

Al-Nahrain University
College of Information
Engineering

Systems Engineering Program

Study Plan and Course
Description

2015

Study Plan

Systems Engineering						
First Year – Semester I						
No.	Course Code	Subject	Hrs. Per week			Units
			Theo.	App.	Tut.	
1	UR111	English Language I	2	--	--	2
2	CR111	Computer Programming	2	3	--	3
3	CR112	Mathematics I	3	--	1	3
4	CR113	Logic Circuits	2	3	--	3
5	CR114	IT Fundamentals& Workshop	2	3	--	3
6	CR115	Physical Electronics	3	3	--	4
Total			14	12	1	18
			27			
Systems Engineering						
First Year – Semester II						
1	UR121	English Language II	2	--	--	2
2	CR121	Object oriented Programming I (C++)	2	3	--	3
3	CR122	Mathematics II	4	--	1	4
4	CR123	Electrical Circuits	3	3	1	4
5	CR124	Eng. Drawing & CAD	1	2	-	2
6	SE121	Introduction to Systems Engineering	2	2	1	3
Total			14	10	3	18
			27			

Systems Engineering						
Second Year – Semester I						
No.	Course Code	Subject	Hrs. Per week			Units
			Theo.	App.	Tut.	
1	UR211	Arabic Language	2	--	--	2
2	CR211	Object oriented Programming II (Java)	2	3	--	3
3	CR212	Electronics	3	3	--	4
4	SE211	Instrumentation & Measurements	2	2	1	3
5	SE212	Information Systems	3	--	0	3
6	SE213	Engineering Analysis	4	--	2	4
Total			16	8	3	19
			27			
Systems Engineering						
Second Year – Semester II						
1	CR221	Digital Electronics	2	3	--	3
2	SE221	Numerical Analysis	2	2	1	3
3	SE222	Fundamentals of Control Engineering	2	3	1	3
4	SE223	Engineering Statistics	3	--	--	3
5	SE224	Computer Architecture	3	--	1	3
6	SE225	Computer Networks	2	2	--	3
Total			14	10	3	18
			27			

Systems Engineering						
Third Year – Semester I						
No.	Course Code	Subject	Hrs. Per week			Units
			Theo.	App.	Tut.	
1	CR311	Communication Systems	3	3	1	4
2	CR312	Project Management	2	--	1	2
3	SE311	Microprocessors & Interfacing	3	3	--	4
4	SE312	Systems Engineering Analysis & Design	3	--	--	3
5	SE313	Control Engineering	3	3	--	4
6	SE314	Operations Research	2	--	1	2
Total			16	9	3	19
			28			
Systems Engineering						
Third Year – Semester II						
1	UR321	Human Rights	1	--	--	1
2	CR321	Operating Systems	3	2	1	4
3	SE321	Microcontrollers	3	3	--	4
4	SE322	Security Engineering	2	2	1	3
5	SE323	Intelligent Systems	3	--	1	3
6	SE324	Digital Control	2	3	1	3
Total			14	10	4	18
			28			

Systems Engineering						
Fourth Year – Semester I						
No.	Course Code	Subject	Hrs. Per week			Units
			Theo.	App.	Tut.	
1	UR411	Democracy	1	--	--	1
2	CR411	Digital Signal Processing	3	3	1	4
3	SE411	Project	--	4	--	2
4	SE412	Real time & Embedded Systems	2	2	1	3
5	SE413	Elective I	3	2	--	4
6	SE414	Elective II	3	2	--	4
Total			12	13	2	18
			27			
Systems Engineering						
Fourth Year – Semester II						
1	SE411	Project (continued from 1 st Semester)	--	4	--	2
2	SE421	Robotics	3	3	--	4
3	SE422	System Modeling & Simulation	2	2	1	3
4	SE423	Systems Reliability	3	--	-	3
5	SE424	Elective III	3	--	1	3
6	SE425	Elective IV	3	2	--	4
Total			14	11	2	19
			27			

Hours and Units Summary

Systems Engineering									
Seq.	Year	Semester	Hrs. Per Week			Total Hrs (Actual)		Total Units	
			Theo.	App.	Tut.	Per Week	Per Year	Per Sem.	Per Year
1	First	1 st	14	12	1	27	810	18	36
2		2 nd	14	10	3	27		18	
3	Second	1 st	16	8	3	27	810	19	37
4		2 nd	14	10	3	27		18	
5	Third	1 st	16	9	3	28	840	19	37
6		2 nd	14	10	4	28		18	
7	Fourth	1 st	14	11	2	27	810	18	37
8		2 nd	14	11	2	27		19	
Total (Four Years)						3270 Hrs	147 Units		

Year/ Semester	University Requirements (UR)		College Requirements (CR)		Specialization (SE)		Total	
	Hrs/Week	Units	Hrs/Week	Units	Hrs/Week	Units	Hrs/Week	Units
1-1	2	2	25	16	-	-	27	18
1-2	2	2	20	13	5	3	27	18
2-1	2	2	11	7	14	10	27	19
2-2	-	-	5	3	22	15	27	18
3-1	-	-	10	6	18	13	28	19
3-2	1	1	6	4	21	13	28	18
4-1	1	1	7	4	19	13	27	18
4-2	-	-	-	-	27	19	27	19
total	8x15=120	8	84x15=1260	53	126x15=1890	86	218x15=3270	147

	%Hrs	%Units
University Requirements	120/3270 = 3.67 %	8/147 = 5.44%
College Requirements	1260/3270= 38.53%	53/147 = 36.05%
Department Requirements	1890/3270= 57.80%	86/147 = 58.50%

Selective Courses:

1. Hardware Programming.
2. Distributed Control Systems (SCADA).
3. Wireless Sensor Networks.
4. Nonlinear Control.
5. Queuing Systems.
6. Hybrid Systems.
7. Programmable Logic Controllers.
8. Advanced Operating Systems.
9. Human-Machine Interface.
10. Decision and Risk Analysis.
11. Optimization.