COURSE LEARNING OUTCOMES
COMPUTER PROGRAMMING TECHNOLOGY (CPT)

Course Code	Outcome Title	Outcome Description
CPT 100	CLO 1	Demonstrate technical skills required of software developers, including the ability to:
CPT 100	CLO 2	Formulate the professional skills required of software developers
CPT 100	CLO 3	Analyze the theoretical and working knowledge of the principles of programming through completion of tasks and projects
CPT 101	CLO 1	Create interactive websites using HTML, CSS, and JavaScript.
CPT 101	CLO 2	Demonstrate strong computational thinking skills and logically organize data.
CPT 101	CLO 3	Apply methodical approaches to problem solving.
CPT 101	CLO 4	Discuss the web's pertinence to society and generalize emerging trends in technology.
CPT 101	CLO 5	Implement rich, interactive user interfaces with client-side programming.
CPT 101	CLO 6	Dynamically generate and serve files using server-side programming.
CPT 101	CLO 7	Explain basic Internet communication principles and protocols.
CPT 101	CLO 8	Identify and communicate use cases for different web technologies and languages.
CPT 101	CLO 9	Select the appropriate tools and technologies to solve a problem.
CPT 101	CLO 10	Learn new technologies and programming tools by building on existing knowledge.
CPT 103	CLO 1	Use server-side scripting to create files and interactive applications.
CPT 103	CLO 2	Describe prototypal inheritance and the role of constructors in creating objects.
CPT 103	CLO 3	Manipulate the Document Object Model by working with collections and using anonymous functions and object constructors.
CPT 103	CLO 4	Describe how Application Program Interfaces (APIs) are utilized in different web applications.
CPT 103	CLO 5	Design a Application Program Interface (API) for a web application.
CPT 103	CLO 6	Create a web application that calls on an Application Program Interface (API).
CPT 103	CLO 7	Describe understanding of data storage types, including JavaScript Object Notation (JSON), and techniques for modeling attributes and relationships.
CPT 103	CLO 8	Create a web application utilizing a JSON file.
CPT 103	CLO 9	Describe how to read and use Unified Modeling Language (UML) diagrams to visual the design of a software system.
CPT 103	CLO 10	Describe how Node is used to write server-side JavaScript and build interactive web applications.
CPT 103	CLO 11	Build a web application using Node.
CPT 104	CLO 1	Describe, define and apply the major components of the relational database model to database design.
CPT 104	CLO 2	Use server-side scripting to create a web application built on a database.
CPT 104	CLO 3	Apply the Structured Query Language (SQL) for database definition and manipulation.
CPT 104	CLO 4	Describe how NoSQL databases differ from relational databases, and select a particular NoSQL database for specific use cases.
CPT 104	CLO 5	Describe understanding of client and server architecture and utilization in full-stack web applications.

CPT 104	CLO 6	Describe the role of Transmission Control Protocol/Internet Protocol (TCP/IP) in building web applications and the role of Hypertext Transfer Protocol (HTTP) in the TCP stack.
CPT 104	CLO 7	Create an interactive web application requiring user authentication.
CPT 104	CLO 8	Describe the difference between authentication and authorization, and their respective business objectives.
CPT 104	CLO 9	Describe understanding of methods to increase performance and functionality of both client and server.
CPT 104	CLO 10	Refactor code of existing web applications to maximize code performance and browser functionality.
CPT 104	CLO 11	Describe the role and function of continuous integration in the software development process.
CPT 104	CLO 12	Adhere to industry best practices for code readability and maintainability.
CPT 104	CLO 13	Refactor code of existing web applications to improve code readability and maintainability.
CPT 190	CLO 1	Write and explain precise diagnosis for a bug.
CPT 190	CLO 2	Apply tactics for finding and analyzing both reproducible and non-reproducible coding errors, by identifying, documenting, and refactoring bugs in JavaScript programs.
CPT 190	CLO 3	Isolate, diagnose, and fix bugs by developing hypotheses which can be tested.
CPT 190	CLO 4	Methodically troubleshoot errors in program logic and syntax, using professional debugging tools (e.g., Firebug) as applicable.
CPT 190	CLO 5	Demonstrate the skills that professional software developers use to approach solving unfamiliar, open-ended problems.
CPT 190	CLO 6	Identify boundary conditions of computer programs by logically analyzing control and dataflow.
CPT 190	CLO 7	Explain complex JavaScript programs using drawings, diagrams, and precise language.
CPT 193	CLO 1	Customize Chrome's Developer Tools settings based on specific development needs.
CPT 193	CLO 2	Utilize the Elements panel in Chrome to inspect and edit HTML + CSS.
CPT 193	CLO 3	Locate and view project directory files in the Resources panel in Chrome.
CPT 193	CLO 4	Analyze server requests in the Networks panel in Chrome.
CPT 193	CLO 5	Perform code tests in the Audits panel in Chrome to ensure quality code.
CPT 193	CLO 6	View and analyze error logs in the Console in Chrome to debug code.
CPT 193	CLO 7	Use Device Emulation in Chrome to debug touch events on desktop.
CPT 193	CLO 8	Describe the use of version control software, such as Git, in software development.
CPT 193	CLO 9	Describe the difference between test-driven-development (TDD) and behavior-driven-development (BDD), and the use cases for either method.
CPT 193	CLO 10	Understand the thought process and steps involved during a typical test-driven development session.
CPT 193	CLO 11	Describe how to implement synchronous and asynchronous tests, and the differences between them.
CPT 194	CLO 1	Describe the role of GitHub and portfolios in acquiring a job as a professional programmer.
CPT 194	CLO 2	Develop and customize personal GitHub portfolios of programming projects.
CPT 194	CLO 3	Communicate individual skills and known technologies to prospective employers.

