



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

**School of Computer Science and Information Systems**

44542-02/04

**Object Oriented Programming**

**3 credit hours**

**Spring 2024**

|                                  |                            |                                                                                        |                                 |
|----------------------------------|----------------------------|----------------------------------------------------------------------------------------|---------------------------------|
| <b>Instructor: Dr. Mark Chai</b> |                            | <b>Email:</b><br><b><a href="mailto:schai@nwmissouri.edu">schai@nwmissouri.edu</a></b> | <b>Office:</b><br><b>CH2315</b> |
| <b>Office Hours:</b>             | Monday, Friday & Wednesday | 10:00 am - 11:30 am                                                                    | CH2315                          |
|                                  | Tuesday                    | 01:00 pm - 03:30 pm                                                                    | CH2315                          |
|                                  | and by appointment         | <b>Phone: (660) 562-1600</b>                                                           |                                 |

**Prerequisites:** Graduate standing and an undergraduate course in data structures with a grade of C or better; no previous experience with object-oriented programming is necessary.

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

**Course description:** Provides fast-paced coverage of object-oriented programming and data structures. Students will gain extensive programming experience.

**Learning Outcomes:**

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

In addition, after successfully completing this course student will be able to.

- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- Analyze a problem and identify and define the computing requirements appropriate to its solution.
- Design, implement, test, and debug Java programs that incorporate:
  - objects and classes
  - control structures, exceptions, enumerated types, and input and output
  - inheritance, polymorphism, interfaces, abstract classes
  - data structures, including use and implementation of arrays, and ArrayLists

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

**Supplementary Materials:** Students must have access to the following at every course meeting:

- A bound notebook with pencil/pen for taking notes and submitting written content (e.g., pop quizzes.)
- Their campus-assigned laptop, in working order, with all required software.
- Free Git distributed version control system.
- Free TortoiseGit for integrating Git with Windows File Explorer.
- Free PuTTY for creating SSH public/private key pairs.
- Free GitHub and/or BitBucket educational accounts.
- Free GitHub Education Pack (as needed).
- Free Chocolatey package manager for Windows.
- Free Notepad++ text editor.
- Free NetBeans, Eclipse, IntelliJ, Visual Studio Code or other IDE as directed by the instructor.

**Graded course requirements:**

| Category                   | Points     |
|----------------------------|------------|
| Quizzes                    | 30         |
| Attendance                 | 20         |
| Assignments (~10)          | 100        |
| Midterm Exam 1             | 50         |
| Midterm Exam 2             | 50         |
| Final exam (Comprehensive) | 100        |
| <b>Total</b>               | <b>350</b> |

If students have any questions/concerns regarding the grades for their course objectives such as assignments, quizzes, and midterm exams there will be a week time given after the grades are posted to ask the faculty about their grades and request re-evaluation. After the allotted time passed, no further requests about their grades are considered.

**Grading scale:**

The faculty reserves the right to make adjustments to the following percentage.

| Graduate Credit (44-542) |       |
|--------------------------|-------|
| Percent Range            | Grade |
| 90-100%                  | A     |
| >= 80% and < 90%         | B     |
| >= 70% and < 80%         | C     |
| >= 60% and < 70%         | D     |
| below 60%                | F     |

**Tentative Course outline:**

| Week | Topics                                                                                            | Labs and project    |
|------|---------------------------------------------------------------------------------------------------|---------------------|
| 1    | Course orientation, Introduction to Java<br>Java and NetBeans installation<br>Objects and Classes | Lab 01: Objects lab |

| Week              | Topics                                                | Labs and project                           |
|-------------------|-------------------------------------------------------|--------------------------------------------|
| 2                 | Constructors<br>Primitive types and Scanner           | Lab 02: Classes lab                        |
| 3                 | Conditions<br>Selections                              | Lab 03: Conditions & Selections Lab        |
| 4                 | Repetition<br>File input and output                   | Lab 04: Control Structures lab             |
| 5                 | Arrays<br>Array Lists                                 | Lab 05: Arrays, Array List and Scanner lab |
| 6                 | <b>Exam 1, Friday, Feb 16</b><br>Debugging<br>Testing | Lab 06: JUnit lab                          |
| 7                 | Annotations, Main method, and UML<br>Enumerated Types | Lab 07: Enumerated Types                   |
| 8                 | Inheritance<br>Polymorphism                           | Lab 08: Inheritance and Polymorphism       |
| 9                 | Abstract classes                                      | No lab                                     |
| 10                | Spring Break                                          |                                            |
| 11                | Interfaces<br>Default Methods                         | Lab 09: Abstract Classes and Interfaces    |
| 12                | Casting and Exceptions                                | Lab 10: Casting and Exceptions             |
| 13                | <b>Exam 2, Friday, March 29</b><br>Recursion          | Project                                    |
| 14                | Sorting                                               | No lab                                     |
| 15                | Equals and Hashcode                                   | No lab                                     |
| <b>Final exam</b> | <b>Tuesday, April 23</b><br><b>7-9 p.m.</b>           |                                            |

Students may use weekly help sessions to complete assignments.

**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>

**Late Submission Policy for lab 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. 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.

**Attendance policies:**

This class will have many in-class activities (lecture, exam, quiz, presentation, etc.), so attendance is mandatory. Some in-class exercises may have points associated with them and may not be announced in advance. A student who misses activities 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.

The following excused absences are acceptable only:

1. Attendance at a university-sponsored event (documented with an excuse signed by the university sponsor prior to the event).
2. Emergency health reason (documented with a valid reason statement and doctor's notes).
3. Immediate family emergency case by circumstances considered adequately extenuating by the course instructor (documented with a valid reason statement and proof).

Please refer to the university policy on attendance at

<https://www.nwmissouri.edu/policies/academics/Attendance.pdf>

**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 emergency health reason, immediate family emergencies, and university-sponsored trips. Written documentation with suitable verification must be supplied before a make-up will be allowed.

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.

**Cheating:** Academic dishonesty will not be tolerated in this class. Any form of cheating will be dealt with according to the Academic Honesty Policy provided in the Northwest Missouri State University's Planner/Handbook, and may result in significant penalties, including receiving an F or zero grade for an assignment or exam, an F-grade in the course, and even removal from the program or suspension/dismissal from the University. Do your own work.

**Personal Equipment and Software:** You will be required to use a computer to complete the assignments or exams for this course. Essential requirements are a modern operating system (Windows, Mac, or Linux) that meets the assignments and exam requirements. It is the student's responsibility to make his/her computer system meet the requirements of the assignments or exam.

As a computer science graduate student you must develop the ability to troubleshoot common software configuration issues using a search engine, online tutorials, web forums, and other common tools.

**Course Communication:** Vital course materials, such as instructions, announcements, and assignments, will be available on the course website and your Northwest Missouri State University email account. It is your responsibility to check each of these sources daily.

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

Emails *must* include the course number (44-542) and section number (02 or 04) in the subject line. For example: '[44542-02] Query about Assignment 2'. For security reasons, emails that do not include an

appropriate entry for the subject will be ignored. Emailed queries on material found in the Canvas course areas will NOT be answered.

**Attendance:** Students are expected to attend all classes as specified in the course syllabi for each course. Class participation points may be awarded to students. It is the responsibility of the student to promptly notify his or her instructor when unable to attend class. Excused absences are not counted against student's attendance points. Please refer to the university policy on attendance at <https://www.nwmissouri.edu/policies/academics/Attendance.pdf>

**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.

**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.