

**SYLLABUS FOR THE BATCH FROM YEAR 2025 TO 2026
FOR**

**Certificate in
Drug Discovery: Recent Approaches in
Drug Designing**

(Credit Based Evaluation and Grading System)

Semester: I

EXAMINATIONS: 2025-2026

The Certificate Programme Offered:

- **Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (6 Months Duration)**



Department of Pharmaceutical Sciences

In collaboration with

Directorate of Open & Distance Learning and Online Studies

**GURU NANAK DEV UNIVERSITY
AMRITSAR**

Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (Semester System) Offered by Department of Pharmaceutical Sciences Directorate of Open & Distance Learning and Online Studies, Guru Nanak Dev University, Amritsar

Eligibility

- +2 or equivalent examination
- Any student pursuing Bachelor Degree, Master Degree, M.Phil., Ph.D. from GNDU campus constituted or affiliated college.

Sr.No	Subject Code	Subject Name	Credits Points
1	ODDDR111T	Evolution of Drug Development	4
2	ODDDR111T	Recent Advances in timeline of Drug Discoveries	4
3	ODDDR111T	Recent Advances in Drug Discovery Technology	4
4	ODDDR111T	Project	4
			16

Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (Semester System) Offered by Department of Pharmaceutical Sciences Directorate of Open & Distance Learning and Online Studies, Guru Nanak Dev University, Amritsar

**Subject Name: Evolution of Drug
Development
Subject Code: ODDDR111T
Semester-I**

Section-A

1. Introduction of Medicinal Chemistry
2. Development of medicinal chemistry through traditional civilizations

Section-B

3. Antiquity Drugs and lead molecules
4. Milestone Discoveries, contribution of scientist in drug discoveries

Section-C

5. Lead molecules with hypnotic and anticonvulsant activity, anaesthetic and analgesic molecules
6. Era of brain research, Endocrine therapy and steroids.

Section-D

7. Traditional Indian Medicines
8. Future direction and challenges

Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (Semester System) Offered by Department of Pharmaceutical Sciences Directorate of Open & Distance Learning and Online Studies, Guru Nanak Dev University, Amritsar

Subject Name: Recent Advances in timeline of Drug Discoveries

Subject Code: ODDDR112T

Semester-I

Section-A

1. Target identification and validation, lead identification and validation
2. Bioinformatics in target discoveries

Section-B

3. Role of transgenic animals in target validation
4. lead identification through *in-silico* techniques (Molecular docking and QSAR, Rigid docking flexible docking, History and development of QSAR)

Section-C

5. Drug Absorption Distribution Metabolism and Excretion.
6. Analogue Based Drug Designing

Section-D

7. Pharmacophore Mapping, Data collection and 3D arrangement of functional groups,
8. Pharmacophore based Screening: Ligand based and Hybrid Molecule based pharmacophore screening

Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (Semester System) Offered by Department of Pharmaceutical Sciences Directorate of Open & Distance Learning and Online Studies, Guru Nanak Dev University, Amritsar

Subject Name: Recent Advances in Drug Discovery Technology
Subject Code: ODDDR113T
Semester-I

Section-A

1. Introduction of AI and application.
2. Tools use in drug designing.

Section-B

3. Machine learning model.
4. High Throughput Screening.

Section-C

5. Prediction of drug design, Prediction of Protein structure (alpha-fold),
6. Prediction of drug Physiochemical properties, Prediction of Bioactivity,

Section-D

7. Biochemical and Pharmaceutical databases
8. Molecular Modeling: Introduction to molecular mechanics and Quantum mechanics, Energy Minimization methods

Certificate Course in Drug Discovery: Recent Approaches in Drug Designing (Semester System) Offered by Department of Pharmaceutical Sciences Directorate of Open & Distance Learning and Online Studies, Guru Nanak Dev University, Amritsar

Subject Name: Project
Subject Code: ODDDR114T
Semester-I

Project should be associated to above mentioned Subject Categories, Pharmaceutical Data Collection, Adverse drug Reaction, Explore AI tools and its Application, Review Article (Literature survey), Pharmaceutical Sciences based case Report