BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

Mobile App Development using Kotlin

Eligible Students: B.Tech. 4th Semester

Date: 22-01-2019 to 22-03-2019

Duration of Course: 33 Hours

Course Code: CC_MADK

No. of Students Enrolled: 35

Timing: 11:30 to 01:05

Days: Tuesday & Friday

Course Coordinator: Er. Ashu Bansal, Assistant Professor (CSE)

The Mobile App Development using Kotlin course conducted during the session 2018-19 for B.Tech. 4th semester students. The course duration was 33 hours where 34 students out of 35 enrolled students have successfully completed the course. The course aimed to provide students with a foundational understanding of Android Language and enable them to create mobile applications. It was a comprehensive program aimed for providing a strong foundation in Android application development.

The faculty expert ensured that the modules covered various aspects of Android development, including building interactive apps, working with multiple activities and intents, fragments, and navigation drawers. Additionally, students learned about location and maps integration, testing and debugging mobile applications, and publishing apps on the Google Play Store.

Teaching Pedagogy:

The course followed a step-by-step approach to teach the basics of Android development. The students were introduced to the Android development environment, including the Android Studio IDE and project configuration. The teaching pedagogy enhances problem-solving skills, students were given code snippets that demonstrated the practical implementation of the concepts covered in the presentations. These code snippets served as practical examples and helped students understand how to apply the theoretical knowledge in real-world scenarios. Active participation and engagement were encouraged through group discussions and quizzes. The teaching methodology

involved the use of PowerPoint presentations, code snippets, group discussions, and quizzes to enhance the students' learning experience and problem-solving skills.

Topics Covered:

The course was divided into several modules, each focusing on specific aspects of Mobile app development. The modules covered in the course were as follows:

Module 1: Introduction to Android Development Environment

Students are introduced to the Android development environment, including its history, versions, and fundamental concepts.

Module 2: Factors in Developing Mobile Applications

Students learn about software installation, creating their first Android app, layouts, views, and activities and intents.

Module 3: Android Application Design Essentials

This module covers app concept selection, working with services and activities in Android.

Module 4: Kotlin User Interface Design Essentials

Students explore user interface components, layouts, and considerations for screen densities and resolutions.

Module 5: Testing and Debugging Mobile Applications

The module focuses on mobile app testing techniques, including manual and automated approaches.

Module 6: Publishing Mobile Applications

Students gain knowledge about application compatibility, managing size and pricing, and finalizing app details for publishing

Assessment Procedure:

The students' performance was evaluated based on four parameters: technical knowledge in the concerned field, hands-on practice, skill tests, and attendance. Throughout the course, students received feedback and had the opportunity to improve their skills.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student’s ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

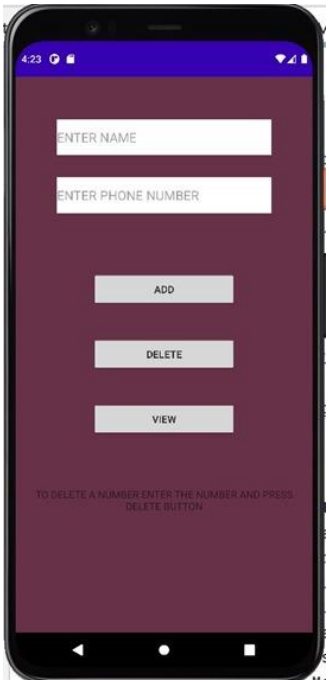
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

The Mobile App Development course resulted in the following outcomes for the students:

1. Students gained the necessary knowledge and skills to develop mobile applications using Android Studio. They became familiar with the Android development environment and its various components.
2. Students learned how to create mobile applications with different functionalities. They gained proficiency in using various Android components such as buttons, text fields, toggle buttons, and radio buttons to build interactive apps.
3. Students acquired the skills to connect their mobile applications to databases using SQLite. They learned how to store and retrieve data, enhancing the functionality and usability of their apps.
4. Students learned the process of publishing their developed applications. They were equipped with the necessary skills to finalize application details for successful publication on platforms like the Google Play Store.
5. Students had the opportunity to work on various projects during the course, such as "woman safety app". This hands-on experience allowed them to apply their knowledge and skills in practical scenarios.

Screenshots of Woman Safety App



Report

on

Backend Development with PHP and MySQL

Eligible Students: B.Tech. 6th Semester

Date: 22-01-2019 to 12-04-2019

Duration of Course: 32 Hours

Course Code: CC_BDPM

No. of Students Enrolled in the course: 46

Timing: 01:50 to 03:20

Days: Tuesday & Friday

Course Coordinator: Er. Sunil Nagpal, Assistant Professor (CSE)

The Backend Development with PHP and MySQL course was conducted during session 2018-19 for B.Tech. 6th semester students interested in gaining knowledge and skills in full-stack web development. It provides an overview of the important technologies and concepts related to web development in the field of Computer Science and Engineering. The course begins with an introduction to the layers of full-stack web development, providing students with a comprehensive understanding of the different components involved in building a web application.

The faculty expert ensured that the course covers essential modules such as the fundamentals of HTML/CSS and the programming aspects of PHP. One of the key aspects covered in the course is creating data structures to support websites in storing user data using MySQL. Students gain an understanding of how to design and interact with databases, enabling them to create robust and scalable web applications. The course duration was 32 hours where all 46 enrolled students have successfully completed the course.

Teaching Pedagogy:

The teaching pedagogy for the Backend Development with PHP and MySQL course focuses on a practical and hands-on approach. The instructor employs a combination of lectures, demonstrations, and interactive sessions to engage students. Students are encouraged to actively

participate in coding exercises, projects, and real-world case studies. The course emphasizes problem-solving and critical thinking skills, allowing students to apply their knowledge to solve web development challenges. Regular assessments and feedback are provided to track progress and address any areas of improvement. The teaching pedagogy aims to foster a deep understanding of the concepts and technologies, ensuring that students gain practical skills and are prepared for real-world backend development scenarios.

Topic Covered:

The course was divided into several modules, each focusing on specific aspects. The modules covered in the course were as follows:

Module 1: Introduction to PHP

Basic Syntax, Defining variable and constant, PHP Data type, Operator and Expression.

Module 2: Decisions and loop

Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping withHtml.

Module 3: Function

What is a function, Define a function, Call by value and Call by reference, Recursive function, String Creating and accessing, String Searching & Replacing String, Formatting String, String Related Library function.

Module 4: Array

Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.

Module 5: Handling Html Form with PHP

Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.

Module 6: Working with file and Directories

Understanding file& directory, Opening and closing, a file, Coping, renaming and deleting afile, working with directories, Creating and deleting folder, File Uploading & Downloading.

Module 7: Session and Cookie

Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.

Module 8: Database Connectivity with MySql

Introduction to RDBMS, Connection with MySql Database, Performing basic database operation (DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query-Join (Cross joins, Inner joins, Outer Joins, Self joins.)

Assessment Procedure:

The students' performance was evaluated based on four parameters: technical knowledge in the concerned field, hands-on practice, skill tests, and attendance. Throughout the course, students received feedback and had the opportunity to improve their skills.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

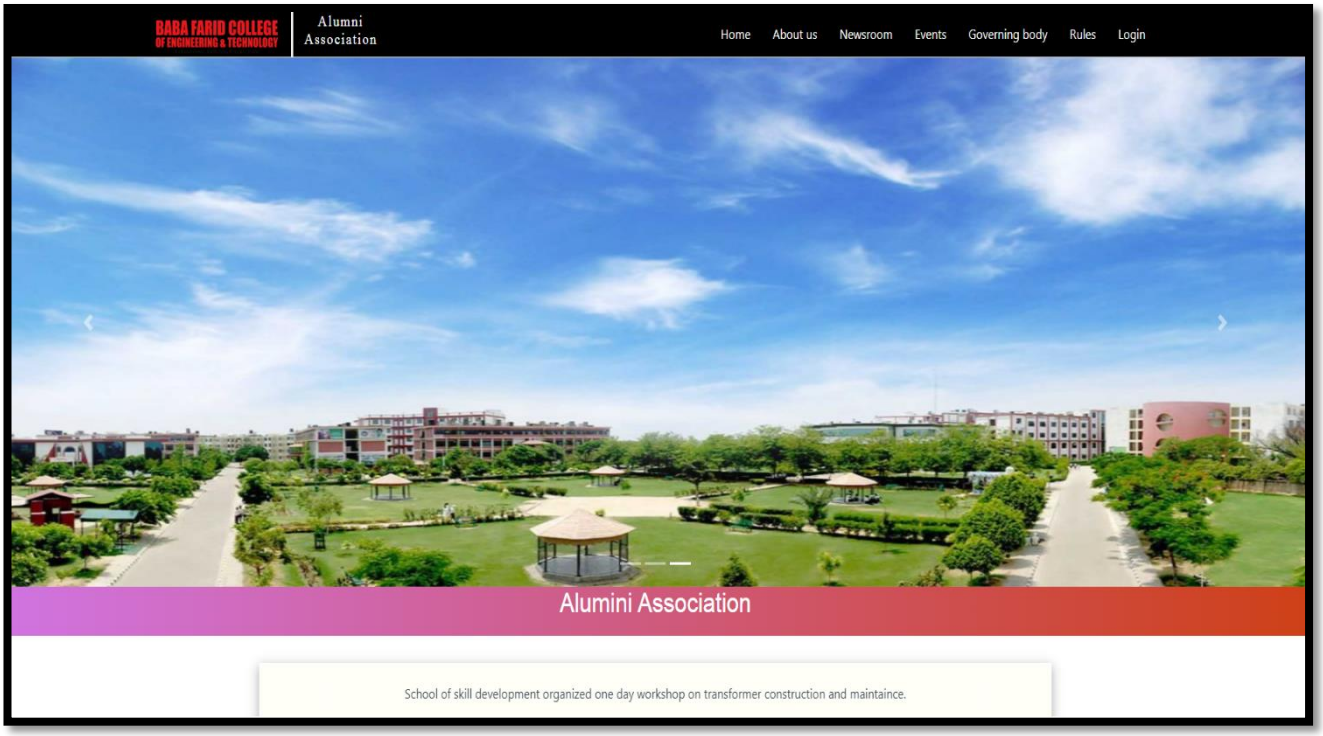
Outcome:

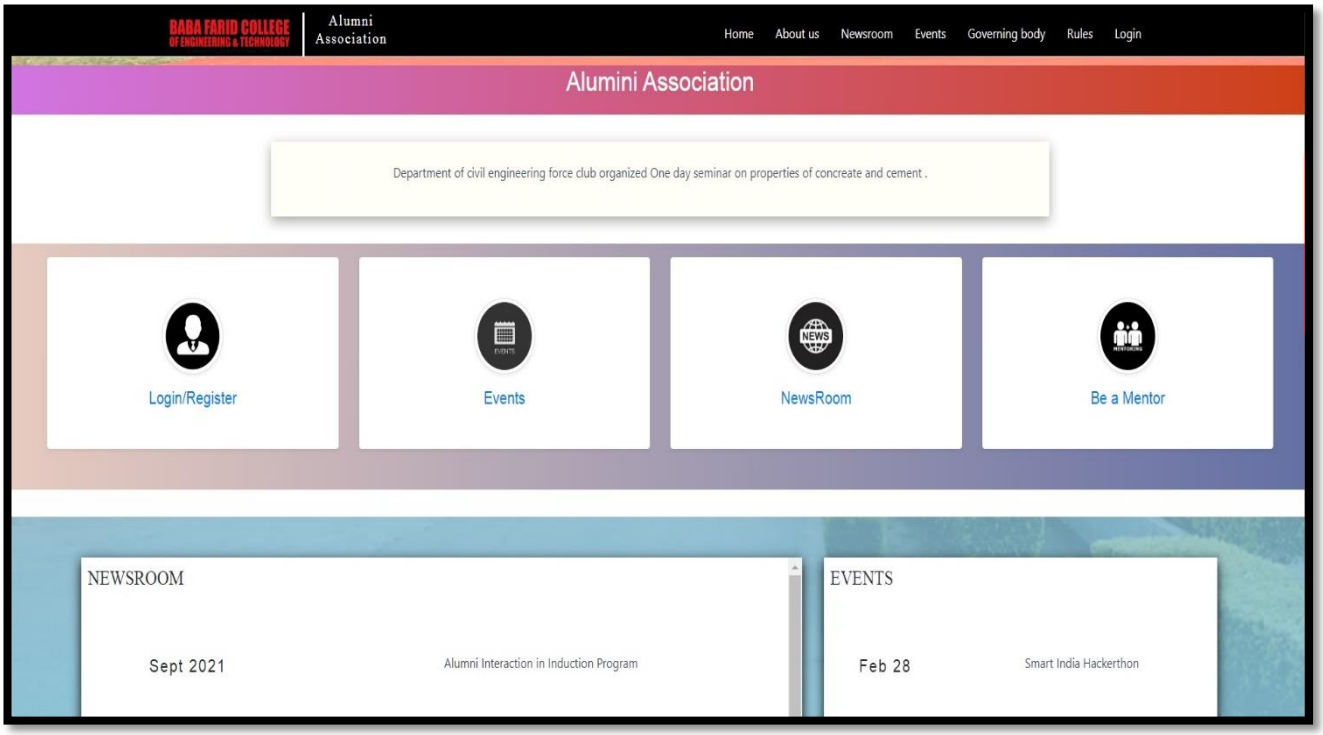
Outcome of the Backend Development with PHP and MySQL course:

