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ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

Meat Science and Technology (FSN 439)

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Course Specifications

Institution: King Saud University	Date of Report: 10-02-2014
College/Department: Food Science and Human Nutrition	

A. Course Identification and General Information

1. Course title and code: Meat Science and Technology (FSN 439)
2. Credit hours: 4 (2+2)
3. Program(s) in which the course is offered.   (If general elective available in many programs indicate this rather than list programs)   Food Sciences and Human Nutrition
4. Name of faculty member responsible for the course   Dr . Fahad Y. Al- Juhaimi
5. Level/year at which this course is offered: Level 8/ Year 4
6. Pre-requisites for this course (if any)   Principles of Food Science (FSN-202) and Cooperative Learning (FSN-400)
7. Co-requisites for this course (if any)   None
8. Location if not on main campus

9. Mode of Instruction (mark all that apply)

a. Traditional classroom	✓	What percentage?	80
b. Blended (traditional and online)	✓	What percentage?	10
c. e-learning	✓	What percentage?	10
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

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B Objectives

1. What is the main purpose for this course? • Understanding the principles of Meat Science and Other related fields. • Be familiar with different animal slaughter methods. • Understanding how muscles converted to meat • Be able to Identify standard meat cuts, and factors affecting meat quality and safety before and after slaughter. • Gain knowledge about poultry slaughtering, processing and packaging. • Understanding the application methods used in processing of meat, poultry and fish products. • Be familiar with methods apply to preserve and store meat, poultry, fish and their products.
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) • Re- evaluating and updating course content according to recent science and technology related to the field of meat science and technology. • Use of new web sites related to meat science and technology.

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
Introduction to Meat Science and its relation with other sciences	0.5	1
The importance of meat (economical and nutritional) and the Kingdom's efforts in making them available	0.5	1
Slaughter house, importance, requirements Factors have to be taken into account before slaughtering	0.5	1
Different methods of slaughtering Stamps and their importance	1	1
Structure and functions of meat muscle	1	2
Conversion of muscle to meat: -Postmortem changes in meat muscle -Electrical stimulation	1.5	2
Chemical composition of meat	0.5	1
Factors affecting meat palatability: -Colour -Tenderness -Juiciness -Flavour	1	2
First Midterm exam	1	1
Meat grading	1	1

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Poultry slaughtering and preparation	0.5	1
Chemical composition and nutritional value of poultry and their sensory attributes	0.5	2
Fish (Introduction): Classification of Fish Body Structure of Fish Weight Structure of Fish	0.5	1
Physical properties of Fish: Shape, Size, specific area, specific weight, Bulk weight, Natural angle of repose, Angle of slip and Coefficient of friction	1	1
Changes in fish after death: Release of mucus, Rigor mortis, Autolysis, Bacterial decomposition	0.5	1
Chemical composition and nutritional value of fish	0.5	1
Determination of fish quality: TVBN, TMA, Thiobarbituric, FFA	0.5	1
Introduction to meat technology and the objectives of meat processing -Types of meat processed products	0.5	1
Raw materials for processed meat	0.5	1
Smoking (meat and fish) Drying (meat and fish)	0.5	1
Canning (meat and fish)	0.5	1
Sausages products	0.5	1
Calculation of principal ingredients used in processing of meat products	0.5	1

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28			56		84
Credit	2			2		4

3. Additional private study/learning hours expected for students per week.

3

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.

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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.

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		NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0		**Knowledge**		
1.1		Rationalizing the principles of meat science and technology	Lectures Practicals	Homework and reports Exams
1.2		Knowing national and international standards and specification related to meat and meat products quality and safety.	Lecture Reports	
1.3		Be able to understand the nutritional and economical/social importance of meat, poultry and fish.	Lecture Essay	
1.4		Be able to discuss the impact of the slaughter houses in providing wholesome safe meats for human consumption.	Lecture Visit to slaughter house	
1.5		Be able to differentiate between the different processed products (cured, dried, smoked, canned, etc)	Lecture Practical session Self-observation	
2.0		**Cognitive Skills**		
2.1		Students are able to understand skills required by a meat processing professional	Lectures, modules and	Quizzes Mid-terms Exams Practical exams Homework and laboratory reports
2.2		Students know about the equipments and processing machines used in meat processing	Videos Laboratory	
2.3		Student become familiar with different standards related to meat products and their safety issue	practice Field trips	
2.4		Be able to identify standard meat cuts and factors affecting meat quality and safety before and after slaughter.	Lecture Practical session	
2.5		Be able to understand postmortem changes in meat muscles and their conversion to human food	Lecture Essay	
2.6		Be able to give decision on meat quality according	Lecture and observations	

