

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

CO 4: Analyse exploratory data analysis. [K4]

CO 5: Analyze the real word datasets presented in different formats using python libraries to Perform exploratory data analysis.[K4]

CO 6: Apply the machine learning algorithms on various real time data sets. [K3]

CO 7: Analyze the data by using visualization tools or libraries. [K4]

LIST OF EXPERIMENTS

1. Perform Basic Visualizations (bar chart, scatter plot, boxplot,histogram etc) for all the columns(numerical data only) on the specified dataset and draw the inferences for the visualizations in excel.
2. Build a prediction model for simple linear regression and do the necessary transformations for input variables for getting better R^2 value for the model prepared.
3. Build a prediction model for multiple linear regression and do the necessary transformations for input variables for getting better R^2 value for the model prepared.
4. Build a prediction model to perform logistic regression.
5. Build a model to generate association rules by using apriori algorithm on the Movies data sets
   i. Try different values of support and confidence. Observe the change in number of rules for different support,confidence values
   ii. Change the minimum length in apriori algorithm Visulize the obtained rules using different plots
6. Perform clustering using k-means clustering algorithm.
7. Perform Principle Component Analysis and then perform clustering.
8. Prepare a Classification model using decision tree Classifier.
9. Prepare a Classification model using Navie Bayes Classifier

TEXT BOOKS:

1. Aurélien Géron, “Handson machine learning with scikit learn and tensorflow”

WEB REFERENCES:

1. https://onlinecourses.nptel.ac.in/noc21_cs22/preview
2. https://onlinecourses.nptel.ac.in/noc21_cs23/preview
3. https://onlinecourses.nptel.ac.in/noc21_cs24/preview
4. https://onlinecourses.nptel.ac.in/noc21_cs51/preview

IV B.TECH I SEMESTER (PE-III LAB)	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
	0	0	3	20	30	50	1.5
CODE: 19BIT7LB01	DATA SCIENCE LAB						

COURSE OBJECTIVES:

- The Data Science Lab focuses on applying machine learning, data mining, and network analysis to real-world problems in society and industry.

COURSE OUTCOMES:

After the completion of this course the student should be able to

CO 1: Develop programs using python. [K3]
CO 2: Develop programs using NumPy. [K3]
CO 3: Develop programs using Pandas. [K3]

LIST OF EXPERIMENTS

1. The student has to experiment the given below programs:
   a) To convert list of tuples into list of strings in python
   b) To remove duplicate lists in tuples using comprehensions.
   c) Write a python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.
2. Experiments in NumPy
   a) create a 2X3 array using NumPy
   b) createa 2X3 array in an array of 8 with random numbers
   c) Create a list and convert into array using NumPy command
   d) Find out shape and type of an array
3. a) Operations between Arrays and Scalars
   b) Crete a 3d array, copy array to another array(old_array) using copy command, restore old_array
   c) Boolean Indexing:
      create an array with names 'Bob', 'Joe', 'Will', 'Bob', 'Will', 'Joe', 'Joe'
      create a Boolean array by comparing names with ‘Bob’
      create a random array of size (7,3), assume that each row belongs one person and display the rows corresponding to ‘Bob’
      (Hint: use Boolean indexing)
   d) Fancy Indexing
      Create an array like: array
      ([[0., 0., 0., 0.],
      [1., 1., 1., 1.],
      [2., 2., 2., 2.],
      [3., 3., 3., 3.],
      [4., 4., 4., 4.],
      [5., 5., 5., 5.],
      [6., 6., 6., 6.],
      [7., 7., 7., 7.]])

      Display rows as given below using fancy +veindexing array
      ([[4., 4., 4., 4.],

[3., 3., 3., 3.],
[0., 0., 0., 0.],
[6., 6., 6., 6.]])

Display rows as given below using fancy -ve indexing array
([[5., 5., 5., 5.],
[3., 3., 3., 3.],
[1., 1., 1., 1.]])

e) do an experiment Expressing Conditional Logic as Array Operations?
f) Generate 5X4 Matrix and do some Mathematical and Statistical operations on that data.
g) Do an experiment on sort, unique and setlogic
h) LINEAR ALGEBRA MATRIX MULTIPLICATION Transpose inverse Experiments using pandas

4. Series using pandas
   a) Load the car data into frame without headers using pandas
   b) display top 5 rows
   c) display last 10 rows
   d) save the file into various formats (csv,excel, pdf,JSON, sql)
   e) display data types of each column
5. Perform different operations in dataframe using pandas
   a)dropping b)concatenating values
6. Filtering data from csv file using pandas By using single condition filtering
7. Draw a barplot graph in pandas using group by filter condition and also plot graph with series and data frame.

WEB REFERENCES:

1. https://www.greatlearning.in/
2. https://onlinecourses.nptel.ac.in/noc20_cs62/
3. https://nptel.ac.in/noc/courses/noc20/SEM2/noc2

b) Problem-based learning:

- Mini projects are incorporated into the curriculum
- The problem is identified based on the existing solutions gathered from a literature survey, as well as the constraints to the problems. The students solve the problem through the mini project and major projects.

NARASARAOPETA ENGINEERING COLLEGE (Autonomous)

Department of Mechanical Engineering

A.Y 2020-21 **2017 batch** IV-I Mini PROJECT-1 -BATCHES

Batch	Reg Num	Guide Name	Project Title	Description	Image
A1	1.17471A0323 2.17471A0325 3.17471A0347 4.17471A0336 5.17471A0342 6.17471A0320	Mr.B.Rajiv Kumar	AUTOMATIC MOTORIZED BENCH VICE	The first jaw-member is a semi-rigid one, while the second jaw-member is completely sidle as an integral unit, and also allows for the workpiece during the working. The second, floating jaw-member may be adjusted for holding the smaller-diameter portion of a long workpiece, while the fixed jaw member holds and clamps the larger diameter portion of the same workpiece. The second workpiece may be used alone for holding and clamping workpieces that are more difficult to grip, or the like, and also may be used for holding a tool, or similar article, while the first, semi-rigid jaw-member clamps a workpiece associated with the tool being clamped by the floating jaw-member. This Project relates to vices, and more particularly has reference to an improved bench vice of the motorized type.	
A2	1.17471A0316 2.17471A0344 3.17471A0318 4.17471A0313 5.17471A0308	Mr.M.Venkanna Babu	DESIGN & FABRICATION OF MOTORISED ROTI	The objective of the " Design & Fabrications of motorized roti maker " for Indian households by considered usability, easy handling, and hygiene. In the fast	

	6.16471A0308		MAKING MACHINE	moving world when everything is automated, even our kitchen is turned to an unmanned atmosphere. Employed people to find it tough to cook after a tedious work culture Our system puts forward a fully automated roti making system to making roties by applying small pressures without wasting the time and energy The main objective of our project is to chapathi making machine with the help of rotating sources by electric motor . For a developing food product industries, hotels the operation performed and the parts (or) components produced should have it minimum possible production cost, and then only industry runs profitability	
A3	1.17471A0301 2.17471A0322 3.17471A0331 4.17471A0307 5.17471A0327 6.17471A0338 7.17471A0348	Dr.P.Suresh Babu	HYDROFORMING	Hydroforming is a specialized type of die forming that uses a high-pressure hydraulic fluid to press room temperature working material into a die. Hydro Forming uses water pressure to form complex shapes from sheet or tube material. A single hydro formed item to replace several individual parts eliminate welding or hole punching, simplifies assembly, and reduce inventory. This project gives an overview of the fundamental	

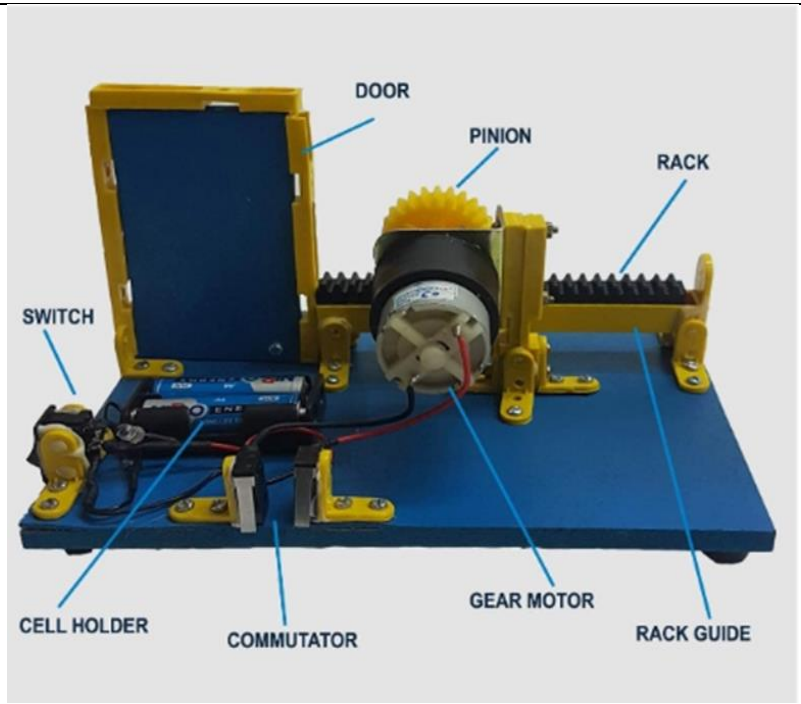
A4	1.17471A0312 2.17471A0302 3.17471A0317 4.17471A0350 5.17471A0346 6.17471A0333 7.17471A0341	Dr.P.Suresh Babu	HYDROFORMING	principles of hydroforming processes and their variants. The correlations between the work piece geometry and the design of tool and process and the forming The trend in auto manufacturing of making parts lighter and more complicated with necessary strength reinforcement only where required is on the rise. The capability of hydro forming is more fully used to produce such complicated parts.	
A5	1.17471A0311 2.17471A0315 3.16471A0367 4.17471A0330 5.17471A0349 6.17471A0324 7.16471A0345	Dr.M.Sreenivasa Kumar	DESIGN AND FABRICATION OF AUTOMATIC VEGETABLE CUTTING MACHINE	Automation brought about by technology has saved human effort and time to a larger extent. Slicing vegetables are a risky and time-consuming task in our busy life. The associated difficulties like time constraint, contamination, etc. make it pretty difficult for any person handling the job. Manual cutting of vegetables is still prevalent, in hostels, and even in restaurants, which cater to a whole set of varying customer tastes and preferences. This system is mainly designed to reduce the human effort and time. This project is aimed at solving above stated problems by introducing a special product named automated vegetable cutting system.	

A6	1.17471A0343 2.17471A0321 3.17471A0303 4.17471A0329 5.16471A0326 6.17471A0304	Mr.B.Rambabu	FABRICATION OF SLIDING GATE	A sliding gate is one of most usefully thing to use in companies, colonies, colleges and schools. There is some type to operate a gate such as a sliding on screw or on rack and pinion, piston operated and rotary. A sliding gate having a gate opening and comprising two gate parts movable toward each other from opposite sides of the gate opening and away from each other, carriage tracks mounted above the gate opening. A running carriage connected to each of said gate parts and movably mounted on said carriage tracks above the gate opening. So as to carry each of said gate parts as said gate parts are moved toward each other or away from each other on said carriage tracks. A guide member extending longitudinally along a front edge of each of said gate parts. An L shaped guide or track is maintained under the gate to have the movement of a gate to and fro. The wheels are connected to the frame to have a easy sliding over the guide. The fabrication of a sliding gate is to save space infront of our house, industry and colleges, by creating the L shaped guide or track can save the gate space and we can move the gate to beside the wall.	

A7	1.17471A0335 2.17471A0332 3.17471A0305 4.17471A0328 5.17471A0334 6.17471A0345	Dr. M. Sreenivasa Kumar	SELF SUPPORTING VERTICAL LADDER	This mini project introduces a vertical ladder climbing of the humans only by the posture control without any external sensors. The humans have not any special structure for fixing the body to the ladder. The body on the ladder by its grippers like human does. As a problem of this locomotion, a free gripper position of the climbing human is not controllable because a yawing of the human body around the axis connecting a supporting gripper and foot on the ladder is not fixed. To solve this problem, the momentum around AOY caused by the gravity is used to control the yaw motion of the body so that the various gait such as pace gait and trot gait could be realized in a ladder climbing maneuver.	

