American Public University System
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ENTD268

Course Summary

Course : ENTD 268 Title : Information System Design
Length of Course : 8
Prerequisites : N/A Credit Hours: 3

Description

Course Description:

This course is an overview of the system development lifecycle. Emphasis on current system documentation through the use of both classical and structured tools/ techniques for describing process flows, dataflows data structures, file designs, input and output designs, and program specifications. Discussion of the information gathering and reporting activities and of the transition from analysis to design.

Course Scope:

This course takes an in-depth to look at key concepts and techniques for systems analysis and design. The course explores system modeling techniques for both the traditional Structured Analysis and Design approach (SAD) and the Object-Oriented Analysis and Design approach (OOAD) as it follows an SDLC (System Development Life Cycle) process and begins with an analysis of SDLC approaches. As the course progresses through the life cycle, the tasks and deliverables are explored as well as the models for the SAD approach. The course presents an overview of the OOAD models. A Case Study provides a context to develop various SAD and OOAD models. Major SDLC specification templates provide the opportunity for students to apply their skills in a professional setting. Thus students will learn about the SDLC, SAD and OOAD methodologies, concepts and principles of Systems Analysis and Design but also apply the techniques through discussions, assignments, and practical hands-on modeling.

Objectives

CO1: Compare SDLC (System Development Life Cycle) phases, models, processes, techniques, and/or deliverables
CO2: Discuss Systems Analysis and Design data gathering techniques
CO3: Discuss the major life cycle deliverables like Vision Document, SRS (Software Requirements Specification) , or SDD
(System Design Document)

CO4: Develop major life cycle deliverables like Vision Document, SRS (Software Requirements Specification) , or SDD (System Design Document)
CO5: Discuss Structured Analysis and Design (SAD) and/or Object-Oriented Analysis and Design (OOAD) UML models
CO6: Discuss the use of files and databases in SAD
CO7: Apply requirements gathering and other traditional analysis techniques
CO8: Differentiate Structured Analysis and Design and Object-Oriented Analysis and Design methodologies and models
CO9: Analyze a business case study by applying Systems Analysis and Design concepts, principles, processes, and techniques
CO10: Create models using Structured Analysis and Design (SAD)
CO11: Create models using Object-Oriented Analysis and Design (OOAD) UML

Outline

Week 1: Introduction and System Planning Phase

Learning Objectives

LO1: Describe the system development life cycle (SDLC) and its phases. LO2: Contrast approaches to the SDLC.
LO3: Describe technical, economic, and organizational feasibility assessments.
LO4: Create a vision statement.
LO5: Describe the project management plan.
LO6: Discuss the management of risks.

Reading(s)

1. Dennis, Chapter 1 The Systems Analyst and Information Systems Development.
Chapter 1 covers an introduction to systems analysis and design, analyst roles and skills , the Systems Development Life Cycle (SDLC), project identification and initiation, and feasibility analysis.
ch01.ppt

2. Dennis, Chapter 2 Project Selection and Management
Chapter 2 covers how projects are selected, project plans, and managing and controlling the project. ch02.ppt

See also the Additional Resources.

Assignment(s)

Discussions
Introduce Yourself (Initial Post Due Wednesday, Responses to Classmates due Sunday 11:59pm)
W1: SDLC Comparison Discussion (Initial Post Due Wednesday, Responses to Classmates and Instructor due Sunday 11:59pm)

Assignment
Assignment 1 Systems Planning: Vision Statement (Due Sunday11:59pm)

Week 2: Analysis Phase: Requirements and Use Cases

Learning Objectives

LO1: Explain the analysis phase of the SDLC

LO2: Describe the content and purpose of the software requirement specification (SRS)

LO3: Discuss the requirement elicitation techniques including interviews, JAD sessions, questionnaires, document analysis and observation

LO4: Describe analysis strategies that can be used to discover requirements

LO5: Explain the purpose of use cases in the analysis phase

LO6: Describe the components of use case model

LO7: Create a use case model using the UML (Unified Modeling Language)

LO8: Describe the use of use cases in determining functional requirements

LO9: Describe how use cases contribute to the development of test plans

Reading(s)

