Computing 311

Software Engineering: Back-End Design and Development

Syllabus

Updated 8/1/2024

General Information

- Instructor

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    Office Hours: MWF 10-11:00, TR 8:30-9:30 or by appointment

- Requisites

    CMP146 - Programming and Problem Solving II, or instructor permission

- Technology

    Access to a computer and the internet is needed. All necessary software will be provided.

- Text

    There is no required text. Resources will be provided as needed.

Course Description and Learning Outcomes

This course is organized around eight modules related to full-stack web application development with a focus on back-end development. At the end of the course, students will be able to:
1. Design and create an application back-end applying *modern architecture* design principles, patterns and frameworks.
2. Design and create an application back-end applying *modern software* design principles and patterns.
3. Design and create an application back-end applying *modern data sources* including files, databases and frameworks.

4. Design and create an application back-end using *modern languages and tools*.
    1. Language: C#.NET
    2. Integrated Development Environment (IDE): Visual Studio
    3. Development frameworks: .NET and Node.js/Express
    4. API front-end application: Postman
    5. Modern development life cycle practices: Agile
    6. Source control/version management tools: git and Github
5. Design and create an application back-end applying *current best practices* in design, implementation and security.
6. Demonstrate confidence and the ability to *independently learn and apply* new technologies, tools, practices to the design and creation of software.

Module	Topic
0 Week of 8/14	Course Overview
1 Weeks of 8/14 and 8/19	Getting Started with Back-End Development
2 Weeks of 8/26 and 9/2	Architecture Design Principles and Patterns
3 Weeks of 9/9 and 9/16	Software Design Principles and Patterns
4 Weeks of 9/23 and 9/30	More on Software Design Principles and Patterns
5 Weeks of 10/7 and 10/14	Web APIs with .NET
6 Weeks of 10/21 and 10/28	Web APIs with Node.js/Express
7 Weeks of 11/4 and 11/11	Data Sources
8 Weeks of 11/18, 12/2 and Finals week (Thurs. 12/12 8:00-11:00am)	Capstone Exercise

Grading

This course uses specification-based, competency-based grading. A description of this type of grading can be found in Canvas with this syllabus.

To earn a D, you must meet **all** of the following specifications:
    (1) Complete required activities
    (2) Complete assignments at an *Unacceptable* level (.5-1.49)
    (3) Average 60% or better on the quizzes
To earn a C, you must meet **all** of the following specifications:
    (1) Complete **all** required activities
    (2) Complete **all** assignments at an *Acceptable* level (1.5-2.49)

(3) Average 70% or better on the quizzes

To earn a B, you must meet **all** of the following specifications:

    (1) Meet **all** specifications at the C level

    (2) Complete **all** required activities *on time*

    (3) Complete **all** assignments on time and at a *High quality* level (2.5-3.49)

    (4) Average 80% or better on the quizzes

To earn an A, you must meet **all** of the following specifications:

    (1) Meet **all** specifications at the B level

    (2) Complete *at least half* of the assignments at an *Exceptional* level including the Capstone Project (Module 8 assignment) (3.5-4.0)

    (3) Average 90% or better on the quizzes

Each student will be given three **tokens** each of which will be used to forgive an activity or assignment being late, or an unexcused absence. At the end of the semester, if the student did not use any tokens, a + will be added to their final course grade. If one or two tokens are used, the final course grade does not change. If the student uses all three tokens, a – will be added to the final course grade. After using all three tokens, turning in work late may lower the letter grade.

Course-Related Information

Technical Support Contact Information

If you are in need of technical assistance please access the Self Service Portal. You may reach the help desk at 402-826-8411 or by email at helpdesk@doane.edu.

Academic Integrity

Fundamental to our mission, our core values, and our reputation, Doane University adheres to high academic standards. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity.

Disciplinary actions may be taken against students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs.

In accordance with Doane's academic dishonesty policy which articulates the college's stance on honesty in the classroom, any act of dishonesty in pursuing the work of this course will be penalized.

First confirmed act of dishonesty

- Report to Academic Affairs as required by college policy.

- Receipt of a zero (0) for the activity.

Second and subsequent confirmed acts of dishonesty will be forwarded to and handled by the Vice President for Academic Affairs in accordance with policy guidelines.

Remember, collaboration among classmates is necessary and expected as an integral part of the education process. Copying will not be tolerated!

Accommodations

Any student who thinks they may need an accommodation based upon the impact of a disability should contact the Office of Disability Services (https://www.doane.edu/disability-services) to coordinate reasonable accommodations as soon as possible.

Course Attendance and Participation
Doane University expects active participation by a student in a course, whether the course is on-ground or online. Regular engagement is expected for online courses.
In order to maximize the benefit from this course, participation in all modules is necessary and therefore expected.

Syllabus Changes

The instructor and Doane University reserve the right to make changes as necessary to this course syllabus. All students will be notified of any changes.

Doane Syllabus Addendum

Each student is responsible for being aware of the policies, resources, and expectations as specified in the Doane Syllabus Addendum found at: https://www.doane.edu/Syllabus

Student Safety and Rights

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses, subject to the same kinds of accountability and the same kinds of support that apply to offenses against other protected categories such as race, national origin, and so on. If you or someone you know has been harassed or assaulted, you can find the appropriate, confidential resources here:

- Counseling Services: email Counselor Myron Parsley (myron.parsley@doane.edu) or call Student Health to schedule an appointment (402) 826-8265
- Health & Wellness: call (402) 826-8265, or visit in the lower level of the Perry Campus Center
- Hope Crisis Center: call 24-hour hotline (877) 388-4673(HOPE);

- Safety Office: email Doane Safety (doanesafetyoffice@doane.edu), call (402) 826-8669, or visit in the upper level of Padour-Walker.
- Title IX Coordinator: call (402) 826-6773