

Course Syllabus

1	Course title	Minerals in Nutrition
2	Course number	0643752
3	Credit hours (theory, practical)	(3,0)
	Contact hours (theory, practical)	(3,0)
4	Prerequisites/corequisites	-
5	Program title	MSc in Human Nutrition and Dietetics
6	Program code	036
7	Awarding institution	The University of Jordan
8	School	School of Agriculture
9	Department	Nutrition and Food Technology
10	Level of course	Graduate
11	Year of study and semester (s)	2 nd semester
12	Final Qualification	MSc in Human Nutrition and Dietetics
13	Other department (s) involved in teaching the course	-
14	Language of Instruction	English
15	Date of production/revision	Dec. 16 th ,2019

16. Course Coordinator:

Prof. Hamed R Takruri
Office number: 166
office hours: available at the office; changing based on each semester's schedule
phone number: 22410
email address: htakruri@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Office number: 166
office hours: available at the office; changing based on each semester's schedule
phone number: 22410
email address: htakruri@ju.edu.jo

18. Course Description:

An advanced level study of the physiological and biochemical aspects of mineral elements, emphasizing their nutritional & pharmaceutical interactions and associated effects on their functions, requirements, deficiency signs and toxicity, as well as the study of their nutritional status assessment methodologies.

19. Course aims and outcomes:

<p>A- Aims: Upon completion of this course, the student is expected to:</p> <ol style="list-style-type: none"> 1- Understand the definition of minerals and the criteria of mineral "essentiality". 2- Appreciate the functions of minerals in the living body. 3- Understand the consequences of mineral deficiencies on health and correlate them with specific signs and symptoms of disease. 4- Understand the interactions among the minerals and among them and other micronutrients and between them and drugs. 5- Know the toxic mineral elements and their impact on health. 6- Know the claimed roles of mineral supplements in the treatment and prevention of diseases.
<p>B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to</p> <p>A. Knowledge and Understanding: The student is expected to:</p> <ol style="list-style-type: none"> A1- Understand the definition of minerals and the criteria of mineral "essentiality". A2- Know the functions of mineral elements in the living body. A3- Understand the consequences of micronutrient deficiencies and toxicities on health and correlate them with specific signs and symptoms of disease. A4- Understand the interactions among micronutrients and between them and drugs. A5- Recognize the toxic mineral elements and their impact on health. A6- Understand the claimed roles of mineral elements in the treatment and prevention of diseases.
<p>B. Intellectual Analytical and Cognitive Skills: Student is expected to:</p> <ol style="list-style-type: none"> B1- correlate mineral functions with disease development in man. B2- gain knowledge and skills on assessment of nutritional status of minerals. B3- gain knowledge about scientific research and data collection, and analysis related to mineral elements. B4- Appreciate the toxic effect of heavy metals on human health.
<p>C. Subject- Specific Skills: Students are expected to</p> <ol style="list-style-type: none"> C1- Increase consumption of food sources of minerals. C2. Prepare a presentation on solving the problem of mineral deficiencies in the community.
<p>D. Transferable Key Skills: Students are expected to</p> <ol style="list-style-type: none"> D1- Produce brochures on food sources of minerals. D2- Counsel people regarding facts and misinformation on the role of minerals in health and the use of supplements.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
<p>* Introduction to the course</p> <p>* Micronutrients(vitamins and minerals): Classifications and essentiality of mineral elements.</p> <p>* General functions</p>	1 st &2 nd	Prof. Hamed R Takruri	A1-A2 B1 D2		Ref. 1
<p>* The Individual Minerals: Macro elements General Review on</p>	3 rd -5 th	Prof. Hamed R Takruri	A1-A5 B1-B4 C1&C2		Ref. 1 and 2

<p>metabolism, functions, deficiencies assessment of nutritional status and requirements:</p> <ul style="list-style-type: none"> - Electrolytes Na, K, Cl Electrolyte homeostasis and dehydration - Calcium and phosphorus Tetany, osteomalacia, rickets, osteoporosis - Magnesium, sulfur Mg deficiency in man and animals 						
<p>* The Individual Minerals: Macro elements General Review on metabolism, functions, deficiencies assessment of nutritional status and requirements:</p> <ul style="list-style-type: none"> - Iron Iron deficiency anemia - Zn :Zn deficiency, Acrodermatitis enteropathica - Copper: Wilson’s disease - Iodine: Iodine deficiency diseases, Goiter, Cretinism - Manganese - Molybdenum and cobalt - Selenium: Keshan disease, Kashin Beck - Chromium: Glucose tolerance, Cr as a 	6 th -9 th	Prof. Hamed R Takruri	A1-A5 B1-B4 C1&C2		Ref.1,Chap. 3	

