Jyothi Engineering College

NAAC Accredited College with **NBA** Accredited Programmes*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O. CHERUTHURUTHY, THRISSUR, PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777

CREATING TECHNOLOGY
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JYOTHI ADD-ON COURSES (2019-20)

Jyothi Engineering College is offering the following add-on course for our students:

1. **INTRODUCTION TO VHDL**
2. **EMBEDDED SYSTEMS DESIGN WITH 8051**
3. **CCTV INSTALLATION**
4. **COMPUTER AIDED DESIGN**
5. **DOMESTIC WATER POLLUTION AND REMEDIAL MEASURES**
6. **BASICS OF PROGRAMMING**
7. **PROGRAMMING PYTHON (INFYTQ)**
8. **FULL STACK DEVELOPER – PHASE 1**
9. **ELECTRONIC CIRCUIT SIMULATION AND PCB PRINTING**
10. **FUNDAMENTALS OF MATLAB**
11. **LASER AND VINYL CUTTER**
12. **NPTEL**

These add-on courses are introduced to improve the technical skill of the students and are not a part of the syllabus/ curriculum. The courses are out of syllabus program of affiliating University. The maximum seats available for each add-on course is 20.Students can log on to the link **courses.jyothiengg.com.** for registration and the course details .Registration will be on first come-first serve basis.

Dr. SUNNY JOSEPH KALAYATHANKAL
M.Tech, MCA, M.Sc, M.Phil, B.Ed
Ph.D (Computer Science), Ph.D (Maths)
PRINCIPAL
Jyothi Engineering College
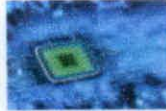Cheruthuruthy P.O.- 679 531

JYOTHI ADD-ON COURSES

WATER QUALITY MANAGMENT OF DOMESTIC SOURCES
ELIGIBILITY
Semester: S3, S5, S7
Department: All Departments
FEE DETAILS
Payment: Rs 200
Refund: Rs 200
CONTACT
Mr. M G Cyriac Civil Department
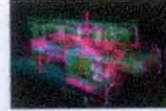Dr.Agnes Antci C Civil Department

SYLLABUS

INTRODUCTION TO VHDL
ELIGIBILITY
Semester: S5, S7
Department: ECE, EEE
FEE DETAILS
Payment: Rs 200
Refund: Rs 200
CONTACT
Mr. Akhil Balakrishnan EEE Department
Mr. Kapil Das C EEE Department

SYLLABUS

COMPUTER AIDED DESIGN
ELIGIBILITY
Semester: S3, S5, S7
Department: ME
FEE DETAILS
Payment: Rs 200
Refund: Rs 200
CONTACT
Mr. Christy V V ME Department
Mr. NABO N S ME Department

SYLLABUS

INTRODUCTION TO IMAGE PROCESSING USING MATLAB
ELIGIBILITY
Semester: S5, S7
Department: ECE, CSE
FEE DETAILS
Payment: Rs 200
Refund: Rs 200
CONTACT
Mr. Pappilon Arbah Mon S CSE Department

SYLLABUS

CCTV INSTALLATION
ELIGIBILITY
Semester: S5, S7
Department: ECE, EEE, ME
FEE DETAILS
Payment: Rs 200
Refund: Rs 200
CONTACT
Ms. Shiny M I ECE Department
Mr. Binoj V J ECE Department

SYLLABUS

EMBEDDED SYSTEMS DESIGN WITH 8051
ELIGIBILITY
Semester: S5, S7
Department: ECE, EEE, ME, CSE
FEE DETAILS
Payment: Rs 600
8051 Kit issued
CONTACT
Mr. Jinesh K J ME Department

SYLLABUS

WORKSHOP ON 3-D DESIGN & 3-D PRINTING (FABLAB)
ELIGIBILITY
Semester: S3, S5, S7
Department: All
FEE DETAILS
Payment: Rs 1000
Refund: Nil
CONTACT
Mr. Shijo ME Department

SYLLABUS

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DEPARTMENT OF EEE-ADD ON COURSE

INTRODUCTION TO VHDL
Eligible for: CSE,ECE, EEE (S4 or higher semester STUDENTS)
DURATION: 41 HOURS

This course will provide you with an overview of the VHDL language and its use in logic design. By this course, you will understand the basic Parts of VHDL structure and its usage and basic VHDL Constructs Used in the Simulation. You will also be able to build simple digital Logic Structures for specific purpose and connect entire models together to create Hierarchical Designs.