A8	1.17471A0339 2.17471A0314 3.17471A0309 4.17471A0326 5.17471A0306 6.17471A0340	Mr.N.VIJAYA SHEKAR	DESIGN AND FABRICATION OF TIN CRUSHER	The main aim of this project is to fabricate a Can Crusher machine to reduce the scrap volume and use the Cans so that carrying them to the recycle site becomes easy. Now-a- days, a large number of cans are used in hotels, canteens etc. and a large volume of space is required for storing or dumping the used Cans. This project includes fabrication of a Can Crusher using single slider crank mechanism which will reduce the volume of cans at least 70%. This report demonstrates the necessary calculation, assembling and fabrication of the machine. i.e. manually operated is made, regarding their efficiencies, cost of construction etc, and presented here in this report	
B1	1.18475A0303 2.17471A0373 3.17471A0356 4.17471A0368 5.17471A0360 6.17471A0353 7.17471A0362	Dr.S.B.Venkata Siva	FABRICATION OF MULTI PURPOSE WHEEL CHAIR	Multi-Purpose Wheelchair (MPW) is an independent patient mobility for indoor and outdoor tasks, such as moving to and placing on bed, and self-lift assistance through electrical control. Currently, patients and attendees facing a problem to be shifting from a wheelchair to vehicles or bed. This research project started with literature review and market survey, and customer satisfaction through questionnaires. The survey was conducted in various places and different respondents. MPW can	

				be operated manually. It was designed in three main functions: the positioning control for sitting state and lying state was considered for this project. The motivation of the Multi-Purpose Wheelchair to reduce injury according to lack of patient handling.	
B2	1.18475A0301 2.17471A0351 3.17471A0371 4.17471A0363 5.17471A0380 6.17471A0365 7.17471A0379	Mr.Sk.Bajan	FABRICATION OF GREEN coconut CUTTING MACHINE	This experimental work includes the study of problems that were faced during the cutting of green coconut in commercial purpose. By studying such problem the need of efficient coconut cutting machine was developed. If the developed machine is commercialize the problem of use of coconut water at hotels and restaurants will get benefited. The purpose of this experiment is to develop, test, and evaluate the green coconut cutting machine.	

B3	1.18475A0305 2.17471A0366 3.17471A0369 4.17471A0361 5.17471A0381 6.17471A0372	B.RAJIV KUMAR	AUTOMATIC MECHANICAL GARAGE DOOR OPENER	Here we propose a fully automatic garage door opener project system. To achieve the design and fabrication of an automated garage door opener system we use a large screw with fabricated door belt, pulley, connecting rods, fixtures, mounts, motor and supporting frame. Proposed system will use a fabricate mini door mounted on the threaded screw to efficiently transfer motor power for achieving radial motion of the door. We use a pulley and belt arrangement in order to drive the screw by transferring motor power to the screw. The screw rotation moves the door in desired direction using threading. We use a switch to run the motor in desired direction for both way motion.	
B4	1.18475A0315 2.18475A0302 3.18475A0316 4.17471A0354 5.17471A0359 6.17471A0376	MR. M.VENKAIAH	MANUAL PIPE BENDER	Mechanical Engineering without production and manufacturing is meaningless. Production and manufacturing process deals with conversion of raw materials inputs to finished products as per required dimension, specification and efficiently using recent technology. The new development and requirements inspired us to think of new improvements in manufacturing field. In our project Pipe Bending Machine various diameters of pipe	

				is being bend with the help of this machine and various shapes is obtained like v-shape, circular, square, channel etc. It is widely used in various industrial operation such as bending a tube to make coil or sheet metal to make certain shape such as 'V' shape.	
B5	1.18475A0307 2.18475A0319 3.17471A0377 4.18475A0310 5.18475A0320 6.17471A0374	Dr.D.Jagadish	MAINTENANCE AND OVERHAULING OF MARUTI - 800 TEST ENGINE SETUP	The maintenance and service of 'Maruti-800 engine setup' is taken as project work. The engine has horse power of 12 and engine was manufactured in 2004. The engine working was run for finding any defects and for knowing the performance of components like oil filter, oil pump, nozzle, injectors. It was found that pump, carburettor has some problems. The components were disassembled for inspection. The pump was maintained for its working as per the operation manual and the problems were rectified. Similarly the carburettor was inspected for mixing conditions and it was thoroughly cleaned and it is fitted with new spark plugs. The engine was made trail run for few hours followed by taking readings of fuel consumption, brake power. The performance parameters like thermal efficiency, volumetric efficiency, Brake specific fuel	

				consumption were successfully measured. The engine is now in good working condition.	
B6	1.18475A0311 2.18475A0317 3.17471A0370 4.18475A0308 5.17471A0358 6.17471A0357	Mr.P.Srinivasa Rao	FABRICATION OF CRANK PEDAL OPERATING WASHING MACHINE	The **crank Pedal Operated Washing Machine** is the project which is best option for rural area where there is a problem of electric supply or there is shortage of electric supply. Pedal power is the transfer of energy from a human source through the use of a foot pedal and crank system**.** Washing clothes is one of the essential parts of life. We all wash our clothes either by hands or by machine. A washing machine is a device designed to wash laundry such as clothes and sheets. Almost 60 percent of our population lives in rural areas where it is impossible to use electric powered washing machines, mainly due to the unavailability of electricity or the absence of the machine itself due to high costs of purchasing a new washing machine. Washing clothes by hand is laborious, strenuous, takes a lot of time and leaves one breathless. This paper intends to directly address the problems faced by people in the rural areas when washing clothes by designing and fabrication a pedal powered washing machine. The machine can also be used in urban areas to save electricity and	

				also to exercise. The machine does not require electricity or an engine but uses human power. This is the mechanism that has been used to propel bicycles. The paper designs and fabricates the pedal powered washing machine. Experiments are conducted in order to determine the optimum operating conditions.	
B7	1.18475A0309 2.18475A0313 3.17471A0352 4.18475A0306 5.17471A0364 6.17471A0378	T.Venkata Deepthi	AUTOMATIC OBJECT SENSING SMART DUSTBIN	The main objective of the project is to design a smart dustbin which will help in keeping our Environment clean and also eco-friendly. We are inspired by the Swachh Bharat Mission. we are designing a smart dustbin by using Arduino. This smart dustbin management system is built on the microcontroller based system having ultrasonic sensors on the dustbin. If dustbin is not maintained than these can cause an unhealthy environment and can cause pollute that affect our health. In this proposed technology we have designed a smart dustbin using ARDUINO UNO, along with ultrasonic sensor, servo motor, and battery jumper wire. After all hardware and software connection, now Smart Dustbin program will be run. Dustbin lid	

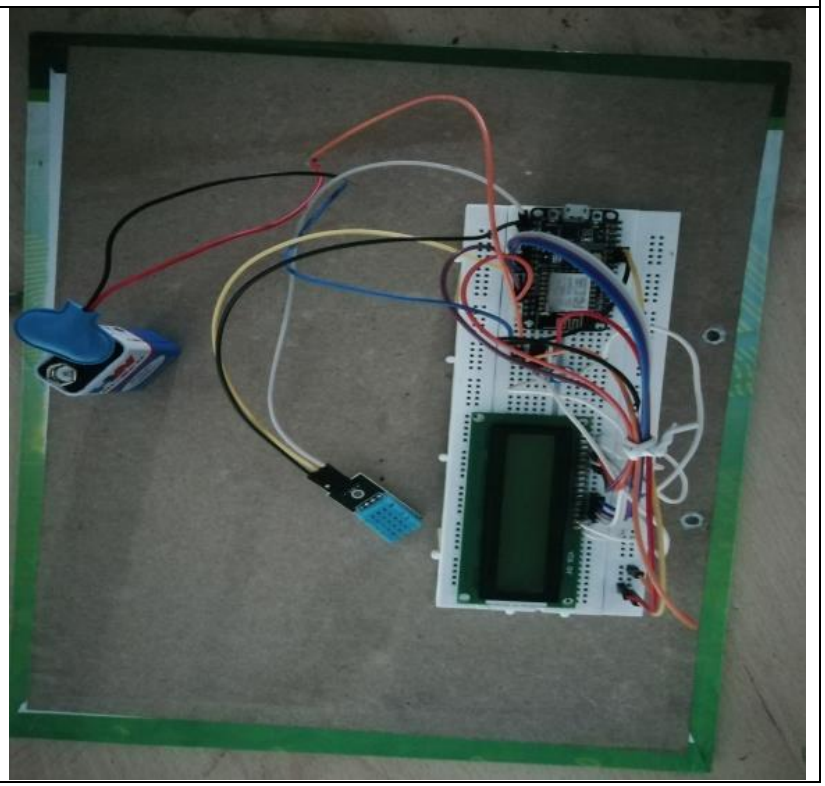
				will when someone comes near at some range than wait for user to put garbage and close it. It's properly running or not.	
B8	1.18475A0304 2.18475A0312 3.17471A0355 4.17471A0382 5.17471A0367 6.18475A0318	Mr.K.Kiran Chand	FABRICATION OF VERTICAL AXIS WIND TURBINE	To generate the electricity with the help of VAWT(vertical axis wind turbine).The VAWT is use for generate the 10 watt D.C.power & LED is turn on. A VAWT does not need to be oriented into the wind a the power transition mechanisms can be mounted at ground levels for easy axis. Or generating the power it is depend on the velocity of the wind but we assured that VAWT is generate the fixed D.C. Output which is depend on the velocity of the wind.	

C1	1.18475A0341 2.18475A0368 3.18475A0339 4.18475A0364 5.18475A0335 6.16471A0314	P.Sravani	FABRICATION OF MANUAL CORN PEELING MACHINE	Traditionally, peeling of Maize is done by hands and this is done manually which gives burden to the farmers as it requires manpower and thus increase workers' wages. Rural farmers, small scale commercial farmers find it difficult to afford these machines which some master farmers can afford to make affordable and convenient machine to peel maize. To solve these difficulties, our new design comes into picture with simple design made at low cost. In our design a several elements are used, to form a simple mechanism and it is operated easily with the help of hand without having specialized skill. Also this mechanism does not need any motor to operate only manual work is needed and it is one of the cheap and economical designs for corn peeling.	
C2	1.18475A0369 2.18475A0330 3.18475A0365 4.18475A0359 5.18475A0324 6.18475A0367	Mr.K.John Babu	AUTOMATIC HAND WASH WITH SOAP SOLUTION	This is a period of computerization where it is comprehensively characterized as substitution of manual exertion by Electronic power in all degrees of robotization. The task remains a basic piece of the framework in spite of the fact that with changing requests on physical contribution as the level of automation is expanded.	

				This research work has successfully presented a functional and highly efficient low cost sensor controlled hand washing and drying machine which is usable in different places within our geographical environment.	
C3	1.18475A0328 2.18475A0340 3.18475A0361 4.18475A0348 5.18475A0343 6.18475A0360	Mr.P.Sarath Chandra	MINI REFRIGERATOR (Eco-Friendly)	In remote places, storage or delivery of general vaccines was observed to be critical and costlier. A technical and cost-effective solution may bring down the gap and fulfill its reach of comfort. For such a trial, this project can deliver necessity-based equipment that can be accessible with low cost and maintenance. This project may be extended for further modeling, simulation, and optimization for providing sub-zero temperatures as required to	

				store specific vaccines for COVID-19 (viz. Covaxin).	
C4	1.18475A0327 2.18475A0345 3.18475A0344 4.18475A0325 5.18475A0334 6.18475A0357	Mr.Ch.Sekhar	MOTORISED QUICK RETURN MECHANISM PISTON	The main aim of our project is to fabricate crank and slotted lever mechanism. All industries want high work output in less time .So, we are preparing in that way it produce required amount of work in less time. And also we are decide to fabricate less weight and occupy small area .This mechanism is purpose is to convert rotary motion into reciprocating motion .We think that to utilize this motion into any required work. And in this mini project we mentioned main parts only. So, the main parts are slotted lever and type spur gear used. The fabrication of crank and slotted lever mechanism requires only less time.so the fabrication do not take more time and the fabrication process is also very important. Mainly we focus on slotted lever length and diameter of the spur gears. These are main components; these can make performance of the mechanism. Finally, we fabricated crank and slotted lever mechanism by our own hands. so, all are helps to do the project in in time and mechanism is fabricated.	

