Vidya Pratishthan's

Kamalnayan Bajaj Institute of Engineering and Technology

(Autonomous Institute)

Faculty of Science and Technology

Board of Studies

Information Technology

Syllabus

Exit Courses
Information Technology

(w.e.f. AY: 2023-24)

Exit Course Syllabus: First Year (FY B. Tech.) Information Technology w.e.f. AY:2023-2024															
Course Code	**Courses Name**	**Teaching Scheme**			**Examination Scheme and Marks**							**Credits**			
		TH	**PR**	**TUT**	**Activity**	**ISE**	**ESE**	**TW**	**PR**	**OR**	**Total**	**TH**	**PR**	**TUT**	**Total**
EIT23101	Skill Based Courses (Online / Offline)	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23102	Work Based Vocational Courses (online / Offline)	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23103	Internship / Apprentices hip	--	25	--	50	--	--	50	--	30	--	--	4	--	--
Total		--	33	--	70	--	--	90	--	90	--	--	8	--	--

Skill Based Courses (Online/ Offline)		Work Based Voc. Courses (online/ Offline)	
EIT23101- A	Data Visualization using Python (Offline/Online)	EIT23102	Web Technology (Offline/Online)
EIT23101 -B	Introduction to programming in C (Online)		

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Data Visualization using Python (Offline/Online)								
Course Code : EIT23101-A			**Course Credits: 02**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
–	**04 hrs/ week**	–	**10**	–	–	**20**	–	**30**

Prerequisite Course Mapping:

1. Programming & Problem Solving (Python)

Future Course Mapping:

1. Artificial Intelligence
2. Data Science and Big Data Analytics
3. Deep Learning

Importance of Course: Data visualization using Python has various applications in the field of Data Science and Machine Learning.

Course Objectives:

1. To learn tools for python programming
2. To learn different python constructs
3. To learn different python libraries for data visualization

Course Outcomes:

1. Understand and utilize programming platforms (tools) for Python.
2. Understand and implement Python construct- Lists, array, tuple, dictionary, set.
3. Implement Python libraries for data preparation and preprocessing.
4. Implement Python libraries for Visualization of datasets.

UNIT No.	Syllabus
I	**Python Programming Tools** Introduction to Programming Tools: File execution, clearing console, removing variables from environment, clearing environment, commenting script files, variable creation.
II	**Python Constructs** Arithmetic and logical operators, Data types and associated operations Strings, Lists, Arrays, Tuples, Dictionary, Sets, Range, NumPy : ndArray, Control structures using dataset: if-else family, for loop, for loop with if break, while loop, functions.
III	**Pandas Dataframe** Reading files, Exploratory data analysis, Data preparation and preprocessing.
IV	**Python Data Visualization** Data visualization on dataset using matplotlib and seaborn libraries: Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot.

List of Practical Assignments:

1. Write a python program which will take two numbers from user and perform following operation using Spyder or Jupyter Notebook.
   Operations: addition, subtraction, multiplication and division.
2. Write a python program to print odd numbers between 1-500.
3. Write a python program that will take a dataset as an input and plot:
   1) Scatter plot
   2) Line plot
   3) Bar plot
   4) Histogram
   5) Box plot

6) Pair plot.

4. For given dataset, write a python program to perform following operations
   1) Checking data types of each column
   2) Count of unique data types
   3) Selecting data, based on data types
   4) Concise summary of dataframe
   5) Checking format of each column
   6) Getting unique elements of each column
   7) Getting count of missing values
   8) Cleaning column

Text Books :

1. Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter, by Wes Mckinney O'Reilly Media: 3rd Edition, ISBN-10- 109810403X, ISBN-13- 978-1098104030
2. Learning Python , by Mark Lutz, O'Reilly Media: 5th Edition, ISBN: 9781449355739

Reference Books:

1. Python: The Complete Reference, by Martin C. Brown, McGraw Hill Education: 4th edition, ISBN-10-9789387572942, 13-978-9387572942

Online Resources:

NPTEL Course "**Python For Data Science**"
https://nptel.ac.in/courses/106106212
Future Skill prime course "Data Processing and Visualisation"
https://futureskillsprime.in/course/data-processing-and-visualisation

Introduction to programming in C (Online)								
Course Code : EIT23101-B			**Course Credits: 02**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
–	**04hrs/week**	–	**10**	–	–	**20**	–	**30**

Prerequisite Course Mapping: Computer Proficiency

Future Course Mapping: Data Structures

Importance of Course:
C language is suitable for writing both system software and application software. Its rich set of built-in functions, data types and operators can be used to write any complex program.

