UNIVERSITY OF MARYLAND GLOBAL CAMPUS

Adelphi · Syllabus ·

CMIS 330 6380 Software Engineering Principles and Techniques (2215)

CMIS-330

Summer 2021 Section 6380 3 Credits 05/19/2021 to 07/13/2021

Faculty Contact

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Course Description

Prerequisite: CMIS 115, CMIS 125, or CMIS 141. A study of software engineering from initial concept through design, development, testing, and maintenance of the product. Discussion covers software development life-cycle models. The goal is to analyze, customize, and document multiple processes to solve information technology problems. Topics include configuration management, quality, validation and verification, security, human factors, and organizational structures. Students may receive credit for only one of the following courses: CMIS 330 or CMIS 388A.

Course Introduction

This course is a survey of topics in software engineering, focusing on the development of software for large computer systems. Because of its complexity, software for large systems is the most difficult to build and requires teams of developers. Each developer must possess skills in problem analysis, system and software design, and test planning and test case design. In other words, each member of the team must be a software engineer. Although new by engineering standards, software engineering has an influence on our personal and professional lives as pervasive as that of computing systems.

We will learn about the discipline of software engineering by studying the software engineering development process and the software product. Process and product are really two sides of the same coin. The goal of the process is the product, and there is no product without the process. To learn about the different roles of software products, we will study software development processes that vary from one another in terms of sequence and frequency of basic tasks. The basic tasks are invariant, as shown in this diagram of one of the predominant software development processes, linear-sequential:

Finally, software process and product exist within the larger framework of a software methodology. A *software methodology* is essentially a fundamental view of software. The methodologies we will cover are structured (also referred to as *functional*) and object-oriented. Both methodologies guide the software engineer in the performance of the tasks of software development.

Note: This course is identified as a prerequisite for another course at UMGC. Successful completion of this course is required to advance to the next course in a sequence. A grade of Withdrawal (W), Failure for non-attendance (FN), Failure (F) or Incomplete (I) will not meet a prerequisite requirement. You may be barred from enrolling in or may be removed from courses for which you do not have the necessary prerequisites. Keep track of your progress in this course. If you are uncertain about your standing, consult with your instructor. You should also work with an academic advisor to be sure you are aware of your options and are meeting all necessary program requirements when planning your schedule.

Course Outcomes

After completing this course, you should be able to

- describe and perform the key development activities in any software life cycle

- select, tailor, and apply processes and products in order to solve IT problems
- communicate and document all phases of a software development life cycle process to internal and external stakeholders
- assess relevant software industry trends and best practices to judge their applicability to a given IT problem

Course Materials

Click to access your course materials information (http://webapps.umgc.edu/UgcmBook/BPage.cfm?C=CMIS%20330&S=6380&Sem=2215)

Class Guidelines

Faculty Information

To locate information within your LEO classroom, log in and review your faculty member's information, which is found in the Start Here section of your classroom after clicking on the **Content** link.

Contacting your Faculty Member

You can use the Pager feature within the classroom to send a message to your faculty member. Click the Classroom Walkthrough Videos link below, and then click **The Pager** link, to view a how-to video on how to use the Pager function within the classroom:

Classroom Walkthrough Videos Link (http://www.umgc.edu/students/leo/videos.cfm)

Within the **Content** section of your classroom, view the **Start Here** section or **Additional Course Information** section within the **Syllabus** to learn more about contacting your faculty member.

Contacting Advising or the Department

- If you have questions related to the course content or any of the graded deliverables, please contact your instructor.
- For questions and concerns related to advising, you can call 800-888-8682 (toll-free), or, write to undergrad.advisor@umgc.edu (if you are an undergraduate student), or grad.advisor@umgc.edu (if you are a graduate student).
- For other questions and concerns about this class, you can contact your program director by writing to infotechnologydept@umgc.edu. Please be sure to mention the course name, course number, and your section number in the "Subject:" field of your email. Your email will be treated confidentially.

Grading Information

This course consists of the following graded items:

conference participation	15%
software requirements specification (SRS) document	20%
software design document (SDD)	20%
software test specification (STS) document (team project)	20%
final project: software development plan (SDP)	25%
Total	**100%**

Definition of Academic Rigor

UMGC defines academic rigor as the degree to which students demonstrate content mastery, application of critical thinking skills and adherence to UMGC's code of academic integrity.

