
# MAHARISHI UNIVERSITY OF MANAGEMENT

*Higher Consciousness*
*and Professional Excellence*

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# Modern Web Application Programming
# Infinity and a Point

CS572

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2020

Maharishi's Ninth Year of Invincibility –
Global Raam Raj

Maharishi University of Management is an Equal Opportunity Institution.

# CS572 – Modern Web Application Programming: Infinity and a Point

**Creating web applications using various backend and frontend technologies (Node, Express, MongoDB, Angular)**

| | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| Theme I: JavaScript, NodeJS and Express- The Nature of Life is to Grow – Life is structured in layers | | | | | | |
| **Week 1** | Webinar Introduction to Node and V8 | Modules, Events Buffers and Streams and Files | Modules & npm | Express | Express | Quizzes Webninar |
| | Lab | Lab | Lab | Lab | Lab | |
| Theme II: NoSQL DB, MongoDB and Mongoose - Purification Leads to Progress | | | | | | |
| **Week 2** | Introduction to NoSQL and CRUD Operations | Query & Data Modeling | Aggregation & Performance | Mongoose | Break | Quizzes Webinar |
| | Lab | Lab | Lab | Lab | | |
| Theme III: Angular - Every Action has a Reaction | | | | | | |
| **Week 3** | TypeScript | Angular | Angular | Angular | Angular | Quizzes Webinar |
| Theme IV: Integrating all parts together - The Whole is Greater than the Sum of the Parts | | | | | | |
| **Week 4** | REST | Authentication & Authorization | Project | Project Submission Deadline | | |

# Course Objectives

In this course you will learn the Reactive Programming Architecture of SPA (Single Page Web Applications) along with all the necessary skills to build a full Modern Web Application. Technologies include: NodeJS, ExpressJS, TypeScript, Angular, Firebase and NoSQL databases (MongoDB). The course will cover:

- How the C++ V8 engine and asynchronous code work in Node and the Node event loop.
- How to structure your code for reuse and build Restful API using modules and ExpressJS.
- How NoSQL databases work: Mongo Shell, Aggregation framework, Mongoose ORM.
- Deep understanding of how Angular (backed by Google) works, Change Detection, Reactive RxJs programming with Observables and Subjects, The Shadow DOM, Zones, Modules and Components, Customized Directives and Pipes, Services and Dependency Injection, Forms (Template Driven and Data Driven), Data Binding, Routing and Guards, HTTP client, Authentication and Route Protection.

# Grading

Your final grade will be a combination of the below:

- **Labs:** The deadline of all Labs is by the end of the course which means the last Thursday of the class. If you miss the due date, no chance to resubmit. Special Requirement on Lab Submission: Copy your source code into a word or pdf file with brief comments. Only one word or pdf file per lab allowed. If you submit with other formats or copy others, no credit.
- **Quizzes:** Hosted every Saturday for the first 3 weeks on Sakai. The quizzes are timed, if you miss the quiz, no other chance to take it again. We'll have a test quiz on the first Friday.
- **Webinar Attendance:** Everyone is mandatory to take Saturday webinar with Teams.
- **Forum Participation:** Everyone is required to ask at least a question (related to course topics) and answer at least a question (other people asked) weekly in Forum on Sakai.
- **Project:** It's a group project. For more information about project, see project document.

| Evaluation Modality | Value |
|---|---|
| Labs | 20% |
| Quizzes | 35% |
| Webinar Attendance | 5% |
| Forum Participation | 5% |
| Project | 35% |

| Range | Letter Grade |
|---|---|
| 93-100 | A |
| 90 - 92 | A- |
| 87 - 89 | B+ |
| 83 - 86 | B |
| 80 - 82 | B- |
| 77 - 79 | C+ |
| 73 - 76 | C |
| 70 - 72 | C- |
| 0 - 69 | NC |