

## NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY ITP 251 - SYSTEM ANALYSIS AND DESIGN (3 CR.)

### **Course Description**

Focuses on application of information technologies (IT) to system life cycle methodology, systems analysis, systems design, and system implementation practices. Covers methodologies related to identification of information requirements, feasibility in the areas of economic, technical and social requirements, and related issues are included in course content. Software applications may be used to enhance student skills. Lecture 3 hours per week.

### **General Purpose**

In this course students will learn how to design, build and deliver an Information Systems that will meet the needs of business. Students will learn to utilize system development life cycle management techniques.

### **Course Prerequisites/Corequisites**

Prerequisites: ITE 115.

### **Course Objectives**

Upon completion of this course, the student will be able to:

- Describe the concepts of systems analysis and information systems development
- Describe the project selection and management techniques
- Develop and analyze the systems requirements documentation
- Identify use case analysis elements and alternatives
- Analyze systems process modeling
- Describe process modeling techniques
- Describe data modeling techniques
- Analyze design alternatives
- Describe systems architecture design
- Describe user interface design
- Describe program design
- Analyze data storage design
- Identify system implementation techniques
- Analyze techniques for transitioning to a new information system
- Represent the information system requirements of a business using modeling techniques such as data flow diagrams and entity relationship diagrams
- Document the requirements for and design of computer files (traditional and database) for a system

### **Major Topics to be Included**

- Systems Planning Phase
  - Lifecycle methodology,
- Systems Design Phase
- Systems Implementation Phase
- Systems Analysis Phase
- Systems Close-out Phase
- Data modeling,
  - Traditional and structured tools for development

### **Student Learning Outcomes**

#### Systems Planning Phase

- Describe the systems analysis and systems development life cycle
- Define and identify the project stakeholders
- Conduct a feasibility analysis

- Create a project plan
- Explain project deliverables
- Explain the process of project Risk Management
- Analyze and develop the project strategy
- Define and explain the project performance criteria
- Explain how to determine the project resource requirements
- Explain how to develop the project budget
- Identify and explain the project documentation

#### Systems Analysis Phase

- Describe and develop the requirements determination
- Identify and define the requirement elicitation techniques
- Describe the root cause analysis
- Describe requirements analysis strategies
- Utilize case analysis techniques and tools
- Describe process modeling
- Develop and analyze data flow diagrams
- Utilize data modeling tools and techniques
- Develop the entity relationship diagram
- Define and explain the project Constraints
- Describe the project plan
- Create a Work Breakdown Structure
- Describe project dependencies and how to build a network diagram
- Create the schedule and Critical Path
- Define risk management and its role in project management
- Understand project risk event triggers

#### Systems Design Phase

- Describe how to transition from the requirements phase to the design phase
- Analyze the acquisition strategy
- Identify the elements of architecture design
- Create a systems architecture design
- Create hardware and software specifications
- Describe user interface designs
- Describe the user interface design process
- Create the input and output designs
- Describe program design techniques
- Identify key program design specifications
- Describe data storage design techniques
- Identify data storage formats
- Describe the process of moving from logical to physical data models
- Identify optimizing data storage techniques

#### Systems Implementation Phase

- Identify the techniques of moving to the implementation phase
- Identify the techniques of managing the programming phase
- Identify the techniques testing phase
- Identify the techniques for developing systems documentation
- Describe the techniques for transitioning to the new system
- Develop a systems migration plan
- Develop systems maintenance program
- Develop a project assessment tool

#### Systems Close-out Phase

- Explain the general process for terminating a project
- Describe the process for obtaining project deliverables acceptance
- Define and describe project lesson learned

- Understand the preservation of the project documentation
- Explain the value of celebrating success
- Explain the orderly release of project resources

#### Data Modeling

- Identify rules and style guidelines for creating entity relationship diagrams
- Create an entity relationship diagram
- Describe the use of a data dictionary and metadata
- Describe the process of normalization

#### **Required Time Allocation per Topic**

In order to standardize the core topics of ITP 251 so that a course taught at one campus is equivalent to the same course taught at another campus, the following student contact hours per topic are required. Each syllabus should be created to adhere as closely as possible to these allocations. Of course, the topics cannot be followed sequentially. Many topics are taught best as an integrated whole, often revisiting the topic several times, each time at a higher level. There are normally 45 student-contact-hours per semester for a three credit course. (This includes 15 weeks of instruction and does not include the final exam week so  $15 * 3 = 45$  hours. Sections of the course that are given in alternative formats from the standard 16 week section still meet for the same number of contact hours.) The final exam time is not included in the time table. The category, Other Optional Content, leaves ample time for an instructor to tailor the course to special needs or resources.

<b>Topic</b>	<b>Hours</b>	<b>Percentage</b>
<b>Systems Planning Phase</b>	<b>5</b>	<b>11.5%</b>
<b>Systems Lifecycle Methodology</b>	<b>1.5</b>	<b>3.5%</b>
<b>Feasibility Analysis</b>	<b>1</b>	<b>2%</b>
<b>Project Plan</b>	<b>2</b>	<b>4.5%</b>
<b>Systems Analysis Phase</b>	<b>6</b>	<b>13.5%</b>
<b>Describe and develop the requirements determination</b>	<b>1.5</b>	<b>3.5%</b>
<b>Develop and analyze data flow diagrams</b>	<b>1.5</b>	<b>3.5%</b>
<b>Systems Design Phase</b>	<b>5</b>	<b>11.5%</b>
<b>Identify the elements of architecture design</b>	<b>2</b>	<b>4.5%</b>
<b>Systems Implementation Phase</b>	<b>5</b>	<b>11.5%</b>
<b>Techniques moving to implementation phase</b>	<b>2</b>	<b>4.5%</b>
<b>Systems Close-out Phase</b>	<b>2</b>	<b>4.5%</b>
<b>Process for obtaining project deliverables acceptance</b>	<b>1.5</b>	<b>3.5%</b>
<b>Data Modeling</b>	<b>3</b>	<b>3.5%</b>
<b>Rules and style guidelines for creating entity relationship diagrams</b>	<b>2</b>	<b>4.5%</b>
<b>Exams and Quizzes</b>	<b>4</b>	<b>10%</b>
<b>Total</b>	<b>45</b>	<b>100%</b>