This definition implies three components to academic rigor:

1. Content mastery to include the subject matter of the course as well as mastery of those core curriculum goals established for the course (for example, information literacy, effective writing).
2. Application of critical thinking skills to include the degree to which the student can present and defend original thinking on the subject matter, including synthesis and analysis of key concepts.
3. Academic integrity to include the degree to which student demonstrates academic honesty defined in UMGC's code of academic integrity.

Participation

By registering for a Web-based course, you have made a commitment to participate in course conferences as well as other online activities. Participation for this course is defined as proactive discussion in weekly discussion activities. This requires you to actively reflect on weekly readings and to develop original ideas in your responses. You are expected to demonstrate critical thinking and your understanding of the content in the assigned readings as they relate to the issues identified in the conference discussion.

You are expected to respond to the main discussion topic(s) each week and read and respond to other student posts to contribute additional knowledge to the class. Note that your online conference participation counts significantly toward your final grade. Interacting and responding to discussion items earlier in the week as opposed to the end of the week is encouraged and rewarded.

When communicating with others in this class always work to be respectful.

The rubric used to grade your online participation is shown below:

Criteria	Exceeds (5 points)	Meets (3-4 points)	Does not Meet (0-2 points)
Completeness of Submission	Responses thoroughly addressed all parts of the discussion question adding depth to the overall conversation. Responses were clear and of the highest quality demonstrating mastery of writing. References were properly cited.	Responses addressed some of the question but additional clarification and details would have strengthened the discussion. Responses were well organized with rare spelling or grammar distractions. References were properly cited.	No responses or responses were incorrect, or missing significant details. No responses or responses were poorly written, disorganized with many spelling and grammatical errors.
Submitted on time	Initial responses submitted at least 3 days before the due date.	Initial responses submitted on or within 2 days before the due date.	No responses or responses submitted after the due date.
Interaction with Others	Responded to student posts providing additional contributions clearly supporting learning and successful accomplishment of assignments and classroom activities.	Responded to student posts providing additional contributions.	No responses to other students or responses to other students do not provide additional insight and are not substantive.

Late Assignments

The first day that a graded assignment is late there will be a 5% deduction in points. Each additional day there will be a 3% grade deduction. The total grade deduction cannot exceed 20% for the assignment. The one exception is the end of the course. All assignments must be submitted by the end of the course unless there is an approved Grade of Incomplete.

Extra Credit

There are no extra credit opportunities for the class.

Project Descriptions

To reinforce the concepts of the software development process, the course project entails submitting software development products. These products are documents that are generated during the course of software development. One key software development product that you will not submit is the program source code. Refer to the course schedule for project submission due dates.

The documents to be developed in this class are

- software requirements specification (SRS) document
- software design document (SDD)
- software test specification (STS) document
- software development plan (SDP)

IEEE standard reference manuals will be posted under Reserved Readings to provide suggested outlines for each of the project documents. Other published outlines for these documents, such as MIL-STD-498, are also acceptable. Because of the compressed course schedule, each of these documents should be on the order of 6–10 typed pages or their electronic equivalent. Technical content rather than document size is the factor that will be considered in grading. Graphical content can help satisfy the page requirement.

Academic Policies

ACADEMIC INTEGRITY

University of Maryland Global Campus (UMGC) has adopted a Philosophy of Academic Integrity (https://www.umgc.edu/current-students/learning-resources/academic-integrity/philosophy.cfm)to guide the university's commitment to a culture of academic integrity and authentic education encompassing a set of dispositions and behaviors that are socially beneficial, educationally critical, and professionally necessary.

All members of the University community must maintain the highest level of integrity across the academic experience. For students, intellectually honest academic work represents independent analysis, acknowledges all sources of information that contribute to the ideas being explored, and ensures the ability to engage in life and work authentically. Your instructor is your primary resource for how to uphold the highest ethical standards in the context of this course's specific requirements.

Turnitin is enabled within the classroom to support the development and assessment of authentic student writing. To learn more about Turnitin, the feedback it provides, how to use feedback to improve your work, and your options regarding the inclusion of your work in the Turnitin database, visit University guides for Turnitin at sites.umgc.edu/library/libresources/turnitin.cfm (https://sites.umgc.edu/library/libresources/turnitin.cfm)
and https://sites.umgc.edu/library/libresources/turnitin.cfm#studentcopyright (https://sites.umgc.edu/library/libresources/turnitin.cfm#studentcopyright).

