ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

Course Specifications

Institution King Saud University	Date of Report 28/1/2014
College/Department : Food and Agricultural Sciences, Department of Food Science and Human Nutrition	

A. Course Identification and General Information

1. Course title and code: Nutritional Biochemistry, FSN 315
2. Credit hours: three 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
4. Name of faculty member responsible for the course
Dr. Abdulla H. Al-Assaf
5. Level/year at which this course is offered: Level 6, third year
6. Pre-requisites for this course (if any): Principles of Human Nutrition FSN 206
7. Co-requisites for this course (if any): None
8. Location if not on main campus: None
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	✓	What percentage?	60
b. Blended (traditional and online)	--	What percentage?	--
c. e-learning	✓	What percentage?	20
d. Correspondence		What percentage?	
f. Other	✓	What percentage?	20

Comments:

B Objectives

1. What is the main purpose for this course? Summary of the main learning outcomes enrolled in the course: 1. Students should be able to relate essentials of nutrition to biochemical background. 2. Students should have a satisfactory knowledge concerning the main metabolic routes. 3. Student should know how energy formed and stored in the body.
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) The bioavailability and interaction of nutrients are reviewed and updated according to recent published information.

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: Animal cell, Human digestive system, introduction to enzymology.	1 week	3 hours
Carbohydrates metabolism: Carbohydrates structure, glycolysis, kreb's cycle, glycogen, pentose phosphate pathway, gluconeogensis, dietary fibers.	2 weeks	6 hours
Fat metabolism: Structure of fatty acids, β-oxidation pathway, fatty acids synthesis, ketone bodies, cholesterol biosynthesis.	2 weeks	3 hours
Energy metabolism biological oxidation, oxidative phosphorylation.	1 week	3 hours
Revision and first mid-term exam	1 week	2 hours
Protein metabolism: structure of proteins and amino acids, fate of dietary protein, break down of amino acids, urea cycle, DNA and RNA structure, genetic code, protein synthesis, evaluation of protein quality.	2 weeks	7 hours
Mineral metabolism: physiological and biochemical functions of macro and micro-minerals, electrolytes, metabolism of calcium, phosphorus, iron, zinc, selenium.	1 week	3 hours
Vitamin metabolism: physiological and biochemical functions of water-soluble and fat-soluble vitamins, role of vitamins (B) in energy metabolism, chemical structure of fat-soluble vitamins.	1 week	3 hours
Revision and second mid-term exam	1 week	2 hours

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	35	None		None	None	35
Credit	3					3

4. Additional private study/learning hours expected for students per week.	
Six hours per week at home.	6

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
1.0	**Knowledge**		
1.1	Understand the relationship between digestion and absorption processes to metabolism of nutrients	Lectures and assignments	Exam (2) and final Home work
1.2	Define the concepts of energy formation, storage and metabolism.	Lectures	Exam and Home work
1.3	Name the interrelationships between the main metabolic pathways	Lectures	Exam and Home work
1.4	Recognize the significance of some important biochemical processes in relation to nutrition.	Lectures	Exam and Home work
2.0	**Cognitive Skills**		
2.1	Ability to calculate energy from oxidation of glucose and fatty acids.	Lectures Home works	Exams reports
2.2	Ability to know the enzymes, coenzymes and cofactors of the main metabolic pathways.	Class interaction	Reports
2.3	Understanding the role of some molecules (e.g. glycogen, cholesterol) in nutrition and health.	Class discussion	Reports
3.0	**Interpersonal Skills & Responsibility**		
3.1	Demonstrate ability to recognize metabolism of macronutrients	Lectures discussion	Exams and Home work
3.2	Illustrate biochemical and physiological functions of micronutrients.	Lectures discussion	Exams and Home work
4.0	**Communication, Information Technology, Numerical**		
4.1	Integrate nutritional biochemistry report in specific topic prepared by the students.	Assignments	Exams, Home work, Report
5.0	**Psychomotor**		
5.1	Employ knowledge in examining nutritional biochemistry reports and show suggestions for improvement.	Class discussion	Reports

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

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	Home work	Every week	10%
2	Assignments	11 and 12	10%
3	First mid-term exam	5	20%
4	Second mid-term exam	10	20%
5	Final exam	Last week	40%
6			
7			
8			

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) Available at office at least 3 hr/week and devoting this time to students' consultation and academic advice

E. Learning Resources

1. List Required Textbooks Al-Takrori, H. and Al-Masri, G. (1989) Principles of Comparative Nutrition.
2. List Essential References Materials (Journals, Reports, etc.) Cropper, S.S., Smith, J. Land Groff, J.L. (2005) Advance Nutrition and Human Metabolism
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Journal of Nutrition.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) http:// Faculty, ksu.edu.sa/Al-Assaf
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

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 to accommodate up to 45 students, equipped with suitable learning facilities (e.g. PC and Projector).

2. Computing resources (AV, data show, Smart Board, software, etc.) Audio-visual facilities are used.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching 1. Course evaluation by the students at the end of each term to evaluate students satisfaction about the course. 2. Meeting with students.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor - Department Council. - Self evaluation.
3 Processes for Improvement of Teaching 1. Improving points of weakness as appeared from student feed back or self evaluation. 2. Attending teaching improvement workshops offered by Deanship of Quality, King Saud University.
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) Students assignments and exam papers are evaluated by eternal examinations from different institutions or from within the department.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 1. The outcomes of self assessment or student evaluation should be tracked when planning for course improvement. 2. Periodic improvements proposed by instructor based on current requirements can be done upon recommendations of department council.

Faculty or Teaching Staff: Dr. Abdullah H. Al-Assaf

Signature: _____ **Date Report Completed: 28/1/2014**

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

Signature: _____ **Date: _____**