ASE-6104 Capstone Complex Systems Syllabus

Capstone Complex Systems, ASE 6104 QSY, 3 Credits

Summer 2026

Instructor Information

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General Course Information

Description

ASE 6104 is the continuation of the Capstone Project you began in ASE 6102 and continued in ASE 6103. The Capstone project is intended to be similar to a real-life example of the first stages of solving a complex problem for a sponsor or customer.

The teams formed in January have already embarked on the journey, immersing themselves in the known requirements, facts and objectives through initial meetings (virtual or in person) with the sponsor. The teams are well on the way to creating the analysis, model or architecture that serves as the answer. Once that is accepted by the sponsor, at the first Live Session in June, the team devotes the remaining time and energy to accomplish that deliverables. The assignments below are the tangible outcomes of the steps along the way toward the final report.

The intent is for you to use the final report as the 'container' for your work on the project, continuing to "fill in" in sections as you progress through the development of your solution. The template is meant to be a 'minimum viable' outline for your team's use, with customization/alteration as needed. Your team should also use the slide deck formats that you are already familiar with for presentations to the sponsor as well as class presentations during the live sessions

Course Learning Outcomes

The Capstone Project is assigned to a group of students in the Professional Masters of Applied Systems Engineering (PMASE) of the College of Lifetime Learning (CLL). The outcomes of the course are shown below. The students will be able to

- Describe in detail what the process of requirements definition was for their particular project.

- Describe in detail the team's process of using previously learned SE tools and methods to define their system architecture and trade space analysis for any preliminary design decisions.
- Demonstrate their understanding of SE methods and tools taught in previous modules by effectively applying them to their project to develop a feasible, measurable solution to the problem
- Demonstrate proficiency with MBSE methods and concepts appropriate to their project.

Required Course Materials

The only required textbook for this course is: INCOSE Handbook, 5th Edition, INCOSE – TP – 2003-002-05, c 2023, John Wiley & Sons, Ltd. ISBN 97811198114290

Grading Policy:

- Grading breakdown:

Grading Type	Description of Graded Assignments	% Grade	Time to Complete (e.g. 1 hour)
Final Report	Written completion of a written report to be delivered to the sponsor, using the course provided template as a guide. The report is drafted in sections/stages (each graded) and submitted for periodic reviews during the 12 weeks.	50%	4-5 hrs/week per team
Preliminary Design Review Presentation	Oral presentation of results of the SE methods used to choose the recommended solution	25%	3-5 hrs/week per team member
Final Design Review	Oral Presentation of the 'story' of the Team's work from Problem Background and Formulation to the recommended solution, recommendations and conclusions	25%	3 hrs/week in the final stretch
Total:		100	

Description of Graded Components

The Preliminary Design Review Presentation takes place midway through the Summer Semester during a Live Session of this hybrid course. The presentation serves as a formal presentation to the project sponsors (who posed the problem to be solved) and serves as a 'decision gate' for the design process and final chance to make significant changes to the proposed solution design. The presentation is scheduled to take 45 minutes with up to 15 minutes for questions and comments from the fellow cohort students, sponsor and instructor. The presentation represents 25% of the total grade and is graded on the basis of the presentation's completeness, clarity, creativity and feasibility.

The Final Report is the project's full description of the project, including formulation of the problem statement, developing the solution requirements, conducting requirements analysis, trade studies, design, risk analysis and any models or simulations accomplished to mitigate risks in the design process. The Final Report is submitted twice during the semester for the purpose of grading, but is also shared with the instructor and mentors prior to the final submission at the end of the course.

The Final Design Review is an oral presentation to the project sponsors and PMASE Class to present the full "story" of the team's work throughout the Capstone journey. It is delivered in person at the final PMASE on-site session at the end of the semester, which is also the end of the PMASE course. The Presentation receives a grade based on the completeness, clarity and creativity of the presentation.

Course Policies

Attendance and/or Participation

This is a hybrid course with online and video lessons and two live sessions spanning the typical Friday/Saturday schedule as previous courses. Attendance is mandatory for the live sessions with exceptions based on personal emergencies or work related schedule conflicts only.

The teams are expected to set their own meeting cadence for collaboration and group work, with other work completed individually to support the completion of the project. The Capstone instructor and mentors are invited to attend meetings to offer assistance by answering process related questions, and by this interaction the instructor is able to assess the group's progress and participation.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on an assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you emain committed to the ideals of Georgia Tech while in this class.Pre- &/or Co-Requisites

This course is the last course of the Professional Masters in Applied Systems Engineering degree program and is based on the completion of the other 9 courses in the curriculum of that program.

Collaboration, Group Work, and Use of Generative AI

The work in this course consists of small groups assigned to work through a problem posed by the sponsor using their Systems Engineering expertise gained through previous courses in the program. Collaboration is therefore essential and expected. Starting with the group

work completed in ASE 6102 and ASE 6103 in the Spring Semester, groups are expected to meet together as often as necessary to complete the work. In addition, the course makes available mentors and Subject Matter Experts to address and questions about the processes to complete the project or the specifics of the problem domain which the team needs to create a robust solution.

Since many topics refer to the use of AI as potential aspects of the desired solution, use of AI during the project may be required. In addition, the use of Generative AI for brainstorming or research is allowed, but the content of the reports and presentations must be the results of student work.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

During the 12 Week portion of Capstone in the Summer Semester, teams are expected to follow the deadlines shown in the syllabus and posted in Canvas. If there are legitimate reasons for extensions, normally in the range of 1-2 days, they will be addressed on a case by case basis by the instructor. There can be no extensions for the Final Presentation.

Campus Resources for Students

Graduate Student Academic and Professional Success Resources:

A list of resources for graduate students is given on the Office of Graduate and Postdoctoral Education website. Specific information for current graduate students includes

- Academic Resources such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- Student Resources such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- *Professional Development such as the programming from the Career Center and other professional development resources and events"*