1. Students have acquired the skills to transform static websites into dynamic ones using PHP and MySQL, enabling the creation of interactive web applications.
2. Students gain the ability to analyze the structure of PHP web applications, identifying the essential components required for development.
3. Students understand the principles of database design and learn how to integrate PHP with MySQL databases, enabling seamless data storage, retrieval, and manipulation within web applications.
4. Students acquired complete understanding of backend development using PHP and MySQL, including the concepts of dynamic web page creation, database connectivity, and server-side scripting.
5. Overall, the course equipped students with the necessary skills and knowledge to develop robust and interactive web applications using PHP and MySQL, providing them with a solid

foundation for backend development in the field of web development by creating fully functional dynamic website project entitled “BFCET Alumni portal”

Screenshots of BFCET Alumni Portal





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Report

on

Brick Laying Techniques and Methods

Eligible Students: B.Tech. 4th Semester

Date: 22-01-2019 to 16-04-2019

Duration of Course: 32 Hours

Course Code: CC_BLTM

No. of students Enrolled: 40

Timing: 02.35-04.00

Days: Tuesday & Friday

Course Coordinator: Er. Sandeep Maan, Assistant Professor (CE)

The Brick Laying Techniques and Methods course provided students with the necessary knowledge and skills to construct walls and structures using bricks as the primary building material. The course covered various aspects, including types of bonds, mortar application, brick placement, cutting techniques, and the use of different mortar types for different brickwork.

The course successfully skilled 38 students, who received certificates upon completion, and received positive feedback for its effectiveness in imparting bricklaying expertise.

Teaching Pedagogy:

The course focused on developing the skills and precision required for brick laying. Students learned the process of laying bricks in a specific pattern or design, ensuring levelness and alignment for a stable and durable structure. They also acquired knowledge of brick cutting and shaping techniques, as well as the use of specialized tools. The emphasis was on maintaining accuracy in horizontal, vertical, and diagonal alignments within specified tolerances and producing straight lines with sharp edges for an aesthetically pleasing appearance.

Topics Covered:

The required modules for the bricklaying course can be summarized as follows:

Module 1: Bricks and Related Terms

- Dimensions of bricks
- Manufacturing process of bricks
- Different types of bricks and their characteristics (class and strength)

Module 2: Bricklaying Tools and Brick Cut Shapes

- Hand tools: trowels, hammers, bolsters
- Power tools: heavy-duty drills, mixers for mortar and plaster
- Measuring devices: laser levels, tape measure

Module 3: Types of Brick Bonding

- Stretcher bond
- Header bond
- English bond
- Flemish bond
- Facing bond
- Dutch bond
- English cross bond
- Brick on edge bond
- Raking bond
- Zigzag bond
- Garden wall bond

Module 4: Setting out a Basic Wall

- Process of developing the physical positions of corners and walls
- Transferring dimensions from the layout plan to the ground

Module 5: Plumbing, Leveling, and Gauging

- Gauge: Checking the height of the course
- Level: Ensuring the course is level
- Plumb: Verifying that the wall is vertical

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcomes:

Upon completion of the course:

1. Students acquired the necessary knowledge and skills in bricklaying.
2. Students learned how to read construction drawings and construct projects accordingly and gained the ability to select bricks that were true to shape and angle, while identifying and rejecting chipped bricks.
3. Students developed the skill to maintain precise horizontal, vertical, and diagonal alignments within given tolerances.
4. They learned techniques to ensure the bricks were level and plumb, resulting in a structurally sound and visually pleasing outcome.
5. They developed the necessary skills and proficiency to showcase their expertise in brickwork.
6. As part of the course, students were assigned the project "Unlocking the Secrets of Professional Brick Laying." They were tasked with designing and constructing a unique structure using their acquired skills in bricklaying. The project provided an opportunity for students to demonstrate their proficiency in laying bricks, creating ornate features, and paying attention to detail.

Project on Brick Laying task

Report

on

Digital Mapping and Surveying

Eligible Students: B.Tech. 6th Semester

Date: 23-01-2019 to 26-04-2019

Duration of Course: 33 Hours

Course Code: CC_DMS

No. of students Enrolled: 34

Timing: 01.50-03.20

Days: Wednesday & Friday

Course Coordinator: Er. Rajan Vinayak, Assistant Professor (CE)

Digital Mapping and surveying is a modern approach that utilizes digital technologies such as GPS, GIS, remote sensing, and computer-aided design software to measure, analyze, and map land features, structures, and boundaries. Compared to traditional survey methods, digital mapping provides more accurate and up-to-date information, making it invaluable in fields like land management, engineering, construction, and urban planning. Additionally, Total Station is a traditional surveying method that employs a theodolite and electronic distance meter (EDM) to measure angles and distances on the ground, enabling the creation of precise survey maps.

The students' feedback about the course was overwhelmingly positive, and at the end of the program, 32 out of 34 students received certificates for their successful completion of the course.

Teaching Pedagogy:

The course began with an introduction to surveying methods and principles, covering essential topics like distance and angle measurements, coordinate systems, and units of measurement. Students were then introduced to the Total Station, where they learned about its components, how it works, and the advantages and limitations it presents. Practical aspects of using the Total Station were emphasized, including skills such as handling the instrument, setting up the equipment, defining job parameters, and implementing traversing techniques.

Topics Covered:

The modules covered in this course are as follows:

Module-1: Surveying Fundamentals

- Principles and methods of surveying
- Basics of coordinate systems
- Units of measurement
- Establishing survey control points

Module-2: Theoretical Aspects of Total Station

- Introduction to Total Station instruments
- Common concepts and components of Total Station
- Understanding electronic distance measurement (EDM) technology
- Working principles of Total Station
- Advantages and limitations of Total Station

Module-3: Practical Applications of Total Station

- Familiarization with Total Station machine parts
- Proper handling and operation of the instrument
- Equipment setup: leveling, centering, and focusing
- Station setup and orientation techniques

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

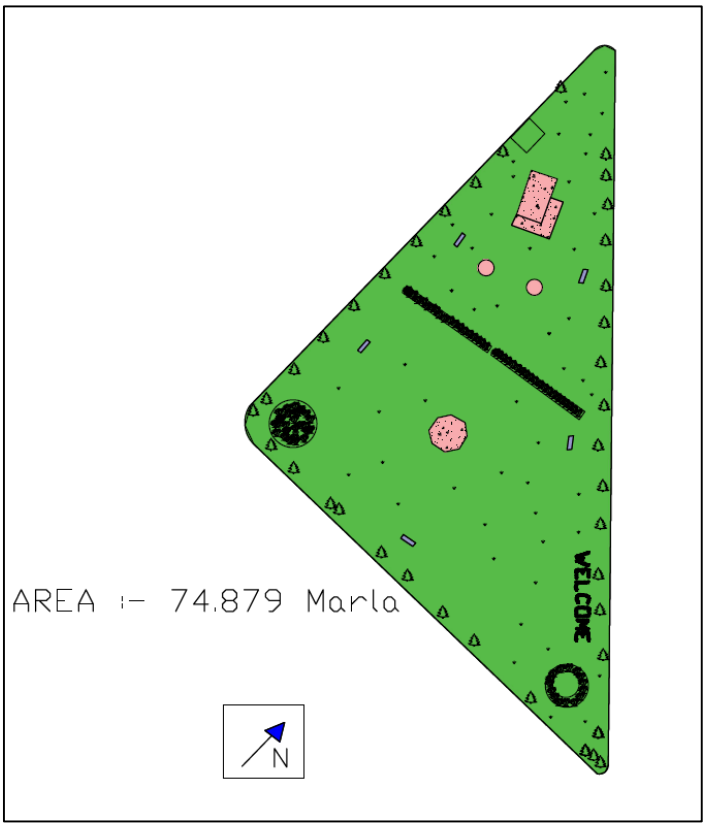
4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcomes:

The course outcomes can be summarized as follows:

1. Students gained knowledge of the applications of Total Station and learned how to conduct field surveying using Total Station techniques.
2. They acquired an understanding of the various functions and component parts of the Total Station equipment.
3. The course initially focused on three techniques for setting up the Total Station: Centering, Leveling, and Focusing. Students successfully applied these techniques to set up the instrument and capture coordinates of different points.
4. Students were provided with a task and after collecting coordinates file, they utilized the file to create a map, determine distances, and calculate areas using AutoCAD software. As a result of the course, students were able to accurately measure the dimensions of buildings that were already constructed within the college campus.



Project on the layout of the existing area in college campus

BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

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Report

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Engineering Design Using Solid Works

Eligible Students: B.Tech. 8th Semester

Date: 21-01-2019 to 02-04-2019

Duration of Course: 35 Hours

Course Code: CC_EDSW

No. of Students Enrolled in the course: 30

Timin g:11.30 am -1.05 pm

Days: Monday & Friday

Course Coordinator: Er. Ashish Kumar

Engineering Design Using Solid Works course conducted during the session 2018-19 for B.Tech. students. The CAD SolidWorks course offers a comprehensive learning experience for individuals aspiring to develop proficiency in computer-aided design (CAD) using the SolidWorks software. SolidWorks is a powerful and widely-used 3D CAD software that enables users to create precise and detailed models for various industries, including engineering, product design, and manufacturing. The course duration was 35 hours, where 30 enrolled students successfully completed the course.

This course aims to equip students with the necessary knowledge and skills to effectively utilize SolidWorks in designing and modeling 3D objects. Through a combination of theoretical concepts, hands-on practice, and interactive sessions, students will learn to navigate the SolidWorks interface, apply design principles, and create complex 3D models.

Teaching Pedagogy

The teaching pedagogy for the CAD SolidWorks course involves a comprehensive and interactive approach. Through lectures, demonstrations, and hands-on practice, students gain practical skills in utilizing SolidWorks for computer-aided design. Individual guidance and collaborative learning activities foster a supportive environment for students to overcome challenges and enhance their understanding. Regular assessments and feedback ensure progress and reinforcement of learning. Real-world applications and project-based learning provide practical relevance, while resources for

continuous learning enable students to explore advanced features of SolidWorks. This pedagogy aims to equip students with the necessary skills to effectively use SolidWorks for designing and modeling 3D objects.

Topics Covered:

Module-1: Getting started with SolidWorks introduces the software, its interface, screen layout, icons, and online help for troubleshooting.

Module-2: Opening a new working space covers setting up the working directory, customization, file saving, addressing redundancy, and familiarizing with SolidWorks icons.

Module-3: Sketch focuses on sketching techniques, including modification, constraints, dimensioning, and inspection.

Module-4: Part modeling covers generating planes, sketching within part modeling, and using tools like extrude, revolve, sweep, and editing functions for refining part models.

Module-5: Assembly of components includes techniques for component dragging, pattern creation, model display management, and generating a bill of materials.

Module-6: Layout covers table creation, annotation, sketching, and unit modification to enhance the presentation and documentation aspects of SolidWorks projects.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. **Technical Knowledge in Concerned Field (20 marks):**
   This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. **Hands-on Practice (10 marks):**
   Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. **Skill Test (10 marks):**
   The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. **Attendance (10 marks):**
   Attendance refers to the student's regular presence in the course. It emphasizes the importance of

active participation and consistent engagement throughout the duration of the program.

Outcome:

1. Demonstrated competency with multiple drawing and modification commands in SolidWorks.
2. Proficiently created three-dimensional solid models using SolidWorks.
3. Assembled multiple solid models to create complex three-dimensional assemblies.
4. Applied industry standards in the preparation of technical mechanical drawings, ensuring adherence to established guidelines.
5. Analyzed fits and tolerances in mechanical assembled systems, enabling evaluation and optimization of design functionality.
6. Developed skills in analyzing the motion mechanisms of mechanical systems, gaining a comprehensive understanding of component interactions and system functioning.
7. Students made a design of piston, milling machine and many more. It was the major achievement of the certificate course.