Online Course:
Introduction to Programming in C By NPTEL

Web link for course:
https://onlinecourses.nptel.ac.in/noc24_cs02/preview

Course Duration: 12 week

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Web Technology (Offline/Online)								
Course Code : EIT23102			**Course Credits: 02**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
-	**4hrs/week**	-	**10**	-	-	**20**	-	**30**

Prerequisite Course Mapping: Introduction to Information Technology

Future Course Mapping: Full Stack Development

Importance of Course: Opportunity in the field of Web development.

Course Objectives:

1. To familiarize students with Web Programming basic concepts.
2. To learn and understand Web scripting languages.
3. To understand and learn Web application deployment

Course Outcomes:

1. Develop Static website using HTML, CSS, Bootstrap
2. Design and style website using CSS, Bootstrap
3. Demonstrate the use of Bootstrap in web designing.
4. Develop a dynamic web site using JavaScript.

UNIT No.	Syllabus
I	**Introduction to HTML** Introduction to HTML, Tags and Elements, Attributes, Properties, Headings list, Links, Tables, Images, HTML Form, Media (Audio, Video), Semantic HTML5 Elements, Paragraphs.
II	**Cascading Style Sheet(CSS)** Introduction to CSS, Types of CSS, how to use CSS, Properties, Classes, Child-Class (Nested CSS), Colours, Text, Background, Border, Margin, Padding, Positioning (flex, grid, inline, block), Animation, Transition.
III	**Bootstrap:** Introduction to Bootstrap, Container and Container-Fluid, Text Colors, Background Colors, Display Headings, Text Alignment, Text Styles, Lead Paragraph, Grid System, Responsive Grid System, Tables, Progress Bar, Form Validation, Navigation Menu.
IV	**Web Scripting Languages: JavaScript** Introduction to Scripting languages, Introduction to JavaScript (JS), JS Variables and Constants, JS Operators, JS Variable Scopes, JS Data Types, JS Functions, JS Array, JS Object, JS Events.

List of Practical Assignments:

1. Create a static web page which shows the admin dashboard with sidebar and statistics in cards using HTML.
2. Design a dynamic website using JavaScript, CSS, Bootstrap.
3. Develop a web application using HTML, CSS, Bootstrap technologies in any of the following

domains: Medical, Education, Social Media.

4. Create a JavaScript program for the following form validation: Name address, contact number and email id.

Text Books

1. Raymond Camden, Andy Matthews, JQuery Mobile Web Development Essentials, Packt Publishing, Second Edition, 9781782167891
2. Kogent Learning Solutions Inc, Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, XML and AJAX, Blackbook, Dreamtech Press, Second Edition, ISBN: 9788177228496.

Reference Books

1. Dr. Hiren Joshi, Web Technology and Application Development, DreamTech, First, ISBN:978-93-5004-088-1.
2. Steven M. Schafer, "HTML, XHTML and CSS", Wiley India Edition, Fourth Edition, 978- 81-265-1635-3.
3. Kogent Learning Solutions Inc, Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, XML and AJAX, Blackbook, Dreamtech Press, Second Edition, ISBN: 9788177228496.

Online Resources:

1. https://www.udemy.com/course/intro-to-web-dev/
2. https://www.udemy.com/course/ui-technologies-indepth/

Internship/ Apprenticeship								
Course Code : EIT23103			**Course Credits: 4**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
--	**25hrs/week**	**--**	**50**	**--**	**--**	**50**	**--**	**30**

Course Objectives:

1. Expose students to the industrial environment.
2. Provide possible opportunities to learn understand and sharpen the real time technical/ managerial skills required at the job.
3. To nurture professional and societal ethics in students.
4. To get familiar with various tools and technologies used in industries and their applications.
5. Understand the working environment of industrial organizations.

