CSIT 406 – Enterprise Web Application Development
3 credits; meets 75 minutes, two days per week (TR)

Instructor: Ry Lowry
Office Hours: None. Please make special arrangements. Available via Slack after-hours.
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Required Text: None. We will use documentation and materials found online.

Course Description: This course covers the creation of web applications using the Spring framework. We will discover how to use numerous small components to form a single, larger application. This approach is often referred to as "microservices architecture" and has been championed by companies like Netflix and Amazon. As we create microservices, we will learn how to test, connect, secure, and deploy them.

Course Prerequisites: CSIT 150

Program Requirements: CSIT 406 is an elective in the CS Comprehensive program.

Course Outcomes:
Upon completion of this course, the student should be able to:

1. Use Git collaboratively. (SO 2)
2. Understand the fundamentals of crafting HTTP requests. (SO 2, 6)
3. Create controllers that receive HTTP requests and produce useful output. (SO 1, 2, 6)
4. Save information to a database while supporting interchangeable database types. (SO 2, 7)
5. Evolve database tables as the application grows and changes. (SO 2)
6. Create and manage different users, roles, and permissions across microservices. (SO 2, 7)
7. Make numerous microservices act as a cohesive whole. (SO 1, 2, 6)
8. Avoid common security pitfalls. (SO 2,6)
9. Write unit tests that test all layers of an application. (SO 2, 6)

Course topics:

- Using Git for collaboration.
- Importing, creating, and sharing projects using IntelliJ.
- HTTP verbs (GET, POST, PATCH, DELETE).
- Parts of an HTTP request (header, query parameters, fragments, etc.).
- Embedded vs persisted databases.
- Basic application security.
- Users, roles, and permissions.
- Security across multiple microservices.
- Communication between microservices.
- Cross-Origin Resource Sharing (CORS)
- Unit testing.
- The power of mock implementations in unit tests.