



المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

Course Specifications

Institution: Tabuk University	Date: 12/8/1440
College/Department : Science/Biology	

A. Course Identification and General Information

1. Course title and code: Bacteriology (BIO 333)			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Biology			
4. Name of faculty member responsible for the course : Dr. Madeha Othman Ghobashy			
5. Level/year at which this course is offered:: Level 6			
6. Pre-requisites for this course (if any): BIO (231) General Microbiology			
7. Co-requisites for this course (if any): Non			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply):			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="75"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other (Lab work)	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="25"/>
Comments:			
Update this course and modify the syllabus even keep pace with the latest research and scientific discoveries in the field of bacteriology, biotechnology and medical bacteriology.			
-Try to trend the students to handle the microbiological processes more professionally, and prepare them to enter the labor market			
- Modification of this course in line with the needs and requirements of the labor market in various field.			

B Objectives

1. What is the main purpose for this course?
 - Demonstrate an understanding of the history of bacteria and its evolution and importance of different groups of bacteria.
- 2-Recognize different forms, shapes , and morphology of bacteria, and different methods of staining of bacteria.
- 3-Represent the ultra-structure of prokaryotic cell and the main difference between prokaryotic and eukaryotic cell.
- 4-Distinguish between Gram Positive and Negative Bacteria.
- 5-Explain the various metabolic processes of bacteria and roles of bacteria in ecological, biotechnological and pathogenic functions.
- 6-Demonstrate the main physical and chemical requirements for bacterial growth.
- 7-Discuss morphological, biochemical, and molecular identification of bacterial strains.
- 8-Describe the general characteristics, and classification of bacteria and their importance and their properties and some important groups.
- 9-Demonstrate an understanding of the taxonomy and morphological features of bacteria.
- 10-Experience and confidence in applying this knowledge to isolate, identify and classify unknown strains of bacteria according to the recent techniques in applied bacteriology.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
 - 1-Increased use of computer based programs and web based reference material to support the course material to more understanding of the role of bacteria in our life.
 - 2-Modify the content as a result of new research in bacteriology
 - 3-Encourage the student to introduce them self in the field of bacteriology and biotechnology.
 - 4-The course planed as basic lectures and reports, seminars introduced by students to understand new important topics and techniques related to advanced bacteriology.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:
This course provides a comprehensive review on the nature of bacteria, History of bacterial discovery. The morphology of bacteria and different forms and arrangement. The different methods of staining and different factors affecting their growth. Bacterial identification, classification, and taxonomy. Study of some groups of bacteria and their role in our life. Study of some pathogenic groups of bacteria. Discuss the importance of filamentous bacteria to the environment

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
Shapes of bacterial cells	1	3
Cell wall of bacteria (G-ve cell wall)	1	3
Plasma membrane, cytoplasm, nuclear area	1	3
Bacterial groups (G-ve aerobic rods and cocci)	1	3
Bacterial groups (Facultative anaerobic G-ve rods)	1	3
Endospore forming G+ve rods	1	3
Endospore forming G+ve rods	1	3
Revision and Pre Final Exam	1	3
Mid Term Vacation	1	3
Non spore forming G+ve rods	1	3
Nutrition in bacteria	1	3
Nutrition in bacteria	1	3
Actinomycetes	1	3
Actinomycetes	1	3
Revision	1	3
Final Exam	1	2

2. Course components (total contact hours and credits per semester):							
		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planned	26			26		52
	Actual	26			26		52
Credit	Planned	2			1		3
	Actual	2			1		3

3. Additional private study/learning hours expected for students per week.	8
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each

course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)			
Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	<p>Upon successful completion of this course the student will be able to</p> <ol style="list-style-type: none"> 1-Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures 2-Understand the basic shapes, structure and function of bacterial cell and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria/archaea 3-Understand the ultrastructure of bacterial cell, cell wall, genome, and differentiate between Gram positive and Gram negative bacteria. 4- Describe the general bacteriology and microbial techniques for isolation of pure cultures of bacteria from natural habitat. 5-Study various culture media and their applications and also understand various physical and chemical means of sterilization 6-Describe the bacterial reproduction and growth curve and different condition affecting growth curve. 7-Demonstrat the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement. 	<p>In class lecturing(using Power Point and illustrations on the white board)</p> <ul style="list-style-type: none"> - Discussion - Self-learning and cooperative learning - Application of scientific method in thinking by solving scientific problems - Laboratory practice and microscope examination (conducting experiments and writing reports). - Activities and homework 	<p>Pre-final and final exams.</p> <ul style="list-style-type: none"> - Assessment of lab reports and practical examinations - Activities and homework evaluation
2.0	Cognitive Skills		
2.1	<p>Upon successful completion of this course the student will be able to:</p> <ol style="list-style-type: none"> 1-Demonstrate practical skills in sterilization , microscopy and their handling techniques and staining procedures 2- Comprehend the various methods for identification of unknown bacteria. 3-Explaining the different groups of microorganisms. 4- Comparing taxonomically between the different genera of each group of bacteria . 	<p>Lectures presentation Practical experiments Discussion</p> <ul style="list-style-type: none"> - Self-learning and cooperative learning - Application of scientific method in thinking by solving scientific problems - Laboratory training - Activities and Homework -Project research 	<p>Evaluation of lab Reports Quizzes Assignments</p> <ul style="list-style-type: none"> - Evaluation of activities and homework

