Jordan University of Science and Technology

Faculty of Engineering

Nuclear Engineering Department

NE372 Computational Techniques In Nuclear Engineering

First Semester 2018-2019

Course Catalog
3 Credit Hours. Three credit hours (3 h lectures) This course is designed to keep the nuclear engineering student up to date with modern techniques, programming languages, and computer codes in nuclear engineering. Methods of modeling radiation problems, the generation of pseudo-random numbers, sampling from different probability distribution, simulation designs, validation of a simulation model, variance reduction techniques. Introduction to modern computer codes used in nuclear engineering.

Text Book	
Title	MATLAB programming fundamentals
Author(s)	Mathworks
Edition	15th Edition
Short Name	Ref #1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Introduction to Programming with Fortran	Ian Chivers, Jane Sleightholme	12th Edition	

Instructor	
Name	**Mr. Neil Abu Ennab**
Office Location	E2 L-2
Office Hours	Sun : 12:30 - 14:30 Mon : 11:30 - 12:30 Tue : 12:30 - 14:30 Thu : 09:30 - 11:30
Email	nrabuennab@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 10:00 - 11:30 Room: LAB

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
2001140	NE114 Programming For Engineers	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Basic MATLAB layout and building a MATLAB code	
Weeks 2, 3	Basic operation, command prompts and expressions	
Week 4	Plotting nuclear data and functions	
Weeks 5, 6	Modelling of radiation problems	
Weeks 7, 8, 9	Numerically solving nuclear problems	
Week 10	Export and import nuclear data from external files	
Week 11	Solving nuclear equations using MATLAB	
Weeks 12, 13	Image processing	
Weeks 14, 15	Basics of Fortran programming language	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Ability to apply basic programming fundamentals [17]	15%	First exam, Second exam, Final exam
Ability to read, modify and write nuclear programming codes [17]	15%	First exam, Second exam, Final exam
Ability to solve nuclear problems using programming languages [11, 17]	35%	First exam, Second exam, Final exam
Be able to use programming languages to read nuclear data, analyze, present and modify it [11, 17]	35%	First exam, Second exam, Final exam

Relationship to Program Student Outcomes (Out of 100%)						
1	2	3	4	5	6	7
35						65

Evaluation	
Assessment Tool	**Weight**
First exam	30%
Second exam	30%
Final exam	40%

Date Printed: 2020-01-07