Course Objective

To familiarise the integration of industry standard hardware description language VHDL into the digital design process

Course Outcome

1. You will be able to write VHDL code for simple digital hardware designs
2. You will be able to design and implement various combinational and sequential digital circuits using different styles of modelling of VHDL.
3. You will be able to simulate and validate a digital design/logic using VHDL with the help of ModelSim/ Xilinx Software

Skills Required

1. **Background in digital logic design**
2. Prior knowledge of "C" language is helpful, but not required

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SYLLABUS

Introduction

About VHDL- VHDL Versions-Design Flow- EDA Tools-Translation of VHDL Code into a Circuit-Circuit Simulation- VHDL Syntax-Number and Character Representations in VHDL

Code Structure

Fundamental VHDL Units- VHDL Libraries and Packages-Library/Package Declarations-ENTITY- ARCHITECTURE- GENERIC -Coding Guidelines

Data Types

Introduction- VHDL Objects-Data-Type Libraries and Packages -Type Classifications-Standard Data Types-Standard-Logic Data Types-Unsigned and Signed Data Types-Fixed-and Floating-Point Types-Predefined Data Types Summary- User-Defined Scalar Types-User-Defined Array Types- Subtypes - Type Conversion-Legal versus Illegal Assignments

Concurrent Code

Introduction -Using Operators-The WHEN Statement-The SELECT Statement- The GENERATE Statement-Implementing Sequential Circuits with Concurrent Code-Implementing Arithmetic Circuits with Operators

Implementation of Combinational Circuits using VHDL

Sequential Code

Introduction- PROCESS -The IF Statement -The WAIT Statement- The LOOP Statement - The CASE Statement -Implementing Combinational Circuits with Sequential Code-SIGNAL and VARIABLE

Implementation of sequential Circuits using VHDL

Synchronous Sequential Design

Synchronous Sequential Systems , Models of Synchronous Sequential Systems, Algorithmic State Machines ,Synthesis from ASM chart , State Machines in VHDL

Reference: Volnei A. Pedroni "*Circuit Design and Simulation with VHDL*",second edition, The MIT press

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COURSE OUTCOMES VS PO MAPPING:

Sl.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	1	1	2	2	2	1	2
CO2	3	2	2	2	2	2	-	2	2	2	2	3
CO3	2	3	2	3	2	1	2	1	1	1	-	2
Avg	2.6	2.3	2.3	2.6	2.3	1.3	1.5	1.7	1.3	1.3	1.5	2.3

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DEPARTMENT OF ECE-ADD ON COURSE
CCTV Installation
DURATION: 31 HOURS

Closed-circuit television (CCTV), also known as video surveillance, is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors. In industrial plants, CCTV equipment may be used to observe parts of a process from a central control room, for example when the environment is not suitable for humans. Through this Add on course students will be able to know different types of CCTV system, how to decide which system to use for a specific application, and about it's transmission, connections, DVR and networking.

Course Objectives
1. To understanding the customer's requirements
2. To installing the camera and CCTV hardware equipment
3. To configure the system for surveillance function
4. Coordinate the work with colleagues and coworkers

Course outcomes:
CO1: Students Will be able to Interact with customer and supervisor and understand customers requirements

CO2: Students Will be able to Procuring CCTV hardware and test before installation

CO3: Students Will be able to Connecting cables and Setting up the camera using tools, Setting CCTV camera and DVR with the system

SYLLABUS
Module I: CCTV Introduction

To understand the import ants of surveillance,

To study different types of CCTV cameras, monitors and installation tools in brief

To familiar with different lighting conditions

To study about power supplies and different types needed for CCTV

To familiar with Different display system

To understand the site condition

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Suggest solution based on the site condition and requirement

Deciding the CCTV system to be installed

To understand about the ambient light setting

Module II: CCTV CAMERA AND LENS

To acquire knowledge about different types of cameras and the latest technologies,

To study about cameras in depth,

To study about sophisticated equipments related with CCTV

Understand different Lenses

Understand the importance of focusing

To procure CCTV hardware

To test hardware before installation

To understand the focusing concept and calibration of camera

Deciding the CCTV system to be installed

Module III: Transmission and Connections

To study different types of cable, switches and other technologies to fulfill the system for
Transmission

Understand the concept of splitter, multiplexer and switcher

Understand the wiring schemes

To correct the different problem related to CCTV

Understand the cable laying methods

Understand the connection establishment

Module IV: DVR and Networking

To familiar with CCTV recording equipment.

To understand the networking information schemes

Understand networking equipments

Study about IP camera

To connect CCTV camera and DVR with the system

Setting up CCTV system

To check the functioning of CCTV system

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To understand about different DVR related issues

COURSE OUTCOMES VS PO MAPPING:

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CO1	3	2	3	3	3	1	1	2	2	2	1	2
CO2	3	2	2	2	2	2	-	2	2	2	2	3
CO3	3	3	2	3	2	1	2	1	1	1	-	2
Avg	3	2.3	2.3	2.6	2.3	1.3	1.5	1.7	1.7	1.7	1.5	2.3

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DEPARTMENT OF ME-ADD ON COURSE
Computer Aided Design (CAD)
DURATION: 32 HOURS

The course will Introduce solid modeling and Finite Element Analysis software. Various exercises on modeling and assembly will be provided. Creation of higher end 3D solid models and assembled views of riveted joints, cotter joints and shaft couplings will be practiced. Exercises on the application of Finite Element Method and Finite Volume Method to engineering will be introduced.