Design of a hand drill

BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

AutoCAD Drafting in 2D

Eligible Students: B.Tech. 6th Semester

Date: 21-01-2019 to 02-04-2019

Duration of Course: 32 Hours

Course Code: CC_AC2D

No. of Students Enrolled in the course: 36

Timing: 01:50 pm to 03:20 pm

Days: Monday & Thursday

Course Coordinator: Er. Ashish

The AutoCAD course conducted during the session 2017-18 for B.Tech. students. This certificate course offers a comprehensive learning experience for individuals seeking to develop proficiency in computer-aided design (CAD). AutoCAD is a powerful software widely used in various industries, including architecture, engineering, and construction. The course duration was 32 hours, where 36 enrolled students successfully completed the course.

The faculty expert ensured to equip students with the necessary knowledge and skills to effectively utilize AutoCAD for creating precise 2D and 3D digital designs. Through hands-on practice and interactive sessions, students will learn the fundamental tools and techniques of AutoCAD, enabling them to produce professional drawings, models, and layouts.

Teaching Pedagogy:

The teaching pedagogy for the AutoCAD course focuses on hands-on learning and interactive methods. Students will receive live demonstrations to understand AutoCAD functionalities, followed by ample opportunities for hands-on practice. Individual guidance and collaborative learning activities will enhance the learning experience. Regular assessments will provide feedback, and real-world applications will highlight the practical relevance of AutoCAD. A project-based approach will allow students to apply their skills, and additional resources will encourage continuous learning beyond the classroom. Through these methods, the course aims to provide a comprehensive and practical understanding of AutoCAD for 2D and 3D design purposes.

Topics Covered:

Module 1: Introduction to Auto CAD

Introduction of AutoCAD, AutoCAD versions, Interface, Control the Drawing, Function keys, AutoCAD basics, Coordinate system, Cartesian, coordinate system,

Module 2: Draw and Modify commands

Draw Commands-Line, Poly line command, Rectangle command, Modify commands-Move, Rotate, Scale, copy, Mirror, erase, trim, extend, Annotate-Dimension Style, Manager Linear, Aligned, Radius, Angular, Arc length

Module 3: Text command, Layers, blocks

Text command-Single line text, Multiline text Layers, Layer properties, Blocks, Insert blocks, Parametric Geometric, Dimensional Manage

Module 4: Isometric views

Isometric views-Isometric top, left, right Isometric diagrams, Isometric drawings, Isometric diagrams, exercise, 2D Fundamentals, Drawing units, Sheet settings, Mechanical diagrams

Module 5: Project

Mechanical Projects

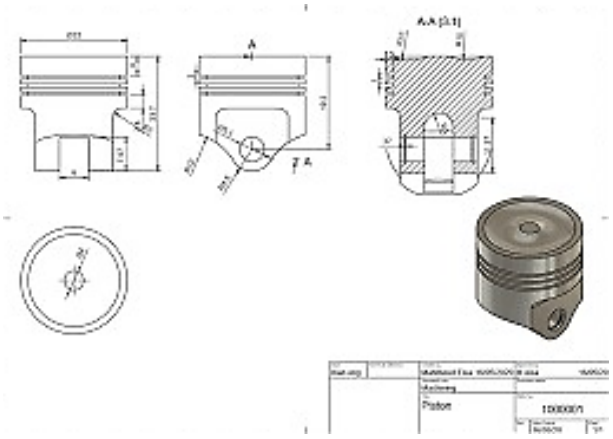
Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

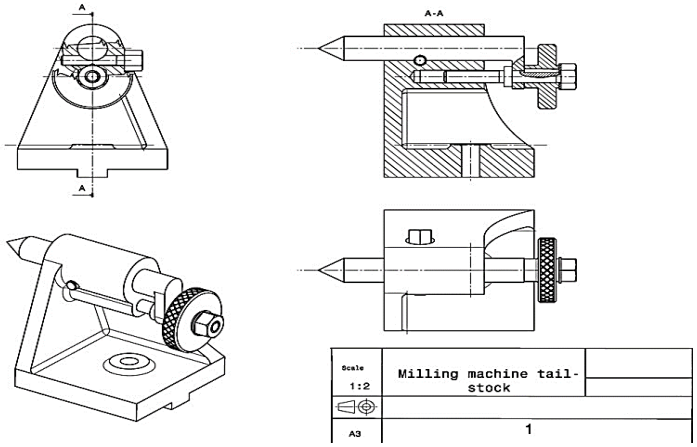
1. **Technical Knowledge in Concerned Field (20 marks):**
   This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.
2. **Hands-on Practice (10 marks):**
   Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.
3. **Skill Test (10 marks):**
   The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.
4. **Attendance (10 marks):**
   Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

- They have gained a comprehensive understanding of CAD concepts and CAD tools, allowing them to navigate and utilize CAD software effectively.
- The students now possess a solid understanding of Concepts, Wireframe, and Surface modeling techniques, enabling them to create complex and detailed 3D models.
- They have acquired the ability to create precise engineering drawings using CAD software, utilizing the Part modeling feature to develop accurate representations of engineering components.
- Students made a design of piston, milling machine and many more. It was the major achievement of the certificate course.



Design of a Piston 2D Drawing using AUTOCAD Software



Design of Milling Machine Tailstock using AUTOCAD Software

Report

on

Fundamentals of Arduino Programming

Eligible Students: B.Tech 4th Semester

Date: 21 Jan 2019 to 25 march 2019

Duration of Course: 32 Hours

Course Code: CC_FAP

No. of Students Enrolled: 32

Timing: 2.35 to 3.20

Days: Monday & Friday

Course Coordinator: Er. Harsimran Singh, Assistant Professor (EE)

The Certificate Course on Programming in Arduino and Hardware Fundamentals was conducted during the session 2018-19 for B.Tech. students in the 4th semester of the Electrical Engineering program. Arduino is a free and open-source platform that allows individuals to create electronic projects. It consists of a physical programmable circuit board, known as a microcontroller, and an Integrated Development Environment (IDE) software used to write and upload code to the board. Arduino programming utilizes a simplified version of C++, making it accessible for learners. The course aimed to provide students with the necessary skills to work with Arduino boards and develop projects using various sensors. By the end of the course, the students had successfully completed their major projects, demonstrating their proficiency in Arduino programming and hardware fundamentals. Out of the enrolled students, 31 students had successfully completed the course.

Teaching Pedagogy:

The teaching pedagogy employed during the course focused on a combination of theoretical knowledge and practical implementation. The students were introduced to Arduino boards and the Atmega IC, along with basic electronic components such as resistors, capacitors, switches, LEDs, and more. The course utilized simulation in TinkerCAD to provide hands-on experience in circuit building and testing. The students learned to install the Arduino IDE software and various libraries required for programming. Practical examples and exercises in the TinkerCAD simulator helped students understand the syntax, Arduino libraries, code execution, debugging techniques, and uploading code to the Arduino board. Through these activities, the students gained a solid foundation in programming concepts and hands-on experience with Arduino.

Topics Covered:

Module 1: Introduction to Arduino and Simulator, Overview of Arduino platform, its history, and versions, Fundamentals of Arduino, including its components and programming languages, Introduction to Arduino IDE software and its installation process, Understanding the basics of simulating Arduino circuits using tools like Tinker CAD

Module 2: Basics of programming in Arduino IDE and TinkerCAD, Setting up and configuring the Arduino IDE for coding, Exploring the syntax and structure of Arduino programming language, Creating circuits and building simple projects using TinkerCAD simulator, Utilizing Arduino libraries and resources for code optimization and functionality enhancement

Module 3: Interfacing and Coding of Sensors on Hardware and Simulator, Interfacing and controlling multiple LEDs for various lighting patterns, Programming Ultrasonic Sensor (HC-SR04) for measuring distance and object detection, Using the DHT11 sensor to measure temperature and humidity values, Integrating an LCD display with Arduino for scrolling text and data visualization, Connecting and utilizing sensors like raindrop and soil moisture sensors for environmental monitoring, Controlling servo motors for precise movement and speed adjustment, Interfacing Bluetooth, Wi-Fi, relay, and motor driver modules with Arduino Uno for wireless communication and actuator control

Module 4: Introduction to Blynk App and IoT Cloud, Installing and configuring the Blynk App for interfacing with Arduino projects, Implementing Bluetooth-based control of LEDs and other devices using the Blynk App, Exploring Wi-Fi connectivity and controlling motors through the Blynk App, Introduction to IoT Cloud and its integration with the ESP8266 Node MCU Development Board, Simulating and understanding the working principles of IoT applications, Coding and deploying IoT projects with Arduino and Blynk for remote monitoring and control.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

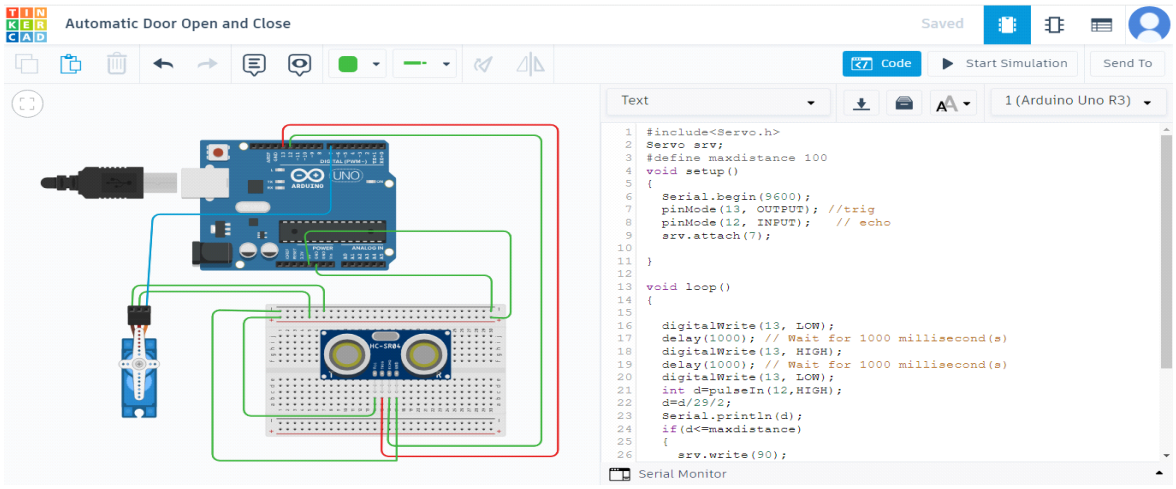
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

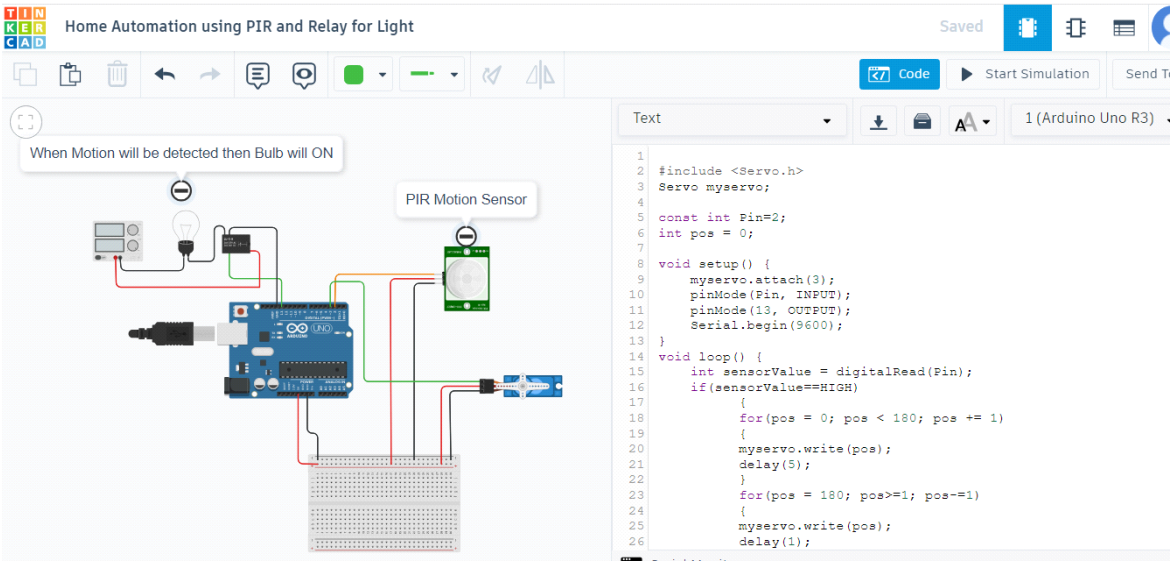
- Proficient Arduino Programming: Students gained expertise in writing code, using libraries, and uploading it to Arduino boards, enabling them to create innovative projects like robots and home automation tools.
- Hands-on Hardware Experience: Students acquired practical skills by connecting and programming various components, such as LEDs, sensors, and motors, preparing them for real-world applications.
- IoT and Cloud Connectivity: Students learned to interface Arduino with the Blynk App and explore IoT Cloud and the ESP8266 Node MCU, enabling them to develop IoT applications and connect their projects to the cloud for monitoring and control.
- Problem Solving and Debugging: Through project work, students enhanced their problem-solving abilities and gain proficiency in debugging code, essential skills applicable to various programming and engineering fields.

