CSCE 240 - Advanced Programming Techniques

- **Credit Hours:** 3 hours
- **Contact Hours:** 3 lecture hours
- **Instructors:** Drs. Tang, Valafar
- **Bulletin Description:** Pointers, memory management, advanced programming language structures, operator overloading, iterators, multiple inheritance, polymorphism, templates, virtual functions; Unix programming environment.
- **Prerequisites:** Grade of D or better in CSCE 215, grade of C or better in CSCE 146
- **Required Course** in CE, CIS, and CS
- **Course Outcomes:** Students will be able to:
  1. Independently design and implement C++ programs in a Unix environment
  2. Demonstrate mastery of pointers, iterators, memory management including object creation and destruction, and parameter passing in C++.
  3. Demonstrate mastery of object oriented programming concepts including: inheritance, polymorphism, operator overloading, template functions and classes, and the use of STL containers.
  4. Engage in program design and implementation in a team environment.

**Student Outcomes addressed by course**

<table>
<thead>
<tr>
<th>Program</th>
<th>Student Outcomes Addressed</th>
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<tbody>
<tr>
<td>Computer Engineering</td>
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<tr>
<td>Computer Information Systems</td>
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<tr>
<td>Computer Science</td>
<td>2, 5</td>
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**Topics covered**

2. Pointers: Pointer manipulation, functions and function pointers, virtual functions.
3. Basic class management: constructors, destructors, data hiding, container classes.
4. Memory management: object creation and destruction, memory leak.
5. Advanced C++ features: operator overloading, iteration, special containers, inheritance, code reuse, multiple inheritance, virtual functions, polymorphism, templates, template libraries.