ITMD 544 SYLLABUS

ITMD 544 Back-End Development

Hours: 3 credit hours / 45 contact hours

Instructor: Brian Baily

Textbook, title, author, and year: *Getting MEAN with Mongo, Express, Angular, and Node 2nd Edition. Holmes, Simon and Harber, Clive. 2019*

Specific course information

a. **Catalog description:** This course emphasizes back-end, server-side components of web application development. It provides broad coverage of server-side data stores and languages, and surveys multiple leading server-side web development frameworks.
b. **Prerequisites:** ITMD 542

Specific goals for the course

a. **Course Outcomes:**
Students learn to interact with back-end portion of web application development. This includes deploying standard back-end frameworks and deploying opensource datastores. The class will cover a single back-end development framework and focus on deploying a complete working web application

b. **Course student outcomes:**
- Explain the client and server architecture of the Internet and related web technologies.
- Compare standard open source application back-end frameworks
- Deploy a standard open source application back-end framework
- Deploy back-end systems to communicate with frontends via APIs
- Explain the benefits of using API layers for communication with datastores
- Explain the benefits of full-stack development
- Compare relational and non-relational (NoSQL) datastores fitness for deployment in applications
- Implement and describe security concerns for back-end frameworks
- Explain back-end security concerns and common security mitigation strategies
- Describe the role of HTTP and HTTPS in the context of web applications
- Evaluate back-end authentication standards
- Develop a web application that validates data inputs on the client- and server-side as appropriate
- Describe various frameworks, open source applications and their use cases
- Evaluate the design and architecture of a web system, including issues such as design patterns, layers, tradeoffs between redundancy and scalability, state and management
- Use version control tools to work with a team on a web development
- Use industry-standard tools and technologies for web development

Topics to be covered

a. Introductions / Syllabus Review / Overview
b. Introduction to commandline tooling and version control (Git)
c. Introducing Node.js and Express
d. Introducing MongoDB
e. Discussing common MEAN Architectures
f. Designing a flexible MEAN Architectures
g. Setting up MEAN projects
h. Defining Express routes
i. Using Mongoose with MongoDB
j. Exposing MongoDB via the application API
k. Managing User Authentication
l. Advanced Topics