Other Academic Integrity resources and guidelines are found at https://www.umgc.edu/current-students/learning-resources/academic-integrity/index.cfm (https://www.umgc.edu/current-students/learning-resources/academic-integrity/index.cfm).

CLASSROOM CIVILITY

Students are expected to work together cooperatively, and treat fellow students and faculty with respect, showing professionalism and courtesy in all interactions. Please review the Code of Civility for more guidance on interacting in UMGC classrooms:

https://www.umgc.edu/students/support/studentlife/conduct/code.cfm (https://www.umgc.edu/students/support/studentlife/conduct/code.cfm).

POLICIES AND GUIDELINES

UMGC is committed to ensuring that all individuals are treated equally according to Policy 040.30 Affirmative Action, Equal Opportunity, and Sexual Harassment (https://www.umgc.edu/administration/policies-and-reporting/policies/administration-policies/affirmative-action-and-equal-opportunity.cfm).

Students with disabilities who need accommodations in a course are encouraged to contact the Office of Accessibility Services (OAS) at accessibilityservices@umgc.edu, or call 800-888-8682 or 240-684-2287.

The following academic policies and procedures apply to this course and your studies at UMGC.

150.25	Academic Integrity Policy (http://www.umgc.edu/policies/academicpolicies/aa15025.cfm) The University expects all members of the university community—students, faculty, and staff—to use guidelines to work with and promote integrity. If you are aware of any academic misconduct, please contact integrity@umgc.edu. All cases of academic misconduct will be addressed in accordance with Policy 150.25 (http://www.umgc.edu/policies/academicpolicies/aa15025.cfm) and associated procedures. You are expected to engage in new learning that furthers your development of knowledge, skills, and abilities in each course. According to this policy, you may not submit a substantial portion of any coursework that you have submitted to any course previously without express written approval through assignment guidelines or other forms of communication. You must use UMGC course materials responsibly. Uploading course materials to any website outside of UMGC's online classroom is prohibited by this policy.
151.00	Code of Student Conduct (https://www.umgc.edu/administration/policies-and-reporting/policies/student-affairs/code-of-student-conduct.cfm)
170.40 170.41 170.42	The following policies describe the requirements for the award of each degree: Degree Completion Requirements for the Graduate School(https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/graduate-school-degree-completion-requirements.cfm) Degree Completion Requirements for a Bachelor's Degree(https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/bachelors-degree-completion-requirements.cfm) Degree Completion Requirements for an Associate's Degree(https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/associates-degree-completion-requirements.cfm)
170.71	Policy on Grade of Incomplete(https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/grade-of-incomplete-policy.cfm) - The mark of I is exceptional and considered only for certain courses. Students who have completed 60% of their coursework with a grade of B or better for graduate courses or C or better for undergraduate courses and request an I before the end of the term. The mark of I is not available for noncredit courses.
170.72	Course Withdrawal Policy (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/course-withdrawal.cfm) - Students must follow drop and withdrawal procedures and deadlines available athttps://www.umgc.edu/ (https://www.umgc.edu/) under Academic Calendar.
130.80	Procedures for Review of Alleged Arbitrary and Capricious Grading(https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/capricious-grading-review.cfm) – appeals may be made on final course grades as described herein.

190.00	Intellectual Property (https://www.umgc.edu/administration/policies-and-reporting/policies/research/intellectual-property.cfm) - All university faculty, staff, and students must comply with University guidelines on the use of copyrighted material. Uploading UMGC or faculty copyrighted material without authorization degrades and corrupts the integrity of the teaching and learning experience and is a potential violation of UMGC policy and copyright law. You must obtain permission to post UMGC or other's copyrighted material to third-party websites, including social learning network sites. UMGC reserves the right to take appropriate action to remove copyrighted material uploaded without authorization.
205.06	Calculation Of Grade-Point Average (GPA) for Inclusion on Transcripts and Transcript Requests (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/grade-point-average-calculation-for-inclusion-on-transcripts-and-transcript-requests.cfm) - Note: Undergraduate and graduate courses have different Grading Policies. See Course Syllabus for Grading Policies.
270.00	Acceptable Use (https://www.umgc.edu/administration/policies-and-reporting/policies/fiscal-and-business-affairs/acceptable-use.cfm) - The security of the online classroom is critical to ensuring a strong culture of academic integrity and authentic education at the University. It is a violation of the University's policies for anyone to share logon, password, and any other secure information about a UMGC online account, including credentials required to access the online learning environment.