C5	1.18475A0350 2.18475A0352 3.18475A0331 4.18475A0326 5.18475A0363 6.18475A0354 7.18475A0355	Mr.M.Venkanna Babu	DESIGN AND FABRICATION OF TREADMILL BICYCLE	This project deals with the design and fabrication of the treadmill cycle. The treadmills are not used to harness power, but as exercise machines for running or walking in one place, we are utilizing same principle for travelling a shorter distances. The motion of the machine is achieved by transferring the human's energy to the machine through the concept of treadmill. This machine can be helpful for travelling to short distances as well as used for exercise to the peoples. Using this machine, allotting a separate time for their exercise is not needed. The same action performed on the treadmill is used in this machine for the movement of the machine. As we (the operator), walks forward, the machine moves forward	
C6	1.18475A0351 2.18475A0321 3.18475A0346 4.18475A0323 5.18475A0322 6.18475A0347 7.18475A0362	Dr.D.Suneel	FABRICATION OF PLANTING TOOL	Planting operation is a regular process in agriculture while farming in fields. For planting, good number of labour is required. Wages towards labour influences significantly cost of farming. Planting machines are high in cost and also having their own operational inconvenience. Right now farmers are not feeling them user-friendly. The bisect problem identified with	

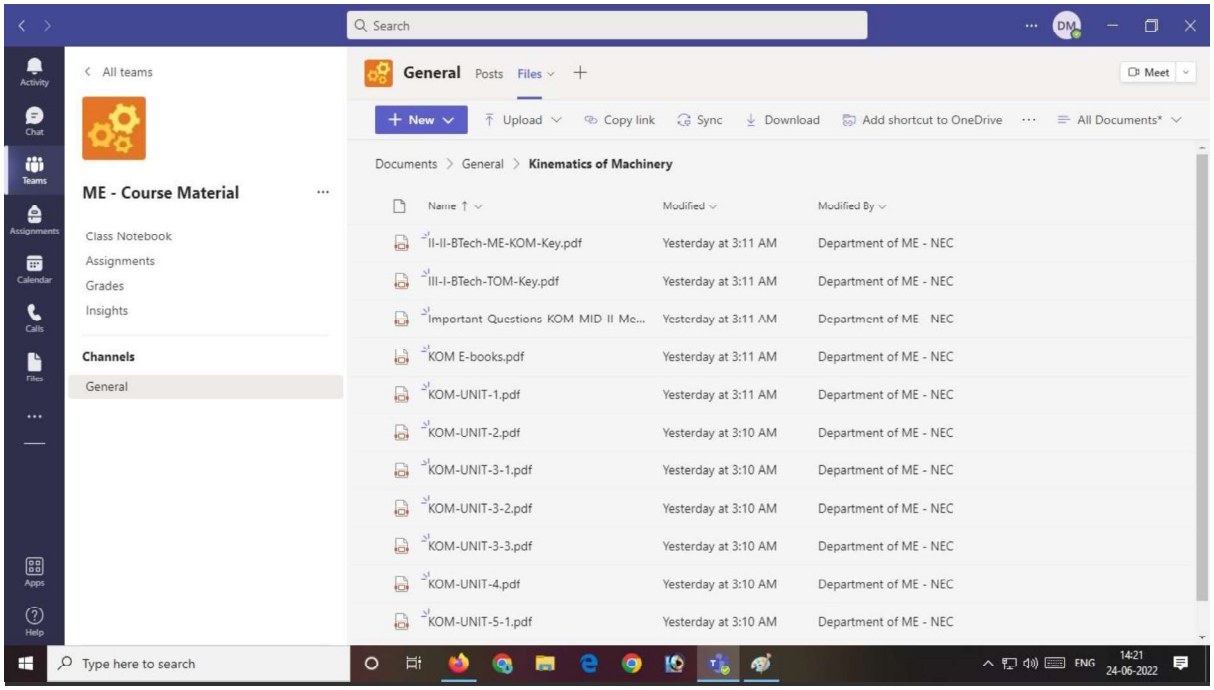
				them is uneven planting and depth of penetration with uniformity. Hence present mini project aims to develop a planting tool which allows farmers to plant without bending their back bone. This tool also does not consume any electric power and can easily assembled or disassembled. Cost of fabrication and maintenance also little. Usage of such planting tools will definitely decrease fatigue of farming labour.	
C7	1.18475A0338 2.18475A0366 3.18475A0371 4.18475A0349 5.18475A0332 6.18475A0342 7.18475A0358	Mr.T.Ashok Kumar	TEMPERATUREANDHUMIDITYMONITORINGUSINGIOTBASED	In this project were using DHT11 sensor for sending Temperature and Humidity data to Things peak using Arduino and ESP8266.By this method, we can monitor our DHT11 sensor's temperature and humidity data over the internet using Thing Speak IOT server. And we can view the logged data and graph over time on Thing speak web site. Here Arduino Uno reads the current temperature and humidity data from DHT11 and sends it to Thing Speak server for live monitoring from any where in the world. We previously used Thing Speak with Raspberry Pi and ESP32 to up load the data on the cloud. Thing Speak is an open data platform for monitoring your data online where you can set the	

				data as private or public according to your choice. Thing Speak takes minimum of15seconds to update your readings.It'sa great and very easy to use platform for building IOT projects	
C8	1.18475A0356 2.18475A0353 3.18475A0329 4.18475A0370 5.18475A0333 6.18475A0337 7.18475A0336	Fabrication of Manual rod bending tool	Mr.Sk.Nagul Meeravali	Now a days for construction works bending of rods is necessary for constructing the pillars. Bending of such rods is done manually by setting angle plates. This wastes lot of labour (man) power and time. It is proposed to replace the manual work and reduce time taken for bending by designing an alternative machine to replace the manual work which works by the principle of hydraulic system and indexing mechanism.	

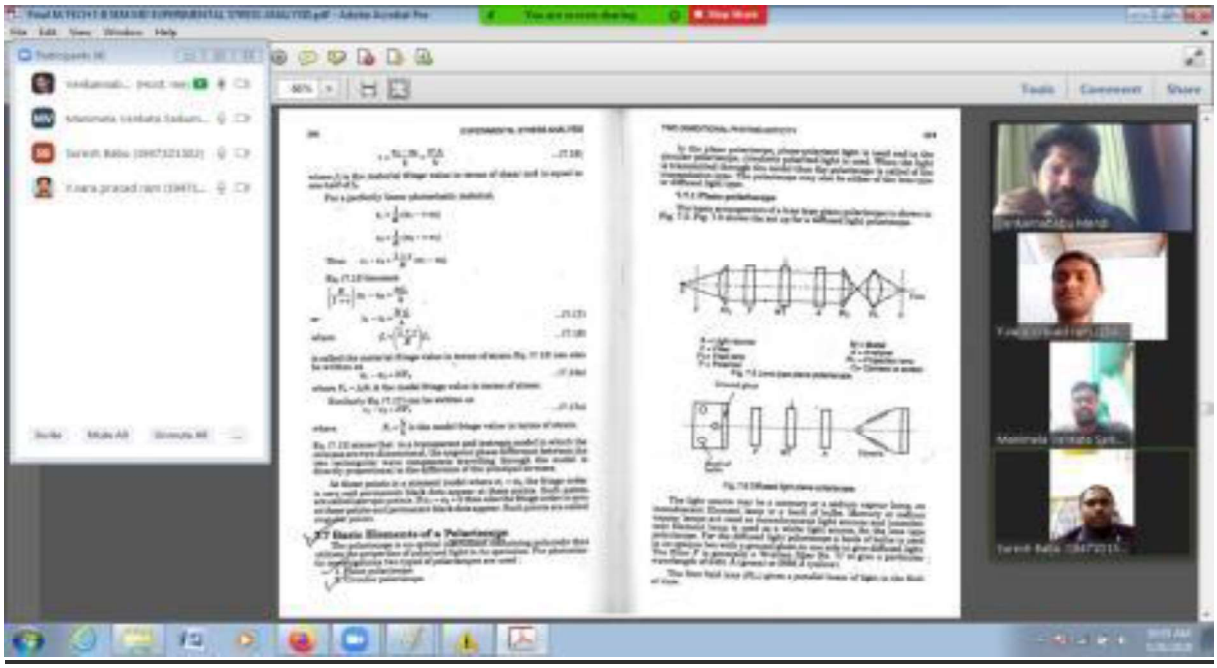
c) LMS (Learning Management System):

- **Microsoft Teams**

The Microsoft team classroom is an innovative tool that is used effectively by all the departments. Faculty members share course plans, e-books, course materials, video lectures, question banks, and other materials through this platform.



Course Materials upload in Teams



Teaching with Microsoft Team

d) Project-Based Learning:

Academic Projects, field trips are made a part of the curriculum and assessment. Summer-based projects are also promoted among advanced learners. The sampling techniques, methodology of the study, data collection tools and methods, analysis, testing and interpretation of information, report writing enhances practical based learning

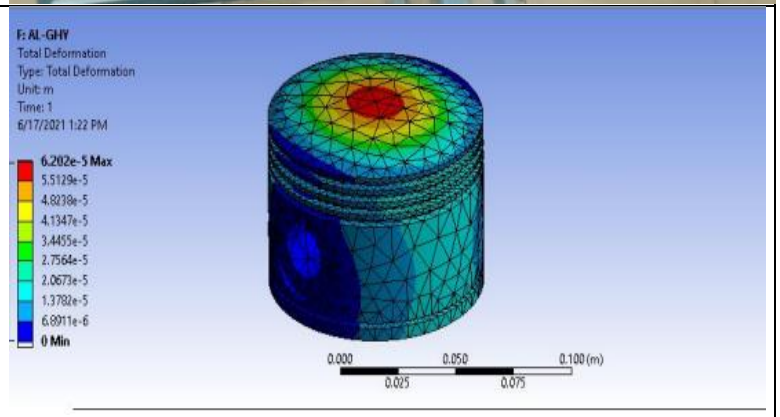
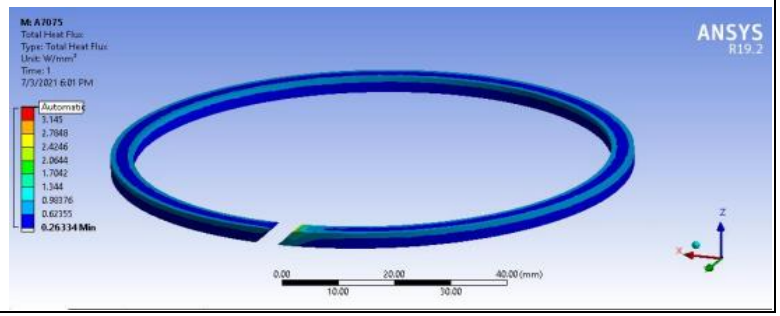
Final Year Project

NARASARAOPETA ENGINEERING COLLEGE (Autonomous)

Department of Mechanical Engineering

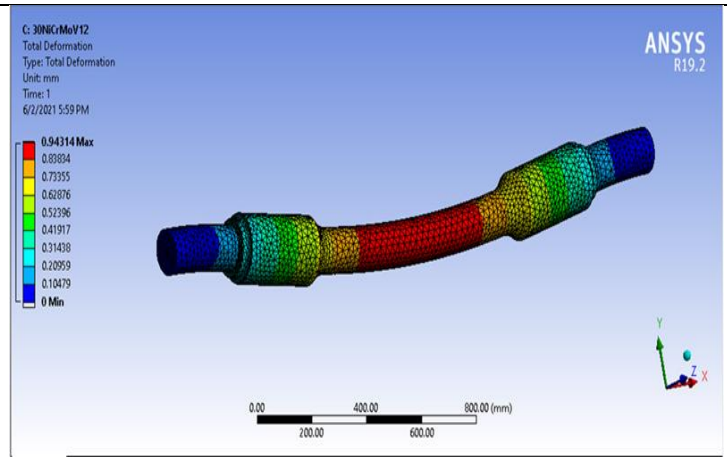
A.Y 2020-21 **2017 batch** IV-II Main PROJECT -BATCHES

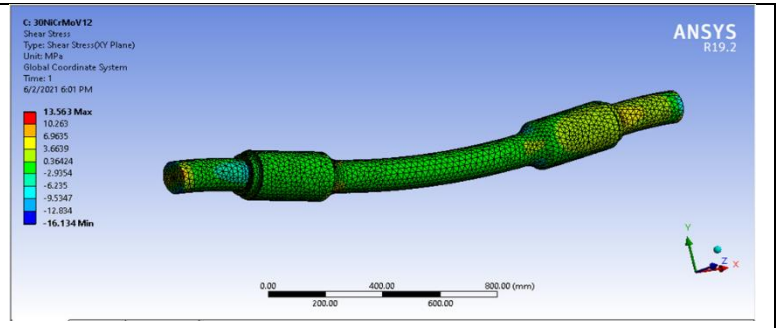
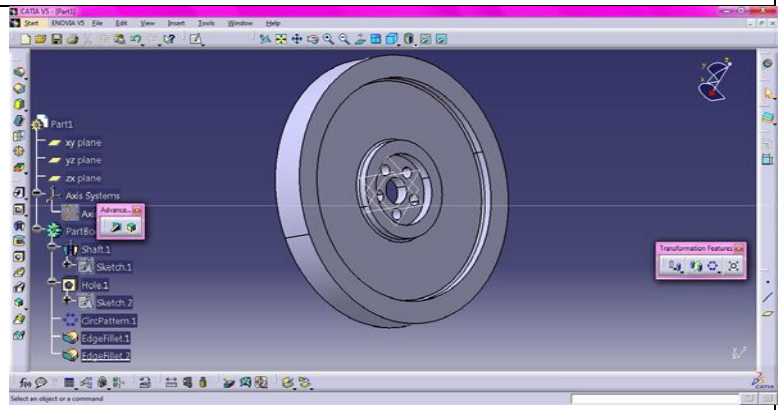
Batch	Reg Num	Guide Name	Project Title	Description	
A1	1.17471A0323 2.17471A0325 3.17471A0347 4.17471A0336 5.17471A0342 6.17471A0320	Mr.P.Sarath Chnadra	MANIPULATING OF ROBOTIC ARM FOR SERVING OF BEVERAGES	A manually operated beverage dispensing machine system has been designed for non-contact servicing of beverages using robo arm manipulated by PLC has been developed and implemented. The PLC with combination of relays attached to the system of motors for dispensing different liquids is used in this system to get more productivity with less time high reliability for and flexible in work. The system is designed to work with a single operator to manipulate robot arm as well the dispensing the liquid as desired by the client. The program was written in Cprog software a simple robot manipulating software is used in this work because this language is very useful and has a lot of functions.	