1. Dennis, Chapter 3 Requirements Determination
Chapter 3 covers requirements including how to identify and specify requirements, strategies for requirements analysis, and its major deliverable the SRS (Software Requirement Specification).
ch03.pptx

2. Dennis, Chapter 4 Use Case Analysis
Chapter 4 covers the Use Case specification and their variations. The Use Case Specification is a detailed description of the use case and its process.
ch04.ppt

3. Dennis, Chapter 14 The Movement to Objects, Use Case Diagrams (pp. 517-521) the Chapter 14 section we will cover is on Use Case Diagrams. We will cover the other UML (Unified Modeling Languages) diagrams later.

ch14.ppt (pp 23-29)

See also Additional Resources.

Assignment(s)

Discussion
W2: Systems Analysis Phase: SRS and Use Cases (Initial Post Due Wednesday, Responses to Classmates and Instructor due Sunday 11:59pm)

Assignment
Assignment 2 Analysis: Preliminary SRS and Use Cases (Due Sunday 11:59pm)

Week 3: Week 3 Analysis Phase: Process Modeling and Data Modeling

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Learning Objectives

LO1: Explain the rules and style guidelines for data flow diagrams LO2: Describe the process used to create data flow diagrams LO3: Create data flow diagrams.

LO4: Explain the rules and style guidelines for creating entity relationship diagrams.
LO5: Create an entity relationship diagram.
LO6: Describe the use of a data dictionary and metadata.
LO7: Explain how to balance entity relationship diagrams and data flow diagrams LO8: Describe the process of normalization.

Reading(s)

Read the chapters below and then review the PowerPoint:
1. Chapter 5 Process Modeling
ch05.ppt

2. Chapter 6 Data Modeling
ch06.ppt
See also Additional Resources.

Assignment(s)

Discussion

Week3 Analysis Phase: Process and Data Modeling Cases (Initial Post Due Wednesday, Responses to Classmates and Instructor due Sunday 11:59pm)

Assignment

Assignment 3 Analysis: SRS Nonfunctional , Other Requirements, and DFD (Due Sunday 11:59pm)

Week 4: Week 4 Design Phase: Transition and Architecture

Learning Objectives

LO1: Explain the initial transition from analysis to design
LO2: Create a Software Design Specification (SDS)
LO3: Describe techniques used to acquire a system LO4: Create an alternative matrix
LO5: Describe components of an information system
LO6: Describe architectures including server-based, client-based, client-server. and cloud based
LO7: Explain how architecture design is affected by operational, performance, security, cultural, and political requirements
LO8: Create an architecture design
LO9: Create a hardware and software specification

Reading(s)

Read the following chapters in your textbook and then review the PowerPoints:
1. Chapter 7 Moving into Design
Chapter 7 focuses on the transition from analysis to design including strategies to acquire system, influences on the acquisition, and how to select an acquisition strategy.
ch07.pptx

2. Chapter 8 Architecture Design

Chapter 8 focuses on the architecture design including server-based, client-based, client-server, and cloud computing architectures. Architecture is based on nonfunctional requirements. ch08.ppt

Web Architecture

Microsoft. (2013, December 6). *Microsoft Application Architecture Guide, 2nd Edition*. Microsoft Docs. https://docs.microsoft.com/en-us/previous-versions/msp-n-p/ff650706(v=pandp.10) This is a 19-chapter eBook on application architecture. Although not being maintained regularly by Microsoft, it is informative.
Chapters 2, 10, and 21 are helpful as well. See Chapter 21 below for a template for a Web application.

Microsoft. (2010, January 13). *Chapter 2: Key Principles of Software Architecture*. Microsoft Docs. Retrieved from https://docs.microsoft.com/en-us/previous-versions/msp-n-p/ee658124(v=pandp.10) Includes a graphical template for application architecture that you may find as a starting point for your Case Study architecture.

Microsoft. (2010a, January 26). *Chapter 10: Component Guidelines*. Microsoft Docs. https://docs.microsoft.com/en- us/previous-versions/msp-n-p/ee658121(v=pandp.10)

Microsoft. (2010, January 26). *Chapter 21: Designing Web Applications*. Microsoft Docs. Retrieved from https://docs.microsoft.com/en-us/previous-versions/msp-n-p/ee658099(v=pandp.10)

See also Additional Resources.

