Instructor information:

Name: Dr. Mohsen Saffari

Location: POTT 225

Email: msaffari@pnw.edu

Office Hours: Tuesdays 12:30 – 4:30 PM

Course Information

Class Time & Location: 11-12:15; Building: Potter (Andrey A) Building Room: 213

Course Website: https://purdue.brightspace.com/d2l/home/1073795

Course Description:

This course provides an introduction to the fundamental principles and practices of software engineering. Students will explore the software development lifecycle (SDLC) and various development methodologies, including Agile, Extreme Programming, and Scrum. Key topics include software requirements analysis, design concepts, and modeling using Unified Modeling Language (UML). The course also covers human aspects of software engineering, quality management, software architecture, and version control systems. Practical skills in software testing, maintenance, risk management, and security are emphasized through project work and guest speaker insights, preparing students to address real-world software engineering challenges.

Prerequisites: Object-oriented programming ECE 251 or instructor permission
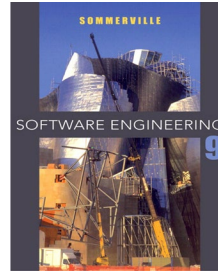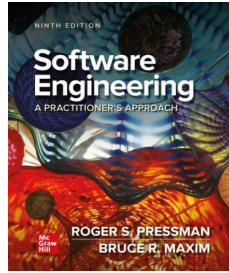
Course Outcomes:

- Students will be able to explain a broad range of concepts from software design methods. spanning all aspects of the software engineering process.
- Students will understand the principles and techniques of the software engineering approach to producing quality software.
- Students will work as part of a team.
- Students will present the results of their work orally.
- Students will document their work in a written report.

Course Materials:

The following textbooks are recommended but not required. You should be able to find their online version.

- Pressman, R. S., & Maxim, B. R. (2014). *Software Engineering: A Practitioner's Approach* (9th ed.). New York, NY: McGraw-Hill Education.
- Sommerville, I. (2011). *Software Engineering* (9th ed.). Boston, MA: Addison-Wesley.

Grading:

Quizzes:	40%
Project (Phase 0)	3%
Project (Phase 1):	30%
Project (Phase 2):	27%
Active participation in class discussions	+5 %

Where:

A^+: $97 \leq$ Final Grade ≤ 100	A: $93 \leq$ Final Grade ≤ 96	A^-: $90 \leq$ Final Grade ≤ 92
B^+: $87 \leq$ Final Grade < 89	B: $83 \leq$ Final Grade < 86	B^-: $80 \leq$ Final Grade < 82
C^+: $77 \leq$ Final Grade < 79	C: $73 \leq$ Final Grade < 76	C^-: $70 \leq$ Final Grade < 72
D^+: $67 \leq$ Final Grade < 69	D: $63 \leq$ Final Grade < 66	D^-: $60 \leq$ Final Grade < 62

Grades below 60 are considered as fail (F). The project should be done in teams to enhance the creativity and teamwork of the students. Every team member must participate in the project, presentation, and writing. Should you encounter any challenges with assignments, do not hesitate to reach out to me for assistance. The different phases of project have their own due date, which will be posted on the course website. Late submissions of project documents within three days after the deadline will incur a 50% point deduction for documentation part. Also, the teams will lose the points corresponding to presentation. In the event that a student is unable to participate in a quiz, they must notify the instructor before the scheduled time. Make-up quizzes will only be arranged under circumstances such as medical emergencies or other valid reasons.

Tentative Course Topics:
- Foundations of Software Engineering
- Generic process models and SDLC overview
- Agile and Team Practices, Agile methods, Scrum, Extreme Programming, RAD
- Requirements Engineering
- SRS development using a running case (Y-mart)
- Unified Modeling Language (UML)
- Introduction on Software Design
- Design process and principles
- Object oriented design
- Introduction on Software Architectures, Architectural styles: monolithic, layered, microservices
- Version Control, Git fundamentals, branching strategies, code reviews
- Software Testing and Verification
- Testing levels and strategies, White-box vs. black-box testing
- Software Maintenance and Evolution
- Guest speaker session on industry practices

Note: The provided course outline could be changed during the semester due to the class needs.