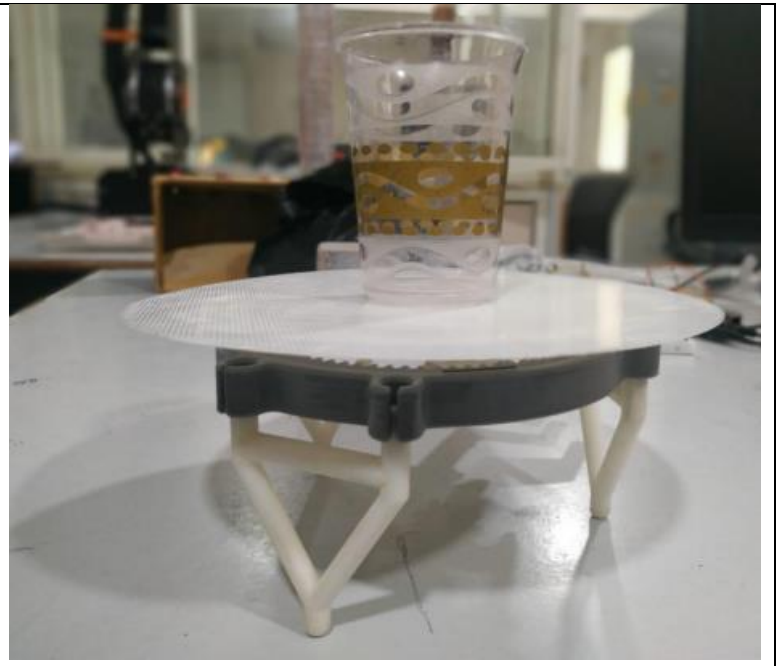
A2	1.17471A0316 2.17471A0344 3.17471A0318 4.17471A0313 5.17471A0308 6.16471A0308	Mr.M.Venkanna Babu	DESIGN AND FABRICATION OF EXPERIMENTAL SETUP TO DETERMINE NATURAL FREQUENCY	This project includes design and fabrication of the experimental setup of the following three experiments. 1. To determine the natural frequency of longitudinal vibrations of a spring. 2. To determine the moment of inertia of rectangular bar (M.S and steel) by using Bifilar and Trifler Suspension System. 3. To determine the mass moment of inertia of the flywheel along with the shaft.	
A3	1.17471A0301 2.17471A0322 3.17471A0331 4.17471A0307 5.17471A0327 6.17471A0338 7.17471A0348	Mr.T.N.V.Mahesh Babu	DESIGN AND ANALYSIS OF IC ENGINE PISTON AND PISTON RINGS BY USING DIFFERENT MATERIALS	This project mainly deals with the design, analysis and manufacture of piston. Here the piston is designed, analyzed and the manufacturing process has been studied. In this present work a piston and piston ring are designed for a single cylinder four stroke petrol engine using CATIA V5R20 software. Complete design is imported to ANSYS 19.2 software then analysis is performed. Five different materials viz AlSic, A7075, A6082, A4032,Al-GHY have been selected for structural and thermal analysis of piston. For piston ring also five different materials viz Al-Sic, A7075, A6082, A4032,Al-GHY are selected and structural and thermal analysis is performed	 

				using ANSYS 19.2 software. Results are shown and a comparison is made to find the most suited design. On comparison, Al-GHY is best material for Piston and Al-Sic is best material for Piston rings.	
A4	1.17471A0312 2.17471A0302 3.17471A0317 4.17471A0350 5.17471A0346 6.17471A0333 7.17471A0341	Dr.P.Suresh Babu	FABRCATION AND ANALYSIS OF A356-SiC AND A356-GRAPHITE METAL MATRIX COMPOSITES BY USING STIR CASTING METHOD	In this project work fabricated two types of Aluminum metal matrix composites with Al356 as a common matrix material and SiC & Graphite particles of 50-micron size & 5% weight percentage as reinforcing materials separately by using stir casting method i.e.., fabrication of A356-SiC and A356-Graphite MMCs. T6-heat treatment is carried out to these fabricated castings to improve the mechanical properties and also to remove the stresses, if any formed. These heat treated samples are further tested for hardness, microstructure studies and surface roughness values. It is found that the hardness values are increased in composites by 11 to 18 %, found uniform distribution of reinforcement materials in matrix and reduced the surface roughness values after machining the heat treated casted samples.	

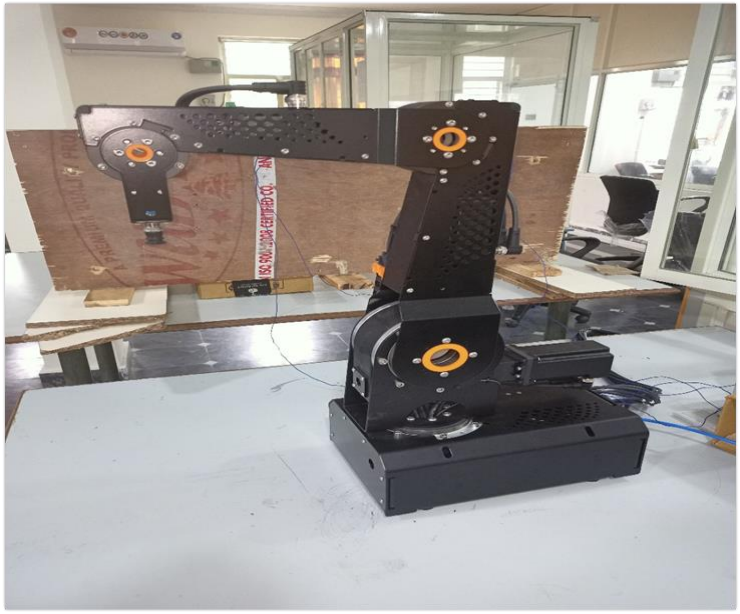
A5	1.17471A0311 2.17471A0315 3.16471A0367 4.17471A0330 5.17471A0349 6.17471A0324 7.16471A0345	Dr.D.Jagadish	PERFORMANCE OF CI ENGINE BY USING BIODIESEL AND IRON OXIDE NANOPARTICLES	Energy demand is the hot topic of all developing and developed countries. Energy demand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Biodiesel can be the alternative solution for this problem. The main purpose of this paper is to test the engine performance and emission parameters of a diesel engine using animal fat biodiesel (fatty acid methyl esters) with diesel and using aluminium oxide Nano particles as additive. The parameters measured are volumetric efficiency, brake thermal efficiency, specific fuel consumption, mass fuel consumption, CO2, CO, NOx, and HC	
A6	1.17471A0343 2.17471A0321 3.17471A0303 4.17471A0329 5.16471A0326 6.17471A0304	Mr.B.Rambabu	MANUFACTURING OF HYPERBOLIODAL GEAR MODEL USING ULTIMAKER S5 3D PRINTING MACHINE	In this project work, design is done by using CATIA software and then file is transformed to STL format which is used for production of the component in 3D printing machine. CURA software is used for slicing of the component produced in CATIA and it also helps in adjustment of dimensions, solidification time, material selection, printing speed and printing time. In this project ABS material is used for the production of the component in 3D printing machine. Total time	

				taken for printing Hyperboloid gear model is 32hrs	
A7	1.17471A0335 2.17471A0332 3.17471A0305 4.17471A0328 5.17471A0334 6.17471A0345	Dr.M.Sreenivasa Kumar	DESIGN AND FABRICATION OF 360 DESK LAMP	The aim of this project is to design and fabrication the 360 degree desk lamp. In this project Desk Lamp designed with the help of fusion 360 software and fabrication is by using 3D printer. Generation of G- Codes and estimating time is done by using Cura Ultimate S5. Acrylonitrile Butadiene Styrene (ABS) material issued for fabrication. This project deals with the study of additive manufacturing, Cura software and polymers	
A8	1.17471A0339 2.17471A0314 3.17471A0309 4.17471A0326 5.17471A0306 6.17471A0340	Mr.N.Vijaya Sekhar	Design and optimization of Railway axle	Axles are one of the most important railway vehicle parts that supports the weight of both vehicle and passenger. Failure in Axle in its operating condition may cause heavy damage to the passenger and car as well, hence high strength design is required to mitigate the possibilities of axle failure. Generally steel axle is used in rail industry, nowadays there are more interest to replace steel axle to the 30NICRMOV12 axle. Use of advanced 30NiCrMoV12 material such as strength and improve fatigue, specific modulus and reduction in energy requirements due to reduction in weight as compared to steel axle. This paper presents	

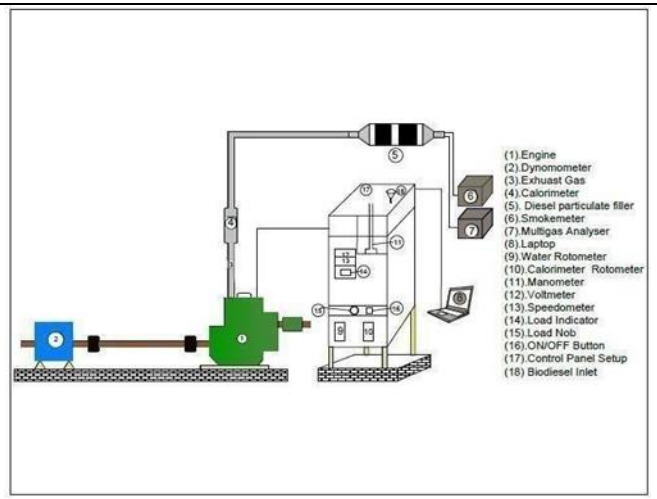
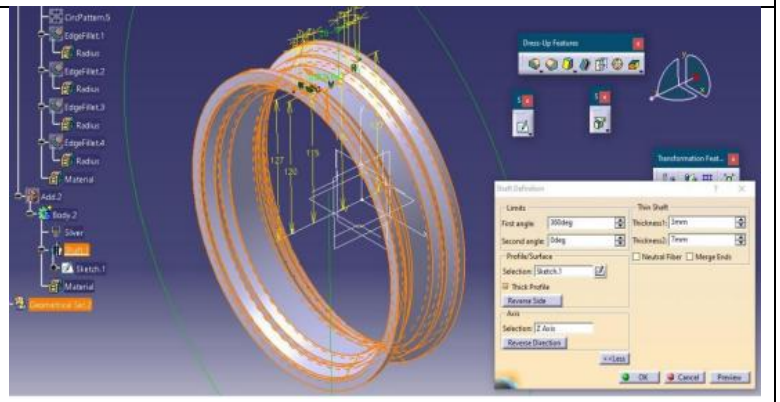
				the modeling and analysis of metal rail axle using Carbon steel, Stainless steel and 30NiCrMoV12.the overall objective of this paper is to analyze the metal shaft axle to find out the best replacement for conventional steel axle in terms of reduced energy requirements reducing weight, comparing static behavior and the natural frequency of both conventional Rail Axle and Metal composite rail Axle when exposed to the same boundary and loading condition.	
B1	1.18475A0303 2.17471A0373 3.17471A0356 4.17471A0368 5.17471A0360 6.17471A0353 7.17471A0362	Dr.S.B.Venkata Siva	DESIGN AND OPTIMIZATION OF FLYWHEEL	The analysis on various geometric forms of Flywheel such as solid type, Rim type, web type & spoke type of flywheel has been carried out Using modelling package such As CATIA& ANSYS & appropriate results have been extracted & moreover analysis has been carried out on the specific rotation of fly wheel & appropriate Speed can be determined	