Screenshot for certificate course projects:

Project 1: Automatic Door Open and Close in Tinker CAD



Project 2: Home Automation using PIR and Relay for Light



Report

on

Latest Trends of PLC in Industrial Automation

Eligible students: B.Tech. 6th Semester

Date: 21/01/2019 to 29/03/2019

Duration of Course: 32 Hours

Course Code: CC_LTPIA

No. of Students Enrolled: 34

Timing: 1:50 to 3:20

Days: Monday & Friday

Course Coordinator: Er. Sabina, Assistant Professor

The Certificate Course on Industrial Automation with PLC & SCADA provided students with comprehensive knowledge of PLC and SCADA systems used in various industries for process automation. PLCs are physical hardware devices, while SCADA is software. The course covered the basics of PLC and SCADA, their components, and the role they play in industrial automation. It also introduced different types of SCADA systems and the programming languages used in SCADA programming. Out of the enrolled students, 31 students had successfully completed the course.

Teaching Pedagogy:

The teaching pedagogy employed in the Certificate Course on Industrial Automation with PLC & SCADA focused on a combination of theoretical knowledge and practical hands-on experience. The instructors utilized a student-centered approach, encouraging active participation and engagement throughout the course. They delivered lectures to introduce the concepts and theories, supplemented with visual aids and real-life examples to enhance understanding. The students were provided with PLC trainer devices and software to gain practical experience in programming and operating PLC systems. Regular skill tests and assessments were conducted to gauge the students' progress and understanding. The instructors fostered a supportive learning environment, encouraging questions, discussions, and collaborative problem-solving. Overall, the teaching pedagogy aimed to ensure t hat students not only acquired theoretical knowledge but also developed the skills and confidence to apply their learning in real-world scenarios.

Topic Covered:

Module 1: Introduction to PLC and PLC Wiring

Students learned about the basics of PLCs, their components, and the installation process. The module also covered PLC I/O module installation, wiring considerations, and recommended procedures for wiring. Students were familiarized with wire sizing, labeling, and bundling techniques.

Module 2: How PLC Ladder Logic Programming Works

This module focused on the programming aspect of PLCs, specifically ladder logic programming. Students learned about special I/O connection precautions, handling leaky inputs, suppressing inductive loads, and fusing outputs. The module also covered ladder logic programming, with a specific focus on Allen Bradley PLCs.

Module 3: Introduction to PLC Trainer Device and PLC Software

Students were introduced to PLC trainer kits and their main components. They gained hands-on experience with PLC software and learned about its different features and objectives.

Module 4: Fundamental Commands of PLC

This module covered the fundamental commands used in PLC programming. Students learned about input and output commands, relay logic, and commonly used logic symbols such as XIC, XIO, PTS, and NTS.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

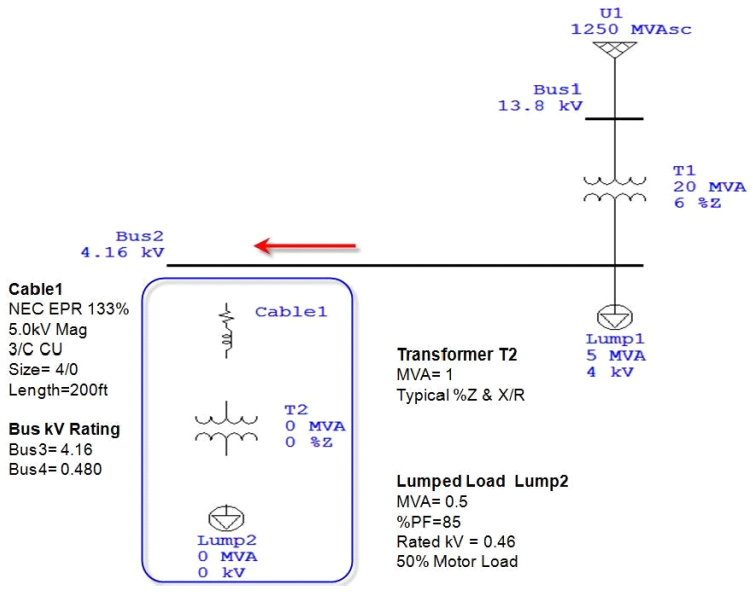
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

Upon completion of the course, students achieved the following learning outcomes:

- Understanding of PLC Components: Students gained the ability to describe the typical components of a Programmable Logic Controller (PLC) and explain their functions.
- Basic Concepts of PLC: Students acquired a clear understanding of the basic concepts and terminology associated with PLCs, enabling them to discuss and apply PLC principles effectively.
- Electrical Ladder Logic: Students developed proficiency in explaining and applying the concept of electrical ladder logic, understanding its historical significance and its relationship to programmed PLC instructions.
- Basic Digital Electronics and Data Manipulation: Students learned the fundamentals of digital electronics and data manipulation, enabling them to analyze and manipulate data within a PLC system.

Overall, the course provided students with a solid foundation in industrial automation with PLC and SCADA systems. They gained practical skills, technical knowledge, and problem-solving abilities necessary to excel in the field of industrial automation.



Project on Modeling and Load Flow Analysis of a Small Power System in ETAP Software

Report

on

Hardware Implementation and Arduino Programming

Eligible Students: B.Tech 4th Semester

Date: 21 Jan 2019 to 29 march 2019

Duration of Course: 32 Hours

Course Code: CC_HIAP

No. of Students Enrolled: 10

Timing: 2.35 to 3.20

Days: Monday & Friday

Course Coordinator: Er. Pushpinder Sharma, Assistant Professor(EE)

The Certificate Course on Programming in Arduino and Hardware Fundamentals was conducted during the session 2018-19 for B.Tech. students in the 4th semester of the Electrical Engineering program. Out of the enrolled students, students had successfully completed the course. Arduino is a free and open-source platform that allows individuals to create electronic projects. It consists of a physical programmable circuit board, known as a microcontroller, and an Integrated Development Environment (IDE) software used to write and upload code to the board. Arduino programming utilizes a simplified version of C++, making it accessible for learners. The course aimed to provide students with the necessary skills to work with Arduino boards and develop projects using various sensors. By the end of the course, the students had successfully completed their major projects, demonstrating their proficiency in Arduino programming and hardware fundamentals.

Teaching Pedagogy:

The teaching pedagogy employed during the course focused on a combination of theoretical knowledge and practical implementation. The students were introduced to Arduino boards and the Atmega IC, along with basic electronic components such as resistors, capacitors, switches, LEDs, and more. The course utilized simulation in TinkerCAD to provide hands-on experience in circuit building and testing. The students learned to install the Arduino IDE software and various libraries required for programming. Practical examples and exercises in the TinkerCAD simulator helped students understand the syntax, Arduino libraries, code execution, debugging techniques, and uploading code to the Arduino board. Through these activities, the students gained a solid foundation in programming concepts and hands-on experience with Arduino.

Topics Covered:

Module 1: Introduction to Arduino and Simulator, Overview of Arduino platform, its history, and versions,Fundamentals of Arduino, including its components and programming languages, Introduction to Arduino IDE software and its installation process, Understanding the basics of simulating Arduino circuits using tools like TinkerCAD

Module 2: Basics of programming in Arduino IDE and TinkerCAD, Setting up and configuring the Arduino IDE for coding, Exploring the syntax and structure of Arduino programming language, Creating circuits and building simple projects using TinkerCAD simulator, Utilizing Arduino libraries and resources for code optimization and functionality enhancement

Module 3: Interfacing and Coding of Sensors on Hardware and Simulator, Interfacing and controlling multiple LEDs for various lighting patterns, Programming Ultrasonic Sensor (HC-SR04) for measuring distance and object detection, Using the DHT11 sensor to measure temperature and humidity values, Integrating an LCD display with Arduino for scrolling text and data visualization, Connecting and utilizing sensors like raindrop and soil moisture sensors for environmental monitoring, Controlling servo motors for precise movement and speed adjustment, Interfacing Bluetooth, Wi-Fi, relay, and motor driver modules with Arduino Uno for wireless communication and actuator control

Module 4: Introduction to Blynk App and IoT Cloud, Installing and configuring the Blynk App for interfacing with Arduino projects, Implementing Bluetooth-based control of LEDs and other devices using the Blynk App, Exploring Wi-Fi connectivity and controlling motors through the Blynk App, Introduction to IoT Cloud and its integration with the ESP8266 Node MCU Development Board, Simulating and understanding the working principles of IoT applications, Coding and deploying IoT projects with Arduino and Blynk for remote monitoring and control.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

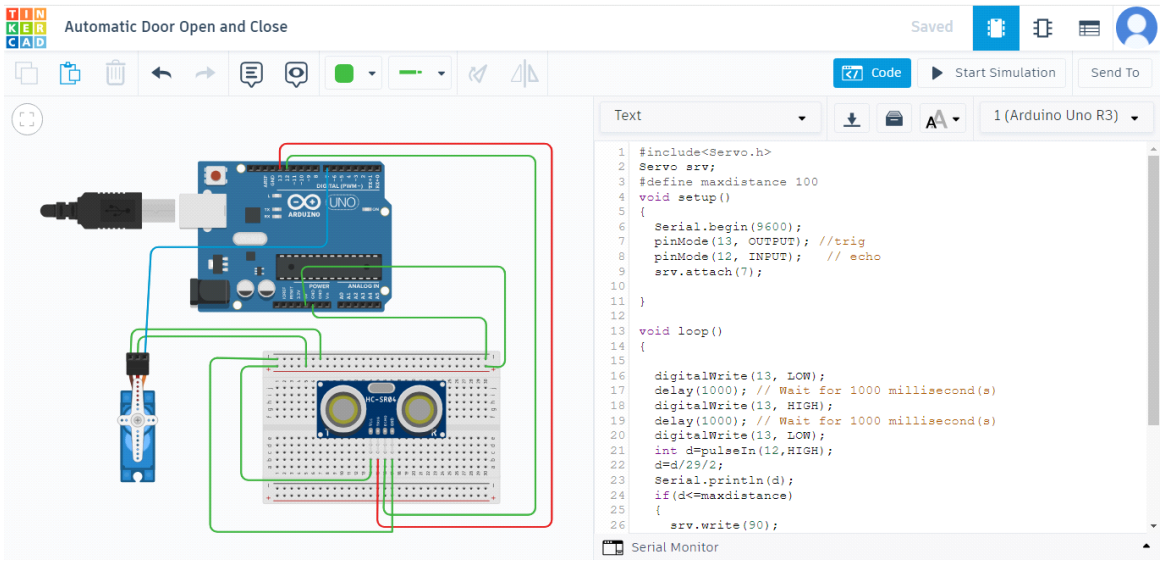
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

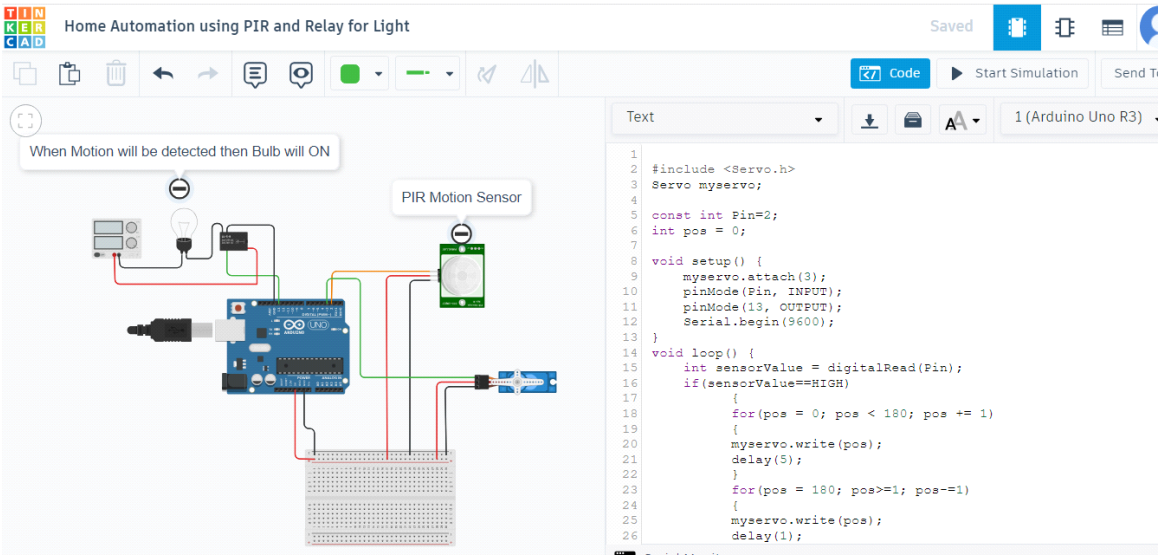
- Proficient Arduino Programming: Students gained expertise in writing code, using libraries, and uploading it to Arduino boards, enabling them to create innovative projects like robots and home automation tools.
- Hands-on Hardware Experience: Students acquired practical skills by connecting and programming various components, such as LEDs, sensors, and motors, preparing them for real-world applications.
- IoT and Cloud Connectivity: Students learned to interface Arduino with the Blynk App and explore IoT Cloud and the ESP8266 Node MCU, enabling them to develop IoT applications and connect their projects to the cloud for monitoring and control.
- Problem Solving and Debugging: Through project work, students enhanced their problem-solving abilities and gain proficiency in debugging code, essential skills applicable to various programming and engineering fields.