Course Objective

1. To provide working knowledge on Computer Aided Design methods and procedures
2. To impart training on solid modelling software
3. To impart training on finite element analysis software

Course Outcome
1. Gain working knowledge in Computer Aided Design methods
2. Gain working knowledge in Computer Aided Design procedures.

Syllabus
Introduction
Introduction to computer graphics - viewing transformations, curves and surfaces generation, curve fitting and curve fairing techniques - 2D, wire frame.
3D Modeling
Creation of higher end 3D solid models, Familiarity with Boolean operations - sweep, revolve, loft, extrude, filleting, chamfer, splines etc. - windowing, view point, clipping, scaling and rotation transformations using commercial solid modeling packages, 3D shading
Design and Assembly
Creation of assembled views of different components, assembling of various parts and tolerance analysis
Drawing sheet preparation
Drawing & Sheet Setup Instructions documentation section, Preparation of drawing sheet templates, Preparation of drawing sheet and bill of materials etc.

Reference:
- F. R. David, Procedural Elements for Computer Graphics, McGraw Hill
- Ibrahim Zeid, CAD/ CAM Theory and Practice, McGraw Hill, 2007

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CO2	3	2	2	2	2	2	-	2	2	2	2	3
Avg	3	2	2.5	2.5	2.5	1.5	1	2	2	2	1.5	2.5

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DEPARTMENT OF CE-ADD ON COURSE

Domestic Water Pollution and Remedial Measures
DURATION: 30 HOURS

Course Objective:

To impart training on various water quality issues in the state with suitable remedial measures

Expected Outcome:

1. Explain the need for wastewater treatment, categorize the wastewater based on characteristics

2. Understand and apply the design principles and criteria in designing units

3. Illustrate wastewater treatment systems for rural areas and explain the applicability of natural systems for treatment of wastewater.

Syllabus

1. Water sector scenario in Kerala state
2. Domestic water quality issues in Kerala state
3. Traditional water sources, maintenance and upkeep
4. Hands on training on water quality testing- both laboratory, KITS and apparent indications of water quality issues
5. Commercial equipments for water treatment
6. Maintenance of house and surroundings for healthy environment

COURSE OUTCOMES VS PO MAPPING:

Sl.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	1	2	2	2	1	2
CO2	3	2	2	2	2	2	-	2	2	2	2	3
CO3	3	3	3	3	2	1	2	1	1	1	-	2
Avg	2.6	2.6	2.6	2.6	2.2	1.6	1.67	1.8	2	1.8	1.5	2.4

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DEPARTMENT OF CSE-ADD ON COURSE
Basics of Programming
DURATION: 30 HOURS

Course Objective:

The Impart understanding of the fundamental concepts in programming and enable the student to apply them in developing computational solutions.

Expected Outcome:

The student will be able to
1. Use the fundamental programming constructs with clear understanding of their working
2. Think recursively to arrive at solutions and convert them to iterative programs if needed
3. Apply OOP concepts and apply them to model software solutions.

Syllabus

Module I :

Fundamental Programming Ideas : Variables, Data types, Operators, Control Flow Statements – Conditional Statements, Loop Statements, Functions, Arrays.

Module II :

Iterative programming : Sorting and searching algorithms and other tricky problems involving loops. Code tracing to predict the output of a loop. Recursion : Understanding the mechanism of recursion. Solving simple problems recursively.

Module III:

Object Oriented Programming: (JAVA/C++) Classes – Inheritance, Polymorphism, Abstraction, Encapsulation. Interfaces.

Module IV:

Implementation of fundamental data structures in OOP language. (Stack, Queue, List)

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DEPARTMENT OF CSE-ADD ON COURSE
Programming Python (InfyTQ)
DURATION: 30 HOURS

Course Objective:

1. Describe the core syntax and semantics of Python programming language.
2. Discover the need for working with the strings and functions.
3. Illustrate the process of structuring the data using lists, dictionaries and tuples
4. Infer the Object-oriented Programming concepts in Python.
5. To handling with data and information processing techniques.
6. To solve problems, explore real-world software development challenges, and create practical applications

This course will provide you with an overview of the VHDL language and its use in logic design. By this course, you will understand the basic Parts of VHDL structure and its usage and basic VHDL Constructs Used in the Simulation. You will also be able to build simple digital Logic Structures for specific purpose and connect entire models together to create Hierarchical Designs.