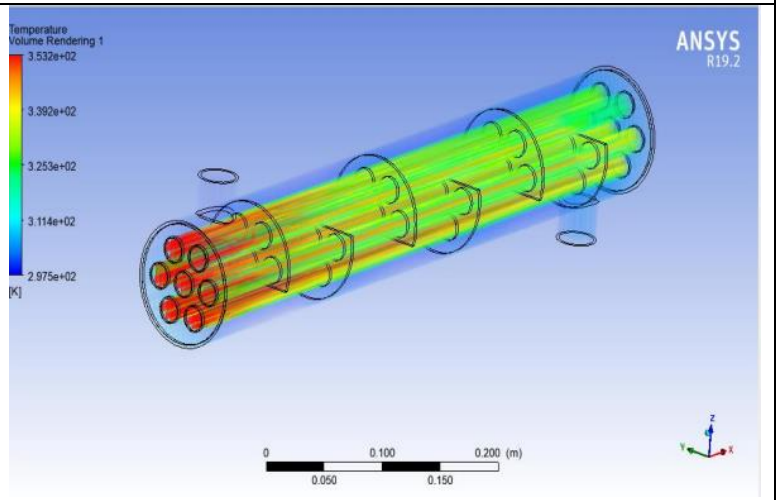
B2	1.18475A0301 2.17471A0351 3.17471A0371 4.17471A0363 5.17471A0380 6.17471A0365 7.17471A0379	Mr.Sk.Bajan	DESIGN AND FABRICATION OF FULLY 3D-PRINTABLE TURNTABLE USING ULTIMAKER S5 PRINTING MACHINE	Turntable is the rotation of X-axis rotation to Z-axis rotation. It works under the Bevel Gear working mechanism. It helps to view an object in a 360^{o} view. Additive manufacturing/Rapid proto typing is a technique used for producing complex geometry. 3D printing is one of the techniques of RPP (rapid prototype). We have designed the prototypes in Fusion 360 design software which is the product of Autodesk Present work focus on the manufacturing of 3D printable turntable of given dimensions in an “Ultimaker S5 pro bundle” printing machine. The components were initially prepared by using CURA software which is followed by slicing methods in order to facilitate the smooth addition of the molten material. The total model assembly is of Nine parts which are made separately to form a set of turntable. The total time required to print the components is 40 hours.	

B3	1.18475A0305 2.17471A0366 3.17471A0369 4.17471A0361 5.17471A0381 6.17471A0372	Mr.B.Rajiv Kumar	DESIGN AND DEVELOPMENT OF 3D PRINTED LINEAR ACTUATOR	The main aim of the project is to design and fabricate linear actuator by using 3D printing machine. Linear actuators are used in machine tools and industrial machinery, in computer peripherals such as disk drives and printers, in valves and dampers, and in many other places where linear motion is required. Hydraulic or pneumatic cylinders inherently produce linear motion. Many other mechanisms are used to generate linear motion from a rotating motor. 3D printing technology is the most advanced manufacturing process which is trending now a day which help in printing component at high speed and reduces production cost. In this project work, design is done by using CATIA software and then file is transformed to STL format which is used for production of the component in 3D printing machine. CURA software is used for slicing of the component produced in CATIA and it also helps in adjustment of dimensions, solidification time, material selection, printing speed and printing time. In this project ABS material is used for the production of the component in 3D printing machine.	

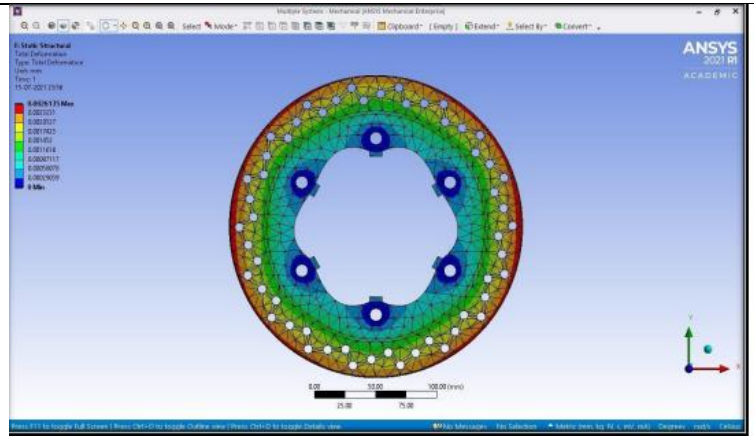
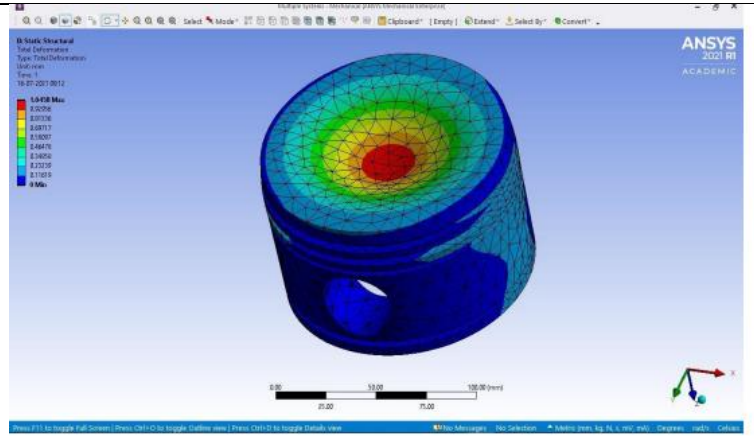
B4	1.18475A0315 2.18475A0302 3.18475A0316 4.17471A0354 5.17471A0359 6.17471A0376	Mr.M.Venkaiah	DESIGN AND FABRICATION OF WALKING MECHANISM	The main aim of this project is to Design and Fabrication of Walking Mechanism. In this project Design and Fabrication of Walking Mechanism with the help of fusion 360 software and fabrication is by using 3D printer. Generation of G-Codes and estimating time is done by using CuraUltimateS5. Acrylonitrile Butadiene Styrene (ABS) material is used for fabrication. This project deals with the study of additive manufacturing, cura software and polymer's and fabrication of the components	
B5	1.18475A0307 2.18475A0319 3.17471A0377 4.18475A0310 5.18475A0320 6.17471A0374	Mr.D.Mojeswara Rao	AUTOMATIC ROBOARM MANIPULATION FOR THE APPLICATION OF SERVING BEVERAGES USING VISUAL FEEDBACK	Recently, the use of Robots has become significant to industries, especially when involving the routine works in industries. A robot is a machine designed to execute one or more tasks automatically with speed and precision. In our project work, we are demonstrating beverage serving by using a robotic arm with pneumatic gripper Manipulation of a robo arm can be utilized for different purposes innovatively, here in this work, for serving beverages. IGUS robot with pneumatic gripper is used to hold the container of a beverage to be served. A scheme has been developed with relays to perform	

				liquid dispensing and / or delivery task by means of manipulation and transportation of consumables viz., tea, water, coffee, cola etc. using a pneumatic gripper to hold the liquid container. Manual selection using switches will be served for selection of choice for different beverages. The scheme worked well and got a satisfactory result with successful deliverables. This program will be repeated till the work completes.	
B6	1.18475A0311 2.18475A0317 3.17471A0370 4.18475A0308 5.17471A0358 6.17471A0357	Mr.P.Srinivasa Rao	EXPERIMENTAL ANALYSIS OF SINGLE CYLINDER DIESEL ENGINE FUELED WITH BIODIESEL AND COBALT OXIDE NANOPARTICLES	Energy demand is the hot topic of all developing and developed countries. Energy demand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Biodiesel can be the alternative solution for this problem. The main purpose of this paper is to test the engine performance and emission parameters of a diesel engine using animal fat biodiesel (fatty acid methyl esters) with diesel and using cobalt oxide Nano particles as additive. The parameters measured are volumetric efficiency, brake thermal efficiency, specific fuel consumption, mass fuel consumption and emission	

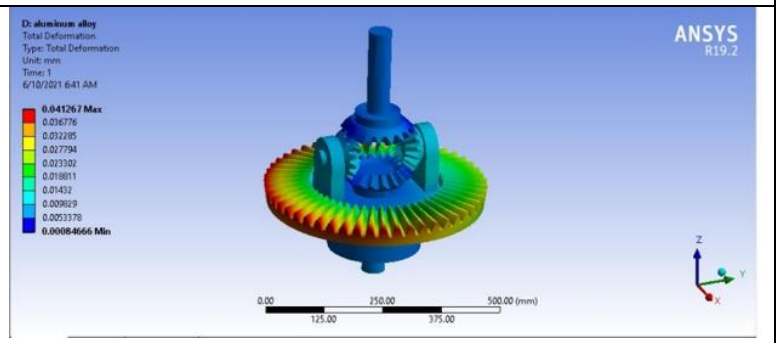
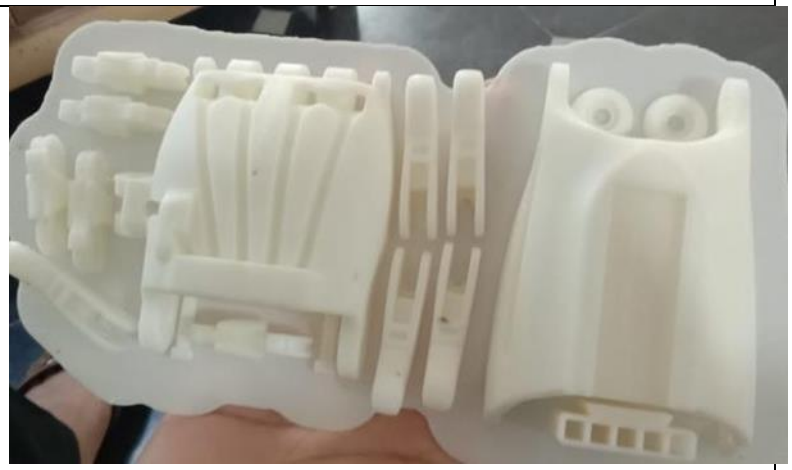
				parameters are CO2, CO, NOx, O2 and HC	
B7	1.18475A0309 2.18475A0313 3.17471A0352 4.18475A0306 5.17471A0364 6.17471A0378	Dr.D.Jagadish	PERFORMANCE OF CI ENGINE BY USING BIODIESEL AND MAGNESIUM OXIDE NANO PARTICLES	Energy demand is the hot topic of all developing and developed countries. Energy demand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Bio diesel can be the alternative solution for this problem. The main purpose of this paper is to test the engine performance and emission parameters of a diesel engine using animal fat bio diesel (fatty acid methyl esters) with diesel and using magnesium oxide Nano particles as additive. The parameters measured are volumetric efficiency, brake thermal efficiency, specific fuel consumption, mass fuel consumption and emission parameters are CO2, CO, NOx, O2 and HC.	
B8	1.18475A0304 2.18475A0312 3.17471A0355 4.17471A0382 5.17471A0367 6.18475A0318	K. KIRAN CHAND	DESIGN AND ANALYSIS OF WHEEL RIM ON RADIAL LOADS	The three-dimensional model of the wheel was designed using CATIA. Then the IGES format 3D model was imported into ANSYS. ANSYS software is the latest software used for simulating the different forces, pressure acting on the component and also for calculating and viewing the results. In the present work a detailed static analysis - displacement, maximum and	

				minimum von-mises stresses and fatigue analysis of wheel rim under radial loads has been done. The application of finite element method for analyzing stress distribution and fatigue life of wheel rim was summarized.	
C1	1.18475A0341 2.18475A0368 3.18475A0339 4.18475A0364 5.18475A0335 6.16471A0314	P.Sravani	DESIGN AND CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER	The objective of this project is to design a shell and tube heat exchanger with segmental baffles and to study the flow and temperatures inside the shell and tubes using ANSYS software tool for the different baffle's assemblies and orientation also overall heat transfer is calculated for each design.This project totally contains 3 designs for comparison. The process in solving simulation consists of modelling and meshing the basic geometry of shell and tube heat exchanger using CFD package ANSYS 19.2. The heat exchanger contains 7 tubes and 600mm length and 90mm shell diameter. In simulation the influence of parameters temperature, pressure, velocity varies in shell due to different baffles orientation are analyzed.	

C2	1.18475A0369 2.18475A0330 3.18475A0365 4.18475A0359 5.18475A0324 6.18475A0367	Mr.Ch.Sekhar	DETERMINATION OF CI ENGINE PERFORMANCE CHARACTERISTICS USING BIO-DIESEL AND TITANIUM OXIDE NANOPARTICLES BLENDER	Energy demand is the topic of highest priority in developing and developed countries. Energydemand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Biodiesel can be the alternative solution for this problem. The purpose of this work is to run a CI engine with different fuel blends to determine performance and emission parameters. The fuel used is fat biodiesel (fatty acid methyl esters) with diesel with addition of iron oxide nano particles. The parameters measured are brake power, brake thermal efficiency, specific fuel conception, CO2, CO, NOx and HC. It was observed that the addition of biodiesel and titanium oxide nano particles have helped in reducing the engine emissions and improving the engine performance while maintaining the smooth running of engine.	

