



Course Specification

(Bachelor)

Course Title: **Pharmacology of Vitamins**

Course Code: **443 PHL-2**

Program: **Pharmaceutical Sciences**

Department: **Pharmacology**

College: **Pharmacy**

Institution: **Najran University**

Version: **1**

Last Revision Date: **24/12/2023**

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A. General information about the course:

1. Course Identification

1. Credit hours: (2 (2+0))

2. Course type

A. ☐ University ☐ College ☐ Department ☐ Track ☒ Program
B. ☐ Required ☒ Elective

3. Level/year at which this course is offered: (8th level/ 4th year)

4. Course general Description:

This course provides an overview of the metabolism vitamins and minerals. The course will cover functions, metabolism, sources, and current recommendations for use of vitamins and minerals, with an emphasis on their impact on human health and disease. In addition to learning these topics, this class is designed to provide students with practical experiences that will promote communication and assessment skills through weekly discussions and debates on vitamins and minerals, an attribute critical to succeeding in dietetics and nutrition

5. Pre-requirements for this course (if any):

None

6. Co-requisites for this course (if any):

None

7. Course Main Objective(s):

Students after completion this course will be:

- Gain knowledge of the requirements for vitamins and minerals.
- Describe the digestion, absorption, transport and storage of vitamins and minerals.
- Describe the functions and mechanisms of action of vitamins and minerals.
- Recognize the interactions of vitamins and minerals with other nutrients
- Describe the metabolism and excretion of vitamins and minerals.
- Recognize the basic roles of vitamins and minerals in macronutrient metabolism.
- Describe the sources and nutritional significance of vitamins and minerals needed for general health.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)



No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Students after completion this course will be able to: • Gain knowledge of the requirements for vitamins and minerals. • Describe the digestion, absorption, transport and storage of vitamins and minerals.	K1	Lectures	Written exams with multiple choice questions (MCQs) and short-answer questions (Quizzes, Mid-term and Final exams)
2.0	Skills			
2.1	• Describe the functions and mechanisms of action of vitamins and minerals. • Recognize the interactions of vitamins and minerals with other nutrients.	S1	Lectures Laboratory work Case studies or multimedia instruction	Written exams with multiple choice questions (MCQs) and short-answer questions (Quizzes, Mid-term and Final exams) Practical Exams
2.2	• Describe the metabolism and excretion of vitamins and minerals. • Recognize the basic roles of vitamins and minerals in macronutrient metabolism.	S2	Lectures Laboratory work Case studies or multimedia instruction Group discussion	Written exams with multiple choice questions (MCQs) and short-answer questions (Quizzes, Mid-term and Final exams)



Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
				Practical Exams
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate leadership, skills, in addition to accountability, confidence, and independent thinking to respond to routine or unanticipated circumstances.	V1	Lectures Practice sessions	Observation card
3.2	Professional use of computer in preparing reports, assignments, and oral presentations and to be skilled in the use of electronic library and internet resources for self-directed learning.	V2	Lectures	Assignments (using rubrics) Presentations (using rubrics)

C. Course Content

No	List of Topics (Theory)	Contact Hours
1.	Introduction to the course and Importance of vitamins and minerals	1
2.	Fat Soluble Vitamins: Vitamin A Vitamin D	2
3.	Fat Soluble Vitamins: Vitamin E Vitamin K	2
4.	Water Soluble Vitamins: Vitamin C and antioxidants	3
5.	Water Soluble Vitamins: Niacin, Riboflavin, Thiamin	3
6.	Water Soluble Vitamins: Biotin, Pantothenic Acid, Folate	3
7.	Water Soluble Vitamins: Vitamin B complex (B1, B2, B6 and B12)	3
8.	Macrominerals: Calcium, Phosphorus, Magnesium	3
9.	Electrolytes: Sodium, potassium, chloride	2





10.	Microminerals: Iron, zinc	2
11.	Microminerals: Copper, selenium, chromium	2
12.	Microminerals: Iodine, Manganese, Molybdenum	2
13.	Important food supplements: Omega-3 FAs., Oleuropein, Ginkgolides, Ginseng	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz	5 th week	10%
2.	Midterm Exam	8 th week	25 %
3.	Practical Quiz	9 th week	5%
4.	Student Activity/Assignment/Presentation	14th Week	5%
5.	Students Observation card	Per semester	5%
6.	Final Theoretical Exam	17 th week	50%
7.	Total		100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Harold M. Silverman, Joseph Romano, Gary Elmer: The Vitamin Book: The Complete Guide to Vitamins, Minerals, and the Most Effective Herbal Remedies and Dietary Supplements. 2. Gropper S. Smith J.: Advanced Nutrition and Human Metabolism 6 th (2012) or 7th edition (2017)..
Supportive References	1. Goodman& Gilman: Pharmacological Basis of Therapeutics. 14 th Edition. 2. Katzung-Trevor. Basic & Clinical Pharmacology. 4th Edition. 3. Rang & Dale's: Pharmacology. 9 th Edition.
Electronic Materials	1. Pub Med 2. Science direct. 3. Medscape. 4. www.dlaf.nu.edu.sa
Other Learning Materials	Library contains adequate number of copies of the required reference text books.

2. Required Facilities and equipment





Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. Suitable lecture room equipped with data show and internet and sufficient number of seats. 2. Blackboard collaborative system for e-learning in NU.
Technology equipment (projector, smart board, software)	1. Data show. 2. Computer software listed above. 3. Internet and Wifi- access
Other equipment (depending on the nature of the specialty)	1. Microsoft Office Package software

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Program Leaders Students	Direct Indirect
Effectiveness of Students assessment	Faculty Department council Peer Reviewer	Direct Direct Direct
Quality of learning resources	Students Faculty	Indirect Direct
The extent to which CLOs have been achieved	Faculty	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PHARMACOLOGY DEPARTMENT COUNCIL
REFERENCE NO.	COUNCIL NO. 5, 1445-1446 H
DATE	24/12/2023

