Course Specifications

Course Title:	**General Microbiology**
Course Code:	**3303-211**
Program:	**Microbiology**
Department:	**Biology**
College:	**Science and Arts-Rafha**
Institution:	**Northern Border University**

Table of Contents

A. Course Identification

1. Credit hours:	**3 Hours (2 Theoretical + 1 Practical)**									
2. Course type										
a.	University		College		Department	√	Others			
b.		Required	√	Elective						
3. Level/year at which this course is offered:	**3rd Level/2ed Year**									
4. Pre-requisites for this course (if any):	**General Biology I (3303-101)**									
5. Co-requisites for this course (if any):	**None**									

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	54	90 %
2	Blended	-	-
3	E-learning	6	10 %
4	Correspondence	-	-
5	Other	-	-

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	60
Other Learning Hours*		
1	Study	-
2	Assignments	14
3	Library	-
4	Projects/Research Essays/Theses	4
5	Others (specify)	-
	Total	18

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course will cover introduction, brief history of microbiology, importance of studying of microbiology, microbial cell structure, the difference between prokaryotic and eukaryotic microbial cells, microbial nutrition, growth and reproduction. Also, this course will provide a conceptual and experimental background about the different microorganisms (Viruses, Bacteria, Fungi, Algae and Protozoa) sufficient to enable the students to take courses that are more advanced in this program.

2. Course Main Objective

At the end of the course the student will be able to:

1. Know and understand the principles of microbiology.
2. Know and understand the different microbial groups and their importance.
3. Know and understand the difference and the cell structure of the prokaryotes and eukaryotes.
4. Know and understand the methods of microbial nutrition and microbial growth.
5. Know and understand the general characters of Viruses, Bacteria, Fungi, Algae and Protozoa.

3. Course Learning Outcomes

	CLOs	Aligned-PLOs
1	**Knowledge:**	
1.1	Understanding the basic concept of microbiology and microorganisms	K1
1.2	Knowing the diversity and distribution of microorganisms in the different environmental sources	K1
1.3	Knowing the different methods of microbial nutrition and growth	K1
2	**Skills:**	
2.1	To able to perform isolation and purification of the different microbial cultures form the different environmental sources	S1
2.2	To differentiate between the culture characteristics of the different microbial groups practically	S1
2.3	Practicing sterilization techniques and avoiding risks of microbial contamination	S1
3	**Competence:**	
3.1	The student will demonstrate knowledge of the history of microbiology through outlining the contributions of major scientists and their contributions to the development of Microbiology by the critical thinking	C1
3.2	Student will be able to demonstrate knowledge of various methodologies such as utilization of appropriate culture media used to isolate, culture, and identify microorganisms	C1
3.3	The student will gain the teamwork ability through practicing the different microbial isolation, purification and identification techniques	C1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction, brief history and importance of microbiology	6
2	Microbial cell structure, differences between prokaryotic and eukaryotic cell	6
3	Microbial nutrition, growth and reproduction	6
4	An introductory study on Viruses	6
5	An introductory study on Bacteria	9
6	An introductory study on Fungi	9
7	An introductory study on Algae	6
8	An introductory study on Protozoa	6
Total		**54**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Understanding the basic concept of microbiology and microorganisms	• Class /Group discussion • Brain Storming	• Multiple choice question • Matching item • Short answer question • True/False
1.2	Knowing the diversity and distribution of microorganisms in the different environmental sources	• Class /Group discussion • Brain Storming	• Multiple choice question • Matching item • Short answer question • True/False
1.3	Know and understand the methods of microbial nutrition and growth	• Class /Group discussion • Brain Storming	• Multiple choice question • Matching item • Short answer question • True/False
2.0	**Skills**		
2.1	To able to perform isolation and purification of the different microbial cultures form the different environmental sources	• Brain storming • Active learning	• Multiple choice question • Short answer question • True/False • Fill in the blank • Practical evaluation
2.2	To differentiate between the culture characteristics of the different microbial groups practically	• Brain storming • Active learning • Observations	• Multiple choice question • Short answer question • True/False • Fill in the blank • Practical evaluation
2.3	Practicing sterilization techniques and avoiding risks of microbial contamination	• Brain storming • Active learning	• Multiple choice question • Short answer question • True/False • Fill in the blank • Practical evaluation

