Data Structures Using C++

CSE 2122

Credit Hours:
3.00

Course Coordinator:

Course Length:
14 weeks (autumn or spring)
12 weeks (summer only)

Representative Textbooks and Other Course Materials:

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving with C++</td>
<td>Walter Savitch</td>
<td></td>
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</tbody>
</table>

Course Description:
Introduction to programming in C++ and object-oriented programming; encapsulation using classes, inheritance, etc.

Prerequisites and Co-requisites:
Prereq: 1222 (202).

Designation:
Elective

Course Goals / Objectives:
Be competent with concepts of object-oriented programming and abstraction mechanisms
Be competent with the concepts of classes, member functions and variables, constructors, destructors, inheritance, and access mechanisms
Be competent with the concepts of prototype functions, functions, parameters, return values, overloading, and operators
Be familiar with control structures, dynamic memory allocation, arrays, and pointers

ABET-CAC Criterion 3 Outcomes:
No outcome selected
### ABET-EAC Criterion 3 Outcomes:

<table>
<thead>
<tr>
<th>Some contribution (1-2 hours)</th>
<th>1</th>
<th>an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</th>
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</thead>
<tbody>
<tr>
<td>Significant contribution (7+ hours)</td>
<td>2</td>
<td>an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors</td>
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<tr>
<td>Some contribution (1-2 hours)</td>
<td>4</td>
<td>an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts</td>
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<tr>
<td>Some contribution (1-2 hours)</td>
<td>6</td>
<td>an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions</td>
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<tr>
<td>Some contribution (1-2 hours)</td>
<td>7</td>
<td>an ability to acquire and apply new knowledge as needed, using appropriate learning strategies</td>
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### Course Topics:

- Introduction to course computing environment
- Basic features, getting started, basic data types
- Advanced data types, functions without returned values
- Classes, members, constructors
- Friends, destructors, returned values in functions
- Operators
- Inheritance
- Flow of control, dynamic memory allocation, arrays and pointers