School of Computer Science and Information Systems

44-642: Application Design: Patterns and Frameworks

(3 hours)

Fall 2020

Instructor: Dr. Charles Badami
Email: cbadami@nwmissouri.edu
Office hours (online only): M 2-3; TTh 10-12; W 2-3; or by appointment
   Note: To schedule a time online, go to NW Success 360 (link in course site).
Office: CH 2270   **Phone:** 660-562-0814

Prerequisites: Students must finish 44-542 with a grade of B 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 Collections Framework). Students will gain extensive problem solving and programming experience in developing applications using various design patterns and a framework (e.g. Spring Framework), as well as principles of user interface 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, 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 assignments, projects, and 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
- Use build tools (e.g., Maven or Gradle)
- Develop Spring applications using best practices such as GitHub and Test-Driven Development
- Implement 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
Exam 1	100
Exam 2	100
Final Exam	100
Spring Framework Projects	100
Other Assignments	50
Miscellaneous	30
Total Points	**480**

Grading Scale:

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	Course Introduction JCF
2	Stack, Queue, List (Array List, Linked List and their performance), Hashing, Sets
3	Maps, Trees (binary trees, traversals, balanced tree)
4	Priority Queues Threads
5	Threads Exam 01
6	Design patterns Singleton, Factory
7	Regex Build tools
8	Dependency Injection, Inversion of control Exam 2
9	Spring Boot
10	Spring Boot
11	Spring Boot
12	Spring Boot
13	Spring Boot
14	Spring Boot
15	Spring Boot
Final Exam	Online, Due Finals Week (see course site)

Disclaimer: *Course schedule is subject to change and you will be responsible for abiding by any such changes. Your instructor will notify you of any changes.*

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

Attendance: There are no points given for attendance in this class. The instructor will be available in the classroom during the regularly scheduled class time to go over content and answer questions for whomever is present. Any student who does not attend class will be expected to keep up with the material as available through the course site, including reading all notes, watching all videos, and submitting all assignments. Please refer to the university policy on attendance at https://www.nwmissouri.edu/policies/academics/Attendance.pdf

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

Quizzes and Other Activities: There may be occasional online quizzes and other activities worth varying amounts of points (see Miscellaneous category under Graded Course Requirements).

Announcements and email: Announcements are communicated via the Announcements page on the course website and your Northwest Missouri State University email account. It is your responsibility to check each of these sources daily. Emails must include the course number and section (e.g., 44-642-01) in the subject line. Emails without an appropriate subject will not be opened.

Professionalism: Students are expected to behave in a professional manner in their dealings with each other, the class assistant, and the instructor. This is particularly important when using electronic means of communication, such as e-mail or discussion threads. E-mails between close friends or individuals who know each other well are frequently written in a very informal manner, which is quite appropriate. However, e-mail communications to the instructor, class assistant, or a classmate with whom you are not well-acquainted should be written in the same manner that you would use if you were sending an e-mail to an employer. That is, the e-mails should be politely written, use proper grammar, and follow the rules of capitalization. Similar rules apply to the discussion threads.

Final exams: If an emergency occurs that prevents the administration of a course scheduled final examination, the final course grades will be calculated based on the work in the course completed to that point in time and the faculty member's considered judgment. Final exams will not be rescheduled, and a grade of "I" will not be given as a result of an institutional cancellation of a final examination. This final exam policy does not apply to online courses.

Administrative drop: An instructor may request the Office of the Registrar delete a student from a course roster if the student has not met the prerequisite for the course as stated in the catalog, or as a result of non-participation in the course.

Academic integrity policy: The students, faculty, and staff at Northwest endeavor to sustain an environment that values honesty in academic work, that acknowledges the authorized aid provided by and intellectual contributions of others, and that enables equitable student evaluation. Please refer to Northwest Missouri State University's Academic Integrity Policy at http://www.nwmissouri.edu/policies/academics/Academic-Integrity.pdf

In addition, the *CSIS Academic Integrity Policy* clearly explains those types of behavior that would be considered academic dishonesty. You are responsible for reading this document and abiding by the guidelines described therein.

Note that plagiarism includes, but is not limited to, failure to give credit for help received on a homework assignment. Also note that all assignments are to be done individually, unless specified otherwise. You may talk to classmates and other students about an assignment, but you must do all the work yourself from beginning to end. Two or more students may sit down together and discuss an assignment as they are working on it, but each student must do his/her own work in completing the assignment. You cannot copy another person's code or written work. You cannot copy database objects or any portion of a database from another student's files.
Failure to follow these guidelines and the remaining guidelines described in the *CSIS Academic Integrity Policy* will be subject to the penalties described in the catalog.

Learning or Living Accommodations Request Process: Northwest Missouri State University complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 [ADA] and the ADA Amendments Act of 2008 [ADAAA]. If a student has a documented disability that qualifies under the ADA/ADAAA and requests accommodations, they should review the Accessibility and Accommodations webpage at https://www.nwmissouri.edu/titleixequity/accessibility/index.htm for guidance, including the accommodations application and supporting documentation requirements. Contact ada@nwmissouri.edu or 660.562.1873 for further assistance. For the university policy on disability accommodation refer to http://www.nwmissouri.edu/policies/student/Disability-Accommodation.pdf

Non-discrimination and anti-harassment policy: Northwest Missouri State University is committed to maintaining an environment for all faculty, staff, students, and third parties that is Free of illegal discrimination and harassment. Please refer to the Non-Discrimination and Anti-Harassment Policy at http://www.nwmissouri.edu/diversity/titlevi.htm

Family Education Rights and Privacy Act (FERPA) policy: Family Educational Rights and Privacy Act of 1974, as amended (commonly known as the Buckley Amendment), is a federal law which provides that colleges and universities will maintain the confidentiality of student education records. Please refer to the Family Educational Rights and Privacy Act (FERPA) Policy at http://www.nwmissouri.edu/policies/academics/Family-Educational-Rights-and-Privacy- Act.pdf

COVID-19 Classroom Mitigation: Northwest is committed to the health and safety of the University community and has therefore adopted COVID-19 mitigation policies. Every student must wear a face covering (such as a cloth facemask, bandana, scarf, neck gaiter, or medical mask) over their nose and mouth at all times in all academic building spaces, including classrooms (unless directed not to by the instructor), offices, hallways, and restrooms. Face shields may be

worn in addition to, but not in place of, a face covering. Students without face coverings will not be allowed in the classroom until they comply with expectations. Students must also follow directions regarding entries, exits and furniture, and maintain at least 6 feet of social distancing whenever possible. Northwest further asks all students to practice good hygiene and not enter academic buildings or attend face-to-face classes when they feel sick or have been instructed to quarantine/isolate; students who miss class should communicate with their instructors. Students who do not comply with these requirements will be subject to standard disciplinary procedures according to the Northwest Student Code of Conduct (i.e. verbal and written warnings followed by a hearing, if necessary). We thank you for doing your part to maintain our learning environment and to protect the health of fellow Bearcats.

Change in Course Delivery:

It is our goal as a University to continue all courses as planned on campus. However, due to unforeseeable impacts of COVID-19, faculty and students must be prepared to move all courses to a remote/online learning format anytime during the semester, either permanently or for a short term. The type of format (synchronous or asynchronous) will be at the discretion of each faculty member. The University and faculty will communicate with students in the event such action is deemed necessary to preserve the health and safety of students and employees.

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