



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Food Microbiology
FSN 323**

**Course Specifications
(CS)**



Course Specifications

Institution: King Saud University	Date of Report / /2014
College/Department Food and Agricultural Sciences / Food Science and Human Nutrition	

A. Course Identification and General Information

1. Course title and code: Food Microbiology			
2. Credit hours FSN 321 (4 Hours)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Food Science and Human Nutrition (College of Food and Agricultural Sciences)			
4. Name of faculty member responsible for the course Prof. Dr. Mosffer Mohamed Al-Dagal			
5. Level/year at which this course is offered : Fifth			
6. Pre-requisites for this course (if any) Agricultural microbiology 211			
7. Co-requisites for this course (if any) No			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input type="text" value="8"/>	What percentage?	<input type="text" value="61.53%"/>
b. Blended (traditional and online)	<input type="text" value="2"/>	What percentage?	<input type="text" value="15.38%"/>
c. e-learning	<input type="text" value="2"/>	What percentage?	<input type="text" value="15.38%"/>
d. Correspondence	<input type="text" value="1"/>	What percentage?	<input type="text" value="7.69%"/>
f. Other	<input type="text"/>	What percentage?	<input type="text"/>
Comments:			



B Objectives

<p>1. What is the main purpose for this course?</p> <ul style="list-style-type: none"> - To learn about the effects of microorganisms on quality and safety of foods that can also affect human health. - To obtain knowledge and skills about analytical devices used in microbiological studies. - To learn preparation of microbial media and solutions required for estimation to number and type of microorganisms. -To learn microbial spoilage of food. - Distribution the culture of quality and food safety.
<p>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)</p> <p>The following set of measures were implemented to improve the course:</p> <ul style="list-style-type: none"> - Improvement of the preparatory guide for practical lessons. - The website was updated to give more information about the course. - Improvement of the display devices in the teaching the course. - Students were encouraged to use of e-mail groups between students (as Tawsul system). - Course content was reviewed and improvement.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
A- Theoretical		
1- Introduction and historical background	1	3
2- Important Microbial populations in foods (Bacteria, Fungi, Viruses,....)	2.5	7
3- Factors affecting the microbial survival in food	2	6
4- Microbial spoilage in the food	2	6



5- Control microorganisms in foods by different methods (physically chemically and biologically,.....)	2	6
6- Microbial food poisoning A- Staphylococcus Gastroenteritis B- Food poisoning caused by gram positive spore forming bacteria (<i>Cl. Perfringens</i> , <i>Cl. Botulinum</i> and <i>B. cereus</i>) C- Foodborne Listeriosis D- Foodborne gastroenteritis caused by <i>Salmonella</i> and <i>Shigella</i> E- Foodborne gastroenteritis caused by <i>E.coli</i> F- Foodborne viral gastroenteritis (Norwalk-Like Viruses(NLVs)) G- Mycotoxins	3.5	8
B. Practical (Laboratory)		
1- Stains	1	2
2- Quantitative determination of microorganisms in foods	3	6
3- Qualitative determination of microorganisms	3	6
4- Practical Applications (Food Samples)	3	6
5- General skills in food microbiology (streaking methods, cultural , morphologically and biochemically tests)	3	6



2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	26	N/A	24	N/A	N/A	60
Credit	3	N/A	1	N/A	N/A	4

3. Additional private study/learning hours expected for students per week. 2 Hours Theoretical - 3 Hours Practical	5
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The **National Qualification Framework** provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

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. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.



NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
Knowledge		
Student will learn how to: List common bacterial spoilage to foods	Lectures	Periodic and short exams
Describe how do bacteria contaminate foods and how it obtains energy to carry out their functions	Lectures	Quiz
Define factors affecting bacterial growth in foods	Lectures	1 st Quarterly exam
Recognize the importance of microbial population in food	Lectures	Quiz
Differentiate between pathogenic and nonpathogenic microorganisms known to spoil foods	Lectures	2 nd Quarterly exam
Record a current information about pathogenic microorganisms in food	Lectures	3 rd Final EXAM
Cognitive Skills		
By now, students should be able to: Explain how to use aseptic technique to properly handle microorganisms.	Practical training in laboratory	Evaluation of practical reports
Properly use the microscope	"	Quiz
Differentiate between microorganisms by using stains such as Gram stain	"	"
Develop the technique of inoculation and isolation of bacteria from foods.	"	1 st Quarterly exam
Analyze food for the presence of microorganisms	"	"
Prepare fermented food using microorganisms	"	"
Interpret the results of lab experiments and write a report	"	2 nd Quarterly exam (Final Exam)
Interpersonal Skills & Responsibility		
Demonstrate How microbiologists study all aspects of a microbe's life, including its growth, reproduction and effects on foods.	Practical training in laboratory	Evaluation and discussion of reports
Illustrate that some microbes specially food poisoning bacteria may pose a potential danger, so microbiologists must ensure that food sample remain isolated in the laboratory.	"	"



Show the potential links between microorganisms and epidemics, test food products for microbes, or look for ways that some microbes can be used in beneficial ways.	“	“
Communication, Information Technology, Numerical		
Demonstrate how, as microbiologist, study microbe's life cycle aspects including its growth, reproduction and effects on foods.		Discussion
Illustrate that some microbes especially food poisoning bacteria may pose a potential danger		“
Show the potential links between microorganisms and epidemics as well as beneficial use of bacteria.		“
Psychomotor		
By now, students should be able to design experiment, analyze the data, draw conclusions, and report findings in a technical and non-technical fashion.	Laboratory training	Evaluation of student according to the results obtained

NQF Learning Domains	Suggested Verbs
	list, name, record, define, label, outline, state, describe, recall,



Knowledge	memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested **verbs not to use** when writing measurable and assessable learning outcomes are as follows:

Consider Maximize Continue Review Ensure Enlarge Understand
Maintain Reflect Examine Strengthen Explore Encourage Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.



	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Duties – Quiz (Theoretical)	Intervals	6%
2	First quarterly exam	4-5	12%
3	Second quarterly exam	8-9	12%
4	Final Exam	End semester	40%
5	First quarterly exam (Practical)	8	10%
6	Final exam (Practical)	13-14	10%



D. Student Academic Counseling and Support

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| 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)
-Office hours (2-3 Hours/week)
-Personal e. mail
-Office telephone |
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E. Learning Resources

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| 1. List Required Textbooks
Al-Mohizaea, I.S. (1426 H). Food Microbiology, King Saud University Publisher. |
| 2. List Essential References Materials (Journals, Reports, etc.) |
| 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

1- Jay, J. 2006. Modern Food Microbiology, 7 th ed. 2 nd print. Springer

2- Modern food Microbiology. 2000. Edited by J.M. Aspen Publications, Inc
Microorganisms in foods. Part 5. Microbiological specifications of food pathogens 1996.
ICMSF. Blackie Academic & Professional |
| 4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
-Personal home page
-Web sites |
| 5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
ANALYTICAL PROFILE INDEX (API) Software for microbial identification |

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.)
Classroom equipped with visual aid
Laboratory
Network explorer connection |



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2. Computing resources (AV, data show, Smart Board, software, etc.) Data show Smart board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) -Microscopes - Colony Counter - Incubators - Water baths - Balances - Homogenizer - Stomachers - Refrigerators and Freezers - Benzene Flame - Centrifuges - Autoclaves - Hot air sterilizers - Distillers - Vortex

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching At the end of the semester, a standard questionnaire is distributed to students. The data is administered by the department quality assurance committee, analyzed, and returned back to the faculty
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor The course is reviewed by the program every five years for improvement and coordination
3 Processes for Improvement of Teaching Determine the degree of student awareness of the field of food microbiology and link course theory to research in an active environment. Improve students' metacognitive and group interaction skills by introducing new teaching methods such as group discussion, class participation, and by case study projects.
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) -Internship supervisors of students during industrial training are requested to evaluate their performance. -Students' assignments can be evaluated by external examiners from different institutions or from within the department.



5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Review the course and updated reference to the latest developments in the field of microbiology and public health.

Faculty or Teaching Staff: _____

Signature: _____ Date Report Completed: _____

Received by: _____ Dean/Department Head

Signature: _____ Date: _____