Screenshot for certificate course projects:

Project 1: Automatic Door Open and Close in Tinker CAD



Project 2: Home Automation using PIR and Relay for Light



BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

Advanced Programming Techniques and Data Structures

Eligible Students: B.Tech. 7th Semester

Date: 21-08-2018 to 16-10-2018

Duration of Course: 33 Hours

Course Code: CC_APTDS

No. of Students Enrolled in the course: 40

Timing: 11:30 to 01:05

Days: Tuesday & Thursday

Course Coordinator: Er. Ankit Sharma, Assistant Professor (CSE)

Introduction:

The Advanced Programming Techniques and Data Structures course in the B.Tech. Computer Science & Engineering program aimed to provide students with a comprehensive understanding of data structures and their implementation. The course was conducted during session 2018-19 for B.Tech. 7th semester students. The course duration was 33 hours, where 38 enrolled students out of 40 students successfully completed the course.

The course primarily focused on advanced concepts in data structures, covering topics that are essential in the field of Computer Science. Throughout the course, students were exposed to the inner workings of different data structures in various programming languages, enabling them to comprehend the underlying mechanisms and expected outcomes of these structures. The Faculty expert ensured the Hands-on practice sessions to reinforce the understanding of these concepts, particularly emphasizing the non-linear tree data structure.

Teaching Pedagogy:

The teaching pedagogy for the Advanced Programming Techniques and Data Structures course focused on a combination of theoretical concepts and practical hands-on exercises. To gauge students' comprehension of the fundamental concepts of data structures, intermediate sessions were organized as checkpoints. These sessions were followed by coding practice sessions, wherein students tackled programming problems related to algorithms such as searching, sorting, and more. By applying algorithm design techniques, students gained valuable hands-

on experience in solving problems involving sorting, searching, and data manipulation. The emphasis on practical implementation, critical thinking, and efficient data structure selection aimed to enhance students' problem-solving abilities in real-world programming

Topic Covered:

The Advanced Programming Techniques and Data Structures course consisted of six modules.

Module 1 introduced algorithm analysis, covering terminologies, analyzing algorithms, and time-space trade-offs.

Module 2 focused on algorithm complexity, including asymptotic analysis, performance measurements, and recursive algorithms.

Module 3 covered stack and queue implementation, including ADTs, operations, and their analysis.

Module 4 explored linked lists and their types, including representation, operations, and complexity analysis.

Module 5 delved into binary trees and binary search trees, covering terminologies, operations, and complexities.

Module 6 covered graphs and sorting algorithms, including sorting techniques, graph basics, and traversal algorithms.

These modules provided students with a comprehensive understanding of advanced data structures and programming concepts.

Assessment Procedure:

The students' performance was evaluated based on four parameters: technical knowledge in the concerned field, hands-on practice, skill tests, and attendance. Throughout the course, students received feedback and had the opportunity to improve their skills.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student’s ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

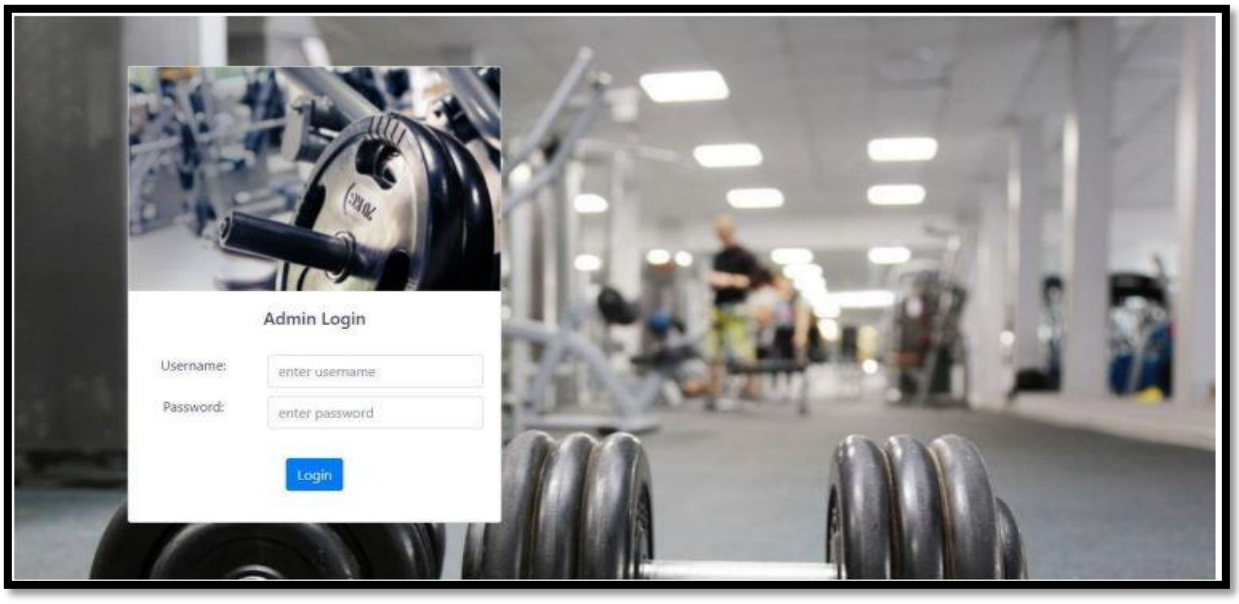
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

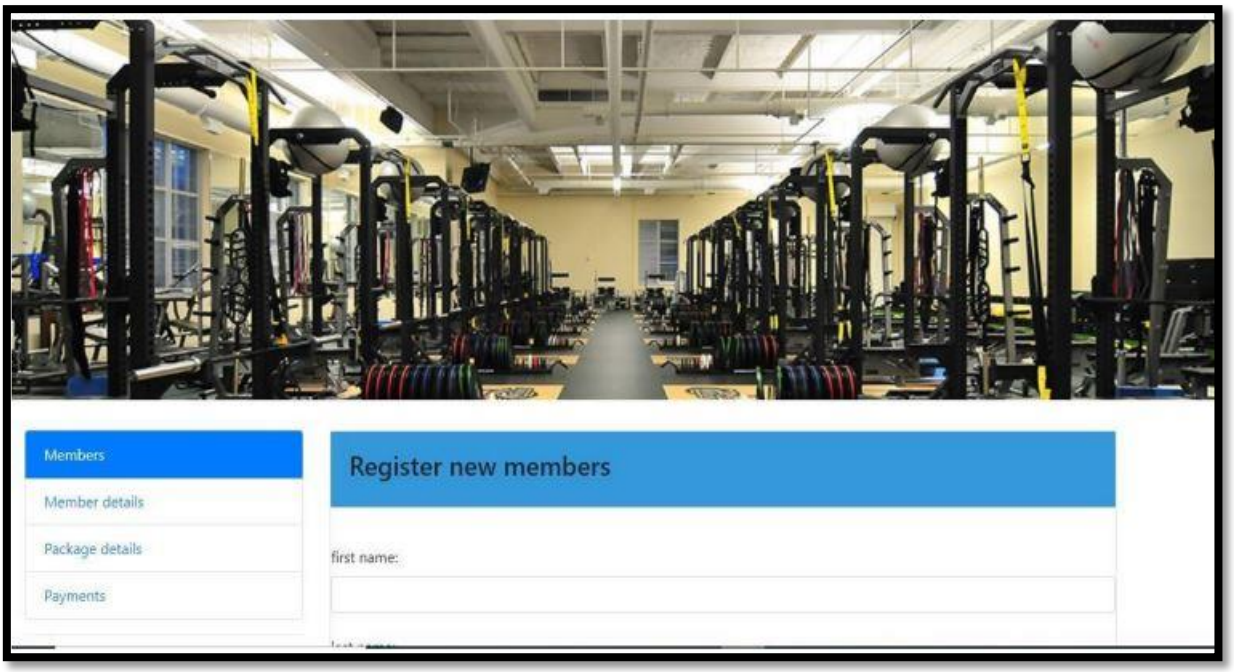
Outcomes:

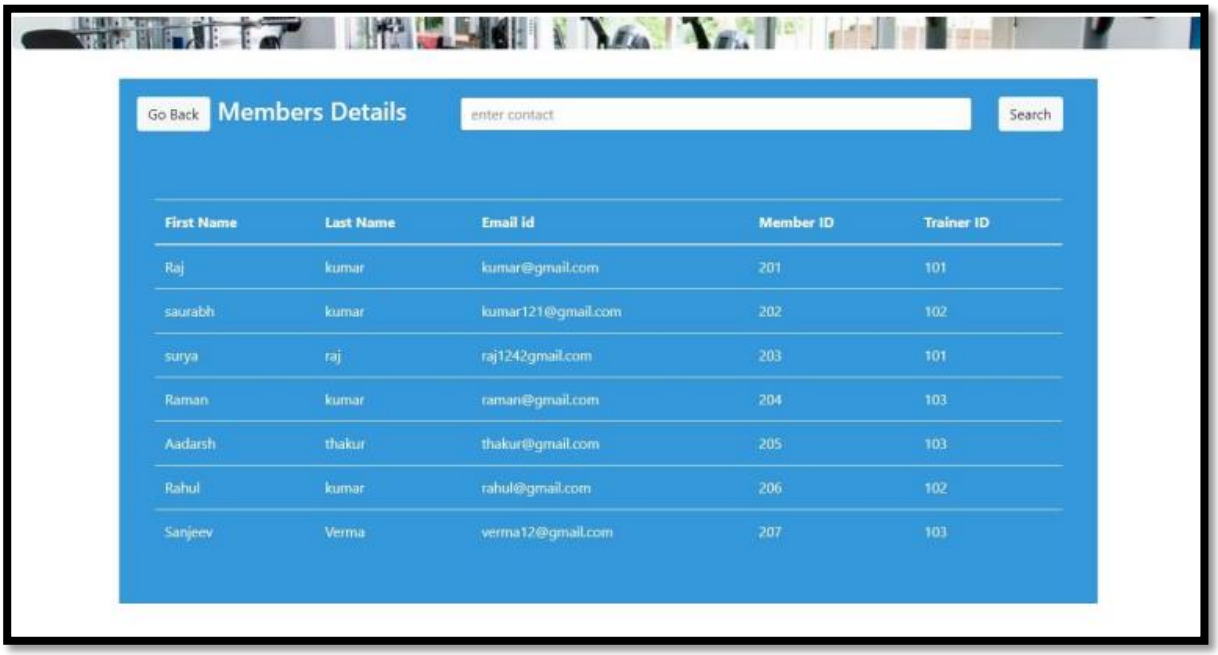
The outcomes of the course on Advanced Programming Techniques and Data Structures are as follows:

1. Developed a comprehensive understanding of data structures, including trees, graphs, and heaps, and their properties and operations.
2. Acquired implementation skills to effectively translate abstract concepts into functional code, gaining practical experience in implementing data structures.
3. Learned to analyze the performance and efficiency of data structures, enabling informed decision-making regarding their use in different scenarios.
4. Acquired the skill of problem decomposition, breaking down complex problems into smaller, manageable components, facilitating an organized approach to problem-solving.
5. Enhanced programming proficiency through coding assignments and projects such as "Gym Management System"

Screenshots of Gym Management System




Members
Member details
Package details
Payments
Register new members
first name: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Members Details
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Last Name
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Member ID
Trainer ID
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201
101
saurabh
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kumar121@gmail.com
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205
103
Rahul
kumar
rahul@gmail.com
206
102
Sanjeev
Verma
verma12@gmail.com
207
103

BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

Frontend Web Development

Eligible Students: B.Tech. 5th Semester

Date: 21-08-2018 to 16-10-2018

Duration of Course: 32 Hours

Course Code: CC_FWD

No. of Students Enrolled in the course: 40

Timing: 1:50 to 03:20

Days: Tuesday & Thursday

Course Coordinator : Er. Charandeep Singh Bedi, Assistant Professor (CSE)

The Frontend Web Development course was conducted during the session 2018-19 for B.Tech. 5th-semester students interested in gaining knowledge and skills in frontend web development. The course duration was 32 hours, where out of 40 enrolled students 39 students successfully completed the course.

