



**Course Outline Template- second semester- /1441**

<b>Form B-I: Theoretical Course with Practical sessions</b>			
<b>Theoretical Part- Course Information</b>			
<b>Course Number:</b>		<b>Sections:</b>	
<b>Faculty Responsible for Developing This Course Outline</b>			
Male campus: 1/ Mohammad Alanazi 2A 68			
<b>Course coordinator</b>		<b>Email</b>	
		msanazi@ksu.edu.sa	
<b>Course Type</b>			
Core Course		Compulsory Elective	
<b>From Course specification (sent along with this email) review and rewrite if needed the following:</b>			
<b>(1) main purpose for this course</b>			
<ol style="list-style-type: none"> <li>Learn the basics and applications of biotechnology</li> <li>Understand genetic engineering and DNA cloning</li> </ol>			
<b>(2) Course Learning Outcomes</b>			
<ol style="list-style-type: none"> <li>Knowledge: students will be able to define and understand biotechnology and recombinant DNA technology as well as the various applications and techniques involved in genetic engineering.</li> <li>Cognitive: students will be able to assess and choose from different techniques according to the research question.</li> </ol>			
<b>(3) Course Assessment Methods:</b>			
- Faculty member is required to announce 40 out of 60 of student degree before the official date of withdrawn courses which is on <b>24 -3-1441</b>			
<b>Assessment Method</b>		<b>Weight</b>	<b>Aligned Course Learning Outcomes</b>
Midterm exam		15%	Knowledge
Quizzes, homework, assignments		5%	Knowledge
practical		30%	Knowledge and
presentation		10%	Cognitive
Final comprehensive		40%	Knowledge and Cognitive



4) Topics to be Covered		
Week	Topics	Reference
	<p>1-Introduction to biotechnology and its brief history, Biotechnology in research and industry</p> <p>2- The central dogma of Molecular Biology: applications in Biotechnology</p>	<p><b>Biotechnology, Clark, chapter 1: basics of biotechnology pages:2,8-29</b></p>
	<p><b>DNA-based techniques:</b> Nucleic acid isolation protocols and plasmids preparation Southern Blots</p>	<p><b>Southern blots: Lehninger</b></p>
	<p>Polymerase chain reaction and applications Mutation detection methods DNA sequencing</p>	<p><b>Biotechnology, Clark, chapter 4: PCR and sequencing Chapter 16: examples of inherited defects and their detection methods, pages 467-473</b></p>
	<p><b>RNA-based techniques:</b> Northern Blots Quantitative-RT-PCR Microarray</p>	<p><b>Biotechnology, Clark, chapter 8</b></p>
	<p>DNA cloning; types and applications; development of recombinant protein Restriction endonucleases &amp; vectors</p>	<p><b>Lehninger Ch.9</b></p>
	<p>Principles and practices of initiation, cultivation, maintenance and preservation of animal and bacterial cultures. Preservation of continuous cell lines.</p>	
	<p>Transgenic animal and plant production; genetically modified plants and animals</p>	<p><b>Biotechnology, Clark, chapter 14: transgenic plants Chapter 15: transgenic animals</b></p>
	<p><b>Last date to drop a course or withdraw from the semester</b></p>	
	<p>Environmental biotechnology Industrial enzymes and their applications</p>	<p><b>Biotechnology, Clark, chapter 12:</b></p>



		page 363 bioremediation chapter 13
<b>(5) References:</b>		
<p>1- <b>Biotechnology 2<sup>nd</sup> Edition Authors: David Clark, Nanette Pazdernik (2015)</b></p> <p>2- <b>Lehninger Principles of Biochemistry, 7<sup>th</sup> edition, 2017</b></p>		
<b>(6) Examination date</b>		<b>(7) Date of Reviewing examination results with students</b>
<b><u>Midterm exam ( 29-7-1441)</u></b>		7-8-1441
<b><u>(24-3-2020)</u></b>		31-3-2020
Students presentation		( 26-8-1441; 19-4-2020)
Final exam		7-9-1441 at 1:00 PM

