

## Course Description Form

1. Course Name:	
Biopharmaceutics	
2. Course Code:	
Phind23_411--	
3. Semester / Year:	
1 <sup>st</sup> Semester /4 <sup>th</sup> year	
4. Description Preparation Date:	
01/9/2023	
5. Available Attendance Forms:	
Students' signature on attendance sheet	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours Theoretical + 2 hours Practical (60) /4 units	
7. Course administrator's name	
Theoretical	
Name: Assist. Prof Dr. Musab Mohammad Khalaf Email: <a href="mailto:Musabph74@uomosul.edu.iq">Musabph74@uomosul.edu.iq</a>	
Name: Lec. Dr Omar Abdulhakeem Hamid Email: <a href="mailto:omar.hamid@uomosul.edu.iq">omar.hamid@uomosul.edu.iq</a>	
Practical	
Name: Assist Lec. Hayder fouad Ibrahim Email: <a href="mailto:ph.hayderfouad89@uomosul.edu.iq">ph.hayderfouad89@uomosul.edu.iq</a>	
Name: Assist Lec. Zahraa Hussein Ali Email: <a href="mailto:zahraa.2021@uomosul.edu.iq">zahraa.2021@uomosul.edu.iq</a>	
8. Course Objectives	
<ol style="list-style-type: none"> <li>1. The concept of biopharmaceutics.</li> <li>2. Identifying factors that are influencing the bioavailability of a drug; these include               <ol style="list-style-type: none"> <li>a. GIT Physiological factors affecting oral drug absorption (oral drugs)</li> <li>b. Physicochemical properties of drug itself (solubility and dissolution rate)</li> <li>c. The type of dosage form and choice of excipients.</li> </ol> </li> <li>3. Bioavailability and bioequivalence studies.</li> </ol>	<ol style="list-style-type: none"> <li>4. Pharmacokinetics of drug absorption including               <ol style="list-style-type: none"> <li>a. One compartment open model.</li> <li>b. Multiple compartment models.</li> </ol> </li> </ol>
9. Teaching and Learning Strategies	
<b>Strategy</b>	Lecturing Homework Quiz Practical laboratory demonstration, practice and reports
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2+2	Concept of biopharmaceutics, bioavailability and pharmacokinetics	Introduction to Biopharmaceutics	Theoretical lectures.	Paper-based exam
2	2+2	GIT Physiological factors influencing gastrointestinal drug absorption: Gastric emptying time, pH and food	GIT Physiological factors influencing gastrointestinal drug absorption	Theoretical lectures. Laboratory demonstration.	Paper-based exam
3	2+2	GIT Physiological factors influencing gastrointestinal drug absorption: Mechanisms of drug absorption	GIT Physiological factors influencing gastrointestinal drug absorption	Theoretical lectures. Laboratory demonstration.	Paper-based exam
4	2+2	Drug physicochemical factors influencing drug absorption: Solubility and dissolution	Drug physicochemical factors influencing drug absorption	Theoretical lectures. Laboratory demonstration.	Paper-based exam
5	2+2	pH- partitioning hypothesis of drug absorption: pKa and dissociation and lipid solubility	pH- partitioning hypothesis of drug absorption	Theoretical lectures. Laboratory experiments.	Paper-based exam
6	2+2	Dosage form factors influencing drug absorption: type of the dosage form	Dosage form factors influencing drug absorption	Theoretical lectures. Laboratory demonstration.	Paper-based exam
7	2+2	Dosage form factors influencing drug absorption: Excipients	Dosage form factors influencing drug absorption	Theoretical lectures. Laboratory demonstration.	Paper-based exam
8	<b>Mid-term exam</b>				
9	2+2	Bioavailability and Bioequivalence: Types of bioavailability studies	Bioavailability and Bioequivalence	Theoretical lectures. Laboratory demonstration.	Paper-based exam
10	2+2	Pharmacokinetics:	Pharmacokinetics	Theoretical lectures.	Paper-based exam

		One compartment open model		Laboratory demonstration.	
11	2+2	Pharmacokinetics: multiple compartment model	Pharmacokinetics	Theoretical lectures. Laboratory demonstration.	Paper-based exam
12	2+2	Pharmacokinetics: Intra-venous infusion	Pharmacokinetics	Theoretical lectures. Laboratory demonstration.	Paper-based exam
13	2+2	Pharmacokinetics: Protein binding	Pharmacokinetics	Theoretical lectures. Laboratory demonstration.	Paper-based exam
14	2+2	Pharmacokinetics: Dosage regimen	Pharmacokinetics	Theoretical lectures. Laboratory demonstration.	Paper-based exam
15	<b>Seminars</b>				
<b>11. Course Evaluation</b>					
<ul style="list-style-type: none"> <li>• 20 M Theoretical assessment; (paper-based mid-term exam + quiz + attendance + seminar)</li> <li>• 20 M practical assessment (attendance + quiz + practice)</li> <li>• 60 M paper-based theoretical final exam</li> </ul> <hr style="width: 20%; margin-left: 0;"/> <p style="margin-left: 40px;">100 M total</p>					
<b>12. Learning and Teaching Resources</b>					
Required textbooks			Pharmaceutics The Science of Dosage Form Design 2Ed M.E.Aulton v		
Main references (sources)			Shargel L, Yu AB, (Eds.), Applied Biopharmaceutics and Pharmacokinetics; 6th edition,2012.		
Electronic References, Websites			<a href="https://www.youtube.com/watch?v=5gJxaWep_Dk">https://www.youtube.com/watch?v=5gJxaWep_Dk</a>		