	5- Using computers and internet		
3.0	Interpersonal Skills & Responsibility		
3.1	<p>Upon successful completion of this course the student will be able to:</p> <p>1-Evaluating ability to work in a team to conduct a specific project 2- Evaluating ability to conduct a specific project with minimal supervision 3- Justifying results of work to others</p>	<p>-Cooperative learning and application of scientific method in thinking by solving scientific problems. - work as part of a team - Conducting group experiments and writing reports - Dividing students into groups to cooperate with each other during the examination of microorganisms</p>	<p>- Assessment of group project - Assessment of projects conducted individually</p>
4.0	Communication, Information Technology, Numerical		
4.1	<p>Upon successful completion of this course the student will be able to:</p> <p>1-Operating to work in a team to conduct a Specific project. 2- Operating to solve problems 3- Operating to use computers and internet 4- Operating to conduct searches and restore information</p>	<p>Promoting students to submit activities, homework and writing reports</p>	<p>Writing a group reports Data presentation Project presentation</p>
5.0	Psychomotor		
5.1	<p>Upon successful completion of this course the student will be able to:</p> <p>1- Encouraging students to participate in the isolation of microorganisms and preparation of experiments and work on the devices in the lab. 2-Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively 3-Comprehend the various methods for identification of unknown microorganisms 4-The student must be bold enough to do sterilization techniques. 5-The student should perform the experiments with ambition and high efficiency. 6-The student should experience high skills and dedication. 7-The ability to choose the suitable methods to estimate the number of microorganisms in a sample (using, for example, viable plate count, and spectrophotometric methods).</p>	<p>-Practical presentation -Training the student on all laboratory skills through laboratory session. -Practical application and demonstration of each experiment. -Field study, survey and isolation -identification of unknown samples or to perform any laboratory experiment</p>	<p>-Perform several practical experiments and answer a questionnaire for each experiment. -Solving problems. -work on assignments and answer to a questionnaire for each assignment -Make a checklist for each skill and measure the efficiency of the student to perform this skill.</p>

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Activities and short Quizzes	3	10%
2	2 Pre-final Practical Exam	8	10%
3	3 Pre-final theoretical Exam	8	25%
4	4 Final Practical Exam	15	15%
5	5 Final Theoretical Exam	16	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Direct Supervision by staff over lab. Session
- Office hours 8 hr/week
- Academic advice(by 20 student/ teaching staff member)

E Learning Resources

1. List Required Textbooks

1-Brock Biology of Microorganisms (14th ed), by Michael T. Madigan. ISBN: 9781292018317.
- Prescott, Harley, and Klein's Microbiology, by Joanne M. Willey, Linda M. Sherwood, and Christopher J. Woolverton, published by McGraw-Hill

2. List Essential References Materials (Journals, Reports, etc.)

1-Brock Biology of Microorganisms (14th ed), by Michael T. Madigan. ISBN: 9781292018317.
Prescott, Harley, and Klein's Microbiology, by Joanne M. Willey, Linda M. Sherwood, and Christopher J. Woolverton, published by McGraw-Hill

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4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

http://www.textbookofbacteriology.net/kt_toc.html

On-line textbook of Bacteriology: Kenneth Tobar, U. of Wisconsin-Madison, Department of Bacteriology. URL (<http://www.textbookofbacteriology.net/>)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) - Lecture halls, containing white board and electronic monitors. The seats fit the number of the students. - Laboratories equipped with benches and water sources, microscopes.
2. Technology resources (AV, data show, Smart Board, software, etc.) Computing resources (AV, data show, Smart Board, software, etc.) Smart board must be available Computers must be available for students Central library must be available and well equipped with computers.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Laboratory must be equipped infrastructure as well as with: autoclave- oven- microscope- spectrophotometer- incubator- air laminar flow- shaking incubator- distillatory- ultra-balance- refrigerator- deep freezer. Bunsen burner flame-

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching - Distribution of questions for course evaluation by students - Student-teaching staff members meetings.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor - Peer consultation by departmental course committee - Self-evaluation of program by the department.
3. Processes for Improvement of Teaching - Installation of modern microscopes, digital labs and maintenance - Implementation of suggestions administration - Implementation of suggestions by departmental course committee - Monitoring of teaching activities by administration.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) - Reviewing assessments by staff member/chairman/special committee when required and instructed by higher administration at the end of each semester
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - Comparison of course with equivalent courses - Reviewing course topics annually by the departmental committee

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| <ul style="list-style-type: none">- Refreshment of teaching resources to ensure updating knowledge- Use of statics of course evaluation by students to improve the course. |
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Name of Course Instructor: Dr. Madeha Othman Ghobashy

Signature: *Madeha Ghobashy* Date Specification Completed: 12/8/1440

Program Coordinator: **Dr. Omar Salem Obeid Bahattab**

Signature: *Omar Bahattab* Date Received: 16/8/1440