

CSC 490 - SENIOR CAPSTONE

FALL 2021 – SYLLABUS

COURSE AND CONTACT INFORMATION

Instructor:	Contact:	Office Location/Hours:	
Jeronimo Grandi	jggrandi@uncg.edu	158 Petty – Tue/Thu 3:30 - 4:45 p.m.	
Meeting Location:	Times:	Prerequisites:	Credits
Stone 204	Tue-Thu 2:00 – 3:15 p.m.	CSC 340 (and senior standing) or permission of instructor	3

CATALOG DESCRIPTION

Application of fundamental knowledge and skills in computer science to solve real-world problems and to develop research and development skills.

COURSE OBJECTIVES

Students in the Senior Project course will:

1. Develop openness to new ideas in computer science, develop the ability to draw reasonable inferences from observations and learn to formulate and solve new computer science problems and situation using analytical and problem-solving skills.
2. Develop the ability to synthesize and integrate information and ideas, develop the ability to think creatively, develop the ability to think holistically and develop the ability to distinguish between facts and opinion.
3. Develop the ability to work individually and as part of a team, develop a commitment to accurate work, develop management skills, improve speaking and writing skills, improve the ability to follow directions, instructions and plans, and improve the ability to organize and use time effectively.
4. Develop a commitment to personal achievement, the ability to work skillfully, informed understanding of the role of science and technology, a lifelong love of learning, and cultivate a sense of responsibility for one's own behavior and improve self-esteem/self-confidence.

STUDENT LEARNING OUTCOMES

On completion of the senior project, students will:

1. (*Knowledge, Comprehension*) Identify project/research problems; understand information and grasp meaning; translate knowledge into new context; use information, methods, concepts, and theories of fundamental topics in computer science in new situations.
2. (*Application and Evaluation*) Apply computer science principles and practices to a real-world problem; demonstrate in-depth knowledge in the area of the project they have undertaken; solve problems using required knowledge and skills; implement and test solutions/algorithms.
3. (*Analysis*) Identify potential solutions/algorithms for the project problem; see patterns and modularize the problem, recognize hidden meanings and identify components, show proficiency in software engineering principles.
4. (*Synthesis*) Develop new ideas; generalize from given facts in the project they undertake, relate knowledge from several areas in systematic scientific approach, predict and draw conclusions relevant to the project undertaken.

5. (*Teamwork*) Show evidence (group collaboration, regular meetings, email communications, significant knowledge and skills contributions, etc.) of working productively as an individual and in team on a project that produces a significant software product.
6. (*Communications*) Show evidence of competency in oral and written communications skills through oral presentations (project presentation, department seminar or conferences), technical reports and/or published research papers in conferences and/or journals.
7. (*Lifelong Learning*) Use modern techniques, skills and tools necessary for computer science practices relevant to the project they undertake; use techniques in the recent research papers to solve problems.

TEACHING STRATEGY

Students are expected to choose an appropriate project/research topic in consultation with their instructor. Students must carry out a requirements elicitation/analysis or literature survey and then identify potential solutions to the problems stated in the project. Students are expected to attend regularly assigned class meetings and individualized conference sessions. Students are also expected to attend their regular group meetings. Students must develop projects that will demonstrate that they have a working knowledge of the basic and advanced concepts in computer science and also demonstrate a reasonable knowledge of recent development in computer science. Each project should include software development that has been approved by the instructor.

1. Students **write preliminary reports and present seminars** that describe the project background, proposed solutions and plans to implement and test the solutions.
2. Students **implement and test the solutions** to the identified problems.
3. Students will **produce a technical report and deliver an oral presentation**. In case of a group project, every member of the group must present (oral and technical report) the entire project activities pointing out their contribution to make the project successful.

ETS EXAM

This course has been designed to satisfy many of the ABET accreditation requirements. Therefore, students are required to take the ETS exam to pass this course. ETS exam fees will be paid by the department.

GRADING POLICY

The project will be graded for content, correctness, method of presentation (oral and technical report), teamwork (group project) and the demonstration of the student's knowledge in the computer science field.