Course Outcomes:

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

1. To develop professional competence through internship.
2. To apply academic knowledge in a personal and professional environment.
3. To build the professional network and expose students to future employees.
4. Apply professional and societal ethics in their day-to-day life.

Guidelines to the students:

Any absenteeism by students during their internship should be informed immediately to the mentor/reporting manager and the HOD.

No special considerations will be accepted.

The monthly attendance should be duly submitted to the HOD by the student.

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Internship Diary/ Internship Workbook:

Student must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The student should record in the daily training diary account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.

Internship Diary/workbook and Internship Report should be submitted by the student along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training.

Internship Diary/ workbook may be evaluated on the basis of the following criteria:

- Proper and timely documented entries.
- Adequacy & quality of information recorded.
- Data recorded.
- Thought process and recording techniques used.
- Organization of the information.

Internship Report:

The report shall be presented covering following recommended fields but limited to:

- Title/Cover Page.
- Internship completion certificate.
- Internship Place Details- Company background-organization and activities/Scope and object of the study / personal observation.
- Index/Table of Contents.
- Introduction.
- Title/Problem statement/objectives.
- Motivation/Scope and rationale of the study.
- Methodological details.
- Results / Analysis /inferences and conclusion.
- Suggestions/ Recommendations for improvement to industry, if any.
- Attendance Record.
- List of reference (Library books, magazines and other sources).

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Exit Course Syllabus: Second Year (SY B. Tech.) Information Technology w.e.f. AY:2023-2024															
Course Code	**Courses Name**	**Teaching Scheme**			**Examination Scheme and Marks**							**Credits**			
		TH	**PR**	**TUT**	**Activity**	**ISE**	**ESE**	**TW**	**PR**	**OR**	**Total**	**TH**	**PR**	**TUT**	**Total**
EIT23201	Skill Based Courses (Online/ Offline)	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23202	Mini Project	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23203	Internship/ Apprenticeship	--	25	--	50	--	--	50	--	30	--	--	4	--	--
Total		--	33	--	70	--	--	90	--	90	--	--	8	--	--

Skill Based Courses (Online/ Offline)	
EIT23201- A	Frontend Design and Development Using Java (Offline/Online)
EIT23201 -B	Data Mining(Online)

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Frontend Design and Development using Java(Offline/Online)								
Course Code : EIT23201-A(Online)			**Course Credits: 2**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
-	**4hrs/week**	-	**10**	-	-	**20**	-	**30**

Prerequisite Course Mapping: Programming language such as C/C++ and data structures & algorithms.

Future Scope: Programmer in all IT Companies

Importance of Course:
This course aims to cover the essential topics of Java programming so that the student can improve skills to cope with the current demands of IT industries.

Course Objectives:
1. To apply concepts of object oriented paradigm.
2. To design and implement models for real life problems by using object-oriented programming.
3. To develop object oriented programming skills.

Course Outcomes: On completion of the course, learner will be able to
1. Understand the object oriented concepts of Java programming language
2. Develop the console based java applications using classes, object, methods, Inheritance
3. Understand the Multithreaded programming and Applet.
4. Understand the Swing, Abstract Windowing Toolkit (AWT) concepts for windows application development.

UNIT NO.	Syllabus
I	**Java Fundamentals** History of Java, Java features, Introduction to Procedural, difference between OOP and procedural programming, Modular Need of Object-Oriented Programming, Java Run Time Environment, JVM architecture, Simple Java Program, Installing and Configuring Java, Fundamentals of Object-Oriented Programming Java Programming Elements, Input-Output Handling in Java
II	**Java Classes, Objects, Methods, Encapsulation, Inheritance:** Class: Creating a Class, Visibility/Access Modifiers, Encapsulation, Methods: Adding a Method to Class, Returning a Value, Adding a Method That Takes Parameters, The 'this' Keyword, Method Overloading, Object Creation, Using Object as a Parameters, Returning Object, Memory Allocation: 'new', Static Data Members, Static Methods, Class as Abstract Data Types (ADTs), Encapsulation, Inheritance, polymorphism, Abstract class, Interface, Packages, Exception handling, Collection Classes: ArrayList Class and LinkedList Class.
III	**Multithreaded Programming, Java Applets** Thread class & Runnable interface, Main thread, Creating Thread using Runnable interface & Thread Class, Creating multiple threads.Applet architecture – HTML APPLET tag – Passing parameter to Appletget, DocumentBase() and getCodeBase() , Japplet: Icons and Labels Text Fields Buttons, Combo Boxes , Checkboxes, Tabbed Panes, Scroll Panes

