Jordan University of Science and Technology

Faculty of Engineering

Nuclear Engineering Department

NE351 Signals And Control Systems
First Semester 2019-2020

Course Catalog
3 Credit Hours. Discrete and continuous time signals and systems: classifications, convolution and impulse response. Fourier series and Fourier transform. Laplace transform. Introduction to control theory. Applications in nuclear engineering.

Text Book	
Title	Signals, Systems and transforms
Author(s)	Charles Philips, John Parr and EVE Riskin
Edition	4th Edition
Short Name	Ref#1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	Dynamics of Nuclear Reactors	David L. Hetrick	1st Edition	

Instructor	
Name	**Dr. RABIE ABU SALEEM**
Office Location	N1 L-2
Office Hours	Sun : 08:30 - 09:30 Mon : 08:00 - 09:00 Tue : 10:30 - 12:30 Thu : 10:30 - 12:30
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Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue, Thu : 09:30 - 10:30
Room: E2117

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
242121	EE212 Electric Circuit Analysis	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2, 3	Review and introduction for Continuous-Time Signals and Systems.	**CHs 1&2** From **Ref#1**
Weeks 4, 5	Convolution for Continuous-Time Linear Time-Invariant Systems	**CH3** From **Ref#1**
Weeks 6, 7	Fourier Series Expansion for Periodic Signals	**CH4** From **Ref#1**
Weeks 8, 9	The Fourier Transform.	**CHs 5&6** From **Ref#1**
Weeks 10, 11	The Laplace Transform.	**CH7** From **Ref#1**
Weeks 12, 13, 14	Introduction to Control Theory.	
Weeks 15, 16	Stability Analysis in Nuclear Reactors.	**CH6** From **Ref#2**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Ability to recognize the properties of different systems and different signals and perform time and amplitude transformations on signals. [11]	23%	First exam, Homeworks
Demonstrate a good understanding of the concepts of impulse response and convolution and use them to determine the response of a linear time-invariant system. [31, 17]	18%	First exam, Second exam, Homeworks
Ability to derive the different forms of the Fourier series expansion for periodic signals and to implement the concept of Fourier series to determine the time and frequency responses of systems. [11, 17]	18%	Second exam, Homeworks
Ability to derive the continuous-time Fourier transform and Laplace transform and implement them in the analysis and description of LTI continuous-time systems. [11, 17]	25%	Second exam, Homeworks
Ability to recognize different models of nuclear reactors as feedback systems and to implement the Routh criterion and the root locus method to determine the stability of feedback systems. [21, 12, 17]	16%	

Relationship to Program Student Outcomes (Out of 100%)						
1	2	3	4	5	6	7
66	4					30

Evaluation	
Assessment Tool	**Weight**
First exam	25%
Second exam	25%
Homeworks	10%
Final Exam	40%

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