Topics: WI-Writing Intensive, SI-Speaking Intensive and TC-Technical Content	WI	SI	TC	Total
Progress Report 1: Project Definition or Requirements Specification	3%	3%	4%	10%
Progress Report 2: System/Algorithm Design and Analysis	5%	5%	10%	20%
Progress Report 3: Implementation, Coding, and Testing	2%	6%	7%	15%
Progress Report 4: Evaluation				
▪ Final Presentation	-	8%	2%	10%
▪ Source Code and User Manual	5%	-	15%	20%
▪ Technical Report	8%	-	2%	10%
▪ Client Evaluation (Poster Presentation)	-	3%	2%	5%
▪ ETS Exam				10%

ETS GRADING:

170 >= ETS Score	CSC 490 score 10%
165 <= ETS Score < 170	CSC 490 score 9%
160 <= ETS Score < 165	CSC 490 score 8%
155 <= ETS Score < 160	CSC 490 score 7%
150 <= ETS Score < 155	CSC 490 score 6%
145 <= ETS Score < 150	CSC 490 score 5%
140 <= ETS Score < 145	CSC 490 score 4%
135 <= ETS Score < 140	CSC 490 score 3%
130 <= ETS Score < 135	CSC 490 score 2%
ETS Score < 130	CSC 490 score 1%
No show for the exam	CSC 490 score 0% - Fail the course

TENTATIVE TIMELINE

Project Stage		Submission Requirements	Due	
0	Proposal	Outline of proposal	Week 2	08/26
1	Project Definition, & Requirements Specification	Progress Report 1 and Oral Presentation <ul style="list-style-type: none"> ▪ Approach and System profile ▪ Feasibility and Draft models 	Week 4	09/09
2	System/Algorithm Design and Analysis	Progress Report 2 and Oral Presentation <ul style="list-style-type: none"> ▪ Detailed Design and Controls ▪ Amended models ▪ Systems/Algorithm Analysis report with data & process models ▪ Data Dictionary 	Week 6	09/23
3	Implementation, Coding & Testing	Progress Report 3 and Oral Presentation <ul style="list-style-type: none"> ▪ Plan and Testing ▪ Training plan ▪ Preliminary demonstration 	Week 12	11/04
4	ETS Exam	https://www.ets.org/mft/about/content/computer_science	Week 13	TBA
5	Evaluation	Progress Report 4 and Oral Presentation <ul style="list-style-type: none"> ▪ Final presentation ▪ Source code and User Manual ▪ Technical report ▪ Evaluation by Clients, Poster Presentation (TBA) 	Week 14	11/19
6		Final Report Due	Week 15	11/30

USEFUL STEPS

- Go through the syllabus again
- Setup the communication medium: email/Discord/Slack...
- Setup Github
 - Project Homepage
 - Project Code

- Project Documentation
- Progress reports
- Github is free for students <https://education.github.com/pack>
- Submit an initial project proposal describing in detail your project/research topic and how you plan to develop the topic.
- Update project report regularly
 - Template Provided at:
 - <https://docs.google.com/document/d/19vohDS5FCnXRvyY9eo7zFb8MhRkVT5mh8t1gVrAwK5Q/edit?usp=sharing>
- Attend all assigned class meetings and oral presentations; Talk to group members and other students; Discuss issues.
- Submit the final findings and results as technical report (in case of group project every member of the group must write papers on their work as part of the technical report).
- Give oral presentation on completion of the project (in group project every member of the group must give presentation).
- External reviewers and department poster presentation.
- Have fun!

TEXTBOOK AND READINGS

To be determined by student or group of students, with approval of instructor based on the research or project topic.