Class Policy:

Regular attendance and active participation in class discussions are not required but are essential for your success in this course. While I understand that circumstances may occasionally prevent you from attending, I ask that you notify me via email in advance whenever possible. Note that chronically missing classes is not acceptable, and it may result in your withdrawal from the course by the instructor. All lectures will be recorded and can be accessed on the course website.

Course Policy:

Commit to Integrity: As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class, and integrity in your behavior in and out of the classroom.

Academic Misconduct: At a minimum, students who cheat will receive "no credit" (a score of zero) on the assignment in question; but students may also be dismissed from the course and automatically assigned a grade of F. Please see the following link to learn more:

https://www.pnw.edu/dean-of-students/policies/academic-integrity-policy/

Accommodations for Disability:

If you have a documented disability that requires academic accommodation, please see me as soon as possible during scheduled office hours. To receive accommodations in this course, you must provide me with a Letter of Accommodation from the PNW Accessibility Center (PAC) for coordination of campus disability services available to students with disabilities. To request and receive accommodations, students schedule an appointment with the PAC to initiate review and approval of supporting documentation showing their disability, the barriers it causes, and the recommended accommodations. If documentation is approved, the PAC will email a letter to the student's current semester faculty members outlining the accommodations needed to ensure accessibility. Accommodation will be provided from the date the letter originates from the PAC. It is important to register as soon as possible as accommodation is not retroactive. The PAC is located at the Hammond campus in the Student Union & Library Building (SULB) 341. The PAC can be reached at (219) 989-2455 or by emailing: dac@pnw.edu.

Non-Discrimination

Purdue University Northwest prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. Any student who believes they have witnessed or experienced discrimination are encouraged to report the incident to the Office of Equity, Diversity & Inclusion in Lawshe 231, Hammond or call (219) 989-2337 or in Schwarz 25, Westville or call (219) 785-5545. Additional information can be found on the Diversity website.

Emergency Preparedness

An information sheet, with instructions for various types of possible emergencies, is posted in each room on campus. These emergencies include criminal activity, severe weather, fire, medical emergencies, and noises sounding like gunshots. Students are strongly encouraged to review this instruction sheet carefully and acquaint themselves with these important guidelines.

Resources and Support for Academic Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Many PNW resources that assist with wellness and academic success are listed below. If you are in immediate crisis, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

- **Accessibility** - Purdue University Northwest is committed to making learning experiences

accessible. If you anticipate or experience physical, academic/learning, mental health, pregnancy, or other medically related barriers to your PNW experience, you are encouraged to contact the PNW Accessibility Center at: pac@pnw.edu or by phone: (219) 989-2455. Visit the PAC website for more information.

- **Mental Health/Wellness** - Purdue University Northwest is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, confidential services are available. For help, contact the Counseling Center at (219) 989-2366 or visit at 2250 173rd Street on the Hammond Campus and TECH 101 in Westville. Visit the Counseling Center website for more information.

- **Basic Needs Security** - Any student who faces challenges securing food, housing, or other basic needs is urged to contact the Dean of Students for support at dos@pnw.edu or (219) 989-4141 (Hammond) or (219) 785-5230 (Westville). Student Advocates are also available to assist students 8:00am-4:30pm in Hammond (SULB 313) or Westville (LSF 103). Visit the Dean of Students website[3] for more information.

- **Veterans** – Purdue University Northwest is committed to creating a community of support for veterans, active-duty service members and their families. Visit the Veterans Services website[4] for more information

- **Academic Support** - All PNW students have access to academic support services for free.
  - **Tutoring** - Tutoring is available by appointment or during walk-in hours for most major subjects. Visit the Tutoring website[5] for more information.
  - **Writing Center** - Get help with any writing task from trained peer tutors; assistance available in-person or virtually. Visit the Writing Center website[6] for more information.

University Policies

As a student, it is important for you to understand these university policies[7], including non-discrimination, academic integrity, and others relevant to your educational experience.

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[3] https://www.pnw.edu/dean-of-students/get-help/

[4]   https://www.pnw.edu/dean-of-students/student-resources/veteran-services/

[5]   https://www.pnw.edu/student-academic-support/

[6] https://www.pnw.edu/writing-center/

[7] https://www.pnw.edu/dean-of-students/policies/