IV	**AWT/Swing and Event Handling** Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, checkbox, checkbox groups, choices, lists panels – scroll pane, dialogs, menu bar, graphics, layout manager – layout manager types – boarder, grid, flow, card and grib bag. Basics of Components, Using Containers, Layout Managers, AWT Components, Adding a Menu to Window, Extending GUI Features Using Swing Components. Java Object Database Connectivity (ODBC).

List of Practical Assignments:

1. Design and develop inheritance for a given case study, identify objects and relationships and implement inheritance wherever applicable. Employee class hasEmp_name, Emp_id, Address, Mail_id, and Mobile_noas members. Inherit the classes: Programmer, Team Lead, Assistant Project Manager and Project Manager from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary.
2. Write a program to demonstrate status of key on an Applet window such as KeyPressed, KeyReleased, KeyUp, KeyDown.
3. Write a program to create a frame using AWT. Implement mouseClicked, mouseEntered() and mouseExited() events. Frame should become visible when the mouse enters it.
4. Develop a GUI which accepts the information regarding the marks for all the subjects of a student in the examination. Display the result for a student in a separate window.
5. Write a program to insert and retrieve the data from the database using JDBC.

Text Books:

1. Java: The Complete Reference Hebert Schildt, Mc Graw Hill
2. Object-Oriented Programming with C++ and Java Debasis Samanta, Prentice Hall India.

Reference Books:

1. T. Budd, "Understanding OOP with Java", Pearson Education, 2nd Updated Edition.
2. Y. Daniel Liang (2010), "Introduction to Java programming", Pearson Education, India, 7 th Edition.
3. Cay Horstmann , "Core Java Volume 1", Kindle, 11th Edition.

Online Resources:

https://onlinecourses.nptel.ac.in/noc22_cs47/preview

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Data Mining (Online)								
Course Code : EIT23201- B			**Course Credits: 2**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
--	**4hrs/week**	--	**10**	--	--	**20**	--	**30**

Prerequisite Course Mapping:
1. Basic statistics
2. Data structures and Databases

Future Scope: Opportunity in the field of Data Science.

Importance of Course:
Data Mining is an integral part of modern industry, where data from customers and industry operations is mined for gaining business insight.

Online Course: Data Mining by NPTEL.

Web link for course:
https://onlinecourses.nptel.ac.in/noc24_cs22/preview

Course Duration: 8 Weeks

Mini Project								
Course Code : EIT23202			**Course Credits: 2**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
--	**4hrs/week**	--	**10**	--	--	**20**	--	**30**

Prerequisite:
Basic Knowledge of Latest Technologies in Information Technology

Importance of Course:
Mini project will help students to increase critical thinking and programming skills and will be able to design, implement and communicate solution to the problem in hand.

Course Objectives:
1. To learn the various processes involved in project development.
2. To develop critical thinking and engineering problem solving skills amongst the students
3. To understand the roles and responsibilities of IT Engineers for providing the solution of engineering problems within the social, environmental and economic context.
4. To equip the students with knowledge and skills required to develop solutions for the problems

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Course Outcomes:

On completion of the course, student will be able to

1. To develop the understanding of the problem domain through literature review
2. To Identify and analyze the problem in detail to define its scope with problem specific data.
3. To know various techniques to be implemented for the selected problem and related technical skills through feasibility analysis.
4. To design solutions for real-time problems
5. Collaborate and engage in learning environments.

Project Report Format: At the end of semester, each group needs to prepare a project report.