Assignment(s)

Discussion

W4: System Design Phase: Transition to Design and Architecture (Initial Post Due Wednesday, Responses to Classmates and Instructor due Sunday 11:59pm)

Assignment

Assignment 4 Design: System Architecture (Due Sunday 11:59pm)

Week 5: Design Phase: User Interface and Program Design

Learning Objectives

LO1: Describe user interface design principles
LO2: Explain the process of user interface design
LO3: Discuss how to design the user interface structure
LO4: Explain how to use the user interface standards
LO5: Design a user interface
LO6: Revise logical DFDs into physical DFDs
LO7: Create a structure chart
LO8: Write a program specification
LO9: Write instructions using pseudocode
LO10: Discuss event-driven programming

Reading(s)

Read the following chapters in your textbook and then review the PowerPoints:
1. Chapter 9 User Interface Design

Chapter 9 covers user interface design including principles the user interface design process, navigation design, input/output design, and how to apply the concepts.
ch09.ppt

2. Chapter 10 Program Design
Chapter 10 covers program design using the Structured Analysis approach including moving from logical to physicals design, designing programs, structure charts, and program specification.
ch10.ppt
See also Additional Resources.

Assignment(s)

Discussion
W5: System Design Phase: User Interface and Program Design.

Assignment
Assignment 5 Design: Structure Chart and Mockups

Week 6: Design Phase: Data Storage Design

Learning Objectives

LO1: Discuss file and database formats
LO2: Describe goals of data storage
LO3: Describe how to revise a logical ERD into a physical ERD
LO4: Describe how to optimize a relationship database for data storage and access
LO5: Describe the use of indexes
LO6: Describe how to estimate the size of a database

Reading(s)
Read the following chapters in your textbook and then review the PowerPoints:
1. Chapter 11 Data Storage Design
ch11.ppt
See also Additional Resources.

Assignment(s)

Discussion
W6: System Design Phase: Database and Files

Assignment
Assignment 6 Design: Entity Relationship Diagram and File Design.

Week 7: Implementation and Maintenance Phases]

Learning Objectives

LO1: Discuss the system construction process
LO2: Explain different types of tests and when to use them LO3: Describe how to develop user documentation

LO4: Explain the system installation process
LO5: Describe the elements of a migration plan
LO6: Explain different types of conversion strategies and when to use them
LO7: Describe techniques for managing change
LO8: Outline post installation processes
LO9: Describe the activities of the System Maintenance Phase

Reading(s)

Read the following chapters in your textbook and then review the PowerPoints:
1. Chapter 12 Moving into Implementation
ch12.ppt

2. Chapter 13 Transition to the New System ch13.pptx
See also Additional Resources.

Assignment(s)

Discussion
W7: System Implementation and Maintenance Phases. (Initial post due Wednesday. Responses to classmates and instructor (Due Sunday 11:59pm

Assignment
Assignment 7 Implementation: Test Cases (Due Sunday 11:59pm)

Week 8: Object Oriented Analysis and Design

Learning Objectives

CO1: Explain the concepts of the object-oriented approach and UML
CO2: Create a use case diagram
CO3: Create a class diagram
CO4: Discuss a sequence diagram
CO5: Discuss a behavioral state machine diagram

Reading(s)

Read the following chapters in your textbook and then review the PowerPoints:
1. Chapter 14 The Movement to Objects
ch14.ppt
See also Additional Resources.

