Course specification
2018- 2019
Faculty of Pharmacy
Mansoura University

المستوى الخامس

توصيف مقرر Technology of Natural Drugs

University: Mansoura University (MU)
Faculty : Pharmacy
Department: Pharmacognosy
Course title: Technology of natural drugs

Program on which the course is given	B. Pharm
Academic Level	Fifth Level, First semester
Date of course specification approval	10/9/2018

1- Basic Information : Course data :

Course title:	**Technology of natural drugs**	**Code:** PG 519	
Specialization:	**Pharmaceutical sciences**		
Prerequisite: Registration			
Teaching Hours:	**Lecture: 1**	**Practical:** -	
Number of units: (credit hours)	1		

2- Course Aims:

1. Provides student with the basic concepts of plant tissue culture technique and its application in the area of production of plant secondary metabolites

2. Be aware with the concept of microbial biotransformation

3. Apply biotransformation reactions for converting natural drug to more active metabolites

3-Intended learning outcomes (ILOs):

a- Knowledge and understanding

a1	List the raw materials used in different culture media and sterilization techniques
a2	Understand different techniques and applications of plant tissue culture and microbial biotransformation
a3	Know the basic application of genetic engineering in pharmaceutical industry

b- Intellectual skills

b1	Apply how biotechnology explain PTC technology and the diversity of microbial world in drugs production
b2	Outline different substances produced by microbial biotransformation and PTC
b3	Report some pharmaceutical products produced by PTC & MT

c- Professional and practical skills

c1	Operate both cultures and fermenters
c2	Isolate and identify metabolites produced by PTC and MT
c3	Report the status of cultures and fermenters

d- General and transferable skills

d1	Interact effectively in team working.
d2	Design experiments for production of valuable chemicals
d3	Suggest methods for production of chemical on biotechnology level

4- Contents :-

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Techniques of Plant Tissue Culture and Plant Tissue Culture media	1	1	
2.	Principles of Microbial Biotransformation	1	1	
3.	Methods of Sterilization and Problems in Plant Tissue Culture Techniques	1	1	
4.	Microorganisms for Biotransformation	1	1	
5	Biotransformation Methodology	1	1	
6	Application of Plant Tissue Culture	1	1	
7	Week 7 Mid-term Exam			
8	Protoplast cultures + Micropropagation of Cultures	1	1	
9	The Improvement of Biotransformation yield	1	1	
10	Bioactive Compounds Produced by PTC Techniques	1	1	

11-12	Bioactive Compounds Produced by Biotransformation Techniques	1	1	
14-18	Final written & oral			

5- Teaching and learning Methods:

5.1	Lectures using white board and data show.
5.2	Suggested Practical session
5.3	Research assignments

6- Student Assessment:

a- Assessment methods:

1-Written exam	To assess understanding, intellectual, professional
2-Practical exam	Suggested to assess transferable skills
3-Oral	To assess Knowledge, understanding, intellectual skills, general skills and confidence
4-Quizzes	To assess Knowledge, understanding
5-Case study	To assess the skills of problem-solving and date presentation

b- Assessment schedule

Assessment 1	Practical	-
Assessment 2	Mid-term	7th week
Assessment 3	Oral	15th week
Assessment 4	Written	15th week

c- Weighting of assessments

1	Mid-term examination	10 %
2	Final-term examination	75 %
3	Oral examination	15 %
4	Practical examination & Semester work	0
5	Other types of assessment	0
Total		100%

7 - List of References

N0.	Reference	type
1	Hard book of PTC, A. Gohar, Mansoura 2010	**Book**
2	Notes by staff members of pharmacognosy department	**Book**

8- Matrix of knowledge and skills of the course

No	Course contents	Study Week	ILOS			
			Knowledge & understanding	Intellectual skills	Professional and practical skills	General & transferable skills
1.	Techniques of Plant Tissue Culture and Plant Tissue Culture media	1st	a1, a2	b1	c1	d1, d2
2.	Principles of Microbial Biotransformation	2nd	a1, a2	b1	c2	d1
3.	Methods of Sterilization and Problems in Plant Tissue Culture Techniques	3rd	a1, a2	b3	c2	d2
4.	Microorganisms for Biotransformation	4th	a1, a2	b1	c2	d1, d2
5.	Biotransformation Methodology	5th	a1, a2	b3	c2	d2
6.	Application of Plant Tissue Culture	6-7th	a1, a2	b3	c2	d2
7.	Protoplast cultures + Micropropagation of Cultures	8th	a1,a2	b2	c2	d2
8	The improvement of Biotransformation yield	9th	a1,a2	b2	c2	d2
9	Bioactive compounds produced by PTC Techniques	10th	a1,a2	b1	c1	d2
10	Bioactive Compounds Produced by Biotransformation Techniques	11-12 th	a1,a2	b2	c1	d1

Course Coordinator :	**Associate Prof. Dr. Weaam Nabil El Sayed Ebrahim**
Head of department	**Prof. Dr. Mona G. Zaghloul**

Course specification
2018- 2019
Faculty of Pharmacy
Mansoura University