



**Jordan University of Science and Technology**  
**Faculty of Engineering**  
**Nuclear Engineering Department**

NE581 Special Topics In Nuclear Engineering - JNQF Level: 7

First Semester 2024-2025

**Course Catalog**

3 Credit Hours. Introduction to the underlying principles and applications of the emerging field of nanotechnology, physical basis and principles of nanotechnology, industrial applications, Carbon nanotube technologies, nanofabrication,... etc.

**Teaching Method:** Electronic Course

**Text Book**

<b>Title</b>	Textbook of Nanoscience and Nanotechnology
<b>Author(s)</b>	B. S. Murty et al.
<b>Edition</b>	1st Edition
<b>Short Name</b>	Ref #1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Introduction to Nanoscience and Nanotechnology	G. L. Hornyak, H. F. Tibbals, J. Dutta and J. J. Moore	1st Edition	
Ref #3	Nanoparticles, From Theory to Application	Gunter Schmid	1st Edition	

**Instructor**

Name	Dr. GHADEER AL-MALKAWI
Office Location	E1L2
Office Hours	
Email	ghmalkawi@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 19:00 - 20:00 Room: متزامن الحضور منصة الكترونية

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Introduction to nanoscience	
Weeks 3, 4, 5	Unique Properties of Nanomaterials	
Weeks 6, 7, 8	Synthesis Routes	
Weeks 9, 10, 11	Tools to Characterize Nanomaterials	
Weeks 12, 13, 14	Projects Presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Students will be able to describe the change in mechanical and thermal properties of materials with nano-scale dimensions. [1SO1] [1L7K1]	30%	
Students will be able to describe several methods for synthesizing nanoparticles and nanomaterials. [1SO2] [1L7S2]	30%	
Students will be able to describe several mechanisms for the characterization of nanostructured materials. [1SO2] [1L7S3]	30%	
Students will be able to discuss some useful applications that take advantage of the superior properties of nanomaterials (project) [1SO3] [1L7C3]	10%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
30	60	10				

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S2	L7S3	L7C3
30	30	30	10

Evaluation	
Assessment Tool	Weight
1st Exam	25%
Project	10%

Final Exam	40%
2nd Exam	25%

<b>Policy</b>	
Attendance	Since class discussion is a major course ingredient, regular attendance is mandatory. Attendance record will be taken into consideration in any borderline grade decisions.
Exam Policy	There will be no make-up exams except in extreme circumstances at the discretion of the instructor. The instructor has to be informed in advance (by email, phone, personal ...). You will be asked to provide proper documentation.
Disabled Students	Students with any sort of limitation or disability should discuss its consequences with instructor prior to the start of the course.
Emergency Provisions	In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Here are ways to get information about changes in this course: - E-learning announcements - Instructor email (ghmalkawi@just.edu.jo)

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