

BGEN 2010

**Applied Nutrition for Pharmacy Practice**

Fall Term 2025-26

**Course Outline**

***“The University of Manitoba campuses are located on original lands of Anishinaabeg, Ininiwak, Anisininewuk, Dakota Oyate and Dene, and on the National Homeland of the Red River Métis.***

***We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of Reconciliation and collaboration”.***

**Course Title:** Applied Nutrition for Pharmacy Practice

**Short Title:** Applied Nutrition for Pharmacy

**Course Number:** BGEN 2010

**Number of Credit Hours:** 2.0 Credit-hours

**Course Format:** On-line and asynchronous

**Registration Restriction:** Admission to PharmD program

**Term:** Fall Term-September 2025

**Voluntary Withdrawal (VW) Deadline:** Monday, 3 November 2025

**Course Description:**

This course will provide an evidence-based guide for pharmacists on how nutrition and supplements can be applied in the management of disease or enhancement of health in pharmacy practice. Topics will focus on the underlying biochemical basis for nutritional management of selected chronic metabolic and genetic diseases. Chronic disorders for which pharmacists are most frequently consulted will be selected for discussion. Other topics could include frequently encountered diets or supplements.

**Course Learning Objectives:**

Upon the completion of the course, students will consistently be able to:

1. Explain the rationale for nutritional therapy of specific chronic metabolic and genetic conditions or diseases.
2. Describe the underlying biochemical basis of selected nutritional therapies.
3. Discuss the safety and effectiveness of vitamin and mineral supplements for selected nutritional interventions.
4. Describe when a referral of a client to a dietitian is needed.

**Hourly Breakdown:**

Online	26 hrs.
Preclinical	0 hrs.
Clinical	0 hrs.
Laboratory	0 hrs.

**Required Textbook:**

Nutrition Therapy and Pathophysiology (4th Edition) by Nelms & Sucher, 2019. Cengage Learning, Inc. Electronic book:  
<https://www.cengage.ca/c/ebook-nutrition-therapy-and-pathophysiology-44-4th-edition-4e-nelms-sucher/9780357391808/>:

**Recommended Reference Textbook**

Nutrition for Health and Health Care (6th Edition) by Debruyne & Pinna, 2017.

**Important Reference Websites**

1. Health Canada: [www.hc-sc.gc.ca/fn-an/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/index_e.html)
2. Public Health Agency of Canada: [www.phac-aspc.gc.ca/index-eng.php](http://www.phac-aspc.gc.ca/index-eng.php)
3. Dietitians of Canada: [www.dietitians.ca](http://www.dietitians.ca)

**Instructor and Coordinator:**

Name: Dr. Francis Amara

Title: Professor

Address:

Dept. of Biochemistry & Medical Genetics  
303 BMSB.

Phone: 204-7893580

E-mail: [Francis.Amara@umanitoba.ca](mailto:Francis.Amara@umanitoba.ca)

Contact: All E-mail communications between the students and the instructor are via using University of Manitoba accounts.

Office Hours: Please contact the instructor to arrange an appointment.

**Class Schedule**

Date	Content	Required Readings
<b>Week 1:</b> <b>Wednesday, August 27</b>  August 25-September 31	<b>Orientation</b>  <b>Unit 1</b> -Introduction to Clinical Nutrition Therapy: Enteral and Parenteral Nutrition Support.	No readings required, only attendance online, or you can sit in room Apotex 071 with your laptop: 3:15-4:15 P.M.  Class notes Textbook: Chapter 5, pp 92-102, and pp 108-114. Referenced articles.
<b>Week 2:</b> September 1-7	<b>Unit 2</b> -Nutrition Therapy and Supplementation for Osteoporosis.	Class notes Textbook: Chapter 24: Bone, pp730-