Assignment(s)

Discussions
W8: Topic 1: Object Oriented Analysis and Design: UML Models (Initial post due Wednesday. Responses to classmates and instructor (Due Sunday 11:59pm)
W8: Topic 2: The Next Course Enrollment

Assignment
Assignment 8 Object Oriented UML Class Diagram (Due Sunday 11:59pm)

Evaluation

Grading is based on the following:

Discussion: 45%
Assignments: 55%

Name	Grade % (Approximate)
Discussions	45%
Welcome Discussion	N/A
Discussion 1	5.6%
Discussion 2	5.6
Discussion 3	5.6
Discussion 4	5.6
Discussion 5	5.6
Discussion 6	5.6
Discussion 7	5.6
Discussion 8	5.6
Assignments	55%
Assignment 1	6.9%
Assignment 2	6.9%
Assignment 3	6.9%
Assignment 4	6.9%
Assignment 5	6.9%
Assignment 6	6.9%
Assignment 7	6.9%
Assignment 8	6.9%%

Discussions

There are 8 graded discussions. The Introduction discussion is required and serves as your entry into the course. If you do not complete this discussion, APUS may withdraw you from the course. You are required to submit your initial post by Wednesday 11:59pm. You are also required to submit two responses to your classmates and answer your instructor's question by Sunday 11:59pm.

Answers should include a restatement of the questions and supporting sentences using the terms, concepts, and theories from the required readings. Include a topic sentence with supporting sentences. You must express your ideas and support your position to demonstrate that you understand the material. APA guidelines must be followed for all reference submissions.

Assignments

There are 8 graded assignments. The assignments are based on the weekly readings and models and require that you use various prepared templates that you will update during the course. Models are based on SAD and OOAD UML modeling techniques and must conform to the standard graphic guidelines for the particular model. An online free online drawing tool is recommended. No hand-drawn diagrams are permitted.

Details of both discussion and assignments are available each week in the Activities and Assessments content module section for each module. Additional requirements are available from the direct link to the discussions and assignments.

Due Dates

In general, for discussions submission of initial posts are due by Wednesday, 11:59pm. Responses to two classmates and your instructor are due by Sunday 11:50pm.

Assignments are due by Sunday, 11:59 pm.

To avoid a late penalty, contact your instructor prior to the submission deadline.

Announcements

Announcement will appear on the Home page of the course. Additional announcements will also be posted through Message alerts email at the top of the course.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 10% of the grade for the week
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments. So you must let your instructor know if you are going to be late to avoid a late penalty.

Disclaimer Statement: Course content may vary from the outline to meet the needs of this particular group.

Materials

Textbook

Dennis, A., Wixom, B. H., & Roth, R. M. (2012). Systems Analysis and Design 5th Edition, 5th Edition.

Your eBook will be provided through the APUS Library.

To get started, click on the title of your eBook below:
Systems Analysis & Design 5th edition

You may have to use your APUS email address.

To see the table of contents, click on the menu icon next to the title at the top of the page.

Case Study

You will use a Case Study for the discussions and assignments for this course. No other case study is permitted for this course. You will find the Case Study in the Course Overview & Introduction module for the course.

Templates

This course also uses formatted Word Templates to which you will add content for your assignments. You must maintain the formatting in the templates. You will fine the templates Vision, SRS, and SDD in the Course Overview & Introduction module for the course under the title Vision, SRS, and SDD Templates.

Required Software

- Microsoft Office is available to you as an APUS student for free. To sign up, visit http://products.office.com/en-us/student opens in new window. If you have questions about accessing the software, please contact Classroom Support at classroomsupport@apus.edu.
- Adobe Acrobat Reader: A free download is available from http://www.adobe.com/support/downloads/main.html opens in new window
- Diagrams.net (formerly draw.io) is a free online drawing tool for use with your models. It is available at https://app.diagrams.net/

Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format

Tutoring

- Tutor.com offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a Skill Center Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete
- the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 10% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Discussion

- Discussions are the heart of the interaction in this course. The more engaged and livelier the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the discussion. The purpose of the discussions is to actively participate in an on-going discussion about the assigned content,
- "Substantive" means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says "I agree" is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting viewpoints, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

Identity Verification & Live Proctoring

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
- Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.

University Policies

- Student Handbook
  - Drop/Withdrawal policy
  - The University encourages all work to be completed according to the course schedule. The University Late Work Policy can be found in the Student Handbook here.
  - Extension Requests
  - Academic Probation
  - Appeals
  - Disability Accommodations

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected,

relevant, accessible, affordable, and studentfocused online programs that prepare students for service and leadership in a diverse, global society.