School of Computer Science and Information Systems
44642 -01: Application Design: Patterns and Frameworks.
Credit hours - 3 hours

Fall 2024

Instructor: Dr. Ajay Bandi   **Email:** ajay@nwmissouri.edu
Office hours: MW – 9:30 am to 10:00 am
                   MWF – 2 pm to 4:00 pm

Office: CH 2250

Prerequisites: Students must finish 44542 course with a grade of C or better.

Textbook and supplementary materials: No textbook is required; all the materials will be posted in Northwest Online.

Course description: Provides fast-paced coverage of data structures in Java (Java Collection Framework). Students will gain extensive problem solving and programming experience in developing applications using various design patterns and a framework (e.g.: Spring framework). Design principles of the user interfaces and user experience design.

Learning Outcomes:

Student learning outcomes	Assessment Methods
1. An ability to use current techniques, skills, and tools necessary for computing practice.	Scores on quizzes, class participation, and written exams.
2. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs	Scores on written exams.

In addition, after successfully completing this course student will be able to
- Apply data structures, including use and implementation of arrays, lists, stacks, queues, maps, trees, and heaps.
- Develop spring applications using best practices such as GitHub and Test-Driven Development
- Use Build tools (e.g., Maven or Griddle)
- Design and build web applications using Spring MVC
- Implement the user interface design principles.

Instructional methods: Instructional methods include lectures, practical demonstration, classroom practice, class projects, individual projects, and interactive question and answer sessions.

Graded course requirements:

Category	Points	Percentages
Exam 1	100	18%
Exam 2	100	18%
Final exam	100	18%
Project	100	18%
Assignments	100	18%
Quizzes	50	9%
Total	550	100%

Grading scale:

Graduate Credit (44-642)	
Percent Range	**Grade**
90-100%	A
>= 80% and < 90%	B
>= 70% and < 80%	C
>= 60% and < 70%	D
below 60%	F

Tentative Course outline/major topics studied:

Week	Topics
1	Syllabus & Review
2	Sorting
3	JCF, Stack, Queue
4	List (Array List, Linked List, and their performance), Hashing, Sets
5	Maps
6	Trees (binary trees, traversals, balanced tree)
7	Priority Queues, Threads
8	Design patterns ,Singleton, Factory
9	Regex ,Build tools
10	Dependency Injection and Inversion of Control
11	Spring framework
12	Spring framework
13	Spring framework
14	Thanksgiving Break!
15	Project
16	Final Exam

Note: Course schedule is subject to change with instructor notification and students will be responsible for abiding by these changes.

Academic Calendar: http://www.nwmissouri.edu/academics/calendar.htm
Final Exam Schedule: http://www.nwmissouri.edu/registrar/finals.htm

Attendance: This course will have many in-class activities, so attendance is strongly suggested. Some in-class exercises may have points associated with them and may not be announced in advance. A student who misses such an exercise due to an unexcused absence will not be allowed to make it up and will receive a zero. For an absence to be excused, written documentation must be provided and approved by the instructor abided by the MS-ACS attendance procedure. Excused absences include attendance at a university-sponsored event (documented with an excuse signed by the university sponsor prior to the event) or by circumstances considered adequately extenuating by the course instructor. It is the responsibility of the student to promptly notify his or her instructor when unable to attend class. Please refer to the university policy on attendance at https://www.nwmissouri.edu/policies/academics/Attendance.pdf

Late Submission Policy for assignments: Each assigned, graded activity will have a due date posted and are expected to be completed by the due date. All the submissions must be submitted through Northwest Online. Any submission up to 24 hours after the due date will be considered as a late submission. The score for late submissions will have 10% of the maximum score deducted from the actual points.

Quizzes and In-class Activities: There may sometimes be short quizzes or in class activities in class, usually worth five points or less. These quizzes or activities will not always be announced in advance. They will usually be given at any point of the class time. If you arrive late or miss a quiz or an activity due to an unexcused absence, you will receive a grade of zero on the quiz or activity. Different sections may have quizzes or activities on different days.

Arriving late for class: Students are expected to be on time for each class period.