		<p>331.</p> <p>Hormonal control of bone metabolism, pp732-33.</p> <p>Osteoporosis, pp 734-36 (<i>excluding</i> “Other Nutrients and Food Components”)</p> <p>Treatment (Adequate Calcium and Vitamin D), pp739-40.</p> <p>Nutrition Therapy for Osteoporosis, pp740-42.</p> <p>Referenced articles.</p>
<b>Week 3:</b> September 8-14	<b>Unit 3-</b> Gout and Dietary Modifications.	<p>Class notes</p> <p>Textbook:</p> <p>Chapter 24-Diseases of the Musculoskeletal System: pages 747-74.</p> <p>Referenced articles.</p>
<b>Week 4:</b> September 15-21	<b>Unit 4-</b> Protein and Amino Acid Supplementation for Skeletal Muscle Mass.	<p>Class notes.</p> <p>Morton R.W et al. (2018). A systematic review, meta-analysis, and meta-regression of the effect of protein supplementation on resistance training-induced gains in muscle mass and strength in healthy adults. <i>British Journal of Sport Medicine</i>. 52(6): 376–384.</p> <p>Doi: <a href="https://doi.org/10.1136/bjsports-2017-097608">10.1136/bjsports-2017-097608</a></p>
<b>Week 5:</b> September 22-28	<b>Unit 5-</b> Ketogenic Diets.	<p>Class notes.</p> <p>Chapter 20: 20.6 Nutrition Therapy for Epilepsy and Seizure Disorders-page 609; Table 20.4; Nutrition Intervention-page 612; Table 20.6; and Box 20.1: Clinical Applications.</p> <p>Referenced articles.</p>
<b>Reading period: September 29-October 2</b>		
<p><b>Mid-term Exam:</b> Online in Room Apotex 071</p> <p>Friday, October 3: 3:30-5:00 P.M.</p>		

<b>Week 6:</b> October 6-12	<b>Unit 6-</b> Dietary Management of Potassium and Phosphorous in Chronic Kidney Disease.	Class notes. Chapter 18.4 Nutrition Therapy for Chronic Kidney Disease: pages 540-541; 549-554; Box 18.5; and Box18.10; Table 18.10-18.11; and Box18.6.
<b>Week 7:</b> October 13-19	<b>Unit 7-</b> Dietary Management of Celiac Disease.	Class notes. Textbook: Chapter 15-Celiac Disease, pages 404-413. Referenced articles.
<b>Week 8:</b> October 20-26	<b>Unit 8-</b> Dietary Intervention in Type 2 Diabetes Mellitus.	Class notes. Chapter 17.3. Pathophysiology of the endocrine system: Pages 487-492, and Nutrition Therapy for Diabetes (Pages 504-510). Referenced articles.
<b>Week 9:</b> October 27-November 2	<b>Unit 9-</b> Nutrition Therapy for Hypertriglyceridemia.	Class notes. Luafs U. et al. (2020). Clinical review on triglycerides. <i>European Heart Journal</i> ; 41:99–109. DOI: <a href="https://doi.org/10.1093/eurheartj/ehz785">10.1093/eurheartj/ehz785</a> . Referenced articles.
<b>Week 10:</b> November 3-9	<b>Unit 10-</b> Nutrition Therapy for the Hereditary Metabolic Disorder (Phenylketonuria).	Class notes. Textbook: Chapter 25. Metabolic Disorders Amino Acidopathies and Phenylketonuria, pp759-763. Referenced articles.
<b>Fall Term Break: November 10-14</b>		
<b>Assignment Due Date: Monday, November 17: 11:59 P.M.</b>		
<b>Week 11:</b> November 17-23	<b>Unit 11-</b> Nutritional and Health Benefits of Selected Indigenous Traditional Diets.	Class notes Referenced articles.
<b><u>Final Exam:</u> TBA</b>		

### Evaluation and Weighting of Marks

Due Date	Assessment Tool	Value of Final Grade	Material Tested
<b>Friday, October 3:</b> 3:30-5:00 P.M.	<b>Mid-term Examination:</b> Multiple choice questions (MCQs)	<b>40%</b>	Notes and Readings from Units 1-4.
<b>Monday, November 17</b> by 11:59 P.M.	<b>Assignment:</b> Essay on topic selected by the student.	<b>15%</b> (See the instructions and Rubric for this assignment online)	
<b>Friday, December 12:</b> 9:00 A.M.-12:00 P.M.	<b>Final Examination:</b> MCQs	<b>45%</b>	Notes and readings from Units 1-11. However, 80% of the questions will be from Units 5-11.
<b>Total Mark</b>		<b>100%</b>	

**Grading Scale:** A student must achieve a minimum grade of C (60%) to pass this course.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.5	4.5
A	80-90	4.0	4.0
B+	75-79	3.5	3.5
B	70-74	3.0	3.0
C+	65-69	2.5	2.5
C	60-64	2.0	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

### Assignment

#### Instruction

Students will select a new topic on nutrition intervention, including vitamin and mineral supplementation, for a specific disease or condition that is not covered in the course. They will research their topics and write a report of 1500-1700 words including tables, but excluding references, on doubled space lines, in a 12 font-type, with a minimum of recent (from 2020), 10 peer-reviewed publications in PubMed data base (<https://pubmed.ncbi.nlm.nih.gov/>) only. The report should describe what is known about the topic, the scientific evidence, and controversies.