Course Outcome
1. Define and demonstrate the use of built-in data structures "lists" and "dictionary".
2. Design and implement a program to solve a real world problem.
3. Design and implement GUI application and how to handle exceptions and files.
4. Make database connectivity in python programming language.

Syllabus

1. Installing Python; basic syntax, interactive shell, editing, saving, and running a script.
2. The concept of data types; variables. Conditions, Boolean logic, logical operators; ranges, Control statements: if-else, loops (for, while).
3. String manipulations, Lists and Tuples, Dictionaries.
4. Concept of function, Function calls.
5. File concepts-Operations.
6. Classes and OOP: classes, objects, attributes and methods, OOP continued: inheritance, polymorphism, Numerical Computations with Python,
7. Matplotlib Introduction, Introduction to pyplot. Python CSV. Creating and Viewing HTML Files with Python. Python MySQL. Web Development using FLASK framework.

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CO2	3	2	2	2	2	2	-	2	2	2	2	3
CO3	3	3	2	3	2	1	2	1	1	1	-	2
CO4	3	2	2	2	2	2	-	2	2	2	2	3
Avg	3	2.3	2.3	2.5	2.2	1.6	1.67	1.8	2	1.8	1.5	2.4

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NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

DEPARTMENT OF CSE-ADD ON COURSE
Full Stack developer – Phase 1
(Basics of Web Programming)
DURATION: 30 HOURS

Course Objective:

To impart the design, development and implementation of Dynamic Web Pages.

Expected Outcome:

The student will be able to The student will be able to

1. Develop interactive Web pages using HTML.
2. Present a professional document using Cascaded Style Sheets.
3. Understand and practice web page designing techniques
4. Understand and practice embedded dynamic scripting on client side Internet Programming.

Syllabus

Unit 1: HTML Basics

HTML Introduction, HTML Elements, Attributes, HTML Headings, Paragraphs, HTML Formatting, Fonts, Styles, HTML Links, Images, Tables, HTML Lists, Forms, Frames, HTML Colors, Colornames, Colorvalues, HTML Quick List.

Unit 2: CSS Basics

CSS Introduction, Syntax, Background and Border Formatting, Text and Fonts, Tables, Listing, Padding, CSS Animation.

Unit 3: JavaScript

JavaScript Introduction, JavaScript Foundation, JavaScript Intermediate, JavaScript Advanced, Case Study Implementation on JavaScript.

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Cheruthuruthy P.O.- 679 531

COURSE OUTCOMES VS PO MAPPING:

Sl.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	1	1	2	2	2	1	2
CO2	3	2	2	2	2	2	-	2	2	2	2	3
CO3	3	3	2	3	2	1	2	1	1	1	-	2
CO4	3	3	2	3	2	1	2	1	1	1	-	2
Avg	2.6	2.4	2.6	2.6	2.2	1.6	1.67	1.8	2	1.8	1.5	2.4

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DEPARTMENT OF MR-ADD ON COURSE
Electronic Circuit Simulation and PCB Printing
DURATION: 32 HOURS

Course Objective
- To familiarise the electronic circuit simulation using EDA tool.
- To familiarise the PCB designing and Printing process.

Course Outcome
- Student will be able to design and simulate electronic circuit suing EDA tool.
- Student will be able to design single sided PCB using EDA tool.
- Student will be able to print PCB using toner transfer method.

Syllabus

Unit I: Circuit Simulation
Simulators and emulators - simple led circuit, Transistors switching circuit, Basic gates, 555 timer, Op-amp

Unit II: PCB Design
PCB design tool familiarization, PCB design Example – 555 timer

Unit III: PCB Printing
Toner transfer method, PCB Etching, Soldering

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DEPARTMENT OF CSE-ADD ON COURSE
Fundamentals of MATLAB
DURATION: 30 HOURS

Course Objective:

- To introduce the basic operations in MATLAB and to enable the students to do basic programming with MATLAB to solve Engineering problems.

Course Outcome

1. You will develop programming skills and technique to solve mathematical problems.
2. You will use graphic features of MATLAB will be able to use this feature effectively in the various applications.
3. You will be able to use MATLAB as a simulation tool.
4. You will be able to work as a 'MATLAB programmer' in the industry.

Syllabus

- Working with the MATLAB user interface
- Entering commands and creating variables
- Analysing vectors and matrices
- Visualizing vector and matrix data
- Working with data files
- Working with data types
- Writing programs with branching and loops
- Writing functions
- Graphs and plots in MATLAB
- Logical statements and operations in MATLAB
- Mathematics in MATLAB
- Basic image manipulations

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