

Course Syllabus

1	Course title	Vitamins in Nutrition
2	Course number	0653753
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)	1 st 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
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18. Course Description:

An advanced level study of the physiological and biochemical aspects of the vitamins, 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 vitamins 2- Appreciate the functions of the vitamins in the living body. 3- Understand the consequences of vitamin deficiencies on health and correlate them with specific signs and symptoms of disease. 4- Understand the vitamin/ vitamin, vitamin/mineral and vitamin/drug interactions 5- Know the toxicities of the vitamins and their adverse impact on health 6- Know the claimed roles of the vitamins in the treatment and prevention of diseases. 7- Know the most common vitamin deficiency problems at the local, regional and international levels and know strategies for their management.
<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- Recognize the definition of the vitamins A2- Know the mechanisms and mode of action of the vitamins A3- Count the deficiency symptoms of vitamins and recognize their management tools. A4- Appreciate the role of micronutrient and drug interactions on their body needs. A5- Understand the tools of assessment of vitamins.
<p>B. Intellectual Analytical and Cognitive Skills: Student is expected to:</p> <ol style="list-style-type: none"> B1- Correlate vitamin deficiencies with disease development in man. B2- Gain knowledge and skills on assessment of nutritional status of the vitamins. B3- Gain knowledge about scientific research and data collection, and analysis related to vitamin deficiencies.
<p>C. Subject- Specific Skills: Students are expected to develop personal attitude in his daily life towards food practices and habits such as:</p> <ol style="list-style-type: none"> C1- Increase consumption of food sources of the vitamins. C2- Counsel people regarding facts and misinformation on the role of vitamins in health and the use of supplements. C3- Avoid wrong practices, such as over-cooking and bad storage conditions, which contribute to vitamin losses and low bioavailability. C4- Appreciate the importance of vitamin interactions with nutrients and non-nutrients
<p>D. Transferable Key Skills: Students are expected to</p> <ol style="list-style-type: none"> D1- Produce brochures on food sources of vitamins. D2- Counsel people regarding facts and misinformation on the role of vitamins 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 * Micronutrients (Vitamins and Minerals): * Nomenclature, history, classifications of the vitamins * Factors affecting</p>	1 st &2 nd	Prof. Hamed R Takruri	A1-A3; A5 B1; D2	Evaluation of Student participation	Ref. 5,Chap.1 & Ref.4, Chap. 1& 4

functions, bioavailability and requirements					
Fat-soluble vitamins: - Vitamin A (Retinol) - Vitamin D (Calciferols) - Vitamin E & K (Tocopherols and Quinones)	3 rd -5 th	Prof. Hamed R Takruri	A1-A5 B1-B3 C1&C2 D1-D2	Evaluation of Student participation & quizzes	Ref.1 Chap. 2-4 & Ref.4, Chap. 5.
Water – Soluble Vitamins	5 th -10 th	Prof. Hamed R Takruri		Evaluation of Student participation & Quizzes	
- Thiamin (B1), Riboflavin (B2)	5 th	Prof. Hamed R Takruri	A1-A5 B1-B3 C1&C2 D1-D2		Ref. 1 Chaps 6&8,
- Niacin, pantothenic acid pyridoxine (B6), Biotin	6 th -8 th	Prof. Hamed R Takruri	A1-A5 B1-B3 C1&C2 D1-D2		Ref. 1 Chap.5 & 8-10 Ref. 3, Chap. 8
Midterm Exam	9 th	Prof. Hamed R Takruri			
- Folic acid, cobalamin (B12) & Ascorbic acid (vitamin C)	9 th -10 th	Prof. Hamed R Takruri	A1-A5 B1-B3 C1&C2 D1-D2		Ref. 1, Chap. 11-12 & Chap.14
Vitamin -like substances	11 th	Prof. Hamed R Takruri	A1;C2; D2		Ref.1,Chap.13 & ref. 3Chaps. 14,4,18
Vitamin interactions: Vitamin-vitamin, vitamin drug & vitamin-mineral interactions.	12 th	Prof. Hamed R Takruri	A4;A5; C4;		Ref.6&7
Assessment of nutritional status of the vitamins	13 th	Prof. Hamed R Takruri	A5;B3		Ref 1 general. &4 Chap. 20
Student Course Projects on: -Intervention programs for vitamin deficiencies - Therapeutic uses of the vitamins: with focus on vitamins and cancer other therapeutic potentials. - Vitamin abuse and safety considerations	14 th -15 th	Prof. Hamed R Takruri			
Final Exam	16 th	Prof. Hamed R Takruri			

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 vitamins and 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-A5)	Lectures and discussions.
B. Intellectual, Analytical and Cognitive Skills (B1-B3)	Lectures and discussions.
C. Subject- Specific Skills (C1-C3)	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

Course Projects in the Vitamins

1. Intervention programs for solving vitamin deficiencies in Jordan.
2. Vitamin B12 deficiency: Recent studies on the etiological factors.
3. Determination of Vitamin B12 status
4. Vitamin D deficiency and diabetes mellitus.
5. Vitamin D and cardiovascular diseases.
6. Vitamin D deficiency and cancer.
7. Vitamin D and multiple sclerosis
8. Vitamin E and cancer.
9. Is carnitine a B vitamin?
10. Vitamin D and bone health.
11. Vitamin –vitamin interactions in haemoglobin synthesis.
12. Vitamin assays: Methods used and sources of errors.
13. Functions and non-nutritional uses of vitamin B6.
14. Bioavailability and food sources of tocopherol compounds.
15. Determination of Ascorbic acid requirements
16. Taurine in infant formulas.
17. Vitamin D and immune function.
18. Vitamin deficiencies in the elderly.
19. Xerophthalmia: Prevalence and etiological factors.
20. Bioavailability of vitamin A compounds.

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-A5)	Exams and quizzes.
B. Intellectual, Analytical and Cognitive Skills (B1-B3)	Exams and Quizzes.
C. Subject- Specific Skills (C1-C3)	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. Zempleni, J., Rucker, R.B., McCormick, D.B. and Suttie, J.W. (Editors) (2013). Handbook of the Vitamins, 5th edn. CRC Press: New York.
2. Shils, M. E. et al. (2014). Modern Nutrition in Health and Disease, 11th edition. Lea and Febiger, Philadelphia.
3. Bender, D.A. (2003). Nutritional Biochemistry of the Vitamins. 2nd Edn. Cambridge University Press, Cambridge, U.K. 488 pages.
4. Combs, G.F (1998) The Vitamins : Fundamental Aspects in Nutrition and Health,

2nd edn., Academic Press, New York

5. Augustin, J. et al. (1985). Methods of Vitamin Assay, 4th ed. J. Wiley and Sons, New York.

6. Recent advances in the Vitamins: Selected papers and reviews

7. Selected Websites:

- Food and Nutrition Information Center: www.nal.usda.gov/fnic.
- Centers for Disease Control (CDC): www.cdc.gov.
- www.nutritiongate.com
- USDA's Gateway to Nutrition Information: www.nutrition.gov.
- Food and Nutrition Service: www.fns.usda.gov/fns.

Recommended books, materials, and media:

26. Additional information:

Evaluation	Point %	Date
Midterm Exam	Theoretical: 30	8 th week
Quizzes	10	As announced to students
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 Takruri Signature: ----- Date: -----

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

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

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

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