Project report contents:

1. Certificate from the institute
2. Certificate from sponsoring organization (If any)
3. Acknowledgement
4. Abstract
5. List of Abbreviations (As applicable)
6. List of Figures (As applicable)
7. List of Graphs (As applicable)
8. List of Tables (As applicable)
9. Introduction
10. Literature Survey
11. Problem Statement and Objective
12. Proposed System
13. Algorithm
14. Design details
15. System Architecture
16. High Level Design of the project (DFD, UML, ER Diagram)
17. Project Plan
18. System Implementation-code documentation
19. Test Cases
20. GUI/Working modules
21. Experimental Results in suitable format
22. Result Analysis
23. Conclusion and Future work
24. References
25. Appendices
    a. Plagiarism Report of Paper and Project report
    b. Base Paper(s) [If any]
    c. Tools used / Hardware Components specifications (If any)

Possible Project Domain:

1. Machine Learning
2. Data Science
3. Cloud Computing
4. IOT
5. Mobile Application Development
6. Web Application Development
7. Image processing
8. Artificial Intelligence

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Internship/ Apprenticeship								
Course Code : EIT23203			**Course Credits: 4**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
--	**25 hrs/week**	--	**50**	--	--	**50**	--	**30**

Course Objectives:

1. Expose students to the industrial environment.
2. Provide possible opportunities to learn understand and sharpen the real time technical/ managerial skills required at the job.
3. To nurture professional and societal ethics in students.
4. To get familiar with various tools and technologies used in industries and their applications.
5. Understand the working environment of industrial organizations.

Course Outcomes:

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

1. To develop professional competence through internship.
2. To apply academic knowledge in a personal and professional environment.
3. To build the professional network and expose students to future employees.
4. Apply professional and societal ethics in their day-to-day life.

Guidelines to the students:

- Any absenteeism by students during their internship should be informed immediately to the mentor/reporting manager and the HOD.
- No special considerations will be accepted.
- The monthly attendance should be duly submitted to the HOD by the student.

Internship Diary/ Internship Workbook:

1. Student must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The student should record in the daily training diary account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.
2. Internship Diary/workbook and Internship Report should be submitted by the student along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training.
3. Internship Diary/ workbook may be evaluated on the basis of the following criteria:
    - Proper and timely documented entries.
    - Adequacy & quality of information recorded.
    - Data recorded.
    - Thought process and recording techniques used.
    - Organization of the information.

Internship Report:

The report shall be presented covering following recommended fields but limited to:

- Title/Cover Page.
- Internship completion certificate.
- Internship Place Details- Company background-organization and activities/scope and object of

the study / personal observation.

- Index/Table of Contents.
- Introduction.
- Title/Problem statement/objectives.
- Motivation/Scope and rationale of the study.
- Methodological details.
- Results / Analysis /inferences and conclusion.
- Suggestions/ Recommendations for improvement to industry, if any.
- Attendance Record.
- List of reference (Library books, magazines and other sources).

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Exit Course Syllabus: Third Year (TY B. Tech.) Information Technology w.e.f. AY:2023-2024															
Course Code	Courses Name	Teaching Scheme			Examination Scheme and Marks							Credits			
		TH	PR	TUT	Activity	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
EIT23301	Skill Based Courses (Online/ Offline)	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23302	Mini Project	--	4	--	10	--	--	20	--	30	--	--	2	--	--
EIT23303	Internship/ Apprenticeship	--	25	--	50	--	--	50	--	30	--	--	4	--	--
Total		--	33	--	70	--	--	90	--	90	--	--	8	--	--

Skill Based Courses (Online/ Offline)	
EIT23301- A	Software Testing (Offline/Online)
EIT23301 -B	Computer Networks And Internet Protocol(Online)

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Software Testing (Offline/Online)								
Course Code : : EIT23301-A			**Course Credits: 2**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
-	**4hrs/w**	-	**10**	-	-	**20**	-	**30**

Prerequisite Course Mapping:

1. Software Engineering
2. Programming Fundamentals

Future Course Mapping:

Software Test Engineer

Importance of Course:

The course provides a brief introduction to test process and techniques available for black box and white box test case design. Software testing proficiency provides great job opportunities in IT industry.

Course Objectives:

1. Learn and apply the testing strategies and methodologies in projects.
2. To understand test management strategies and tools for testing.
3. To explain various automated testing tools used in quality management.

Course Outcomes:

On completion of the course, learner will be able to

1. Test the software by selecting and applying testing techniques to deliver a product free from bugs.
2. Understand the black box testing strategies to test the software to remove detected defects.
3. Understand the white box testing strategies to test the software to remove detected defects.
4. Understand various automated software testing tools.