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	to factors affecting their palatability.		
2.7	Be able to explain the processes associated with poultry preparation.	Visit to poultry farm	
2.8	Be able to apply skills and knowledge to give decision on freshness of fish.	Lecture Practical session	
2.	Be able to explore the functions of raw materials for processed meat.	Lecture Practical session	
3.0	**Interpersonal Skills & Responsibility**		
3.1	Students are able to illustrate and use a process in meat science and technology	Lectures, and practice	Practical exams Theoretical exams Homework and laboratory reports Presentation
3.2	Participants can explain, predict and analyse meat products quality	Practical demonstration	
3.3	Student can demonstrate and write about processing methods in meat technology	Practical and reports	
3.4	Student can use different types of meats (chicken, animals and fish) food product development	Practicals	
4.0	**Communication, Information Technology, Numerical**		
4.1	Participant can carry out research in meat science and technology	Practical demonstration	Practical exams and reports
4.2	Participant can work for designing a process for meat products	Lecture and reports	
5.0	**Psychomotor**		
5.1	The participant can perform a certain experiment about meat technology	Practical demonstration	Practical exams and reports
5.2	Student can demonstrate a skill obtained in this course to others who are less familiar with the science of this field	Practicals	

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Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

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

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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.

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Quizzes	Weekly	5%
2	First theoretical exam	6	12%
3	Seconded theoretical exam	11	13%
4	First practical exam	7	10%
	Second practical exam	12	10%
5	Practical reports	Periodically	10%
6	Final exam	14	40%

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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)   Office hours : 3 hours/week

E. Learning Resources

1. List Required Textbooks

Hand book prepared by the instructor

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

A- Arabic References

- أساسيات علم اللحوم- جون فورست- ترجمة محارب عبدالحميد طاهر. ١٩٨٣م. كلية الزراعة ـجامعة البصرة.
- تكنلوجيا المنتجات السمكية- ترجمة مازن الهندي. ١٩٨٣م . وزارة التعليم العالي و البحث العلمي- الجمهورية العراقية.
- تكنولوجيا اللحوم – عصمت محمد الزلاقي. ٢٠٠١م. مكتبة المعارف الحديثة. الأسكندرية. جمهورية مصر العربية.
- تقنية اللحوم. يوسف الشريك. ٢٠٠٥. منشورات جامعة الفاتح. الجماهيرية الليبية.
- تكنلوجيا اللحوم و الأسماك- منير عبود جاسم الطائي. ١٩٨٧م. كلية الزراعة ـجامعة البصرة.

B- English References:

- Kisman, D., Kotula, A., Breidenstein, B.C. 1994. *Muscle Foods.* Chapman & Hall, Inc. New York.
Pearson, A.M and Tauber, F.M. 1984. *Processed Meat*. Van Nostrand Reinhold Company. New York

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3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
- Journal of Meat Science
- Journal of Processed Meat
- Poultry Science
- Journal of Food Science

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4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
- http://www.sciencedirect.com
- Internet search engines
- Smart boards

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

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 room for at least 30 students equipped with Lab top computer and projector and Network connection • Laboratory for at least 30 students equipped with different meat processing equipments which include grinders, mixers, emulsifiers, ovens, sausage makers, smoke house etc.

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2. Computing resources (AV, data show, Smart Board, software, etc.)

- Smart board screen that is connected with computer and also can be connected to laptop pc.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
- Different basic equipments can be used such as, meat cutting tools, meat processing facilities, texture analyser, fish freshness meeter, proximate analysis equipments etc.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- In Class feedback at mid semester time by asking questions on an anonymous form. Suggestions can be used to make up the deficiencies for the remaining period.
- Students are requested to fill an anonymous online survey related to course contents, deficiencies and teaching methods etc.,
- End of the semester feedback teacher's evaluation performance are used to get the students feedback.
- Students can evaluate the teaching capabilities, contents delivered, and communication skills of the instructor.
- Survey Feedback data is analyzed and used to upgrade the course contents, teaching skills of the instructor.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor

- Small Group Analysis method of getting feedback from students by department representative other than instructor. Students are asked to suggest what is needed to improve the course.

3 Processes for Improvement of Teaching

- Continuous improvements in the course contents according to the requirements of local job market and international scientific developments
- Close collaboration with the other institutions offering the same course.
- Consideration of the student's interests and suggestions gathered through teacher's evaluation Performa.
- Attend workshops, related to teaching skills improvement, offered by the Deanship of Quality at KSU.

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)

- Supervisors of students during industrial training are requested to evaluate their performance.
- Students' assignments and exams should be evaluated by external examiners from different institutions or from within the department.
- Product development competition supervised by industrial expert can be used as an evaluation method to access the student's capabilities.

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

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- The course contents are re-evaluated every five year
- The new information from different sources is gathered on annual basis.
- Changes and improvements in the course contents are made on the basis of new information in the field of meat science and technology

Faculty or Teaching Staff: <u>**Dr . Fahad Y. AL-Juhaimi**</u>

Signature: _____   **Date Report Completed:** <u>**16-02-2104**</u>

Received by: _____   **Dean/Department Head**

Signature: _____   **Date:** _____