C3	1.18475A0328 2.18475A0321 3.18475A0361 4.18475A0348 5.18475A0343 6.18475A0362	Mr.K.John Babu	DESIGN ANALYSIS AND OPTIMIZATION OF TWO-WHEELER DISC BRAKE ROTOR	The objective of this project was to study thermal Phenomenon of a Disk Brake Rotor and a newly designed disc rotor using the finite element method (FEM). Finite element (FE) models of the brake-disk rotor were created using CREO 6.0 and simulated using ANSYS 2021 R1 which is based on the finite element method (FEM). The brake- disks were simulated under three different loading conditions (Pressure, heat flux and temperature). Particular attention was given to the thermal stress and temperature simulation for the cut patterns brake-disk rotor where a potential problem may arise due to its design.	
C4	1.18475A0327 2.18475A0345 3.18475A0344 4.18475A0325 5.18475A0337 6.18475A0357	Mr.K.John Babu	MODELING AND OPTIMISATION OF PISTON BY USING SOLID WORKS AND ANSYSA	CAD model is generated in the SOLIDWORKS and static couple field analysis (Nonlinear structural and thermal) is performed by applying various loads (thermal and combustion pressure) on the piston in ANSYS. The stress and temperature distributions on the piston are studied and the conclusions are drawn. Compare the results obtained from the non-linear static structural analysis of the piston with those obtained from the coupled field analysis	

C5	1.18475A0350 2.18475A0352 3.18475A0331 4.18475A0326 5.18475A0363 6.18475A0354 7.18475A0355	Mr.M.Venkanna Babu	DESIGN AND FABRICATION OF EXPERIMENTAL SETUP TO DETERMINE MOMENT OF INERTIA	This project includes design and fabrication of the experimental setup of the following three experiments. 1. To determine the natural frequency of longitudinal vibrations of a spring. 2. To determine the moment of inertia of rectangular bar (M.S and steel) by using Bifilar and Trifilar Suspension System. 3. To determine the mass moment of inertia of the flywheel along with the shaft. For modeling of the experiments FUSION 360 software is used and fabrication is done according to the design of the equipments. From this project we gained the knowledge of machine dynamics and vibrations.	
C6	1.18475A0351 2.18475A0340 3.18475A0346 4.18475A0323 5.18475A0322 6.18475A0347 7.18475A0360	Dr.D.Suneel	FABRICATION OF APPARATUS TO DETERMINE THE THERMAL CONDUCTIVITY OF PURE METALS AND COMPOSITES	we are modifying this apparatus for conducting experiments on metals like copper, brass, steel, bronze, composites etc., by opening the main shell of the apparatus. We can conduct the experiment by removing the pre-fixed rod from the shell and later by removing the thermocouples on a pre-fixed rod. At last we make the other rods similar to the pre fixed rod i.e., making holes, taps and thread cutting same as on the required	

				rods.Finally we fix the modified rods in the shell by fixing the thermocouples correctly and we can conduct the experiment regularly.	
C7	1.18475A0338 2.18475A0366 3.18475A0371 4.18475A0349 5.18475A0332 6.18475A0342 7.18475A0358	Mr.T.Ashok Kumar	DESIGN AND ANALYSIS OF DIFFERENTIAL GEAR BOX	Mainly focuses on the mechanical design and analysis of gearbox as transmit the power. I had developed this work as my semester project with a view to get familiar with the technologies as well as application of theories into practical work done by industries. My project contains the design and material selection of the gearbox for different type of vehicles also. For better efficiency, improvement of power transmit rate is important phenomenon.	
C8	1.18475A0356 2.18475A0353 3.18475A0329 4.18475A0370 5.18475A0333 6.18475A0334 7.18475A0336	Mr.Sk.Nagul Meeravali	Design and fabrication 3d printed prosthic hand	3D printing technology is the most advanced manufacturing process which is trending now a day which help in printing component at high speed and reduces production cost. In this project work, design is done by using CATIA software and then file is transformed to STL format which is used for production of the component in 3D printing machine. Ultimaker Cura software is used for slicing of the component produced in CATIA and it also helps in adjustment of dimensions, solidification time,	

				material selection, printing speed and printing time. In this project ABS material is used for the production of the component in 3D printing machine.	

Industrial Tours

NEC B.Tech 3rd year of Mechanical Engineering students visited the Kumar Pumps, Tenali on 01.08.2018

NEC B.Tech 2nd year of Mechanical Engineering students visited the Dr.Narla Tata Rao Thermal Power Station (Dr.NTTPS) on 07.01.2019

IV Year I Semester students of NEC Mechanical Engineering, had visited the Kusalava International Ltd., Vijayawada on 17.08.19

NEC B.Tech 2nd year Mechanical Engineering Students visited Sagar Cements Power Plant, Nekarikallu on 27.12.2019.

NEC B.Tech 3rd year Mechanical Engineering Students had visited the CIPET, Vijayawada, on 27.01.2021

NEC II Year I Semester students of Mechanical Engineering had visited the Mittapalli Spinners Limited, Narasaraopet, on 22nd Jan 2021

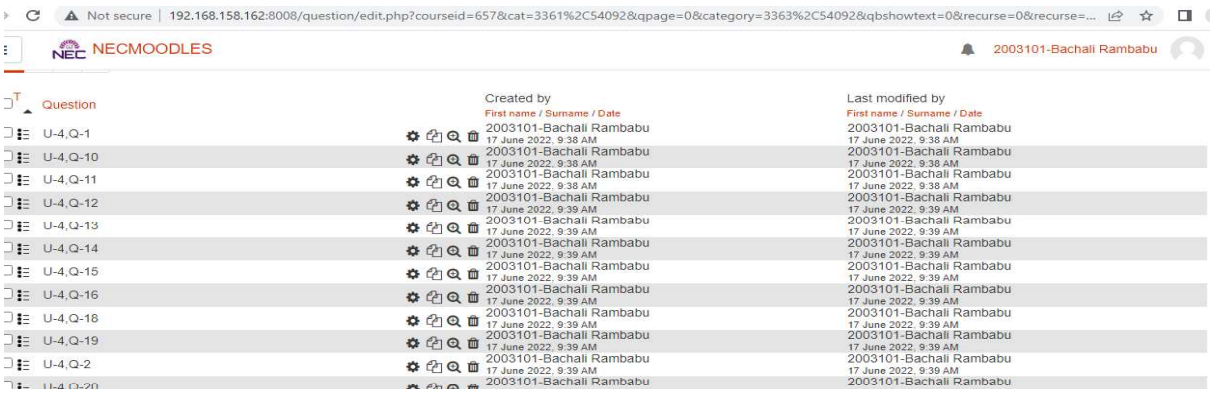
2. E-Learning

E-learning is a structured course or learning experience that is delivered electronically and can include performance support content. The purpose of e-learning is to enable people to learn for personal fulfilment or to obtain a professional degree without physically attending a traditional university or academic setting.

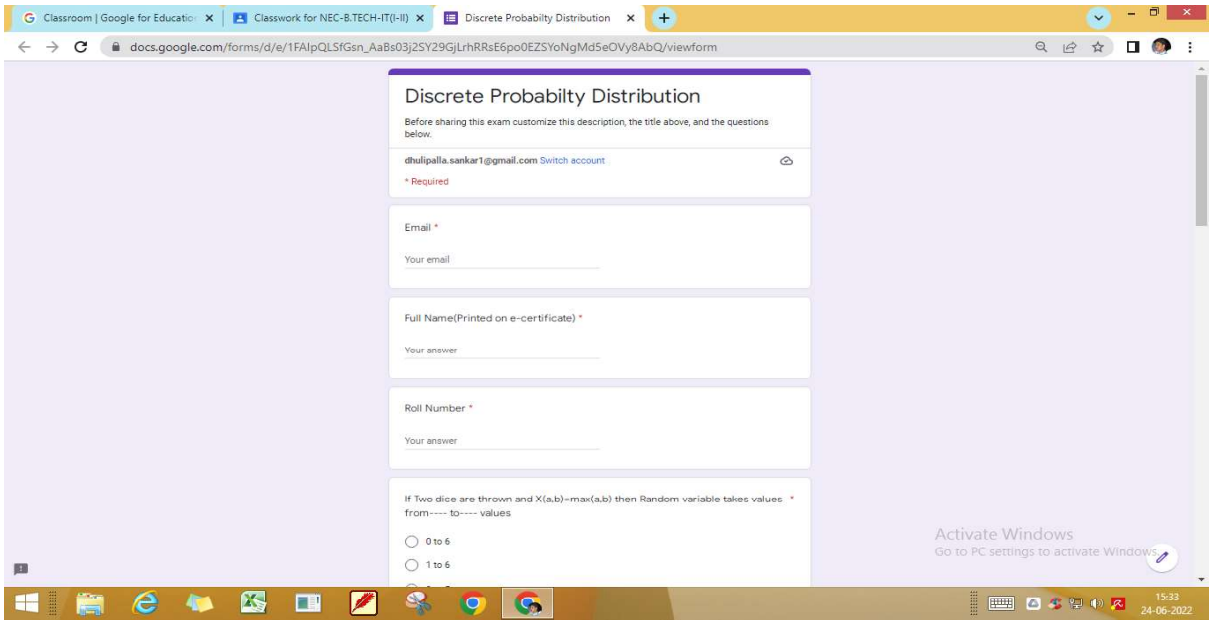
- Moodle and self-learning

Moodle and Self-Learning

Moodle is used to provide students for creating personalized learning environments. Moodle is used effectively by faculty to upload syllabus, lesson plans, materials, PPTs, videos, Model question papers, assignment question papers, and also to conduct online quizzes. Students participate in MOOC Courses such as NPTEL, Coursera, Solo Learn, Data Camp, Udacity, Udemy, and Virtual labs demonstrating their self-learning abilities.



Usage of Moodle for Conduction of Online Examination



Google Class Room for Online Teaching and Conduction of Exam

Student Certifications

Spoken Tutorial

Certificate for Completion of C Training

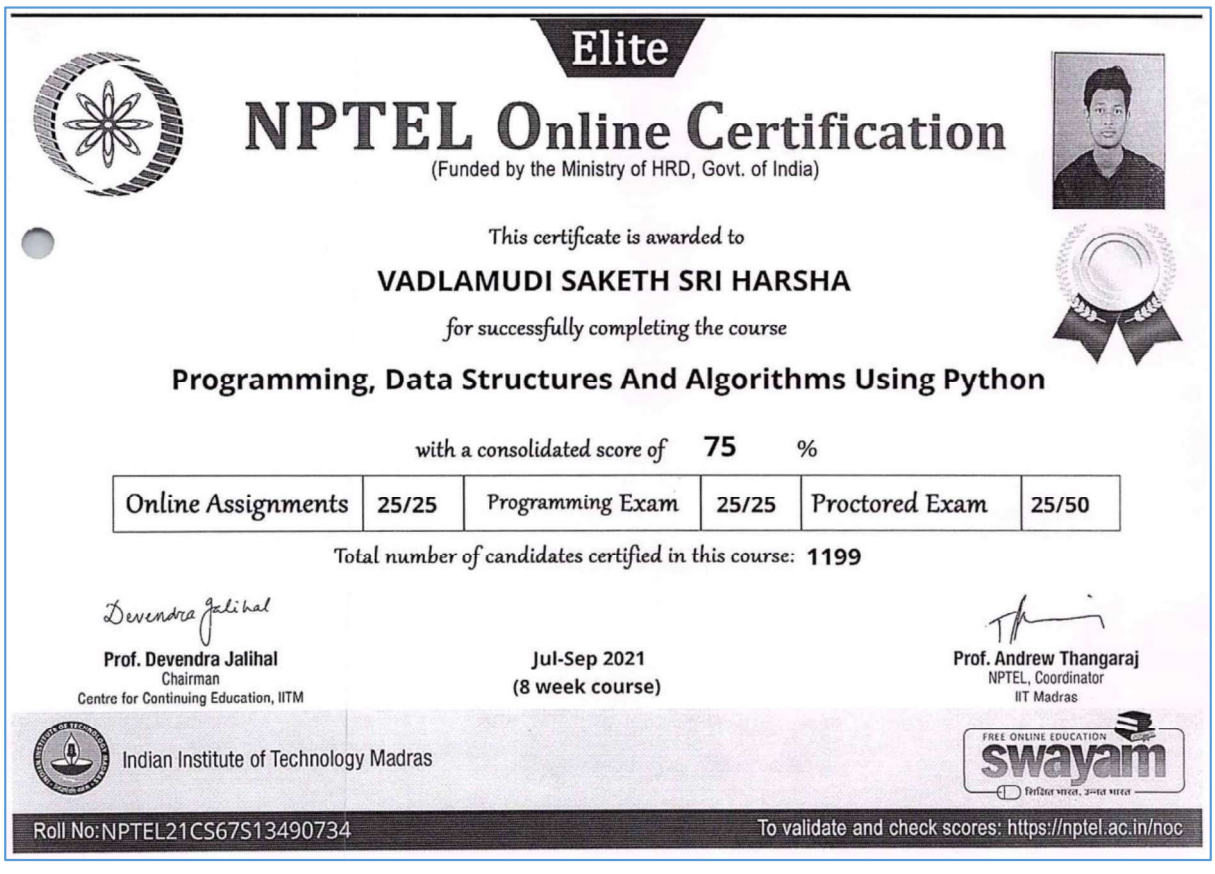
Talk To A Teacher

This is to certify that **AMBATI VENKATA NAGA SRAVANI** has successfully completed **C** test organized at **Narasaraopeta Engineering College** by **RAMA KRISHNA REDDY VENNA** with course material provided by the Talk To A Teacher project at IIT Bombay.

