

School of pharmacy

Department Medicinal Chemistry

Course title: **Nanobiotechnology**

Credit (Theory or Practical): 2 Credits Theory

Prerequisite: Pharmaceutical Nanotechnology

Course Lecturers: Dr. Rastegari

Responsible Lecturer: Dr. Rastegari

Student responsibilities:

- 1- Attend all scheduled classes on time.
- 2- Actively participate in class discussion and activity.
- 3- Complete all assignments, seminars and projects on time
- 4- Engage in respectful and professional communication with lecturers and staff.

Course Description:

- Course objectives:

- Understand Fundamentals of Nanobiotechnology
- Learning the principles of nanobiotechnology-based approaches for enhancing wound healing.
- Learning nanobiotechnology roles in vaccine development
- Learning nanobiotechnology applications in cancer therapy
- Learning nanobiotechnology applications in hard diseases treatment
- Learning the role of machine learning in nanobiotechnology
- Familiar with nanobiotechnology applications in stem cell therapy
- Familiar with steps in translating nanobiotechnological innovations from laboratory research to marketable product

Student Learning Objectives:

- Students should understand Fundamentals of Nanobiotechnology
- Students should learn the principles of nanobiotechnology-based approaches for enhancing wound healing.
- Students should learn nanobiotechnology roles in vaccine development
- Students should learn nanobiotechnology applications in cancer therapy

- Students should learn nanobiotechnology applications in hard diseases treatment
- Students should learn machine learning roles in nanobiotechnology
- Students should familiar with nanobiotechnology applications in stem cell therapy
- Students should familiar with steps in translating nanobiotechnological innovations from laboratory research to marketable product

Course title: Pharmaceutical Nanotechnology – Saturday (10:00-12:00)

	Subject	Lecturer	Presentation method	Date
1	Introduction of Nanobiotechnology	Dr. Rastegari	Seminars and team work	04.10.25
2	Micro- and Nanofluidics in Biotechnology	Dr. Rastegari	Seminars and team work	11.10.25
3	Surface Patterning and Protein Printing	Dr. Rastegari	Seminars and team work	18.10.25
4	Protein-Based Nanostructures 1	Dr. Rastegari	Seminars and team work	25.10.25
5	Protein-Based Nanostructures 2	Dr. Rastegari	Seminars and team work	01.11.25
6	DNA Nanostructures 1	Dr. Rastegari	Seminars and team work	08.11.25
7	DNA Nanostructures 2	Dr. Rastegari	Seminars and team work	15.11.25
8	Nanoparticle–Biomaterial Hybrid Systems	Dr. Rastegari	Seminars and team work	22.11.25
9	Nanoanalytics and Imaging	Dr. Rastegari	Seminars and team work	29.11.25
10	Applications and Future Perspectives	Dr. Rastegari	Seminars and team work	06.12.25
11	Seminars-1	Dr. Rastegari	Seminars and team work	13.12.25
12	Seminars-2	Dr. Rastegari	Seminars and team work	20.12.25
13	Seminars-3	Dr. Rastegari	Seminars and team work	27.12.25
14	Problem solving	Dr. Rastegari	Seminars and team work	27.12.25

References:

- 1- Recently published research and review articles
- 2- The Nanobiotechnology Handbook (1st Edition) edited by Yubing Xie (Routledge)
- 3- Rastegari, Current applications of biomolecules in biopharmaceuticals and drug discovery
- 4- The Handbook of Nanomedicine (3rd Edition, 2017) by Kewal K. Jain

Notes:

- All classes will be held in Besarati (Eastern 7) street, North Shahin Boulevard

The absence hours of a student should not exceed 4/17 in theoretical, 2/17 in practical and laboratorial. Otherwise, the score for that course or section will be considered as zero.

Note 1: allowed absences are accepted provided that students bring in documents for that and the related professor approves it. Acting against absences (either excused or not) will be the decision of the professor and agreement of the college.

Student Evaluation

Seminar and class activity	4
Final exam	16
Total Score	20