The course provided an overview of the important technologies and concepts related to building user interfaces and interactive web applications. Frontend web development focuses on creating the client-side components of a web application, ensuring the visual design, interactivity, and user experience are well-executed. It requires proficiency in HTML, CSS, and JavaScript, along with a solid understanding of web design principles, responsive layouts, and browser compatibility.

Teaching Pedagogy:

The teaching pedagogy for the Frontend Web Development course focused on a practical and hands-on approach. The instructor employed a combination of lectures, demonstrations, and interactive sessions to engage students. Students were encouraged to actively participate in coding exercises, projects, and real-world case studies. The course emphasized problem-solving and critical thinking skills, allowing students to apply their knowledge to solve frontend development challenges. Regular assessments and feedback were provided to track progress and address any areas of improvement. The teaching pedagogy aimed to foster a deep understanding of the concepts

and technologies, ensuring that students gained practical skills and were prepared for real-world frontend development.

Topics Covered:

The course was divided into several modules, each focusing on specific aspects of frontend web development. The modules covered in the course were as follows:

Module 1: Introduction to PHP - Basic Syntax, Defining variable and constant, PHP Data type, Operator and Expression.

Module 2: Introduction to Web Technologies - Covers basics of HTML and CSS, along with understanding the Document Object Model.

Module 3: Responsive Web Design - Focuses on creating responsive layouts using CSS media queries and introduces CSS frameworks for streamlined development.

Module 4: JavaScript Fundamentals - Provides an introduction to JavaScript and covers syntax, data types, and working with variables, functions, and control structures.

Module 5: Advanced CSS and Styling - Covers CSS preprocessors, animations, transitions, and methodologies like BEM and SMACSS for advanced styling techniques.

Module 6: Handling Html Form with PHP - Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.

Module 7: Frontend Frameworks and Libraries - Introduces popular frontend frameworks like React, Angular

Module 8: Web Accessibility and Performance Optimization - Addresses designing accessible web interfaces, techniques for improving performance, and optimizing browser rendering.

Assessment Procedure:

The students' performance was evaluated based on four parameters: technical knowledge in the concerned field, hands-on practice, skill tests, and attendance. Throughout the course, students received feedback and had the opportunity to improve their skills.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

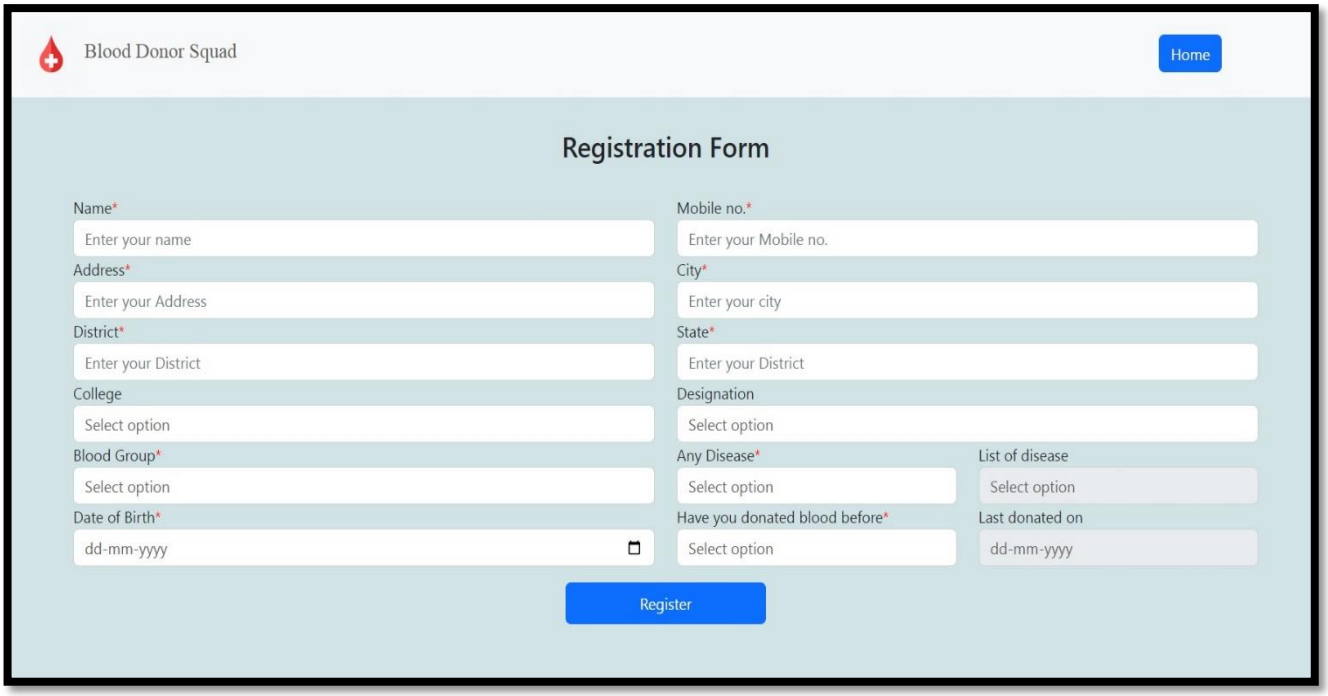
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcomes:

1. The Frontend Web Development course equipped students with the necessary skills and knowledge to develop interactive and user-friendly web interfaces.
2. Students acquired proficiency in HTML, CSS, and JavaScript, enabling them to create visually appealing and responsive web pages.
3. Students gained a deep understanding of the Document Object Model (DOM) and learned how to manipulate it
4. Students have understand the concepts and techniques of responsive web design, enabling them to build websites that adapt and perform well across various devices and screen sizes.
5. Students have understand the interactions between frontend and backend development by creating various project such as "Blood Donor Squad".

Screenshots of Blood Donor Squad


Blood Donor Squad
Register Now
Login
"Blood is a life.
pass it on!"
A blood donation portal


Blood Donor Squad
Home
Registration Form
Name*
Enter your name
Mobile no.*
Enter your Mobile no.
Address*
Enter your Address
City*
Enter your city
District*
Enter your District
State*
Enter your District
College
Select option
Designation
Select option
Blood Group*
Select option
Any Disease*
Select option
List of disease
Select option
Date of Birth*
dd-mm-yyyy
Have you donated blood before*
Select option
Last donated on
dd-mm-yyyy
Register

Report

on

Waste Water Treatment

Eligible Students: B.Tech. 7th Semester

Date: 22-08-2018 to 15-11-2018

Duration of Course: 32 Hours

Course Code: CC_WWT

No. of students Enrolled: 40

Timing: 02.35-04.00

Days: Wednesday & Thursday

Course Coordinator: Er. Rajan Vinayak, Assistant Professor (CE)

Water pollution poses a significant environmental concern, with profound impacts on both human health and the delicate balance of ecosystems. It arises from various sources, including industrial waste, agricultural runoff, and sewage. The pollutants, such as heavy metals, pesticides, and microorganisms, can lead to illnesses, aquatic life impairment, and compromised water quality. This report aims to address the problem of water pollution by highlighting the importance of implementing measures like improved waste management practices, enhanced wastewater treatment, and more effective regulation of industry and agriculture.

The course received positive feedback from the students. Out of 40 students, 38 received certificates upon successful completion of the course.

Teaching Pedagogy:

The course aimed to provide students a thorough comprehension of pollutants and the techniques utilized in water treatment systems. It delved into diverse categories of pollutants, encompassing chemical, biological, and physical contaminants, and examined their origins, properties, and potential impacts on water quality. The course emphasized the development of students' expertise and abilities in constructing efficient water treatment systems. It encompassed a wide array of subjects, commencing with the study of water collection systems, which entailed an exploration of different water sources such as surface water (rivers, lakes) and groundwater.

Topics Covered:

The modules covered in this course are as follows:

Module-1 Pollutants and their Effects

Pollutants and their types, Air Pollution, Land Pollution, Water Pollution

Module-2 Water Quality-Criteria & Analysis

Quality of Water, Water requirements, Source and collection of water, Overview of purification of water and its Pre-treatment

Module-3 Sedimentation Tank

Theory of sedimentation tank, Design of sedimentation, Theory and design of filtration, Theory and design of Disinfection

Module-4 Reservoirs

Storage and Distribution reservoir, Pumps and Pumping requirements, Valves and Appurtenances

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcomes:

The outcomes of this course can be summarized as follows, using past tense:

1. Students attained knowledge regarding the chemical makeup of natural water sources and comprehended the factors causing variations in these compositions.
2. Students acquired a comprehensive understanding of the primary categories of pollutants and discovered effective methods for managing and regulating each type.
3. They gained insights into the intricate processes involved in treating sewage to ensure its safe discharge into the environment.
4. Model developed by students after completing Wastewater Treatment Plant course.

Project on Waste water treatment plant

Report

on

Project Planning and management through REVIT

Eligible Students: B.Tech. 5th Semester

Date: 23-08-2018 to 15-11-2018

Duration of Course: 36 Hours

Course Code: CC_PPMR

No. of students Enrolled: 34

Timing: 01.50-03.20

Days: Thursday & Friday

Course Coordinator: Er. Gurkirtan Sharma, Assistant Professor (CE)

Project Planning and management through REVIT is an advanced building information modeling that caters specifically to architects, engineers, and construction professionals. It provides an extensive range of powerful tools that facilitate the entire lifecycle of building design, construction, and management. REVIT's intuitive interface coupled with its robust analytical features empower users to efficiently create architectural designs, tackle complex engineering tasks, perform structural engineering analyses, generate comprehensive construction documentation, and foster seamless project collaboration.

Throughout the course, students were evaluated based on skill tests, hands-on practice, attendance, and technical knowledge. The feedback from students was overwhelmingly positive, indicating their successful acquisition of knowledge and skills. Out of the 34 participants, 32 students received certificates upon completing the course.

Teaching Pedagogy:

The course commenced by explaining the students with REVIT's fundamental techniques, encompassing initial software configurations and familiarizing them with the user interface. Subsequently, students delved into a series of modules that extensively explored different aspects of REVIT. These modules encompassed structures and annotation, types of loads and patterns, requirements for structure design, and reinforcement settings. Through these comprehensive modules, students gained a profound understanding of REVIT's diverse functionalities, including the selection of fabrics, varying foundation slab types, the utilization

of different line patterns, the application of load types, and the discernment of suitable materials for specific structures.

