Basic Course Information: CS 691

I. Catalog Description
Individual study program under supervision of master's thesis/project advisor. Presentation of proposal for thesis/project in acceptable written form. Credit assigned upon acceptance of proposal by thesis/project committee. May be repeated as appropriate.

II. Required Coursework and Background
Pre-requisite(s): Unconditional standing with approval of thesis advisor.

III. Expected Outcomes
On successful completion of this course, students will be able to:

- Study in-depth a specific research topic in computer science.
- Gain experience in reading and understanding technical articles.
- Gain experience in writing proposals.
- Gain programming experience in large-scale project.

Outcomes of this course will build student capacity in each of the following areas as defined by programmatic objectives for the computer science major.

P-SLO 5. An ability of reasoning and problem solving to conduct independent research in the area of specialization.

P-SLO 6. An ability to communicate effectively and defend results of research to peers and broader audiences, both in written and verbal formats

IV. Instructional Materials
Reference:
Selected advanced technical papers in recent computer science publications and relevant textbooks.

V. Minimum Student Material
Selected technical papers (library) and relevant textbooks (library reserve).

VI. Minimum College Facilities
N/A

VII. Course Outline
Topics may vary with instructor and over time. Examples of possible topics might include:

Big Data
Computer Architecture
Computer Graphics, Vision, Animation, and Game Science
Machine Learning
Theory of Computation
Wireless and Sensor Systems
Computer Networks and Security
Artificial intelligence and robotics
Software Engineering
Virtual Reality
Human-computer Interaction
Optical Computing
Neural Networks

Parallel and Distributed Computing
Data Mining
Cloud Computing
Mobile Computing
Cryptography
Voice and Speech Recognition
Genetic Algorithms
DNA-based and molecular computers
Computers in Medicine
Computing in the 21st Century

VIII. Instructional Methods
Research advisor will hold weekly meeting with the student.

IX. Evaluation of Outcomes
A. Student Assessment
1. Research proposal

B. Meaningful Writing Assignment
Students are required to write a project or thesis proposal.

C. A Matrix of Course Student Learning Outcomes vs Methods of Assessment
If the course is being evaluated for accreditation purposes, approved department accreditation assessment tools will additionally be utilized.

Course Learning Outcomes	Methods of Assessment
	Research Proposal
Study in-depth a specific research topic in computer science.	x
Gain experience in reading and understanding technical articles.	x
Gain experience in writing proposals.	x
Gain programming experience in large-scale project.	x