

**COURSE HANDOUT**

**Session:** 2023-2024 **Sub Session:** Semester II (Jan-Jun) **Course Name:** Capstone Project **L/T/P/C:**2/0/4/4

**Course Incharge:**  Mr. Manish Hurkat

**Course Faculty:**

Mr. Manish Hurkat ( manishhurkat@yahoo.com | Mobile No N/A )

**Registered Batches:**

# Course Description

By empowering students with the skills necessary to access, understand and evaluate Information, Capstone Project will support students in the achievement of 21st century learning expectations. Students work in teams to develop or implement a real-world IT solution.

* Address a typical business and organizational need such as data management, application development, system deployment, or security analysis.
* Usage of HTML, CSS, JavaScript, JQuery and BootStrap along with Web Application Framework.
* Apply information technologies, applications, best practices, and standards in technical design, development, and implementation.
* Practice soft skills in a real-world IT project, including project planning and management, research and learning, communication, writing, presentation, and teamwork.

# Course Outcomes

|  |  |
| --- | --- |
| **S.No.** | **Description** |
| CO1 | Understand the basics of Web Application and apply them in their project. |
| CO2 | Learn to collaborate development using Version Control. |
| CO3 | Applying the process of Full Stack Development and best practices using cutting Edge Technology stack. |
| CO4 | Apply Continuous Integration and Continuous Deployment. |
| CO5 | Understand and apply containerization. |

**Course outcome mapping with Programme Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| **CO2** | 2 | 3 | 1 | 1 | 3 | 2 | 1 | 1 | 3 | 1 | 3 | 3 |
| **CO3** | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 |
| **CO4** | 2 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | - | 2 | 3 | 3 |
| **Max.** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |

**3 is High, 2 is Moderate, 1 is Low & - is Not Applicable**

# Tentative Lecture Plan/ Activities

|  |  |  |  |
| --- | --- | --- | --- |
| **Units** | **Syllabus Details** | **Hours required to complete** | **Course Outcome** |
| **1** | Self Learning of HTML, CSS, Javascript and Bootstrap | 1 | CO1 |
| **2** | Introduction to Git / Github | 3 | CO2 |
| **3** | Client Server Architecture | 2 | CO2 |
| **4** | Introduction to NodeJS | 2 | CO3 |
| **5** | Express Basics | 4 | CO3 |
| **6** | API Development with Express | 4 | CO3 |
| **7** | React Intro, JSX, Class and Functional Components | 3 | CO3 |
| **8** | React State, Lifecycle and events of a component | 4 | CO3 |
| **9** | CI/CD and working with pipelining, monitoring, notification, distributed build. | 3 | CO4 |
| **10** | Containerization | 4 | CO5 |
| **Total lectures/activities required** | | **30\*** |  |
| **\*Number of lectures/activities may vary.** | |  |  |

# Book Details

**Text Books**

Pro MERN Stack Full Stack Web App Development

with Mongo, Express, React,

and Node - Vasan Subramanian - Apress - ISBN-13 (pbk): 978-1-4842-2652-0

The Ultimate Docker Container Book: Build, test, ship, and run containers with Docker and Kubernetes Packt Publishing Ltd, 31 Aug 2023

**Reference Books**

You Don’t Know JS: Up and Going - Kyle Simpson - O Reilly

**Online course work/ Massive Open Online Course/ Open source web material**

Will be shared during the course

# Evaluation Scheme (Theory/ Practical)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Evaluation Component** | **Exam Month** | **Exam Duration (in Hrs)** | **Mode of Examination** | **Weighted Marks** |
| Attendance | Not Applicable | Not Applicable | Not Applicable | 10.00 |
| Project 1 | March | 0.5 | Not Applicable | 15.00 |
| Mid Semester Examination | March | 1.5 | Pen-Paper | 20.00 |
| Project 2 | April | 0.5 | Not Applicable | 15.00 |
| Lab Assignment | May | Not Applicable | Not Applicable | 10.00 |
| Comprehensive Exam | May | 3 | Pen-Paper | 30.00 |

**Mode of Practical Exam**

Presentation and Lab evaluation

# List of Tentative Practical

Collaboration using Git & GitHub

HTML and CSS

Javascript

NodeJS

ExpressJS

MongoDB

Database Connectivity

Login Exercise

Session and Cookies Demo

Implementing RESTful API

Working with Docker containers

Creating an image with Docker

Multi-container Docker application

Using Docker swarm for container orchestration

Creating Jobs in Jenkins

CI/CD with Multibranch pipeline in Jenkins

**Course outcome mapping with evaluation components:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CO** | **Comprehensive Exam** | **Mid Semester Examination** | **Project 1** | **Project 2** | **Viva** |
| **CO1** | 2 | 3 | 3 | 3 | 3 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 2 | 3 | 2 |
| **CO4** | 3 | 1 | - | 3 | 2 |
| **CO5** | 3 | 1 | - | 3 | 2 |
| **Max.** | 3 | 3 | 3 | 3 | 3 |

**3 is High, 2 is Moderate, 1 is Low & - is Not Applicable**

# Make up Policy

Students who are likely to miss a component of evaluation due to any genuine reason may be given a make-up for that component by the Course In-Charge. The students are required to approach the Course In-Charge immediately for the same before the conduct of the evaluation component. It is the responsibility of the student to approach the Course In-Charge. The Course In-Charge will not allow makeup, if a student approaches 7 days after the evaluation component (Student Handbook R 35).

# Plagiarism

We are committed to uphold the standards of academic integrity and honesty. Plagiarism in any form is unacceptable and will be treated seriously (Student Handbook R 49).

# Grading Policy

Marks obtained in all the components of evaluation shall be totaled and the final marks shall be converted in the letter grades, namely A, B, C, D, E and NC. The grading is relative and normally, it is centered around the average of a class. MidSemester grading will be announced after the completion of about 50% of the evaluation components (Student Handbook R 40).

# University Attendance Policy

Students are requested to go through the Student Handbook for better understanding of the attendance policy. Students is advised to regularly check his/her attendance on ERP. In case of any discrepancy in attendance record, student should report only through e-mail/written communication (no oral communication will be entertained) to the Course In-Charge in the same week itself, otherwise request will be not considered (Student Handbook R 37 and NU Attendance policy).

# Consultation Hours

The students can communicate with Mr. Manish (through email or on mobile) on matters related to Capstone Project being done.