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	**Competence**		
3.1	The student will demonstrate knowledge of the history of microbiology by critical thinking	• Inquiry-based instruction/problem-based learning	• Report
3.2	Student will be able to demonstrate knowledge of various methodologies such as utilization of appropriate culture media used to isolate, culture, and identify microorganisms	• Inquiry-based instruction/problem-based learning • Lab work	• Report • Practical evaluation
3.3	The student will gain the teamwork ability through practicing the different microbial isolation, purification and identification techniques	• Inquiry-based instruction/problem-based learning • Lab work • Team assignments	• Report • Practical evaluation

2. Assessment Tasks for Students

No	Assessment task*	Week Due	Percentage of Total Assessment Score
1	1st periodic exam	7th	10 %
2	2ed periodic exam	12th	10 %
3	Participation and attendance	weekly	10 %
4	Practical exam	15th	30 %
5	Final exam	16th-17th	40 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

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).*

- During the working time, each group of the students is assigned to a staff member who will be available for academic guidance and support through guidance hours (3 hours/week).
- The course instructor will allocate office hours (3 hours/week) as a part of his teaching load to help the students on any problems or difficulties in his course.
- Outside the working hours the students can contact the staff member electronically through Blackboard, E-mail, WhatsApp or other social contacting media.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	[1] Madigan, Martinko, Stahl and Clark. Brock Biology of Microorganisms. 13th Edition. (Pearson), 2012.
Essential References Materials	[1] Madigan, Martinko, Stahl and Clark. Brock Biology of Microorganisms. 13th Edition. (Pearson), 2012. [2] Tom Betsy, D.C., Jim Keogh. Microbiology Demystified. (Mcgraw-Hill), 2005.
Electronic Materials	[1] https://journals.asm.org/ (American Society for Microbiology). [2] https://microbiologyonline.org/ (Microbiology Online: Homepage). [3] The Journal of Microbiology - Springer. [4] Journal of Microbiological Methods – Elsevier.
Other Learning Materials	[1] https://www.synbiosis.com/product-category/microbiology-analysis-software/ [2] https://www.technidata-web.com/engb/solutions/disciplines/microbiology.

2. Facilities Required

Item	Resources
Accommodation *(Classrooms, laboratories, demonstration rooms/labs, etc.)*	➢ The classrooms must be provided with a suitable number of seats and equipped with a whiteboards and projectors. ➢ The laboratories must be provided with sufficient equipment's and materials.
Technology Resources *(AV, data show, Smart Board, software, etc.)*	➢ The Classrooms and laboratories should be fully equipped with educational technology resources such as smartboard mini-Lessons, powerpoint resources, best of the web and internet resources to enhance and engage the students in their lessons. ➢ Laboratories must be having recent computers provided with scientific software.
Other Resources *(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)*	➢ Autoclaves ➢ Laminar Flow Cabinets ➢ Incubators ➢ Colony Counters ➢ Rotary Incubator Shakers

G. Course Quality Evaluation

Evaluation (Areas/Issues)	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	At the end of the course each student will complete an evaluation form to be used by the faculty to evaluate the course feedback and the instructor.	Direct (Questionnaire)
Extent of achievement of course learning outcomes	At the end of each semester the course instructor should complete the course report, including a summary of student's results and questionnaire responses to identify changes that need to be made if necessary.	Direct (Questionnaire) Indirect (Student's answers)
Processes for improvement of teaching	• Student's evaluations. • Course report. • Benchmarking with similar programs in Saudi and International Universities.	Direct (Questionnaire) Indirect (Benchmarking)
Quality of learning resources	Evaluation the learning resources should be performed annually by both the staff member and student to be used by the administration in improvement.	Direct (Questionnaire)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Quality Committee
Reference No.	
Date	March 21st, 2021 – Shaban 7th, 1442