

EECP 4192	Software Engineering and High Level Programming	3 Credit Hours
Prerequisites:	EECP 1290	
Goal	To introduce Software Engineering concepts in the context of learning advanced data structures and algorithms.	
Objectives		Outcomes
<p>This course should enable the student to:</p> <ol style="list-style-type: none"> 1. Understand the object-oriented programming paradigm. 2. Reuse mechanisms in object-oriented languages. 3. Specify requirements and use cases. 4. Analyze and design programs using object-oriented methodologies. 5. Design patterns. 6. Unify modeling language. 		<p>A student who satisfactory complete the course should be able to:</p> <ol style="list-style-type: none"> 1. Explain the concepts central to developing reusable and reliable software, such as encapsulation, inheritance and polymorphism. 2. Utilize diagramming tools such as CRC cards and UML to document software designs. 3. Develop data flow diagrams and control flow charts. 4. Turn design documents into high-level language written in C++. 5. Demonstrate knowledge of arrays, lists, trees, and graphs as fundamental data structures. 6. Demonstrate knowledge of a number of searching, scanning and sorting algorithms. 7. Assess the runtime of these algorithms. 8. Realize these data structures and algorithms in object – oriented C++. 9. Demonstrate knowledge in software testing theory and practice. 10. Demonstrate knowledge about advances in the field of object-oriented software design. 11. Communicate with clients and problem domain experts. 12. Produce formal requirement specifications. 13. Design object-oriented solutions using unified modeling language. 14. Devise incremental/iterative implementation and testing strategies. 15. Organize and contribute to team programming projects.