CPT 194	CLO 4	Create resume specific to seeking a job as a computer programmer.
CPT 194	CLO 5	Tailor resume and brand based on specific job descriptions.
CPT 194	CLO 6	Demonstrate professional portfolio projects to showcase technical skills and understanding.
CPT 194	CLO 7	Describe technologies, tools, and design decisions utilized in portfolio projects.
CPT 194	CLO 8	Research new technologies found on job descriptions, and describe understanding of research to prospective employers.
CPT 194	CLO 9	List examples of social and professional programming events and resources and describe their pertinence to continued education and job search.
CPT 194	CLO 10	Describe and answer coding questions in technical programming interviews.
CPT 199	CLO 1	Explain the difference between different roles in the tech industry, including a developer, program manager, and designer
CPT 199	CLO 2	Describe the day-to-day activities of a professional software developer
CPT 199	CLO 3	Analyze current trends in the tech industry, considering cases where technology impacts societal issues
CPT 199	CLO 4	Explain basic programming concepts
CPT 199	CLO 5	Write a simple application in JavaScript
CPT 201	CLO 1	Create an interactive web application using a database
CPT 201	CLO 2	Use arithmetic, comparison, and logical operators in a scripting language
CPT 201	CLO 3	Create and use scripting variables and data types using appropriate naming conventions
CPT 201	CLO 4	Describe how server-side scripting is processed by a Web server and create pages which include server-side scripting
CPT 201	CLO 5	Use the Document Object Model to interact with a Web page
CPT 201	CLO 6	Use properties, methods and event handlers associated with the Document Object
CPT 201	CLO 7	Create procedures and re-usable functions in a scripting language
CPT 201	CLO 8	Use the request object to retrieve information supplied by a Web user to a form
CPT 201	CLO 9	Describe different data types and how they are used in databases
CPT 201	CLO 10	Illustrate a flow chart for a typical algorithm
CPT 201	CLO 11	Design algorithms typically used in computer programming
CPT 290	CLO 1	Complete a project utilizing pair programming
CPT 290	CLO 2	Explain the responsibilities and skill sets of different roles found on web teams, including front end developers, back-end developers, program managers, and designers
CPT 290	CLO 3	Explain the importance of diversity on development teams and describe attributes of effective team cultures
CPT 290	CLO 4	Operate professional development collaboration tools, including Git
CPT 290	CLO 5	Communicate assumptions and choices made in the techniques used to create websites within teams
CPT 290	CLO 6	Demonstrate the ability to work collaboratively within groups.
CPT 290	CLO 7	Explain the Agile software development principles and Agile's pros and cons relative to other software development processes

CPT 299	CLO 1	Create technical planning documents for a software project
CPT 299	CLO 2	Communicate technical requirements in the form of written specifications
CPT 299	CLO 3	Choose appropriate technologies for solving novel programming problems
CPT 299	CLO 4	Describe projects from their professional portfolio in a job interview scenario
CPT 299	CLO 5	Demonstrate the ability to anticipate and adapt to changing business and technology environments
CPT 299	CLO 6	Design, plan, and build web applications and websites using professional software development technologies and methodologies
CPT 299	CLO 7	Refine and improve existing software projects by incorporating feedback from users/clients
CPT 299	CLO 8	Prototype, test, analyze, and refine software based on the iterative design process