**Basic Course Information:** CS 696

**I. Catalog Description**
Independent investigation intended to be an extension of an existing body of knowledge. Reporting of research results in an oral presentation and acceptable written form. Credit assigned upon successful completion of thesis and oral presentation. Total credit limited to 3 units, but may be repeated until completion.

**II. Required Coursework and Background**
Pre-requisite(s): Pass or waiver for the GWT and CS 691. Advancement to Candidacy and approval of project committee required.

**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 programming experience in large-scale project.
- Gain experience in writing thesis report.
- Communicate effectively and defend research results orally

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

IX. Evaluation of Outcomes
A. Student Assessment
   1. Research project
   2. Thesis
   3. Oral presentation

B. Meaningful Writing Assignment
Students are required to write Master thesis and prepare presentation slides.

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.

<table>
<thead>
<tr>
<th>Course Learning Outcomes</th>
<th>Methods of Assessment</th>
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<tr>
<td></td>
<td>Research Projects</td>
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<td>Study in-depth a specific research topic in computer science.</td>
<td>x</td>
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