

EE2510

Introduction to Object Oriented Programming

Spring 2020 - **Modified**

Syllabus

JUST THE FACTS

Class website:

<https://faculty-web.msoe.edu/johnsontimobj/EE2510/index-ee2510.html>

Or search “Johnson MSOE”, it will be the first result in Google
Notes, Handouts and readings will be available on the website

Grading:

	Final Taken	No Final
• Lab	30% 50%	70%
• Tests	50% 50%	30%
• Lab Exam	20%	

*** Late labs will be assessed a 25%/day penalty

Lab attendance is mandatory

Grade scale: 60 – 70 – 80 – 90 – 100

No Pass < 60, Low pass < 71.5, Pass

~~F | D | C | B | A~~

~~Final scores in the lower 15% of each range and the upper 15% of the subsequent range will receive a mixed grade of AB, BC, or CD.~~

On each Test you will receive a “raw score”. This will reflect your un-weighted performance. Your “raw score” will be shifted with respect to the upper percentile of the class to obtain a “weighted score”. It is these weighted scores that will be used in your “overall score” calculation.

For example, if the top student has a raw score of 93%, everyone’s raw score will be multiplied by 1.075 (1.00/0.93) to obtain their corresponding weighted score.

Help:

MSOE is a student-centered educational institution. If you need help – **ASK!**

Don't Cheat!

COURSE DESCRIPTION, GOALS, and OUTCOMES

Course Description

This course introduces object-oriented programming to students who have experience in structured programming techniques. Particular emphasis is placed on the design and implementation of computer programs to solve problems encountered in engineering practice. Topics include introduction to object concepts, describing, declaring and developing user-defined classes and objects, constructor and destructors, abstraction, function overloading, inheritance, polymorphism, encapsulation, and operator overloading. A high-level computer language will be used to illustrate and implement the topics. The lab sessions of the course will be used to design software for engineering applications.

Prerequisites & Notes

EE 1910 or EE3910B, MA 137 or MA 225

Primary Goal:

Provide a solid foundation in object oriented programming.

Learning Outcomes and Objectives:

A student who successfully fulfills the course requirements will be able to:

- Design computer software to solve engineering problems using object-oriented programming methods,
- Create and use classes and objects,
- Apply encapsulation and information hiding in software design,
- Create and apply derived classes (inheritance),
- Create and apply virtual functions (polymorphism), and
- Implement objects and classes in designing software for engineering applications.

COURSE MECHANICS

Class Details

Section 031:

Room - DH229
Days - Monday, Thursday
Time - 4:00 – 4:50

Lab Details:

Section 031:

Room - L308
Days - Tuesday
Time - 3:00 – 4:50

Instructor:

Dr. Johnson
Office: S-336
Email: johnsontimoj@msoe.edu
preferred method of contact
(prepend all email subjects with EE2510 - subject...)
Website – <https://faculty-web.msoe.edu/johnsontimoj>
Office phone - (414) 277-2682
Office hours: See web page

Text Book – 4 options

Halterman R., *Fundamentals of C++ programming* – available on the website
Soulie', J., *C++ Language Tutorial* – <http://www.cplusplus.com/doc/tutorial/>
Gaddis, T., *Starting Out with C++ from Control Structures to Objects*
Deitel, H., Deitel, P., *C++ How to Program* – on reserve in the library

Class website:

<https://faculty-web.msoe.edu/johnsontimoj/EE2510/index-ee2510.html>

Notes, Handouts and readings will be available on the website.

Support Outside of Class:

If you are struggling it is ALWAYS better to ask for help early since concepts build upon each other. In addition, office hours will be more crowded prior to the test and you may not get the kind of time needed to clarify your understanding.

Student Accessibility Services (SAS)

For students with documented disabilities, chronic medication conditions and mental health concerns; MSOE provides services to make reasonable accommodations available. If you are a student who requires or anticipates the need for accommodations, please contact Student Accessibility Services Office at 414-277-7281, by email at moureau@msoe.edu, or in person at K250 to discuss appropriate accommodations and eligibility requirements.

Your success as a student is of utmost importance to me. If you have a disability or any other special circumstance that may have some impact on your work in this class, and for which you may require special accommodations, please contact me early in the semester so that accommodations can be made in a timely manner.

Class Notes / Additional Readings:

I will make every attempt to put the class notes and additional readings on the web page two weeks in advance of the lecture but worse case these will be available one week in advance of class. It is critical that you read these over before class. They are not intended to include all the class material but will jump start the learning process. In addition, all the material in the notes may not be covered in class – but you are still responsible for it. See the notes on *Effective Learning Concepts*.

Labs and Project:

Prelabs, lab demonstrations and post lab write-ups will be due as indicated in the lab assignments. Late labs will be assessed a 25%/day penalty

Tests:

Test schedules are outlined on the web page.

COURSE POLICIES and PROCEDURES

Lab Attendance:

Lab attendance is REQUIRED, any unexcused lab absences will result in a 0 for the lab.

Class Attendance:

This course and will move pretty quickly. While you may be able to learn the material on your own, if you fail to attend class you will not:

- be exposed to the subtlety of the concepts
- learn the details “between the lines”
- know what points I consider important
- learn from the questions of other students
- get the benefit of the doubt on any borderline decisions

In Class Behavior:

You are young professionals and I expect you to act accordingly. Disruptive behavior of any kind will be referred to the appropriate administrative office.

I expect your focus in class to be on the course material. Cell phones, MP3 players, laptops, tablets, ... are not allowed in my class. If you must use one of these devices you are welcome to leave the room. Research shows that taking notes on a laptop or tablet is less effective than taking them long-hand, so please do not ask for an exception.

No video or audio recording is allowed in class. Failure to follow this rule will be treated as academic dishonesty and dealt with accordingly.

