INFOTC 2040 Programming Languages and Paradigms

Syllabus (FS18, v1.0)

This course presents programming principles and their syntactical representation and implementation across languages including those that are compiled and interpreted. The course shows how to implement algorithms and data structures to solve problems while utilizing paradigms offered by the programming languages such as procedural, object-oriented, protocol-oriented, functional, and declarative. Language support for strong and weak typing and type safety are covered along with support for optional values. This course provides experience in developing algorithms and determining their efficiency, designing application architecture, and developing applications. Building and using libraries/application programming interfaces is covered. Git and GitHub are used for code versioning and collaboration. Integrated development environments (IDEs) are used for managing, building, debugging, and testing applications.

The following topics are covered:
* programming paradigms such as procedural, object-oriented, protocol-oriented, functional, and declarative.
* programming languages, their syntax, abilities, and supported paradigms.
* data structures.
* strong and weak typing, type safety.
* the null reference/pointer problem and the use of optionals.
* algorithm design and efficiency analysis and measurement utilizing different paradigms.
* application design and architecture.
* building and using libraries and application programming interfaces (APIs).
* code versioning systems, Git, and GitHub.
* integrated development environments (IDEs) for managing, building, debugging, and testing applications.

100% online course.

You must own, or have access to, a computer to take this course on which you can install software. If you are in Columbia, MO while taking the course you can use the iMac lab in C1205/06 Lafferre. The iMac lab has all the required software installed on the computers.

Credit Hours

3 hours

Prerequisites

INFOTC 1040 Introduction to Problem Solving and Programming, CMP_SC 1050 Algorithm Design and Programming I, OR prior experience with programming and consent of instructor.

Class Schedule

This is an online course. There are no physical class meetings.

Saturday, August 18 - Canvas course and first module available.
Monday, August 20 - Fall classes officially begin.
Monday, September 24 - Last day to drop the course without a grade.
Saturday, November 17 - Sunday, November 25 - Thanksgiving Break
Monday, December, 3 - Last day to withdraw from a course.
Friday, December 7 - **All challenges, activities, quizzes and exams have to be submitted.**

The course officially starts on Monday, August 20. Your access to Canvas and the first week's modules are available on Saturday, August 18. Each week you are provided with new modules on Saturday and the work needs to be completed by the following Friday. Assignment, quiz and test solutions are posted the week following their assignment. This means there can be no extensions on assignments. **Assignments must be submitted by 11:59pm on the Friday due date each week to receive credit.**

Assignments

All assignments (quizzes, exams, activities, challenges, and projects) must be completed by the due date/time to receive credit.

You must fulfill the requirements of an assignment submission to receive credit for that assignment. Any information you are asked to provide and files you are asked to supply must be present to receive credit for the assignment. If you are asked to follow a specific procedure or utilize a convention you must do so to receive credit. For example, if you are asked to name a project in a specific way and you do not follow the rules provided you will receive a zero on the assignment. If you are unsure of what you are to do you must ask and receive clarification before submitting your work.

Required Textbooks

C# 7.0 Pocket Reference: Instant Help for C# 7.0 Programmers 1st Edition
Authors: Joseph Albahari and Ben Albahari
Paperback: 240 pages
Publisher: O'Reilly Media; 1 edition (July 28, 2017)
Language: English
ISBN–10: 1491988533
ISBN–13: 978–1491988534
Product Dimensions: 4.5 x 0.5 x 7 inches
Amazon: http://a.co/6lMlSS7

C# 7.0 in a Nutshell: The Definitive Reference 1st Edition
Paperback: 1088 pages
Publisher: O'Reilly Media; 1 edition (October 28, 2017)
Language: English
ISBN–10: 1491987650
ISBN–13: 978–1491987650
Amazon: http://a.co/heTZYzm

The Clean Coder: A Code of Conduct for Professional Programmers 1st Edition
Author: Robert C. Martin
Paperback: 256 pages
Publisher: Prentice Hall; 1 edition (May 23, 2011)
Language: English
ISBN–10: 0137081073
ISBN–13: 978–0137081073
Product Dimensions: 7 x 1 x 9 inches
Amazon: http://a.co/97YNFp9

The Pragmatic Programmer: From Journeyman to Master
Authors: Andrew Hunt and David Thomas
Paperback: 352 pages
Publisher: Addison-Wesley Professional; 1 edition (October 30, 1999)
Language: English
ISBN–10: 020161622X
ISBN–13: 978–0201616224
Product Dimensions: 7.4 x 1 x 9.2 inches
Amazon: http://a.co/b3HbFNn

You are required to obtain a copy of the books by the end of the first week of the course.

Book sources:

- Mizzou Bookstore
- Amazon - Amazon offers paper, eTextbook, and Kindle versions. They offer rental and purchase options.

