



Course Specification

Course Code: System Analysis and Modeling

Course Code: DS441

I. Basic Course Information

Major or minor element of program: Major

Department offering the course: [Operations Research and Decision Support Department]

Academic level: [400 Level]

Semester in which course is offered: [First (Fall) Semester]

Course pre-requisite(s): [Modeling and Simulation (DS241)]

Credit Hours: 3

Contact Hours Through:

Lecture	Tutorial*	Practical*	Total
2.5	1.5	0.0	4.0

* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: [September 2014]

II. Overall Aims of Course

This course aims at providing students with a comprehensive introduction to systems and their analysis and gives a broad overview of the main techniques commonly used for carrying out the analysis. The course will introduce students to the nature of systems analysis and modeling as a problem-solving activity, describe the key elements of analysis and modeling and explain the place of the analysis and design phases of building a model within the system development life cycle. The course will also introduce students to the nature of modelling as an analytical and a communicative process. Further, students will learn to build, interpret and understand models created with traditional structured modelling techniques.]

III. Program ILOs covered by course

Program Intended Learning Outcomes (By Code)			
Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
[K5,K14,K16,K19]	[I10,I12,I13]	[P12,P14,P16]	[G5,G9]



Course Specification

IV. Intended Learning Outcomes of Course (ILOs)

a. Knowledge and Understanding

On completing the course, students should be able to:

- K.1 Explain [the roles of system analysts and modelers.
- K.2 Learn various system analysis methodologies.
- K.3 Acquire the principles of modeling and the relationship of systems modeling to systems analysis.
- K.4 Study the criteria that can be used to evaluate the quality of a model of a system.
- K.5 Illustrate the definition, purpose and role of different types of models.]

b. Intellectual/Cognitive Skills

[On completing the course, students should be able to:

- I.1 Appreciate that a range of valid solutions exist for any given problem.
- I.2 View any real-life problem as a system and a part of a bigger system.
- I.3 Analyse different systems properly with various analysis methodologies.
- I.4 Formulate models for any real-life problems using appropriate modeling techniques.]

c. Practical/Professional Skills

[On completing the course, students should be able to:

- P.1 Analyse and model logical and physical systems.
- P.2 Develop and practice the skills and competencies necessary to undertake a requirements analysis for a business application.
- P.3 Apply problem solving techniques at different levels of abstraction and understand the effect this may have on a system specification.]

d. General and Transferable Skills

[On completing the course, students should be able to:

- G.1 Numerate systems analysis and modeling concepts.
- G.2 Explain the interdependence and relationships between all stake-holders in the systems development process.]

V. Course Matrix Contents

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1-	[Introduction to Systems and Systems Thinking]	[2]	[K1,K2]	[I1,I3]	[P1]	[G1]
2-	[System Analysis Concepts and Methodologies]	[2]	[K1,K3,K4]	[I2,I3]	[P2,P3]	[]
3-	[Introduction to Modeling]	[2]	[K2,K5]	[I1,I3]	[]	[G2]
4-	[Systems Modeling Techniques]	[2]	[K4,K5]	[I2,I4]	[P3]	[G1,G2]
5-	[System Analysis and Modeling Applications]	[2]	[K1,K2,K3]	[I1,I2]	[P1,P3]	[G1]
6-	[Case studies]	[3]	[K3,K4,K5]	[I1,I2]	[P2,P3]	[G2]
	Net Teaching Weeks	13				



Course Specification

VI. Course Weekly Detailed Topics / hours / ILOs

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours*
1	Introduction to Systems and Systems Thinking]	[2.5]	[2.5]	
2	Introduction to Systems and Systems Thinking]	[4]	[2.5]	[1.5]
3	System Analysis Concepts and Methodologies]	[4]	[2.5]	[1.5]
4	System Analysis Concepts and Methodologies]	[4]	[2.5]	[1.5]
5	Introduction to Modeling]	[4]	[2.5]	[1.5]
6	Introduction to Modeling]	[4]	[2.5]	[1.5]
7	Midterm Exam			
8	Systems Modeling Techniques]	[4]	[2.5]	[1.5]
9	Systems Modeling Techniques]	[4]	[2.5]	[1.5]
10	System Analysis]	[4]	[2.5]	[1.5]
11	Modeling Applications]	[4]	[2.5]	[1.5]
12	Case studies]	[4]	[2.5]	[1.5]
13	Case studies]	[4]	[2.5]	[1.5]
14	Case studies]	[4]	[2.5]	[1.5]
15	Final Exam			
Total Teaching Hours		51	33	18

* No Practical/Tutorial during the first week of the semester

VII. Teaching and Learning Methods

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K & U	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	√	[K1,K2,K3,K5]	[I1,I2,I3,I4]	[P1]	[G1]
Tutorials	√	[K2,K4]	[I1,I3,I4]	[P1,P2,P3]	[G1]
Computer lab Sessions	□	[]	[]	[]	[]
Practical lab Work	□	[]	[]	[]	[]
Reading Materials	√	[K1,K2,K3,K5]	[I1,I2]	[P1]	[G1]
Web-site Searches	□	[]	[]	[]	[]
Research & Reporting	□	[]	[]	[]	[]
Problem Solving / Problem-based Learning	□	[]	[]	[]	[]
Projects	□	[]	[]	[]	[]
Independent Work	□	[]	[]	[]	[]
Group Work	√	[K1,K4]	[I1,I2,I3,I4]	[P1,P2,P3]	[G2]
Case Studies	□	[]	[]	[]	[]
Presentations	□	[]	[]	[]	[]
Simulation Analysis	□	[]	[]	[]	[]
Others (Specify):	□	[]	[]	[]	[]



Course Specification

VIII. Assessment Methods, Schedule and Grade Distribution

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K & U	I.S.	P.S.	G.S.		
Midterm Exam	[√]	[K1,K2,K3]	[I2,I3,I4]	[P1,P2,P3]	[G1,G2]	[20%]	7
Final Exam	[√]	[K1,K2,K3]	[I2,I3,I4]	[P1,P2,P3]	[G1,G2]	60%	15
Quizzes	[√]	[K3,K5]	[I4]	[P3]	[]	[5%]	[3,5]
Course Work	[√]	[K2,K3,K4,K5]	[I3,I4]	[P1,P3]	[G1]	[5%]	[10]
Report Writing	[]	[]	[]	[]	[]	[]	[]
Case Study Analysis	[]	[]	[]	[]	[]	[]	[]
Oral Presentations	[]	[]	[]	[]	[]	[]	[]
Practical	[]	[]	[]	[]	[]	[]	[]
Group Project	[√]	[K1,K3,K4]	[I1,I2,I3,I4]	[P1,P2,P3]	[G1,G2]	[10%]	[12]
Individual Project	[]	[]	[]	[]	[]	[]	[]
Others (Specify):	[]	[]	[]	[]	[]	[]	[]

IX. List of References

Essential Text Books	•	None
Course notes	•	Lectutrer own notes
Recommended books	•	None
Periodicals, Web sites, etc...	•	Different search engines

X. Facilities required for teaching and learning

•	Teaching accommodation and aids
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[Course coordinator: Prof. Mohamed Mostafa Saleh

Head of Department:[Prof. Mohamed Mostafa Saleh]

Date: September 2014]