Passing an online exam, conducted remotely from IIT Bombay, is a pre-requisite for completing this training. **CHINTALA KARTHIK** at **Narasaraopeta Engineering College** invigilated this examination. This training is offered by the **Spoken Tutorial Project, IIT Bombay, funded by National Mission on Education through ICT, MHRD, Govt., of India.**

October 5th 2018

Prof. Kannan M Moudgalya
IIT Bombay



Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

VADLAMUDI SAKETH SRI HARSHA

for successfully completing the course

Programming, Data Structures And Algorithms Using Python

with a consolidated score of **75** %

Online Assignments	25/25	Programming Exam	25/25	Proctored Exam	25/50

Total number of candidates certified in this course: **1199**

Devendra Jalihal

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Jul-Sep 2021
(8 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

FREE ONLINE EDUCATION swayam

Roll No:NPTEL21CS67S13490734

To validate and check scores: https://nptel.ac.in/noc

CERTIFICATE
OF ACHIEVEMENT
THIS CERTIFICATE IS PRESENTED TO
Vemula Jahnavi Sravya
BEST AWARD
You have completed our C Programming Online Test (practitioner) with 90 %
For any clarification contact us at 'admin@cppbuzz.com'
CppBuzz.com
2018.08.04
DATE
SIGNATURE
Chicago, USA

deeplearning.ai
COURSE CERTIFICATE
Dec 25, 2020
GANTA HARSHA VARDHAN REDDY
has successfully completed
AI For Everyone
an online non-credit course authorized by DeepLearning.AI and offered through Coursera
Andrew Ng
Founder, DeepLearning.AI
Co-founder, Coursera
1647190516
EDUCATION FOR EVERYONE
coursera
COURSE CERTIFICATE
Verify at coursera.org/verify/UC4MELEH4UVG
Coursera has confirmed the identity of this individual and their participation in the course.

Red Hat

Certificate of Participation

KOTHA THARUN TEJA

has attended and successfully completed

Redhat Linux Operating System & Networking

course

at **Narasaraopeta Engineering College, Narasaraopet**

held from **8th Feb 2020** to **13th Feb 2020**

in association with

VECTRA TECHNOSOFT ADVANTAGE PRO
OPEN SOURCE ACADEMY
Vectra Technosoft Pvt. Ltd.
Networking with success

Authorised Signatory
S.No : 2019/ADV/11665
Date : 17th Feb 2020

RankSheet Certificate

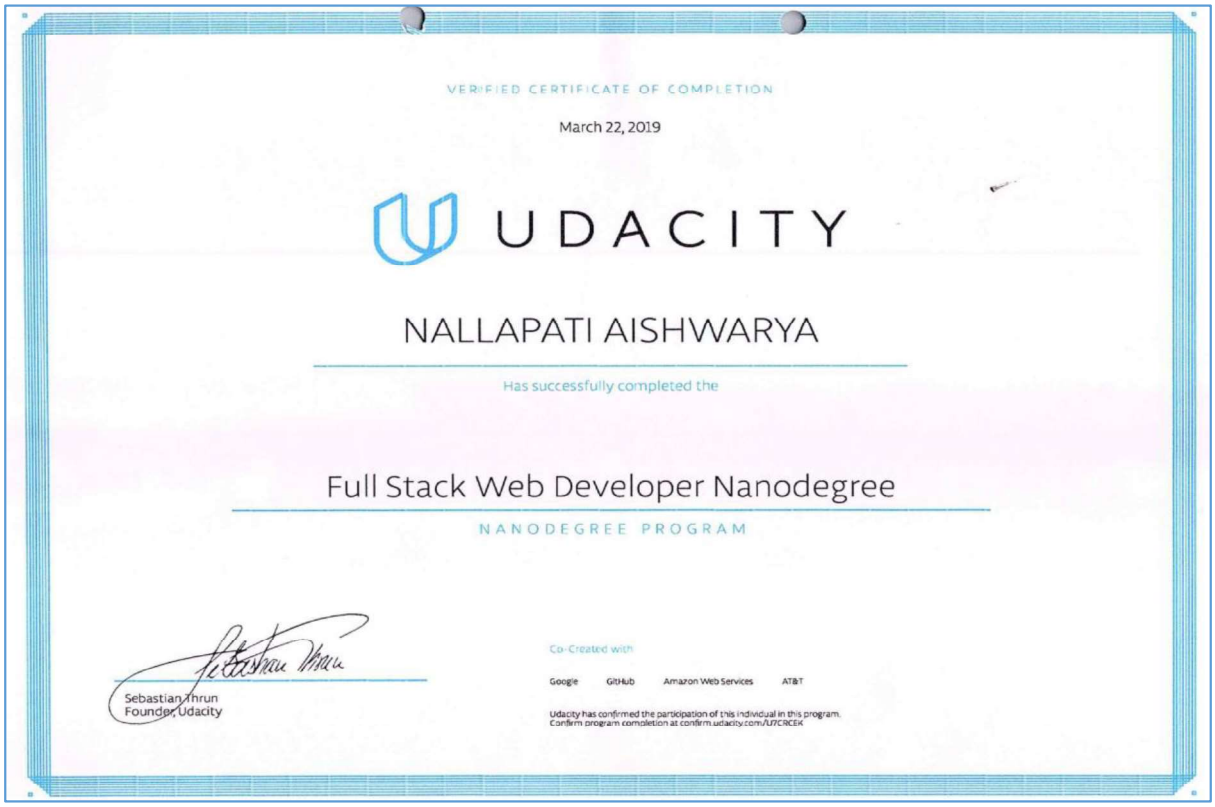
RankSheet Certified Professional

imran shaik

has successfully completed all requirements and is certified as a RankSheet

Professional - Level 1 in C and scored 70/100

Authorized Signature



VERIFIED CERTIFICATE OF COMPLETION

March 22, 2019

UDACITY

NALLAPATI AISHWARYA

Has successfully completed the

Full Stack Web Developer Nanodegree

NANODEGREE PROGRAM

Sebastian Thrun
Founder, Udacity

Co-Created with

Google GitHub Amazon Web Services AT&T

Udacity has confirmed the participation of this individual in this program.
Confirm program completion at confirm.udacity.com/U7CRCEK

Great Learning

CERTIFICATE OF COMPLETION

Presented to

Ganesh Mulaveesala

For successfully completing a free online course

Digital Image Processing

Provided by

Great Learning Academy

(On June 2021)

To verify this certificate visit verify.greatlearning.in/[illegible]

3. Collaborative learning

The college collaborates with industry and academic experts to arrange Guest Lectures/Seminars/Workshops on cutting-edge technologies and tools.

- The college has several student chapters, including IEEE, IETE Student's Forum (ISF), IE, ISTE, and CSI. All the departments frequently arrange guest lectures by experts from industry, academia, and research institutions.
- Students are also encouraged to present technical papers at conferences and project competitions.
- Industrial visits are arranged for the students to learn through interaction and observation of working methods and employment practices.
- Programs are conducted in collaboration with APSSDC, Dassault systems, ARC, Eduskills, ICT Academy, Bytexl, Hebeon Technologies to train students and faculty in industry-based technologies and novel practices.

COLLABORATIVE LEARNING

Department of Mechanical Engineering

Programs Organized in Association with AGIIT

DATE	Days	TITLE	Type of Program	No. of Beneficiaries
26-11-19 to 30-11-19	5	INDUSRIAL ROBOTICS & FIELD INSTRUMENTS WORKSHOP	STUDENT WORKSHOP	95
29-03-21 to 10-04-21	12	INDUSTRIAL AUTOMATION USING PLC AND PNEUMATICS	STUDENT WORKSHOP	153

Department of Electrical and Electronics Engineering

Programs Organized in Association with AGIIT

DATE	Days	TITLE	Type	No. of Beneficiaries
04-02-20 to 08-02-20	5	INDUSTRIAL AUTOMATION TRAINING(IAT)	STUDENT WORKSHOP	74

Programs Organized with ByteXL

Training Programmes organized from 12-01-20 to 07-12-20

S.No.	Name of the Programme	Organized by / Resource Person(s)	Date (from to)	Organized for (B.Tech M.Tech,MBA & MCA)	No. of beneficiaries
1.	TCS NQT	byteXL - Zoom	03-09-2020 to 17-09-2020	IV B.Tech	251
2.	TCS NQT	byteXL - Google Meet	05-10-2020 to 23-10-2020	IV B.Tech	251

Training Programs Organized from 8-12-20 to 30-06-21

S.No.	Name of the Programme	Organized by/Resource Person(s)	Date (from to)	Organized for (B.Tech M.Tech, MBA & MCA)	No. of beneficiaries
1	MNC specific training	ByteXL/ ChaitanyaLingamaneni	03-12-20 to 31-12-20	B.Tech 3	245
2	Wipro specific training	ByteXL	24-12-20 to 05-01-21	B.Tech 4	141
3	MNC specific training	ByteXL	29-03-21 to 03-04-21	B.Tech 2&3	504
4	InfyTQ	ByteXL	24-03-21 to 01-04-21	B.Tech 3	126
5	MNC specific training	ByteXL	05-04-21 to 18-04-21	B.Tech 2&3	504
6	MNC specific training	ByteXL - Zoom	22-04-21 to 30-04-21	B.Tech 2&3	504
7	DXC specific training	ByteXL – Microsoft teams	22-06-21 to 29-06-21	B.Tech 3	181

Training Programs Organized From 01-05-2021 to 30-10-2021

S.No.	Details	Organized by	Resource Person	Date	No. of beneficiaries
1	DXC Specific Training (IV B.Tech.)	TPC	Bytexl Team	14-06-2021 To 26-06-2021	186
2	Campus Recruitment Training (II B.Tech.)	TPC	Bytexl Team	31-07-2021 To 07-08-2021	219
3	TCS Specific Training (IV B.Tech.)	TPC	Bytexl Team	05-08-2021 To 09-08-2021	210
4	TCS Specific Training (IV B.Tech.)	TPC	Bytexl Team	31-08-2021 To 11-09-2021	210
5	Campus Recruitment Training (III B.Tech.)	TPC	Bytexl Team	22-09-2021 To 29-09-2021	255
6	Wipro Specific Training (IV B.Tech.)	TPC	Bytexl Team	23-09-2021 To 30-09-2021	182
7	Hexaware Specific Training (IV B.Tech.)	TPC	Bytexl Team	30-09-2021 To 06-10-2021	163
8	MphasisSpecific Training (IV B.Tech.)	TPC	Bytexl Team	01-10-2021 To 02-10-2021	94
9	Campus Recruitment Training (III B.Tech.)	TPC	Bytexl Team	20-10-2021 To 30-10-2021	255
10	Campus Recruitment Training (III B.Tech.)	TPC	Bytexl Team	08-12-2021 To 18-12-2021	255
11	Campus Recruitment Training (IVB.Tech.)	TPC	Bytexl Team	27-12-2021 To 08-01-2022	245

Programs Organized with Hebeon Technologies

Training Programmes organized

S.No.	Name of the Programme	Organized by / Resource Person(s)	Date	Organized for
1	TCS Code Vita	Hebeon Technologies / Sai Krishna	03-07-18 to 14-07-2018	IV B.Tech
2	CRT	Hebeon Technologies / Sai Krishna	26-08-2019 To 31-08-2019	III B.Tech

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Department of Computer Science and Engineering

