<h1 style="text-align:center">COURSE DESCRIPTION</h1>

| **Course No.** | CSC 490 | **Course Title** | Senior Project |
|---|---|---|---|
| **Course Type** | Required | | |
| **Sem. Hours** | 3 | **Coordinator** | Shan Suthaharan |

## Current Catalog Description:

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

## Textbook and References:

None

## Course Outcomes:

Upon successful completion of this course students will be able to
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*) create new ideas using the old ones; 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 they undertake;
5. (*Team Work*) show evidence (group collaboration, regular meetings, email communications, significant knowledge and skills contributions, etc.) of working productively as an individual and in a 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 recent research papers to solve problems.

## Activities Enabling Program Outcomes (POx refers to program student outcome x)

*Instruction*: This course is a capstone course in which students demonstrate what they have learned in prior courses. There is limited to no instruction in new topics.

*Student Activities and Assessment*: Every offering of this course will include (details of assessment criteria and expectations are in outcome rubrics):

- A required student-written requirements specification and design document, in which students identify, analyze, and clearly document system requirements and design, using current software engineering techniques, including UML diagrams (POc, POfw, POi, and POk)
- A portion of the design or other early document in which students consider and choose a suitable programming language (POj)
- A portion of the design or other early document in which analyze the time and other resource requirements of their design (POj)
- An assignment resulting in a major software implementation in which students implement a system consistent with their design document, using current software engineering techniques (POc and POi)
- An assignment in which students define and execute a test plan using current and appropriate tools and methods for software testing (POi)
- An assigned evaluation report in which students demonstrate an ability to evaluate a product in terms of requirements, design, and implementation (POc and POfw)
- A required section of the final project report in which students address professional, ethical, legal, security, and social issues related to their project (POe)
- A required "Team Definition" section of the project final report (POd)
- A survey and peer assessment exercise in which students demonstrate an understanding of teamwork and an ability to function effectively on a team (POd)
- A final oral presentation that is advertised to and open to all department faculty (POfo)
- An assigned "reflective essay" in which students discuss the need for continuing professional development for a practicing software professional (POh)

## Prerequisites by Topic:

Students must have
- permission of instructor; student must be in the final semester of major coursework.

## Major Topics Covered in the Course:

This is a capstone course and, as such, no new topics are covered. Students will develop projects utilizing all major topics covered in previous courses.

## Estimated Curriculum Category Content (Semester hours):

| Area | Core | Advanced | Area | Core | Advanced |
|------|------|----------|------|------|----------|
| **Algorithms** | 0 | 0 | **Software design** | 0 | 0 |
| **Data structures** | 0 | 0 | **Prog. Languages** | 0 | 0 |
| **Comp Arch & Org** | 0 | 0 | | | |