UNIT No.	Syllabus
I	**Introduction to software testing and test process** Testing as an engineering activity, Role of process in software quality, Testing as a process, Basic definitions, Software testing principles, The tester's role in a software development organization, Origins of defects, Defect classes, The defect repository and test design, Defect examples, Developer / Tester support for developing a defect repository, V-Model.
II	**Black Box Testing** Using Black Box Approaches to Test Case Design, Random Testing, Requirements based testing, Decision tables, State-based testing, Cause-effect graphing, Error guessing, Compatibility testing,
III	**White Box Testing** Using White Box Approach to Test design - Static Testing Vs. Structural Testing, Code Functional Testing, Coverage and Control Flow Graphs
IV	**Integration, regression and system testing, test automation** Levels of Testing -Unit Testing, Integration Testing, Defect Bash Elimination. System Testing - Usability and Accessibility Testing, Configuration Testing, Compatibility Testing. Automation Testing: What is automation testing, Benefits of automation testing, Selenium Automation Tools: Selenium's Tool Suite- Selenium IDE, Selenium RC, Selenium Web driver, Selenium Grid. Automation Tools: SoapUI, Robotic Process Automation (RPA), Tosca, Appium.

List of Practical Assignments :

1. Write TEST Scenario for Gmail Login Page
2. Write Test cases in excel sheet for Social Media application or website
3. Create Defect Report for Any application or web application
4. Installation of Selenium grid and selenium Web driver java eclipse (automation tools).
5. Use existing small web-based application by selecting relevant system environment / platform and programming languages. Narrate concise Test Plan consisting features to be tested and bug taxonomy. Narrate scripts in order to perform regression tests. Identify the bugs using Selenium WebDriver and IDE and generate test reports encompassing exploratory testing.

Text Books:

1. "Software Engineering" by Rajib Mall, PHI 2014
2. "Software Testing: A Craftsman's Approach, by Paul C. Jorgensen, Third Edition

Reference Books

1. Srinivasan Desikan, Gopalaswamy Ramesh,"Software Testing: Principles and Practices" Pearson.
2. Daniel Galin, Software Quality Assurance: From Theory to Implementation, Pearson Addison Wesley.
3. Renu Rajani, Pradeep Oak, Software Testing – Effective Methods, Tools and Techniques, Tata McGraw Hill.
4. William Perry, Effective Methods of Software Testing, Wiley Publishing, Third Edition.
5. Aditya P. Mathur, Foundations of Software Testing, Pearson

Online Resources:

https://onlinecourses.nptel.ac.in/noc24_cs47/preview

Computer Networks and Internet Protocol(Online)								
Course Code : EIT23301 -B			**Course Credits: 2**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
-	**4hrs/week**	-	**10**	-	-	**20**	-	**30**

Prerequisite Course Mapping:
Basic knowledge of computer software and hardware.

Future Scope: Opportunity in the field of Networking as Network Administrator and Network Engineer.

Importance of Course:
The course provides basic knowledge of protocols and their functionalities. It builds foundation for the next generation Computer Network Protocols.

Online Course: Computer Networks and Internet Protocol by NPTEL.

Web link for course: https://onlinecourses.nptel.ac.in/noc24_cs19/preview

Course Duration: 12 Weeks

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Mini Project

Course Code : EIT23302	Course Credits: 2	Course type: Exit Course

Teaching Scheme			Evaluation Scheme					
TH	PR	TUT	ACTIVITY	ISE	ESE	TW	PR	OR
--	4hrs/week	--	10	--	--	20	--	30

Prerequisite:
Basic Knowledge of Information Technology

Importance of Course:
Mini project will help students to increase critical thinking and programming skills and will be able to design, implement and communicate solution to the problem in hand.

Course Objectives:
1. To develop problem solving ability.
2. To evaluate alternative approaches and justify the use of selected tools and methodologies.
3. To consider relevant social, ethical and legal issues.
4. To follow SDLC and meet objectives of proposed work.
5. Evaluate the various validation and verification methods.