These are not the only locations for purchasing the book.

If you purchase a paper copy, be careful to select a source that can deliver the book by the end of the first week of the course. If you purchase the Kindle or electronic textbook version, it should be delivered immediately to you. The Kindle book can be viewed on a desktop computer (Windows or Mac) using the free Kindle app or on tablet such as the iPad or an Android tablet. It cannot be downloaded to the Kindle eInk readers.

Choose the format that will work best for you. Some people are more comfortable with paper books and find them easier to refer to while working on their computer or for reading away from their computer. Other people like having electronic versions of their books.

Web Sites

The following are some of the sites that will be used during the course. Other sites are provided during the course.

This course utilizes Canvas for course materials, communications, and assignments:
https://courses.missouri.edu

Git
https://git-scm.com

GitHub
http://github.com
Every student is required to have a GitHub account and will know or learn how to use git.

Hardware/Software Requirements

You must own, or have access to, a computer to take this course on which you can install software. If you are in Columbia, MO while taking the course you can use the iMac lab in C1205/06 Lafferre. The iMac lab has all the required software installed on the computers.

Regarding the iMac lab and DoIT labs, BE AWARE that the files you create are erased when you log out of the computer. You must save the files you create to some other storage before you log out or you will lose them.

You also need to be able to watch online videos because some of the course content is video-based. If you can watch YouTube videos at HD resolution you have the needed ability.

Accounts

You need to have a GitHub account.

GitHub Account

You are to use GitHub with this course. If you already have a GitHub account then you can use it. If you don't have a GitHub account the best option is to sign up for the GitHub Student Developer Pack at: https://education.github.com/pack. This offers "Unlimited private repositories (normally $7/month) while you are a student."

Learning Support

An email account dedicated to this course has been established where you are to email the e-learning support specialists and the instructor for any technical questions regarding challenges, quizzes, the final project, and receiving help for anything you might need. This email account is monitored by all the e-learning support specialists and the instructor allowing any of us to respond. Please use this email account:

infotc2600@missouri.edu

If you have any course requests, disability accommodation requests, complaints, or grade disputes, email me (Dale Musser) directly at:

musserda@missouri.edu

Please allow a minimum of 24 hours to receive a response to emails.

Locations

Lafferre Hall is the home for the College of Engineering and the location of the iMac lab (C1205 and C1206) and several DoIT computer labs. Lafferre Hall is located on 6th street near Stewart Street and is referred to as Engineering Building East or EBE.
http://map.missouri.edu/index.html?bldg=37023

Naka Hall is the home for the EECS department and the location of several DoIT computer labs. Naka Hall is located west of Lafferre Hall and is referred to as Engineering Building West or EBW.
http://map.missouri.edu/index.html?bldg=37022

Engineering Building North (EBN) is the home for the IT Program and the location of the IT Program Checkout and Virtual Reality labs. MU Map labels the building as the Old Student Health Center. EBN is the building north of Lafferre Hall.
http://map.missouri.edu/index.html?bldg=37133

Instructor

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https://www.facebook.com/dale.musser.54
https://dalemusser.com

Teaching and Learning Assistants

Graduate Teaching Assistants (GTAs) are graduate students and Personal Learning Assistants (PLAs) are undergraduate students who support courses. GTAs and PLAs have offices in Lafferre Hall, Naka Hall, and Engineering Building North. GTAs and PLAs are assigned to courses each semester and information about getting support from them is posted on Canvas. GTAs and PLAs serve as e-learning support specialists for this course.

Online Office Hours

The instructor and e-learning support specialists (GTAs and PLAs) hold online office hours using Zoom (https://zoom.us), an online video and web conferencing service. Information about online office hours and how to setup and use Zoom is provided on Canvas.

Grading

The course grade is calculated as a weighted average of grades in five categories. In each category, a grade is earned as a percentage from 0% to 100% that is based on an equal averaging of items in that category. The percentage grade for each category is multiplied by the weighting percentage to determine the category's contribution to the total grade. The sum of contributions from the five categories yields the final grade.

Categories and Weights

Quizzes: 20%
Activities, Challenges, Projects: 20%
Midterm Exam: 20%
Final Exam: 20%
Final Project: 20%

Grading Scale

A+ = 98–100%, A = 93–97%, A- = 90–92%
B+ = 87–89%, B = 83–86%, B- = 80–82%
C+ = 77–79%, C = 73–76%, C- = 70–72%
D+ = 67–69%, D = 63–66%, D- = 60–62%
F = 59% and below

Challenge Grading

Unless otherwise specified, challenges will be graded on effort. Effort will be measured on a number of different criteria; including, but not limited to, correctness, amount of work attempted, amount of work completed, using support material, asking for help, and meeting challenge requirements.

