



**NORTHWEST**  
MISSOURI STATE UNIVERSITY  
MARYVILLE | KANSAS CITY

**School of Computer Science and Information Systems**  
**44-642: Application Design: Patterns and Frameworks**  
(3 hours)  
**Fall 2022**

**Instructor:** Dr. Ajay Bandi  
**Email:** [ajay@nwmissouri.edu](mailto:ajay@nwmissouri.edu)  
**Office hours:**  
W -- 3:00 to 5:00 PM (2 hours)  
T, R -- 1:00 to 3:30 PM (5 hours)  
Office: CH 2250

**Prerequisites:** Students must finish 44542 course 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 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
1 Written Exam @50	50
2 Written Exams @ 100	200
Quizzes	30
Assignments	100
Project	50
<b>Total Points</b>	<b>430</b>

**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	Days	Topics
1	August 17 - August 21	Course Introduction JCF
2	August 22 - August 28	Stack, Queue, List (Array List, Linked List and their performance), Hashing, Sets
3	August 29 - September 04	Maps, Trees (binary trees, traversals, balanced tree)
4	September 06 - September 11	Priority Queues Threads
5	September 12 - September 18	Threads Exam 01
6	September 19 - September 25	Design patterns Singleton, Factory
7	September 26 - October 02	Regex Build tools
8	October 03 - October 09	Dependency Injection, Inverse of control Exam 2
9	October 10 - October 16	Spring framework
10	October 17 - October 23	Spring framework
11	October 24 - October 30	Spring framework
12	October 31 - November 06	Spring framework
13	November 07 - November 13	
14	November 14 - November 20	
15	November 21 - November 25	Thanksgiving Break
16	November 28 - December 04	

Week	Days	Topics
17	December 05 (7:30AM-9:30AM)	Exam – 03

**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:** 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 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.

**Exam policies:** Dates for all exams will appear on the course website under the weekly modules. If you must miss an exam, it is your responsibility to notify the instructor prior to the exam.

Make-ups for written exams will be given only for valid and verifiable reasons. Valid reasons include illness, family emergencies, and university-sponsored trips. Written documentation with suitable verification must be supplied before a make-up will be allowed.

There will be no make-ups for lab exams. If you miss a lab exam for a valid reason, the lab final (suitably pro-rated) will be used as the make-up.

Lab exams are submitted via Canvas. It is the student's responsibility to ensure that the correct files is dropped in the correct assignment. If no submission is found in the drop box, the student receives a grade of zero on the lab exam.

All exams are closed book, closed notes, unless explicitly noted in writing by the instructor.

No calculators, cell phones, or other electronic devices can be used during exams or quizzes unless explicitly allowed by the instructor.

**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. The final exam time for this course can be found at <https://www.nwmissouri.edu/registrar/finals.htm>

**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-attendance in the course.

**University communications:** Any course related announcements will be communicated via the **Announcements** page on the course website in Northwest Online or your Northwest e-mail account. Students are expected to use their Northwest student email account for any electronic correspondence within the university. Students are also strongly advised to check their email on a regular basis. E-mails must include the course number (44-695) in the subject line. For security reasons, e-mails that do not include an appropriate entry for the subject or unsigned e-mails will not be replied.

**Professionalism:** Students are expected to behave in a professional manner in their dealings with each other, the teaching assistant, and the instructor. E-mails should be politely written, use proper grammar, and follow the rules of capitalization.

**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>

**Special accommodations policy:** 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 disability that qualifies under the ADA/ADAAA and requires accommodations, they should contact the Office for Equity and Accessibility for information on appropriate policies and procedures at 660.562.1639, or [pjp@nwmissouri.edu](mailto:pjp@nwmissouri.edu)/[ADA@nwmissouri.edu](mailto:ADA@nwmissouri.edu). 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>