APSSDC TRAINING PROGRAMME

Sl.No.	Academic Year	Name of the Programme	Resource Person	Dates	Year/Sem	No.of Beneficiaries
1	**2017-2018**	MIT APP Inventor	Manasa pothula	25-10-2017- to 28-10-2017	I & II year	40
2		Mobile Application Development	G Venkata Sai Shankar	25-10-17 to 28-10-17	II Year	90
4	**2018-2019**	AWS Technical Essentials.	R Ramadeep,T Gopi Sudheer	27-7-18 to 28-7-18	II Year	55
5		AWS Technical Essentials.	R Ramadeep,T Gopi Sudheer	25-7-18 to 26-7-18	II Year	60
6		AWS Technical Essentials.	R Ramadeep,K Ragavendra Rao	19-7-18 to 20-7-18	II Year	56
7		Google Android Nano Degree Certification Training -Udacity	T Pavan Kumar Reddy, G Venkata Sai Shankar	27-11-2018 to 20-03-2019	II,III & IV Year	45
8		Full Stack Web development By Using Python	Mr Venkatesh,Mr Gopi , Mr.Saisri	27-11-2018 to 16-03-2019	II,III Year	57
9		Google Andriod Developer Fundamentals	Prasanth Kumar Katta	11-9-2018 to 14-9-2018	III Year	44
10			G.Venkata Sai Sankhar	15-9-2018 to 18-9-2018		

11			Pavan Kumar Reddi Tadi	20-9-2018 to 24-9-2018	II & III Year	28
12			Prasanth Kumar Katta	25-9-2018 to 27-9-2018		16
13		Problem Solving Skills By Using C	G.Venkata Sai Manohar	18-02-2019 to 23-02-2019	II Year	60
14	**2019-2020**	Front End Web Developer Nano Degree Certification Course-Udacity	Mr jagan,Mr santoosh	27-05-2019 to 28-06-2019	III & IV Year	68
15		Problem Solving Skills By Using The Raptor	K Harideep,N Rajesh	5-12-19 to 7-12-19	I year	55
16		Problem Solving with Python	P Indu Priya,M Ruthamma	23-1-2020 to 25-01-2020	II Year	59
17	**2020-2021**	Web Designing Using React JS	Rajesh nallebaina, Sairam Devarapalli	02-02-2021 to 8-02-2021	II Year	36
18		Machine Learning Using python	R Sivaranganayakulu Mr Ravi Sastry	19-04-2021 to 26-04-2021	IV Year	126
19		Data Analysis Using Python --- Batch-2	R Sivaranganayakulu Mr Ravi Sastry	08-04-2021 to 17-04-2021	IV Year	123
20		Data Analysis Using Python –Batch-1	G Naga Mounika, M Madavi	08-04-2021 to 17-04-2021	III Year	56
21		Amazon Web Services	Mr Gopi Raju,Mr. Gopikrishna	15-11-2021 to 27-11-2021	II Year	167

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Department of Electronics and Communication Engineering

APSSDC TRAINING PROGRAMME

Sl.No.	Academic Year	Name of the Programme	Resource Person(s)	Dates	Year/Sem	No.of Beneficiaries
1	2017-18	Embedded System Course	Online	19-12-2017 to 31-03-2018	IV B.Tech	31
2		EMBEDDED SYSTEMS (IoT) WORK SHOP	T Venkata Siva Reddy & B.Suresh Kumar	18-12-2017 to 20-12-2017	III B.Tech	59
3		MIT App Inventor Workshop	Ms.Alekhya	25-10-2017 to 28-10-2017	I B.Tech	39
5	2018-19	IOT INTERNATIONAL CERTIFICATION	J.Siva Naga Raju & Y Madhu Vamsi	02-05-2018 to 26-05-2018	IV B.Tech	31
6		EMBEDDED SYSTEMS WORK SHOP	B Nagaraju, Darji Fayazuddin & S.Sravan Kumar	16-07-2018 to 18-07-2018	III B.Tech	43
7		EMBEDDED SYSTEMS WORK SHOP	B Nagaraju, Darji Fayazuddin & S.Sravan Kumar	19-07-2018 to 21-07-2018	II B.Tech	37
8		SCI LAB WORKSHOP	Sireesha.V & D Gireesha	23-08-2018 to 25-08-2018	III B.Tech	37
9		Python for Everybody International Certification	Mr.Y.Venkatesh & M. Venkata Gopi	27-12-2018 to 07-01-2019	III B.Tech	65

10		Python for Everybody International Certification	Mr.Y.Venkatesh & M. Venkata Gopi	08-01-2019 to 23-01-2019	III B.Tech	59
11		Mathematical Operations with SCILAB	G.Alekhya & Mubeena	10-01-2019 to 12-01-2019	I B.Tech	32
12		Python for Everybody International Certification	Mr.Y.Venkatesh & M. Venkata Gopi	06-02-2019 to 16-02-2019	III B.Tech	57
13	2019-20	Python Basics Workshop	Yekkanti Venkatesh & Sana Sudha	15-07-2019 to 17-07-2019	II B.Tech	58
14		Internet of Things Fundamentals	P.Siddhodhana Sakhambari, I.RaviKumar & Mamidi Jyoshitha	15-07-2019 to 17-07-2019	III B.Tech	49
15		Python Basics Workshop	M. Srilalitha K. Meenakshi	26-12-2019 to 28-12-2019	II B.Tech	53
16		Internet of Things Fundamentals	D. Chandi Rani M. Umamaheswara Rao T. Damodhar & T.Sadik Basha	06-02-2020 to 08-02-2020 & 10- 02-2020 to 12-02-2020	IV B.Tech	65
17		Internet of Things Fundamentals	D. Chandi Rani M. Umamaheswara Rao T. Damodhar & T.Sadik Basha	13-02-2020 to 14-02-2020 & 17- 02-2020 to 20-02-2020	IV B.Tech	59
18		Internet of Things Fundamentals	D. Chandi Rani M. Umamaheswara Rao T. Damodhar & T.Sadik Basha	24-02-2020 to 29-02-2020	IV B.Tech	57
19		Python Basics Workshop	M. Srilalitha & K. Keerthi	03-03-2020 to 05-03-2020	II B.Tech	58
20		Python Basics Workshop	M. Srilalitha & K. Keerthi	06-03-2020 To 09-03-2020	II B.Tech	71

21	2020-21	Embedded Systems Fundamentals & Advanced	B.Mahidhar & K.Madhava	01-02-2021 to 06-02-2021	III B.Tech	42
22		Internet of Things Fundamentals	Macharla Umamaheswara Rao, M. Prapul Kumar & K.Vineela	19-04-2021 to 26-04-2021	IV B.Tech	60
23	2021-22	Embedded Systems Fundamentals & Advanced	Mr. Reddi Anishkumar, G.Sireesha & Mittameedi Gokula Sukanya	15-11-2021 to 27-11-2021	II B.Tech	56
24		Internet of Things Fundamentals & Advanced	Mr. Reddi Anishkumar, G.Sireesha & Mittameedi Gokula Sukanya	15-11-2021 To 27-11-2021	II B.Tech	59

NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)

Department of Electrical and Electronics Engineering

APSSDC TRAINING PROGRAMME

Sl.No.	Academic Year	Name of the Programme	Resource Person(s)	Dates	Year/Sem	No.of Beneficiaries
1	2018-2019	Embedded System	APSSDC / P.Sakhambari/B.Sravani	30-8-2018 to 1-9-2018	III B.Tech	34
2		SCI LAB WORKSHOP	APSSDC /K,Kavitha Rani & G.Sravani	10-01-2019 to 12-01-2019	I B.Tech	20
3	2019-2020	PLC Fundamentals	APSSDC /K,Kavitha Rani & G.Sravani	29-07-2019 to 31-07-2019	II B.Tech	39
4		PLC Orientation	APSSDC /K,Kavitha Rani & G.Sravani	07-02-2019 to 09-02-2019	II B.Tech	58
5		PLC Fundamentals&Advanced	APSSDC /K,Kiran Varma & G.Sravani	19-02-2020 to 21-02-2020 & 24-02-2020 to 26-02-2020	IV B.Tech	35
6	2020-2021	Internet of Things Fundamentals	APSSDC /M.JYOSHITHA/T.Bhanu Chandar Reddy	01-2-2020 to 06-02-2021	III B.Tech	78

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Department of Mechanical Engineering

APSSDC TRAINING PROGRAMME

Sl. No.	Academic Year	Name of the Programme	Resource Person(s)	Dates	Year/Sem	No.of Beneficiaries
1	2018-19	FUSION 360 WORKSHOP	Mr.Kumar Mayank	12-07-2018 to 23-07-2018	II B.Tech I-Sem Students	31
2		ROBCAD BASICS	Mr.K.Vamsi Krishna	04-09-2018 to 08-09-2018	III B.Tech I-Sem Students	55
3		ESSENTIALS FOR NX DESIGNERS	Mr.M.K.Sridatta	04-10-2018 to 09-10-2018	IV B.Tech I-Sem Students	31
4		FUSION 360 WORKSHOP	Mr.AVB. Sujith	10-12-2018 to 15-12-2018	III B.Tech II-Sem Students	31
5		FUSION 360 WORKSHOP	Mr.AVB. Sujith	17-12-2018 to 22-12-2018	IV B.Tech II-Sem Students	31
6		ROBCAD WORKSHOP	Mr.K.Vamsi Krishna	31-12-2018 to 05-01-2019	II B.Tech II-Sem Students	37
7	2019-20	CNC TRAINING PROGRAMME	Mr. K Krishna chaitanya	01-07-2019 to 06-07-2019	IV B.Tech I-Sem Students	35

8		SOLID EDGE TRAINING PROGRAMME	Mr. M.Dayakar	22-07-2019 to 27-07-2019	III B.Tech I-Sem Students	50
9		AUTO CAD	Mr. N.Mahesh Babu Mr. A.V.B.Sujith	23-12-2019 to 28-12-2019	II B.Tech II-Sem Students	50
10		SOLID EDGE TRAINING PROGRAMME	Mr. Gopi Sai chandu, Mr. Datakar	06-01-2000 to 11-01-2000	III B.Tech II-Sem Students	50
11	2020-21	PRODUCT DESIGN AND DRAFTING BY SOLID EDGE	APSSDC	04-01-2021 to 09-01-2021	III B.Tech I-Sem Students	40
12		MECHANICAL COMPONENTS DRAFTING BY AUTOCAD	APSSDC	18-01-2021 to 23-01-2021	II B.Tech I-Sem Students	30
13	2021-22	Product Design and Drafting by Solid Edge Workshop	Nuthakki Mahesh Babu Nayudu Srikanth Kolagadi Jaya Durga Phani Venna Vijaya Kumar	04-10-2021 to 09-10-2021	III B.Tech	97
14		Product Design and Drafting by CATIA	Nuthakki Mahesh Babu Alapati Tejo Amareswar Nayudu Srikanth A V B Sujith	20-09-2021 to 25-09-2021	IV B.Tech	97
15		INTERNET OF THINGS	Mrs. G.Sireesha Mr. Reddi Anishkumar	15-11-2021 to 27-11-2021	II B.Tech I-Sem Students	55
16		PROGRAMMABLE LOGIC CONTROLLER	Mrs.Mittameedi Gokula Sukanya	15-11-2021 to 27-11-2021	III B.Tech I-Sem Students	101

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

APSSDC ARC TRAINING

Sl.No.	Academic Year	Name of the Programme	Resource Person(s)	Dates	Branch	Year/Sem	No.of Beneficiaries
1	2018-19	ARC 1.0	ONLINE & OFFLINE-Dr. Starke, Dr.B.Venkata Siva & Mr.Sk.Zuber Basha	23-01-2019 to 27-03-2019	Mech, ECE, EEE	III B.Tech	80
2	2019-20	ARC 2.0	ONLINE & OFFLINE-Dr. Starke, Dr.B.Venkata Siva & Mr.Sk.Zuber Basha	26-11-2019 to 21-12-2019	Mech, ECE, EEE	IV B.Tech	42
3	2019-20	ARC 3.0	ARC TRAINERS	23-01-2020 to 07-03-2020	Mech, ECE, EEE	IV B.Tech	40
4	2020-21	ARC INTERNATIONAL INTERNSHIP	ONLINE & OFFLINE-Dr. Starke, Dr.B.Venkata Siva & Mr.Sk.Zuber Basha	24-02-2021to 17-04-2021	Mech, ECE, EEE	IV B.Tech	65
5	2021-22	ARC INTERNSHIP PROGRAM	ONLINE & OFFLINE-Dr. Starke, Dr.B.Venkata Siva & Mr.Sk.Zuber Basha	16-11-2021 to 21-12-2021	Mech, ECE, EEE	IV B.Tech	44

Experiential Learning

Engine Assembly and Disassembly by Mech. Dept. Students Program organized as ISTE Event

Go-kart Challenge Competition-Participated by Mech. Dept. Students

Collaborative Learning

Fabrication of Drone- Program Organized by Dept. of Mechanical Engineering

Participative Learning

Students Project Works, Department of Mechanical Engineering