Final Project Grading

Final Projects will be graded on correctness.

Course policies

- All challenges, activities, quizzes and exams have to be submitted by Friday, December 7th. There will be no exceptions to this policy. Anything not turned in by this date will receive a zero on the item in question.
- You are responsible for keeping up-to-date on the work you are to be doing for this course. While reminders will be sent out based on the recommended schedule, it is up to you to complete the work in a timely manner.
- You must fulfill the requirements of an challenge submission to receive credit for that challenge. Any information you are asked to provide or files you are asked to supply must be present to receive credit for the challenge.

Instructor's Expectations for Students

- Be responsible for yourself, your work, and your actions.
- Attend to the work you have to do. Do not put it off. Make it part of your schedule.
- Do not try to do all of the work just before the course ends.
- Ask questions if you do not understand something.
- Engage in discussions on the class discussion boards.
- Ask for help if you get lost. Use the e-learning mentors!
- Communicate!
- Do not wait until late in the semester to address problems.
- Do not ask the instructor to break class policies.
- Plan.
- Be creative, curious, inventive, resourceful, and proactive.
- Be playful in your approach to learning and the work you do.
- Play nice with others.
- Have fun.

Academic Honesty

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

Intellectual Property Notice

All course materials including but not limited to the syllabus, course assignments, study guides, learning guides, online lecture videos and content, and lab book (i.e. course pack) are property of the instructor and University and may not be shared online or distributed in any manner to others. Students are prohibited from posting course materials or notes online and from selling notes to or being paid for taking notes by any person or commercial firm without the express written permission of the professor teaching this course. Doing so will constitute both an academic integrity violation and a copyright violation. Violations of copyright laws could subject you to civil penalties and criminal liability. Violations of academic integrity may subject you to disciplinary action under University policies.

Classroom Misconduct

Classroom misconduct is defined by the University of Missouri's collected rules and regulations are also outlined in the M-Book Student Code of Conduct.

See:
https://www.umsystem.edu/ums/rules/collected_rules/programs/ch200/200.010_standard_of_conduct
https://accountability.missouri.edu/university-policies/

Classroom misconduct includes forgery of class attendance; obstruction or disruption of teaching, including late arrival or early departure; failure to turn off cellular telephones leading to disruption of teaching; playing games or surfing the Internet on laptop computers unless instructed to do so; harassment, bullying, physical abuse or safety threats; theft; property damage; disruptive, lewd or obscene conduct; abuse of computer time; repeated failure to attend class when attendance is required; and repeated failure to participate or respond in class when class participation is required.

IMPORTANT: Entering a classroom late or leaving a classroom before the end of the period can be extremely disruptive behavior. Students are asked to arrive for class on time and to avoid early departures. Instructors have the right to deny students access to the classroom if they arrive late and have the right to dismiss a student from the class for early departures that result in disruptions.

Under MU policy, your instructor has the right to ask for your removal from the course for misconduct, disruptive behavior or excessive absences. The instructor then has the right to issue a grade of withdraw, withdraw failing or F. The instructor alone is responsible for assigning the grade in such circumstances.

Dishonesty and Misconduct Reporting Procedures

MU faculty are required to report all instances of academic or classroom misconduct to the appropriate campus officials. Allegations of classroom misconduct will be forwarded immediately to MU's Vice Chancellor for Student Affairs. Allegations of academic misconduct will be forwarded immediately to MU's Office of the Provost.

Title IX Information

The University of Missouri prohibits all forms of sex or gender discrimination, including sex-based violence. If you or someone you know has experienced sex discrimination or been harassed or assaulted, you can get help at the Relationship & Sexual Violence Prevention (RSVP) Center, a confidential resource, at rsvp@missouri.edu or (573) 882–6638, or go to https://rsvp.missouri.edu. You can also contact the Title IX Office (title9@missouri.edu; (573) 882–3880; or http://www.title9.missouri.edu). Mizzou employees are required to report all incidents of sex discrimination to the Title IX Office.

Students with Disabilities

If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with your instructors, or if you need to make arrangements in case the building must be evacuated, please let us know as soon as possible. You can email Dale Musser at musserda@missouri.edu or text/call (415) 279–4040.

If disability related accommodations are necessary (for example, a note taker, extended time on exams, captioning), please register with the MU Disability Center (http://disabilitycenter.missouri.edu, S5 Memorial Union, (573) 882–4696, and then notify your instructor of your eligibility for reasonable accommodations.

Intellectual Pluralism

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director; the director of the Office of Student Rights and Responsibilities (http://osrr.missouri.edu); the MU Equity Office (http://equity.missouri.edu), or equity@missouri.edu.

All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

University of Missouri-Columbia Notice of Nondiscrimination

The University of Missouri does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age, disability or status as a protected veteran.