<ul style="list-style-type: none"> - supplement - Fluorine: Dental caries - Semi-essential mineral elements: As, Ni, B, V, Sn, St, Si, 					
MIDTERM EXAM	10 th	Prof. Hamed R Takruri			&Ref.2, Chaps. 7;9;10;11;12
* Mineral interactions: <ul style="list-style-type: none"> a) Mineral - Drug Interactions b) mineral vitamin interactions b) mineral mineral interactions a) Interactions with other nutrients 	11 th -12 th	Prof. Hamed R Takruri	A4;B1, B3; C2; D1-D2		
*Minerals Analysis	12 th	Prof. Hamed R Takruri	B2,B3; C1		Textbook 1, chap. 3 &
* Minerals Toxicities <ul style="list-style-type: none"> - Heavy metals: Cd,Hg,Pb, Se, V, As, Cu & Cr, Co, F 	12 th -13 th	Prof. Hamed R Takruri	A3;C2; D2		Textbook 2, 13-16
* Micronutrient Therapy	13 th	Prof. Hamed R Takruri	A6;B2; D1-D2		
* General Discussion; Students' Reports	14 th -15 th	Prof. Hamed R Takruri	B3; C2; D2		Ref.6 & Ref.7
Final Exam		Prof. Hamed R Takruri			Ref. 7

21. Teaching Methods and Assignments:

Lectures, group discussions and presentations by students for previously assigned topics. Seminars and term papers of assigned topics. Demonstration of minerals and their supplements commonly found in the market. Development of ILOs is promoted through the following teaching and learning methods:

ILO/s	Learning Methods
A. Knowledge and Understanding (A1-A6)	Lectures and discussions.
B. Intellectual, Analytical and Cognitive Skills (B1-B4)	Lectures and discussions.
C. Subject- Specific Skills (C1-C2)	Lectures, Discussions.
D. Transferable Key Skills (D1-D2)	Projects, Presentations, and brochure preparation.

Each student is assigned a topic in which he/she explores literature through use of library and internet, then write a report which is presented and discussed in the classroom. For this academic year assigned topics included the following:

1. Health impacts of salt fortification with iodine in Jordan.
2. Iron fortification of infant formulas.
3. The effect of high sodium intake on kidney stones
4. Chromium supplements: Fads and facts.
5. Health impact of flour fortification in Jordan and other Middle Eastern countries.
6. Selenium functions and its status during pregnancy.
7. Wilson's disease: Occurrence and management.
8. Indicators of iron-deficiency anaemia in man.
9. The effect of mineral deficiencies on the pathogenesis of diabetes mellitus.
10. The impact of salt reduction in bread on human health: focus on WHO efforts.
11. Assessment of the nutritional Status of potassium and sodium.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

ILO/s	Evaluation Methods
A. Knowledge and Understanding (A1-A6)	Exams and quizzes.
B. Intellectual, Analytical and Cognitive Skills (B1-B4)	Exams and Quizzes.
C. Subject- Specific Skills (C1-C2)	Exams, Quizzes and project presentation
D. Transferable Key Skills (D1-D2)	Project presentation and brochure evaluation.

23. Course Policies:

- A- Attendance policies: Students are not to be absent for more than 15% of lectures
- B- Absences from exams and handing in assignments on time: This is required unless there is an excuse
- C- Health and safety procedures:
- D- Honesty policy regarding cheating, plagiarism, misbehaviour: University regulations are to be applied

E- Grading policy: 30% of the grade for midterm exam, 30% for course project and 40% for a final exam

F- Available university services that support achievement in the course:

24. Required equipment: (Facilities, Tools, Labs, Training....)

Data Shaw, white board, computers etc.

25. References:

Required book (s), assigned reading and audio-visuals:

1. 1. Mahan L.K. and Escottstump, S.. (2012), Food and the Nutrition and Care Process, 13th edition,W.B., Saunders Co., Philadelphia, pp 191-128.
2. 2. Shils, M.E Olson, J. A. & Shike, O.N (eds.) (2006). Modern Nutrition
3. in Health and Disease 10th edn., Chapters 8-18. Lea & Febiger, Philadelphia. pp149-350.
4. 3. World Health Organization (1996). Trace Elements in Human Nutrition and Health. WHO, Geneva.
5. 4. Disilvestro, R. A. (2005). Handbook of Minerals as Nutritional Supplements. CRC Press, New York.
6. 5. Berdanier, C.D.(2000). Advanced Nutrition: Micronutrients. CRC Press, London.Units 5-8.
7. 6. Reilly, C.(2004).The Nutritional Trace Metals. Blackwell Publishing,Oxford,U.K.
8. 7. Relevant reprints and papers.
9. 8. Selected Web Sites.

Recommended books, materials, and media:

26. Additional information:

Evaluation	Point %	Date
Midterm Exam	30	8 th week
Quizzes	10	As Announced by instructor
Course Project & Student Participation	20	14 th and 15 th weeks
Final Exam	40	Will be announced by Registrar's Dept.

Intended Grading Scale (Optional)

It depends on the student average and standard deviation

Notes:

- Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming, then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter, problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For final complaints, there will be a committee to review grading the final exam.
- For more details on University regulations please visit:
<http://www.ju.edu.jo/rules/index.htm>

Name of Course Coordinator: Prof. Hamed R Tahruri -Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----