GRADING

According to UMGC's grading policy, the following marks are used:

	Undergraduate	Graduate
A	90-100	90-100
B	80-89	80-89
C	70-79	70-79*
D	60-69	N/A**
F	59 or below	69 or below
FN	Failure-Non attendance	Failure-Non attendance
G	Grade Pending	Grade Pending
P	Passing	Passing
S	Satisfactory	Satisfactory
U	Unsatisfactory	Unsatisfactory
I	Incomplete	Incomplete
AU	Audit	Audit
W	Withdrew	Withdrew

* The grade of "B" represents the benchmark for graduate courses. Students must maintain a Grade Point Average (GPA) of 3.0 or higher. Classes where final grade of C or F places a student on Academic Probation must be repeated.
** UMGC does not award the grade of D in graduate courses.

COURSE EVALUATION SURVEY

UMGC values its students' feedback. You will be asked to complete an online evaluation toward the end of the term. The primary purpose of this evaluation process is to assess the effectiveness of classroom instruction in order to provide the best learning experience possible and make continuous improvements to every class. Responses are kept confidential. Please take full advantage of this opportunity to provide your feedback.

LIBRARY SUPPORT

Extensive library resources and services are available online, 24 hours a day, seven days a week at https://sites.umgc.edu/library/index.cfm (https://sites.umgc.edu/library/index.cfm) to support you in your studies. The UMGC Library provides research assistance in creating search strategies, selecting relevant databases, and evaluating and citing resources in a variety of formats via its Ask a Librarian service at https://www.umgc.edu/library/libask/index.cfm (https://www.umgc.edu/library/libask/index.cfm).

EXTERNAL LINK DISCLAIMER

This course may contain links to external sites neither owned nor maintained by UMGC. UMGC bears no responsibility for the accuracy, legality, or content of external sites or for that of subsequent links. In addition, the terms of use, security policies, and privacy policies may differ from those of UMGC. Contact the external site for answers to questions regarding its content, terms of use, and policies.

LEARNING MANAGEMENT SYSTEM SUPPORT

Those requiring technical assistance can access Help@UMGC Support directly in LEO under the Help menu. Additional technical support is available 24 hours a day, seven days a week via self-help and live chat at https://www.umgc.edu/help/ (https://www.umgc.edu/help/) or by phone toll-free at 888-360-8682.

SYLLABUS CHANGES

All items on this syllabus are subject to change at the discretion of the Instructor and the Office of Academic Affairs.

Class & Assignment Schedule

SESSION	TOPICS	ASSIGNMENTS
Week 1	• Introductions • Introduction to Software Engineeering • Software Life Cycles	• Week 1 discussions due by 11:59p EST 5.25.21
Week 2	• Requirements Engineering • Standards • Validation	• Week 2 discussions • SRS due by 11:59p EST 6.1.21
Week 3	• Software Quality • Software Design	• Week 3 discussions due by 11:59p EST 6.8.21
Week 4	• System Design • Architectural Design	• Week 4 discussions • SDD due by 11:59p EST 6.15.21
Week 5	• Software Testing • Testing Strategies and Techniques	• Week 5 discussions due by 11:59p EST 6.22.21
Week 6	• Testing Strategies (Continued)	• Week 6 discussions • STS due by 11:59p EST 6.29.21

Week 7	• Software Measurement and Metrics • Software Project Management	• Week 7 discussions due by 11:59p EST 7.6.21
Week 8	• Software Maintenance • More Software Project Management	• Week 8 discussions • SDP due by 11:59p EST 7.13.21

Students can access their complete list of assignments and their corresponding due dates within the **Assignments** section of the classroom by navigating to the **Assignments** section of the class from the main navigation bar. Follow the link below, and then click **Assignments**, for a video demonstration on how to utilize this feature.

Classroom Walkthrough Videos Link (http://www.umgc.edu/students/leo/videos.cfm)

Students also have access to a calendar tool on the course homepage within the classroom.