Topics Covered:

The modules covered in this course are as follows:

Module-1: Basics of REVIT software

- Introduction to the basic techniques of REVIT
- Basic initial settings and user interface of the software
- Analytical Link types in detail

Module-2: Structures and Annotation

- Annotation Family Label Types in detail
- Fabric (select all three) in detail
- Foundation Slab Types for different types of structures

Module-3: Types of loads, patterns, and styles

- How to do Halftone and Underlay Settings
- Line Patterns, Line Styles for different structures
- Load Types for different structures

Module-4: Materials for different structures

- Requirement for structure design
- Reinforcement Settings and Slab Edge Settings
- Structural Settings for different structures

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

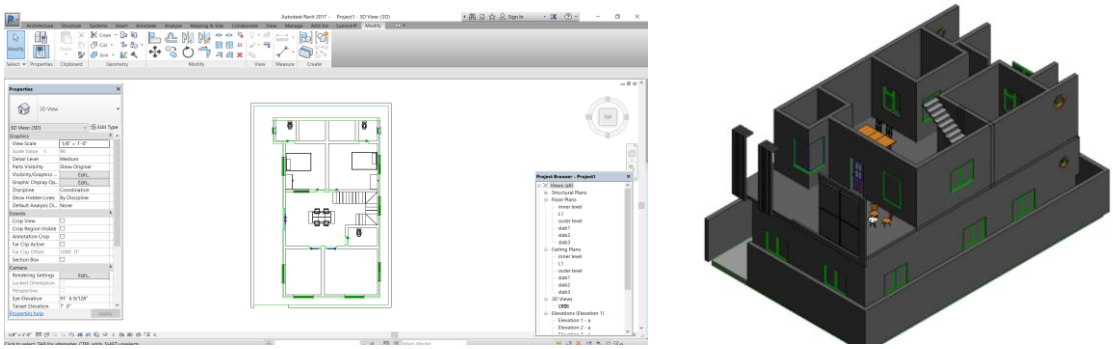
The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcomes:

1. Students were able to utilize REVIT's collision scanning capabilities to identify and resolve clashes between elements.
2. Students gained proficiency in cropping non-rectangular model areas quickly and effectively.
3. The students successfully applied techniques to automatically display dimension values for enhanced accuracy and productivity.
4. They derived construction insights from design models, enabling better decision-making during the building process.
5. Students learned to calculate detailed material quantities and present them as totals in either current or load values.
6. They gained the ability to create detailed views and drawings from 3D models, providing comprehensive documentation.
7. The project undertaken during the course involved designing of building structure using REVIT. Students had the opportunity to apply their knowledge and skills to develop an architectural model, perform analysis, and generate accurate documentation.



Layout plan, inside views of Building structure project using REVIT

Project on 3D View of building structure project using REVIT

BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

Basics of Engineering Wears

Eligible Students: B.Tech. 5th Semester

Date: 20-08-2018 to 25-10-2018

Duration of Course: 33 Hours

Course Code: ME-BEW

No. of Students Enrolled in the course: 36

Timing: 11.30 am - 1.05 pm

Days: Tuesday & Thursday

Course Coordinator: Er. Ashish Kumar

Basics of Engineering Wears course conducted during the session 2018-19 for B.Tech. students. This certificate course delves into the fascinating field of engineering materials and the critical role they play in various industries. This course explored the science behind wear, friction, and lubrication to ensure the efficient functioning and longevity of mechanical systems. The course duration was 33 hours, where 36 enrolled students successfully completed the course.

Throughout this course, the students examined the fundamental concepts of wear, including the different types of wear mechanisms, such as adhesive, abrasive, erosive, and corrosive wear. Students determined the factors influencing wear, such as contact pressure, sliding velocity, temperature, and surface roughness, and learn how to mitigate wear through various engineering strategies.

Teaching Pedagogy:

The Engineering Wears course employs a diverse range of teaching pedagogies to create an engaging and interactive learning experience. Through comprehensive lectures, real-world case studies, hands-on experiments, group discussions, multimedia resources, guest lectures, assignments, projects, and assessments, students will develop a solid understanding of the fundamental principles and practical applications of engineering wears. Online learning platforms will complement these methods, providing additional resources and facilitating collaborative learning. By combining theory, practical experimentation, and industry insights, this pedagogical

approach aims to foster critical thinking, problem-solving skills, and the ability to analyze and optimize the performance of engineering components in the face of wear-related challenges.

Topics Covered:

MODULE-1: Introduction to Engineering Wear

Module 1 provides an overview of engineering wear and its significance in design and industrial applications. It covers topics such as viscosity, flow of fluids, and the nature of surfaces in contact. Participants will learn about the properties of surface layers, methods of studying surfaces, and the contact behavior of smooth and rough surfaces.

MODULE-2: Wear and its Potential Reasons

Module 2 focuses on the causes and morphology of wear. It discusses design issues, friction in upper and lower pairs, and different types of friction. Participants will explore the definition, mechanisms, and measurement of wear, as well as the theories associated with wear phenomena. The module also covers wear of materials and the impact of friction on wear.

MODULE-3: Introduction to ASTM and Various Codes

Module 3 introduces the American Society for Testing and Materials (ASTM) and various codes related to wear. It presents case studies of wear occurring in fields such as agricultural tillage and industrial production, including the airline industry. The module explores remedial measures for mechanical wear through metallurgical processes. Participants will also learn about bearing selection, lubrication, maintenance, and diagnostic considerations in different tribological components.

MODULE-4: Lubrication and Lubricants

Module 4 focuses on lubrication and lubricants. It covers the principles of lubrication and the general requirements of bearing materials. Participants will learn about different types of bearing materials and their applications. The module delves into hydrostatic step bearings, hydrodynamic theory of lubrication, friction in sliding bearings, and hydrodynamic thrust bearings. Additionally, participants will gain an understanding of lubricant functions, types, properties, and selection criteria, as well as the classification, recycling, and disposal of oils.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. **Technical Knowledge in Concerned Field (20 marks):**
   This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. **Hands-on Practice (10 marks):**
   Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. **Skill Test (10 marks):**
   The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. **Attendance (10 marks):**
   Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

1. Knowledge of Surface Topography: Students acquired the ability to understand and model the surface topography of engineering materials, allowing them to analyze and predict wear behavior based on surface roughness and contact conditions.
2. Understanding of Tribology Basics: Students developed a comprehensive understanding of the fundamental principles of tribology and related sciences. They grasped the theoretical background of processes occurring in tribological systems and the various mechanisms and forms of interaction between friction surfaces.
3. Familiarity with Types of Wear: Students became familiar with different types of wear mechanisms, including adhesive, abrasive, erosive, and corrosive wear. They understood the underlying mechanisms of each type and recognized the factors that influence wear behavior in various engineering systems.
4. Methods to Reduce Friction: Students learned various methods to reduce friction in engineering systems, such as surface coatings, lubrication strategies, and surface treatments. They acquired the skills to identify friction-related problems and implemented effective

solutions to enhance the efficiency and lifespan of mechanical components.

5. Students studied the wear in machine components such as gears and many more. It was the major achievement of the certificate course.

Project on Wear in Bearings

Project on Wear in Gears

BABA FARID COLLEGE OF ENGG. & TECHNOLOGY

Report

on

AutoCAD-3D

Eligible Students: B.Tech. 7th Semester

Date: 20-08-2018 to 25-10-2018

Duration of Course: 32 Hours

Course Code: ME-AC3D

No. of Students Enrolled in the course: 30

Timing: 01:50 pm to 03:20 pm

Days: Monday & Thursday

Course Coordinator: Er. Ashish Kumar

Auto CAD3D course conducted during the session 2018-19 for B.Tech. students. The Auto CAD3D course offers a comprehensive learning experience for individuals aspiring to develop proficiency in computer-aided design (CAD) using the relevant software. SolidWorks is a powerful and widely-used 3D CAD software that enables users to create precise and detailed models for various industries, including engineering, product design, and manufacturing. The course duration was 32 hours, where 30 enrolled students successfully completed the course.

This course aims to equip students with the necessary knowledge and skills to effectively utilize SolidWorks in designing and modeling 3D objects. Through a combination of theoretical concepts, hands-on practice, and interactive sessions, students will learn to navigate the SolidWorks interface, apply design principles, and create complex 3D models.

Teaching Pedagogy

The teaching pedagogy for the Auto CAD3D course involves a comprehensive and interactive approach. Through lectures, demonstrations, and hands-on practice, students gain practical skills in utilizing SolidWorks for computer-aided design. Individual guidance and collaborative learning activities foster a supportive environment for students to overcome challenges and enhance their understanding. Regular assessments and feedback ensure progress and reinforcement of learning. Real-world applications and project-based learning provide practical relevance, while resources for continuous learning enable students to explore advanced features of SolidWorks. This pedagogy aims to equip students with the necessary skills to effectively use

SolidWorks for designing and modeling 3D objects.

Topics Covered:

Module-1: Getting started with SolidWorks introduces the software, its interface, screen layout, icons, and online help for troubleshooting.

Module-2: Opening a new working space covers setting up the working directory, customization, file saving, addressing redundancy, and familiarizing with SolidWorks icons.

Module-3: Sketch focuses on sketching techniques, including modification, constraints, dimensioning, and inspection.

Module-4: Part modeling covers generating planes, sketching within part modeling, and using tools like extrude, revolve, sweep, and editing functions for refining part models.

Module-5: Assembly of components includes techniques for component dragging, pattern creation, model display management, and generating a bill of materials.

Module-6: Layout covers table creation, annotation, sketching, and unit modification to enhance the presentation and documentation aspects of SolidWorks projects.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. **Technical Knowledge in Concerned Field (20 marks):**
   This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

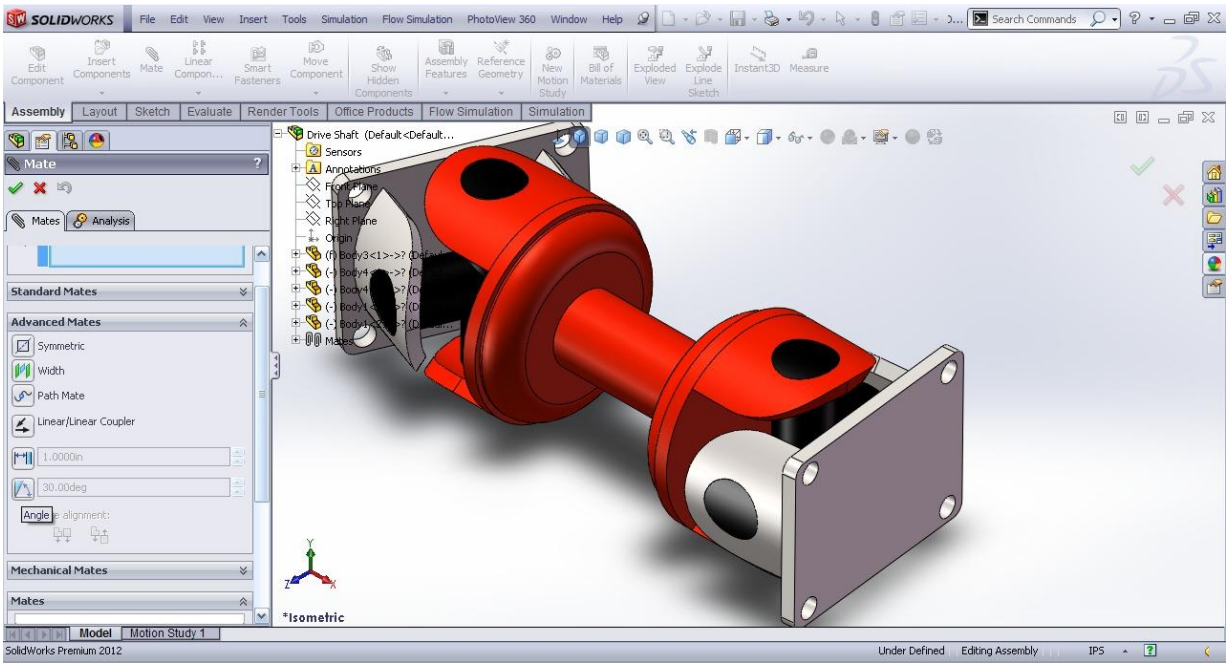
2. **Hands-on Practice (10 marks):**
   Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. **Skill Test (10 marks):**
   The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. **Attendance (10 marks):**
   Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

1. Demonstrated competency with multiple drawing and modification commands in SolidWorks.
2. Proficiently created three-dimensional solid models using SolidWorks.
3. Assembled multiple solid models to create complex three-dimensional assemblies.
4. Applied industry standards in the preparation of technical mechanical drawings, ensuring adherence to established guidelines.
5. Analyzed fits and tolerances in mechanical assembled systems, enabling evaluation and optimization of design functionality.
6. Developed skills in analyzing the motion mechanisms of mechanical systems, gaining a comprehensive understanding of component interactions and system functioning.
7. Students learned the skills to draw a design of Universal Joint and many more.