Course Outcomes:
On completion of the course, student will be able to
1. To apply knowledge of mathematics, science and engineering to formulate the problem statement.
2. To design and conduct experiments.
3. To understand professional and ethical responsibility.
4. To collaborate, engage in learning environments and show evidences of independent investigation
5. To use the techniques, skills and modern tools necessary for engineering practices.
6. To write reports, documents and communicate results.

Introductory information:
The project can be application oriented and/or will be based on some innovative work in recent technologies in information technology. The student will take a project, which will involve the analysis, design of a system in the area identified earlier in the field of information technology, Computer Science and Engineering. The project will be undertaken by a student.

Guidelines to Faculty and Students:
In the project, students shall complete the project work which consists of Problem statement, literature review, design, selection of technology, tools, installations, implementation, testing results, performance evaluation, comparison with known algorithms/systems, validation of results and conclusions.
Students shall prepare and submit a report of project work in a standard format for the satisfactory completion of the work that is duly certified by the concerned guide and head of the department/Institute.

Project Report Format: At the end of semester, each group needs to prepare a project report.
Project report contents:
1. Certificate from the institute
2. Certificate from sponsoring organization (If any)
3. Acknowledgement
4. Abstract
5. List of Abbreviations (As applicable)

6. List of Figures (As applicable)
7. List of Graphs (As applicable)
8. List of Tables (As applicable)
9. Introduction
10. Literature Survey
11. Problem Statement and Objective
12. Proposed System
    i. Algorithm
    ii. Design details
13. System Architecture
14. High Level Design of the project (DFD, UML, ER Diagram)
15. Project Plan
16. System Implementation-code documentation
17. Test Cases
18. GUI/Working modules
19. Experimental Results in suitable format
20. Result Analysis
21. Conclusion and Future work
22. References
23. Appendices
    i. Plagiarism Report of Paper and Project report
    ii. Base Paper(s) [If any]
    iii. Tools used / Hardware Components specifications (If any)

Possible Project Domain:

1. Artificial Intelligence
2. Machine Learning
3. Big Data
4. Cloud Computing
5. IOT
6. Andriod
7. Data Mining
8. Blockchain
9. Angular
10. Computer Vision
11. Network security

Internship/ Apprenticeship								
Course Code : EIT23303			**Course Credits: 4**			**Course type: Exit Course**		
Teaching Scheme			**Evaluation Scheme**					
TH	**PR**	**TUT**	**ACTIVITY**	**ISE**	**ESE**	**TW**	**PR**	**OR**
--	**25hrs/week**	--	**50**	--	--	**50**	--	**30**

Course Objective:

1. Expose Students to the industrial environment.
2. Provide possible opportunities to learn understand and sharpen the real time technical/

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managerial skills required at the job.

3. To nurture professional and societal ethics in students
4. To get familiar with various tools and technologies used in industries and their applications.
5. Understand the working environment of industrial organizations

Course Outcomes:

1. After completion of this course, students will be able to,
2. To develop professional competence through internship.
3. To apply academic knowledge in a personal and professional environment.
4. To build the professional network and expose students to future employees.
5. Apply professional and societal ethics in their day-to-day life.

Guidelines to the students:

- Any absenteeism by students during their internship should be informed immediately to the mentor/reporting manager and the HOD.
- No special considerations will be accepted.
- The monthly attendance should be duly submitted to the HOD by the student.

Internship Diary/ Internship Workbook:

1. Student must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The student should record in the daily training diary account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.
2. Internship Diary/workbook and Internship Report should be submitted by the student along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training.
3. Internship Diary/ workbook may be evaluated on the basis of the following criteria:
    - Proper and timely documented entries.
    - Adequacy & quality of information recorded.
    - Data recorded.
    - Thought process and recording techniques used.
    - Organization of the information.

Internship Report:

The report shall be presented covering following recommended fields but limited to:

- Title/Cover Page.
- Internship completion certificate.
- Internship Place Details- Company background-organization and activities/scope and object of the study / personal observation.
- Index/Table of Contents.
- Introduction.
- Title/Problem statement/objectives.
- Motivation/Scope and rationale of the study.
- Methodological details.
- Results / Analysis /inferences and conclusion.
- Suggestions/ Recommendations for improvement to industry, if any.
- Attendance Record.
- List of reference (Library books, magazines and other sources)

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