STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

American Public University System

The Ultimate Advantage is an Educated Mind

ENTD278

Department of Information Technology
ENTD278: Object Oriented Design
3 Credit Hours
8 Weeks
Prerequisite(s): None

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Course Description (Catalog)

This course is a study of the principles, practices, and technical architecture and evelopment characteristics of Object Oriented Programming and an examination of the differences between object oriented programming and traditional programming. It examines objects, instances, classes, inheritance, polymorphism, encapsulation, abstraction, methods, attributes, tight-encapsulation, interfaces, type casting, type conversions, and object libraries. This course differentiates between single-inheritance model and multiple inheritance models. This course also explores the foundations of the Unified Modeling Language (UML), class models, state models, and interaction models. (Prerequisites: ENTD200 and ENTD268). [3 Semester Hours]

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Course Scope

This course introduces students to Object Oriented Programming concepts and UML (Unified Modeling Language) models for application development. Students will learn various Object Oriented concepts like abstraction, inheritance, and others and the basics of UML using various models like class, state, use cases, sequence diagrams, activity diagrams, and other UML models.

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Course Objectives

CO1: Describe object-oriented modeling concepts, class diagrams, and object diagrams

CO2: Explain advanced class modeling concepts and the state model

CO3: Describe interaction UML models and their concepts

CO4: Explain the software development process including system conception, domain analysis, and application analysis and their respective models

CO5: Describe the software development process including application analysis and system design

CO6: Describe the software development process including the implementation of models and object oriented languages

CO7: Describe implementation modeling for databases and programming style

CO8: Explain software engineering techniques including iterative development, model management, and legacy systems integration

CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models

CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding.

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Course Delivery Method

This course delivered via distance learning will enable students to complete academic work in a flexible manner, completely online. Course materials and access to an online learning management system will be made available to each student. **Online assignments are due by the last day of each week** and include Discussion Board questions (accomplished in groups through a threaded discussion board), examinations, and individual assignments (submitted for review by the Faculty Member). Assigned faculty will support the students throughout this eight-week course.

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Course Materials

Open-education resources in the classroom.

Software Used: None

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Evaluation Procedures

Readings, Assignments and Classroom Participation

This course requires disciplined independent practice and individual completion of assignments. Although Distance Learning provides you with a flexible schedule to meet your professional, personal, and academic responsibilities, you are expected to follow the student course guide and submit assignments on time and on schedule. All accepted late weekly assignments will lose 10 points; midterms and finals will lose one full letter grade. All work must be submitted by the end of the class session. **No** assignments will be accepted after the class end date.

Original Work

All work submitted must be original work. Incidents of academic dishonesty will result in you failing the assignment, and repeat incidents will result in failing the course. I check assignment regularly for incidents of academic dishonesty. Please read and understand the University policy on academic dishonesty. You must credit your sources and provide the appropriate references on your assignments.

Course Requirements Summary

Your final grade will be based on the following course requirements and percentages:

Discussions	45%
Assignments	55%

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Grading Scale

Please see the student handbook to reference the University's grading scale.

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Course Outline

Week	Topic(s)	Learning Objective(s)	Reading(s)	Assignment(s)
1	Introduction and Class Modeling	• CO1: Describe object oriented modeling concepts, class diagrams, and object diagrams • CO10: Collaborate on relevant ideas and concepts in a	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 1-4; Additional resources	Assignment 1 Classes Week 1 Discussion/ Introduction

		substantive manner, showing a clear understanding.		
2	State Modeling	• CO2: Explain advanced class modeling concepts and the state model • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding.	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 5-6; Additional resources	Assignment 2 Class and State Diagrams Week 2 Discussion
3	Interaction Modeling	• CO2: Explain advanced class modeling concepts and the state model • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding.	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 7-9; Additional resources	Assignment 3 Use Cases Week 3 Discussion

4	Process Overview, System Conception Domain Analysis, and Application Analysis	• CO2: Explain advanced class modeling concepts and the state model • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding.	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 10-13; Additional resources	Assignment 4 Interaction Models Week 4 Discussion
5	System Design and Software Architecture	• CO5: Describe the software development process including application analysis and system design • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding.	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 14; Additional resources	Assignment 5 Application Classes and Software Architecture Week 5 Discussion
6	Class Design	• CO6: Describe the software development process including the implementation of models and object oriented languages • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 15-16; Chapter 2: Modeling as a Design Technique Chapter 3: Class Modeling Chapter 4: Advanced Class Modeling; Additional resources	Assignment 6 Detailed Classes Week 6 Discussion

		models • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding		
7	Implementation	• CO7: Describe implementation modeling for databases and programming style • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models • CO10: Collaborate on relevant ideas and concepts in a substantive manner, showing a clear understanding	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 17-20; Textbook: Chapter 20: Programming Style Chapter 2: Modeling as a Design Technique Chapter 3: Class Modeling Chapter 4: Advanced Class Modeling; Additional resources	Assignment 7 Implementation Week 7 Discussion
8	Development Models, System Issues	• CO8: Explain software engineering techniques including iterative development, model management, and legacy systems integration • CO9: Apply your knowledge of object oriented and UML concepts by designing and developing UML models • CO10: Collaborate on relevant ideas and concepts in a	Object Oriented Modeling and Design with UML, 2nd Ed Chapters 17-20; Aditional resources	Assignment 8 Research Essay Week 8 Discussion

		substantive manner, showing a clear understanding. models		

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Policies

Please see the student handbook to reference all University policies. Quick links to frequently asked question about policies are listed below.

Drop/Withdrawal Policy
Plagiarism Policy
Extension Process and Policy

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Academic Services

ONLINE LIBRARY RESEARCH CENTER & LEARNING RESOURCES
The Online Library Resource Center is available to enrolled students and faculty from inside the electronic campus. This is your starting point for access to online books, subscription periodicals, and Web resources that are designed to support your classes and generally not available through search engines on the open Web. In addition, the Center provides access to special learning resources, which the University has contracted to assist with your studies. Questions can be directed to orc@apus.edu.

- ***Charles Town Library and Inter Library Loan:*** The University maintains a special library with a limited number of supporting volumes, collection of our professors' publication, and services to search and borrow research books and articles from other libraries.
- ***Electronic Books:*** You can use the online library to uncover and download over 50,000 titles, which have been scanned and made available in electronic format.
- ***Electronic Journals:*** The University provides access to over 12,000 journals, which are available in electronic form and only through limited subscription services.
- ***Turnitin in the classroom*** is a tool to improve student research skills that also detect plagiarism. Turnitin.com provides resources on developing topics and assignments that encourage and guide students in producing papers that are intellectually honest, original in thought, and clear in expression. This tool helps ensure a culture of adherence to the University's standards for intellectual honesty. Turnitin.com also reviews students' papers for matches with Internet materials and with thousands of student papers in its database, and returns an Originality Report to instructors and/or students.
- ***Smarthinking:*** Students have access to 10 free hours of tutoring service per year through Smarthinking. Tutoring is available in the following subjects: math (basic math through advanced calculus), science (biology, chemistry, and physics), accounting, statistics, economics, Spanish, writing, grammar, and more. Additional information is located in the Online Research Center. From the ORC home page, click on either the

"Writing Center" or "Tutoring Center" and then click "Smarthinking." All login information is available.

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Selected Bibliography

For information on professional code of conduct for computing professionals see:

www.acm.org

For information on system and software engineers see:

www.ieee.org

For more information on System Analysis and Design Basics see:

https://www.tutorialspoint.com/system_analysis_and_design/index.htm

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