Lesson Plan

Course Information:

- **Course Title: Nanotechnology Safety**
- Course Type & Credit: Theoretical • 2 Credits
- Prerequisite or Co-requisite: Nanomedicine 1

Instructor Information:

- Full Name: Dr. Razieh Nazari
- Teaching Experience: Yes
- Faculty: School of Advanced Technologies

Learner Information:

- Field of Study: Medical Nanotechnology
- Degree Level: Master's (M.Sc.)
- Semester: First ☐ Second • (Summer ☐)
- Number of Students: 2

Course Objective:
The aim of this course is to familiarize students with the toxicity of nanomaterials and the tests used to evaluate nanomaterial toxicity.

Course Outline Table:

Main Topics	Detailed Objectives	Teaching Method	Educational Aids	Final Assessment Method	Location
1. Introduction to Nanomaterial Toxicity Assessment	1. By the end of the session, the student should be able to explain nanomaterial toxicity.	In-person: Lecture, discussion, use of PowerPoint and introduction of books and articles, film screening, questioning students and resolving issues in person or via other communication tools such as SMS or messaging apps, designing assignments for students appropriate to the topic.	Projector – Computer – Appropriate software for presenting slides	Formative assessment throughout the course via questions in each session and evaluation of students' opinions and participation in discussions; designing virtual assignments related to the topic taught in each session; administering a final written exam including descriptive and multiple-choice questions.	School of Advanced Technologies
2. Physicochemical Properties and Toxicity	2. Describe the role of physicochemical properties (size, shape, surface charge, coating, and specific surface area) in the toxicity of nanomaterials.				
3. Exposure Routes	3. Explain the main exposure routes (respiratory, dermal, gastrointestinal, and injection) and the passage of nanoparticles through biological barriers.				
4. Toxicity Assessment Models	4. Cell culture and animal models.				
5. Cellular Tests for Nanomaterial Toxicity Assessment	5. By the end of the session, the student should be able to name the methods for testing nanomaterial toxicity. 6. By the end of the session, the student should be able to explain cellular tests for assessing nanomaterial toxicity.				