Design of a Universal Joint

Report

On

Electrical System Design using MATLAB

Eligible Students: B.Tech 3rd Semester

Date: 21/08/2018 to 30/10/2018

Duration of Course: 32 Hours

Course Code: CC_ESDM

No. of Students Enrolled: 32

Time: 1:50 to 3:20

Days: Tuesday & Thursday

Course Coordinator: Er. Harsimran Singh, Assistant Professor (EE)

The Certificate Course on Basic MATLAB and Simulation of Electrical Systems aimed to provide students with a solid foundation in using MATLAB and Simulink for simulation and analysis of electrical systems. MATLAB and Simulink are widely used software packages for numeric computation, visualization, and dynamic simulation. The course introduced students to the basics of MATLAB and its applications, including toolbars, scripting, data import, and graph plotting. It also covered the fundamentals of Simulink and its usage for modeling electrical systems. The course emphasized the importance of MATLAB and Simulink in electrical engineering applications, such as power system design and control. Out of the enrolled students, 30 students had successfully completed the course.

Teaching Pedagogy:

The teaching pedagogy for the Certificate Course on Basic MATLAB and Simulation of Electrical Systems employed a comprehensive approach to ensure students obtained a solid understanding of MATLAB and Simulink. The course combined theoretical lectures, hands-on practice, assignments, skill tests, and active participation. The modules covered various aspects, starting from the basics of MATLAB and Simulink to mathematical coding, modeling and analysis, and the design of electrical, transmission, and distribution systems. Students were evaluated based on their technical knowledge, hands-on practice, skill tests, and attendance, emphasizing the practical application of the learned concepts. By the end of the course, students achieved key learning outcomes, including the ability to perform computations and simulations, proficiency in file management, understanding of circuit components and their installation, and knowledge of solar panel installation and DG synchronization. The teaching pedagogy aimed to equip

students with a strong foundation in MATLAB and Simulink, empowering them to analyze and simulate electrical systems effectively in real-world scenarios.

Topic Covered:

Module 1: Introduction to MATLAB

Students were introduced to the basics of MATLAB, its applications, and the various tools available in the MATLAB toolbar. They learned about creating scripts, importing data, and managing variables.

Module 2: Introduction to MATLAB Simulink

This module focused on Simulink, the graphical programming environment in MATLAB. Students learned about simple blocks, wiring connections, and how to create dynamic simulations using Simulink.

Module 3: Mathematical Codes and Graphs

Students were introduced to programming concepts in MATLAB and learned how to write mathematical codes, perform calculations, and plot graphs using MATLAB functions.

Module 4: Simulink Modeling and Analysis

This module covered the selection of basic electrical components from the Simulink library for modeling electrical systems. Students learned about simulation, analysis, and automation coding in Simulink.

Module 5: Design of Electrical Systems using Simulink

Students gained knowledge about designing simple electrical systems using Simulink. They learned about ladder logic, programming with Programmable Logic Controllers (PLCs), load calculations, and linear control systems.

Module 6: Design of Transmission Systems

This module focused on the design of transmission lines, both short and long. Students learned about the various components and calculations involved in transmission line design.

Module 7: Design of Distribution Systems

Students were introduced to distributed networks and learned about designing small grids, control panel installations, solar panel concepts, and DG synchronization. They also gained practical experience in wiring and testing various electrical equipment.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

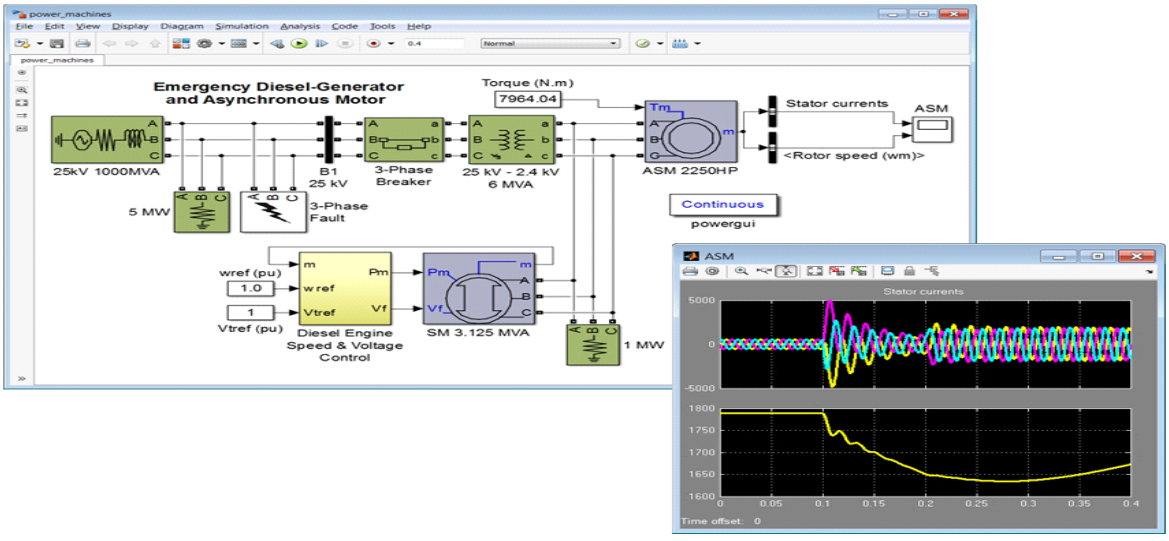
Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

Outcome:

Upon completing the course, students achieved the following learning outcomes:

- Ability to perform interactive computations and simulations using MATLAB.
- Proficiency in file management and memory handling in MATLAB.
- Understanding of circuit components, relay and circuit breaker parameters, and their installation in control panels.
- Knowledge of solar panel installation and DG synchronization in electrical systems.

The course provided students with a strong foundation in MATLAB and its applications in electrical engineering, enabling them to perform simulations, analyze electrical systems, and apply their knowledge in real-world scenarios.



Project on Emergency Diesel-Generation and Asynchronous Motor

Report

On

Power Simulation in Distributed Systems

Eligible Students: B.Tech 5th Semester

Date: 21/08/2018 to 30/10/2018

Duration of Course: 32 Hours

Course Code: ECE-PSDS

No. of Students Enrolled: 10

Time: 1.50 to 3.20

Days: Tuesday & Thursday

Course Coordinator: Er. Sabina, Assistant Professor (EE)

The Certificate Course on Power System Simulation in Distributed Systems focused on providing students with a comprehensive understanding of power system analysis using ETAP (Electrical Transient and Analysis Program) software. ETAP is a powerful simulation tool used by power systems engineers to model, analyze, and automate generation, distribution, and industrial power systems. It enables engineers to create an "electrical digital twin" and analyze various aspects such as system dynamics, transients, and protection. This course aimed to equip students with the necessary skills to perform simulations, analysis, and design of power systems using ETAP software. Out of the enrolled students, 9 students had successfully completed the course.

Teaching Pedagogy:

The teaching pedagogy employed in the Certificate Course on Power System Simulation in Distributed Systems was designed to enhance students' understanding and practical skills in power system analysis using ETAP software. The pedagogy focused on a combination of theoretical concepts and hands-on practice to provide an immersive learning experience. The course utilized a structured module-based approach, allowing students to progressively build their knowledge and skills. The instructors employed interactive lectures to deliver theoretical concepts, supplemented with visual aids and real-world examples to enhance comprehension. Hands-on practice sessions were conducted, providing students with opportunities to work directly with ETAP software, design single line diagrams, perform simulations, and analyze power system scenarios. This experiential learning approach fostered active student engagement and critical thinking. The instructors also encouraged collaborative learning through group discussions, allowing students to share their insights and learn from each other's experiences. Regular assessments and

feedback sessions were conducted to monitor student progress and address any challenges. Overall, the teaching pedagogy aimed to create a supportive and stimulating learning environment that facilitated the acquisition of knowledge, practical skills, and a deep understanding of power system simulation in distributed systems using ETAP software.

Topic Covered:

Module 1: Insulators and Introduction to ETAP Software

Students were introduced to overhead line insulators, voltage distribution in a string of suspended insulators, and the features and applications of ETAP software. They learned about the symbols used in ETAP and its benefits in power system analysis.

Module 2: Designing Single Line Diagrams

This module focused on designing single line diagrams (SLDs) using ETAP. Students learned about circuit design, fault calculations, load flow analysis, and corona designing. They applied their knowledge by designing SLDs for MES GRID 66KV and BFGI.

Module 3: Short Circuit Analysis in Power Systems

Students learned about the difference between short circuits and arc flashes. They gained knowledge about arc flash analysis and performed short circuit analysis using ETAP software.

Module 4: Distribution System Load Flow and Voltage Stability

This module covered the approximate methods of distribution system analysis, including DC 2-wire and 3-wire systems, AC single-phase, three-phase, and 4-wire systems. Students also learned about copper efficiency comparison.

Assessment Procedure:

The students were evaluated throughout the course based on four parameters: Technical Knowledge, Hands-on Practice, Skill Test, and Attendance. Each parameter carried a certain weightage in the overall evaluation.

1. Technical Knowledge in Concerned Field (20 marks):

This parameter measured their theoretical knowledge, conceptual understanding, and ability to apply that knowledge to practical scenarios.

2. Hands-on Practice (10 marks):

Hands-on practice evaluated the student's ability to apply their knowledge in practical situations. It measured their proficiency in utilizing tools, techniques, or software relevant to the course.

3. Skill Test (10 marks):

The skill test assessed the student's competency and proficiency in specific skills related to the course. It focused on practical skills that were essential for the field of study.

4. Attendance (10 marks):

Attendance refers to the student's regular presence in the course. It emphasizes the importance of active participation and consistent engagement throughout the duration of the program.

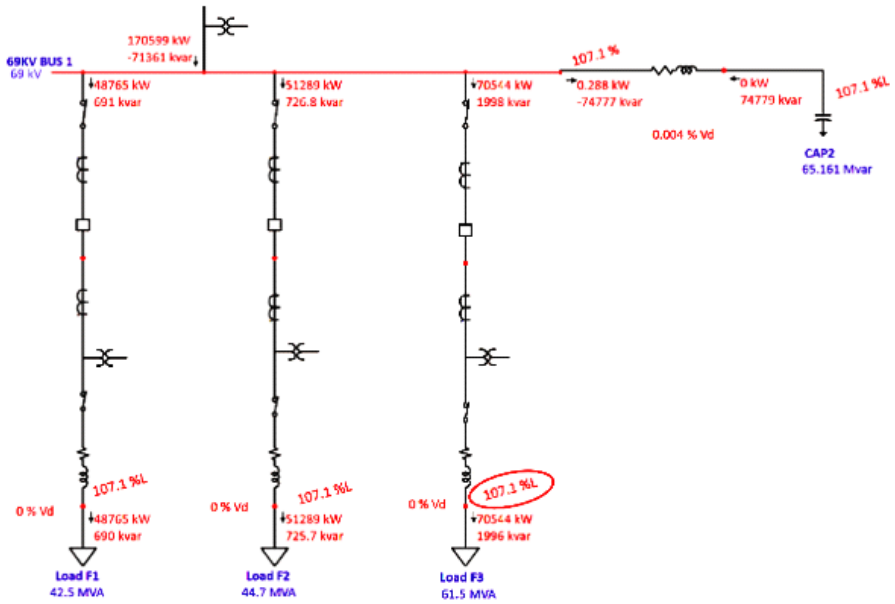
Outcome:

Upon completing the course, students achieved the following learning outcomes:

1. Proficiency in utilizing high-level programming languages and software tools for power system studies: Students developed proficiency in using programming languages and software tools specifically designed for power system analysis and simulation. They gained hands-on experience in utilizing these tools to solve complex power system problems.
2. Ability to write computer programs for load flow analysis: Students learned how to write computer programs to perform load flow analysis, a crucial aspect of power system studies. They gained the skills to model power system components, perform load flow calculations, and analyze the steady-state behavior of electrical networks.
3. Competence in performing short circuit analysis and stability studies in power systems: The course equipped students with the knowledge and skills to conduct short circuit analysis and stability studies in power systems. They learned about different types of faults, fault current calculations, and stability analysis techniques to ensure the reliable and stable operation of power systems.
4. Understanding of load frequency control in a distributed system: Students gained an understanding of load frequency control, an important aspect of power system operation in distributed systems. They learned about the principles and techniques involved in maintaining a balance between load and generation to ensure stable frequency control.

The course focused on utilizing ETAP software for power system simulation in distributed systems. Students acquired practical skills in analyzing and designing power systems using this software. This knowledge and skill set are highly valuable for electrical engineering professionals working in various sectors, including power generation, transmission, distribution, industrial applications, transportation, and low voltage systems.

By attaining these outcomes, students were well-prepared to apply their knowledge in real-world scenarios and contribute effectively to the field of electrical engineering.



Project on Load flow analysis 138/69 kV substation using ETAP software