Professionalism and Academic Honesty:

A professional does not take credit for the work of someone else.

All students are expected to conform to the **Policy on Student Integrity** outlined in the MSOE Undergraduate Academic Catalog.

Working collaboratively on homework assignments is allowed and encouraged (sharing ideas and approaches). **The work you turn in however must be your own.** (code, problem solutions, calculations).

Any documented case of “cheating” will result in a **FAILING GRADE** as well as possible disciplinary action. All cases of academic dishonesty will be reported to the EECS Chair as well as to the Dean of Students.

Examples of Cheating include (**but are not limited to**) the following:

Testing

- copying the work of another student (past or present) during a test
- providing test information to students who have not yet taken it

- obtaining information about a test prior to taking it
- having someone else take a test for you
- bringing “cheat sheets” in any form with you to a test
- using a cell phone or other electronic device during a test

Homework / Labs

- modifying a graded lab or homework paper and submitting it for reevaluation
- turning in work that was done by someone else
- using another student’s (past or present) homework files
- posting solutions to homework problems or lab experiments

LEARNING OUTCOME ASSESSMENT

Assessment Overview:

The goal of this course is to ensure students learn the concepts identified in the *Learning Outcomes and Objectives* section. In order to meet this goal, students must be assessed in order to determine if they have in fact learned these concepts. To that end there will be five assessment components in this course:

	Final Taken	No Final
• Lab	30% 50%	70%
• Tests	50% 50%	30%
• Lab Exam	20%	
• Participation	<1% only used on borderline cases	

Lab / Lab Exam:

Lab work is essential to turning concepts and ideas into real world artifacts. It is intended to solidify the concepts in the student's mind and enhance the overall learning process.

Late labs will be assessed a 25% reduction / day

Tests:

Tests will serve two primary purposes in this class.

They will be used as feedback to the instructor on teaching/learning progress.

They will be used to assess student understanding of the material.

Makeup Tests:

If you have an excused absence from a scheduled test based on documented participation in a University-related activity (e.g., band trip), you must make arrangements **in advance** to take your test during an alternate time during the week the test is being administered.

If absence during a scheduled test period is excused (due to illness or family emergency, which must be verified **in writing**), you will be given the opportunity to make up the missed test upon your return.

Participation:

Participation in class is valuable to the student, the instructor, and others in the class.

Participation will not be officially graded. I reserve the right to use participation as the “borderline” determining factor as outlined in the *Grading* section.

Grading:

On each Test you will receive a “raw score”. This will reflect your un-weighted performance. Your “raw score” will be shifted with respect to the upper percentile of the class to obtain a “weighted score”. It is these weighted scores that will be used in your “overall score” calculation.

For example, if the top student has a raw score of 93%, everyone's raw score will be multiplied by 1.075 (1.00/0.93) to obtain their corresponding weighted score.

Grade scale: 60 – 70 – 80 – 90 – 100

No Pass < 60, Low pass < 71.5, Pass

~~For the final grade, equal width cutoffs will be applied based on a cutoff width of 10 (i.e., the nominal cutoffs for A B C D will be 90 80 70 60, respectively). Final scores in the lower 15% of each range and the upper 15% of the subsequent range will receive a mixed grade of AB, BC, or CD.~~

A “borderline” is officially defined as an overall score within 0.5% of a cutoff when the final grade calculation is performed. Before course grades are assigned, the instructor will carefully examine all such cases and determine if the next higher grade is warranted. **Primary factors will be participation or recognition of one bad test/lab.**

Reporting of Grades:

Individual homework assignments, labs and tests will be graded and returned to the student. These grades are unofficial. The official grades will be kept in Blackboard and updated on a regular basis. Any errors in grading must be brought to the attention of the instructor within one week of posting to Blackboard. Blackboard will contain the raw score and weighted score for each assessment, and the current overall score.

EFFECTIVE LEARNING CONCEPTS

As an engineer you most likely consider yourself a scientist also. A critical piece of being a scientist is believing in the scientific method and not ignoring the results. Here are some key learning and learning behavior results.

- Multi-tasking reduces competency in each task undertaken
- <5% of the population can multi-task and the odds are high that you are not one of them
- Repetition is a key factor in long term retention
- Your brain tosses out anything it thinks is irrelevant each night – review material the same day to help make it relevant to your brain
- Sleep is not an option – it is critical to learning (7 hours min – no exceptions)
- Connect new concepts to concepts you already know
- Taking notes by hand increases understanding – not true for typing
- Study as you go and review in the days before the test – then sleep the night before
- Hear – Do – Teach Teaching others solidifies learning
- Cramming has no long term learning value
- Cramming works for a few hours – if you do it – do it the morning of the test

Seven Things you can do to be a better learner:

1. Make connections. Use analogies or mnemonic devices to build upon your existing knowledge. Not only do these help you remember – but the act of creating these helps you learn.
2. Never read anything without a purpose and stop once you have accomplished it.
3. When you read – stop after every major section or chapter and write down a few key notes. Review the summary within 24hrs to help transition it from short term to long term memory.
4. 20-30 min maximum at any task – then take a short stretch break (30-60sec) and get the blood flowing – review what you have been doing in your mind.
5. 2 hours total without a long break (10 - 15 minutes). Do something that stimulates other parts of your brain – music, exercise, food – when you return – review your short notes from earlier.
6. Plan your time – keep a record – modify your schedule accordingly – Stress reduces learning and being overloaded with no time left is very stressful.
7. Ask – when you don't get it, and have tried a few times - ASK

Always remember – your goal is not to accomplish a task – it is to learn something in the process.

COURSE SCHEDULE

SUBJECT TO CHANGE – depending on overall class progress and any unforeseen natural phenomena.

Please check the website for the current schedule