



A. JAMES CLARK  
SCHOOL OF ENGINEERING

## ENPM 613

Fall 2017

# Software Design and Implementation

## Overview and Learning Outcomes

This course is part of the core curriculum for the Software Engineering specialization of the Professional Master of Engineering Program and the Graduate Certificate in Engineering, and typically should follow ENPM611 and ENPM612. The ENPM613 course is also open to students in specializations other than Software Engineering, who have an appropriate background.

ENPM613 enables learning of industry best practices and their applications for designing and implementing software in a business setting, as well as development of soft skills needed by software engineers.

After successfully completing this course, students will be able to:

- Define concepts of software architecture and detailed design, and building-in software quality
- Apply methods, techniques, tools, and industry standard notations for developing and documenting software design
- Analyze and evaluate software design
- Implement and deliver software in accordance with its design, in a team environment
- Identify software design problems, propose adequate solutions, and analyze their benefits, cost, and limitations.

## Course Resources

Course website: [www.elms.umd.edu](http://www.elms.umd.edu)

### Textbook:

*Introduction to Software Engineering Design: Processes, Principles and Patterns with UML 2* by Christopher Fox, Addison Wesley, First edition (2007). ISBN #0-321-41013-0

Additional references will be provided in class, as necessary.

**Dr. Ioana Rus**

[irus@umd.edu](mailto:irus@umd.edu)

### Class Meets

Wednesday 7:00pm-9:40pm  
BLD JMP Room 2121 (DETS)

### Office Hours

Wednesday 5:00pm-7:00pm BLD JMP Room 2105

### Prerequisites

ENPM611 or instructor's permission

### Course Communication

Email: [irus@umd.edu](mailto:irus@umd.edu)  
Please see a link with helpful guidance on writing professional emails ([ter.ps/email](http://ter.ps/email)).

## Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit [www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html) for a full list of campus-wide policies and follow up with me if you have questions. Note that this list has been compiled by the Office of Undergraduate Studies, but most provisions apply to graduate students as well.

## Activities, Learning Assessments, and Expectations for Students

- Students will learn the class material by attending lectures and by independent study
- Classes will incorporate active learning (e.g., hands on exercises) and will stimulate students' critical thinking
- Assessment vehicles are: quizzes, mid-term and final exam, a research project, and a team software design and implementation project
- Students will present to the class their research project findings and software development artifacts
- Students will perform peer reviews of project deliverables
- For the group project, each student must fairly contribute to all activities and deliverables. At the end of each project phase, each student will provide a description of their contribution to the project, and feedback on their team mates' and their own performance. Individual project grades will be based on the grade for the group deliverables and individual contribution
- Students are expected to have the prerequisite knowledge (ENPM611 or equivalent) and to be proficient in Java programming before they enroll in this course
- Submissions for project deliverables will be made online, using ELMS (Canvas), by the date specified in ELMS. Late submissions are not accepted. Exceptions might be occasionally granted, but if and only if permission is obtained from the instructor **before** the submission deadline
- Mid-term and final exams will be administered in class and will be closed book and closed notes. Students must bring their UMD student ID to exams
- Students will participate in ELMS (Canvas) Discussions and are encouraged to post feedback and questions for the instructor.

## Course-Specific Policies

### Use of technology:

- **Please bring your laptops to class**
- **Cell phones:** Please refrain from using your cellphone in class. If you have critical communication to attend to, please excuse yourself and return when you are ready.

### Other course policies:

- Project groups will be formed by the instructor or by students themselves
- For project presentations, all group members must be present in class (either in College Park, or remotely, at their respective sites)
- No make-up exams will be considered, except for very rare circumstances (officially excused absences). In that case, an equivalent (but not identical) assessment will be administered. The make-up for the final exam must be administered before the last exams day of the semester
- No work for extra credit will be considered

## Grades

Grades are not given, but earned. Your grade is determined by your own performance on the course learning assessments, and is assigned individually (not curved). If earning a particular grade is important to you, please speak with your instructor at any time throughout of the semester, to receive advice for achieving your goal.

Assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time during office hours for us to meet, in my office or online (using Google Hangouts).

Late work will not be accepted for course credit, so please plan to have it submitted well before the scheduled deadline. I am happy to discuss any of your grades with you, and if I have made a mistake I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

| Learning Assessments                           | Points            | Category Weight % |
|--|-------------------|-------------------|
| Midterm Exam                                   | 100               | 15                |
| Final Exam                                     | 100               | 20                |
| Group Project (Total), distributed as follows: | 100               | 40                |
| Requirements analysis                          | 5                 |                   |
| Project user models and UI prototype           | 15                |                   |
| Architecture                                   | <del>25</del> -30 |                   |
| Detailed design                                | <del>25</del> -20 |                   |
| Implementation                                 | 22                |                   |
| Project management                             | 8                 |                   |
| Research Project                               | 100               | 10                |
| Learning Checks: Quizzes (total)               | 100               | 15                |
| <b>Total</b>                                   | <b>500</b>        | <b>100</b>        |

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone, clear standards must be established and applied consistently.

| Final Grade Cutoffs |        |    |        |    |        |    |        |          |
|---------------------|--------|----|--------|----|--------|----|--------|----------|
| A+                  | 97.00% | B+ | 87.00% | C+ | 77.00% | D+ | 67.00% |          |
| A                   | 93.00% | B  | 83.00% | C  | 73.00% | D  | 63.00% | F <60.0% |
| A-                  | 90.00% | B- | 80.00% | C- | 70.00% | D- | 60.00% |          |

## Campus Resources

You are expected to take personal responsibility for you own learning. This includes acknowledging when your performance does not match your goals and apply corrective action. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, so I encourage you to consider visiting <http://ter.ps/learn> and schedule an appointment with an academic coach. Sharpen your communication skills (and improve your grade) by visiting <http://ter.ps/writing> and schedule an appointment with the campus Writing Center. Finally, if you just need someone to talk to, visit <http://www.counseling.umd.edu>. Everything is free because you have already paid for it, and **everyone needs help**... all you have to do is ask for it.