As an example, for a computer system design project the following textbooks may be used:

1. *Build Your Own PC*, 2nd Ed. Morris Rosenthal, McGraw-Hill, 2001.
2. *Red Hat Linux for Dummies*, Jon Hall and Paul G. Sery, IDG Books, 2000. (or similar reference)

For a software engineering project, the following books may be used:

1. *Project-Based Software Engineering: An Object-Oriented Approach*, by Evelyn Stiller and Cathie LeBlanc, Addison-Wesley, 2002.
2. Ian Sommerville, *Software Engineering*, 7th ed. Addison-Wesley, 2004.
3. Stephen Schach, *Object-Oriented and Classical Software Engineering*, 6th ed., 2004
4. Bruegge and A. Dutoit, *Object-oriented Software Engineering*. 2nd ed., Prentice Hall, 2003.

POLICY

Attendance: Students are required to attend ALL online classes. You may be dropped from the course for missing more than two meetings.

Academic Integrity: All work including assignments is subject to the UNCG Academic Integrity Policy (<https://osrr.uncg.edu/academic-integrity/>). By submitting their assignments, students are implicitly agreeing to this policy. Academic dishonesty is not acceptable and is subject to official sanctions. That is, the incident(s) will be reported to the department, and it may result in zero point to the work and even failure in the course.

Academic Accommodations: If you have disability-related requirements, please contact the Office of Accessibility Resources and Services (OARS) at <https://ods.uncg.edu/>.

Health and Wellness: Student Health Services and The Counseling Center (<https://shs.uncg.edu/>) can help with health and wellness issues you may be experiencing (e.g., physical ailments, illnesses, strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, or loss of motivation).

COVID-19 Spartan Shield Video (<https://youtu.be/Mb58551qxEk>): UNCG Chancellor Frank Gilliam has challenged us to create a Culture of Care at UNCG where we all wear face coverings and social distance, less to protect ourselves but rather more to protect everyone around us. It shows that you care about the well-being of everyone around you. We have created this video featuring your student body presidents to better explain how and why this is so important.

Disruptive Behavior: Upon any non-course-related or disruptive activities, the instructor may ask the student to leave the classroom and count it as absence. If such behavior is continued, it may result in dropping the student from the course based on the UNCG Disruptive Behavior Policy (<https://osrr.uncg.edu/faculty/disruptive-behavior/>)

COVID-19 COURSE SYLLABUS STATEMENT

As we return for fall 2021, the campus community must recognize and address continuing concerns about physical and emotional safety, especially as we will have many more students, faculty, and staff on campus than in the last academic year. As such, all students, faculty, and staff are required to uphold UNCG's culture of care by actively engaging in behaviors that limit the spread of COVID-19. Such actions include, but are not limited to, the following:

- [Following face-covering guidelines](#)
- Engaging in proper hand-washing hygiene when possible
- Self-monitoring for symptoms of COVID-19
- Staying home if you are ill
- Complying with directions from health care providers or public health officials to quarantine or isolate if ill or exposed to someone who is ill.

Instructors will have seating charts for their classes. These are important for facilitating contact tracing should there be a confirmed case of COVID-19. Students must sit in their assigned seats at every class meeting and must not move furniture. Students should not eat or drink during class time.

To make it easier for students to hear their instructor and/or read lips and if conditions permit, instructors who are fully vaccinated and who can maintain at least six feet of distance from students may remove their masks while actively teaching if they choose, but will wear a mask at all other times while in the classroom, including during the periods before and after class.

A limited number of disposable masks will be available in classrooms for students who have forgotten theirs. Face coverings will also be available for purchase in the UNCG Campus Bookstore. Students who do not follow masking requirements will be asked to put on a face covering or leave the classroom to retrieve one and only return when they follow the basic requirements to uphold standards of safety and care for the UNCG community. Once students have a face covering, they are permitted to re-enter a class already in progress. Repeated issues may result in conduct action. The course policies regarding attendance and academics remain in effect for partial or full absence from class due to lack of adherence with face covering and other requirements.

For instances where the Office of Accessibility Resources and Services (OARS) has granted accommodations regarding wearing face coverings, students should contact their instructors to develop appropriate alternatives to class participation and/or activities as needed. Instructors or the student may also contact [OARS](#) (336.334.5440) who, in consultation with Student Health Services, will review requests for accommodations.