In addition, the students should synthesize their own ideas and compare them with other findings. Figures may be appended.

Links to websites of nutritional and dietary organizations, foundations, and or societies, and non-peer reviewed articles are unacceptable as references.

A rubric (assessment marking criteria) and guidelines will be provided for the Assignment to highlight information that is required and the critical thought of writing that is expected

### Referencing Style

The Assignment should use the American Psychological Association (APA) reference style (7th. ed.), as outlined in the APA style of referencing: (<https://apastyle.apa.org/style-grammar-guidelines/references>).

Example of a Journal Reference in APA style:

Ruxton, C. (2016). Tea: Hydration and other health benefits. *Primary Health Care*, 26(8), 34-42. <https://doi.org/10.7748/phc.2016.e1162>.

### Assignment Feedback

Students will receive both formative (comments) and summative (marks) feedback after submitting their Assignments through UM Learn. Students will receive their graded assignments within 15 days after the submission deadline.

### Assignment Extension and Late Submission

Late assignments will be accepted up to 3 days after the due date. However, there will be a penalty for late submission of the assignment beyond the 3<sup>rd</sup> day after the due date. The penalty is guided by the policies of the College of Pharmacy regarding assignment extensions. You can find these policies on the College's web page for more information at: <https://umanitoba.ca/pharmacy/student-experience/resources-professional-students>

### Examinations

The conduct of examinations (mid-term, final and supplementary examinations) and in-course evaluation (assignment) in this course is guided by the regulations, policies, and procedures of the College of Pharmacy, under the following sections of the *Resources for professional students* | *College of Pharmacy* | *University of Manitoba* ([umanitoba.ca](http://umanitoba.ca)):

- Deferrals (*Final exam conflicts and deferral* | *University of Manitoba* ([umanitoba.ca](http://umanitoba.ca))).
- Supplementary exams
- Student access to final exams
- Taking the exams
- Scholastic progress

### Copyrighted Material

Please respect copyright. Course materials (both paper and digital) are for the private study and research of students only. The instructor will use some copyrighted content in this course, which is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by the instructor, must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the Copyright Act applies or written permission has been confirmed. For more information, review the University's Copyright Office website at <http://umanitoba.ca/copyright/>, or contact [um\\_copyright@umanitoba.ca](mailto:um_copyright@umanitoba.ca).

### Academic honesty: plagiarism and cheating

Plagiarism or cheating in any form in the examinations and assignment of this course is not acceptable. Students found guilty of academic dishonesty will immediately earn an automatic “0” grade for the examination or assignment and can suffer serious academic punishment (suspension or expulsion) from the college or university.

Always identify the source of a quotation, using APA referencing:

[https://umanitoba.ca/student/academiclearning/media/cite\\_APA-1.pdf](https://umanitoba.ca/student/academiclearning/media/cite_APA-1.pdf).

For additional information, read the university’s policy on academic integrity:

*Academic integrity* | *University of Manitoba* ([umanitoba.ca](http://umanitoba.ca)).

### Course Technology

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical, and legal manner

### Respectful Work and Learning Environment

We will treat you with respect and would appreciate the same courtesy in return. See the Respectful Work and Learning Environment policy, which is adopted by the College of Pharmacy at: *Resources for professional students* | *College of Pharmacy* | *University of Manitoba* ([umanitoba.ca](http://umanitoba.ca)). For additional details on expanded definitions and prohibited behaviors, review the *University of Manitoba - Office of Human Rights and Conflict Management - Respectful Work and Learning Environment (RWLE)* ([umanitoba.ca](http://umanitoba.ca)).

### Students’ Rights, Responsibilities, and Discipline

As a student of the University of Manitoba, you have rights and responsibilities, and subject to discipline. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to the College of Pharmacy at: *Resources for professional students* | *College of Pharmacy* | *University of Manitoba* ([umanitoba.ca](http://umanitoba.ca)), under the following sections:

- Attendance
- Illness or injury
- Appeals
- Withdrawal from a course

### Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns contact Student Advocacy Office

(<http://umanitoba.ca/student/advocacy/>), or contact:

520 University Centre

204 474 7423

E-mail: [student\\_advocacy@umanitoba.ca](mailto:student_advocacy@umanitoba.ca)