

**University of Manitoba  
Faculty of Agricultural and Food Sciences  
Department of Food and Human Nutritional Sciences**

**HNSC 2140: BASIC PRINCIPLES OF HUMAN NUTRITION (3-0)**

**Course Syllabus – Winter 2021**

**COURSE DETAILS**

**Course Title & Number:** BASIC PRINCIPLES OF HUMAN NUTRITION (HNSC 2140)

**Number of Credit Hours:** 3

**Class Times & Days of Week:** 1:00 – 2:15 pm, Tuesdays and Thursdays

**Location for classes/labs/tutorials:** WebEx on UMLearn

**Pre-Requisites:** A grade of C or higher in [CHEM 2770 or MBI0 2770 or CHEM 2360 or MBI0 2360] and [HNSC 1210 and HNSC 1200] or [FOOD 2500].

**INSTRUCTOR CONTACT INFORMATION**

**Instructor(s) Name:** Dr. Harold Aukema

**Office Location:** W573 Duff Roblin

**Office Hours or Availability:** Immediately after class (for quick questions, no appointment necessary)  
Office hours Thursdays 2:30-4:30 pm, by appointment (arrange by email or after class)

**Office Phone No.** 474-8076 (email is preferred and will get a quicker response)

**Email:** Aukema@UManitoba.CA

## TERRITORY ACKNOWLEDGEMENT

*The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation.*

*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 DESCRIPTION

The scientific principles underlying nutrient function and dietary requirements.

## LEARNING OUTCOMES

Detailed learning objectives for each section will be provided at the beginning of each topic in the PowerPoint slides for that topic.

## FOUNDATIONAL KNOWLEDGE CONTENT AREAS FOR DIETETICS EDUCATION

This dietetic education program is an accredited program recognized by the Partnership for Dietetic Education and Practice (PDEP) and prepares students for eligibility for registration with a provincial dietetics regulatory body.

*Highest level achieved: 1= demonstrate broad knowledge; 2= demonstrate comprehension; 3 = analyze, interpret and apply knowledge*

Content Area	Foundational Knowledge	Cognitive Complexity Level
<b>Anatomy and Physiology</b>	Role, function and regulation of the integumentary, musculo-skeletal, nervous, endocrine, cardio-respiratory, urinary, lymphatic and digestive systems in health and disease	2
<b>Biochemistry</b>	Foundations of chemistry and biochemistry	2
	Major metabolic pathways	2
	Foundations of cellular and molecular biology	2
	Mechanisms of metabolic regulation	2
<b>Human Nutrition across the Lifespan</b>	Ingestion, digestion, absorption, metabolism and excretion of nutrients	3
	Biochemical utilization of nutrients and energy	3
	Nutrient and energy requirements	3
	Physical activity and energy balance	2
	Nutrition recommendations and guidelines	3

## TEXTBOOK, READINGS, MATERIALS

**Textbook:** **Advanced Nutrition and Human Metabolism, 7<sup>th</sup> Edition.** S.S. Gropper, J.L. Smith, T.P. Carr. Wadsworth/Cengage Learning, 2018. ISBN: 9781305627857. Available at U of M Bookstore.

**DRI**

**Assignment:** The DRI chapter on copper is needed for the DRI assignment. The chapter is available online for **free** as a PDF. It can be found at:  
<https://www.nap.edu/catalog/10026/dietary-reference-intakes-for-vitamin-a-vitamin-k-arsenic-boron-chromium-copper-iodine-iron-manganese-molybdenum-nickel-silicon-vanadium-and-zinc>

**Reference:** **Your Biochemistry Textbook**

**Class**

**Format:** **Class notes** will be available on UM Learn on the HNSC 2140 class site.

Students will need to review the notes for each class before coming to class. Some of the notes will be self-explanatory – these slides will be identified and there will be no formal lectures on these slides. However, there will be opportunity for discussion and questions pertaining to these slides in class. Reviewing previous coursework in biochemistry and foods and nutrition also is recommended.

Students also are encouraged to go over the lecture and class notes following each class. Each class will start with the opportunity to ask questions relating to the previous class material. Students also are encouraged to ask questions and seek clarification of material during class.

Classes will be a combination of traditional lecture format, directed learning and inquiry based education. There will be iClicker questions in most classes (so **HAVE YOUR iCLICKER technology ready for each class**).

Students are expected to attend lectures. Lectures provide elaboration and explanation of the notes provided on UM LEARN. The textbook should be used to help clarify the notes and the lectures. In addition, iClicker questions count for a (limited) part of the grade, and this part cannot be obtained without attendance. However, attendance is not recorded.

## 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. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services.

## Classroom Response System ("iClicker Cloud")

You are required to bring a device to participate in the iClicker sessions during class. You can participate with the iClicker Reef app on a smartphone, tablet or laptop. If you have an iClicker account for other classes, you will need to register this class in the REEF account (see below).

It is your responsibility to set up your iClicker Reef account by **January 22, 2021** and follow the steps below to properly register in this course. It is also your responsibility to regularly check your iClicker records for any discrepancies and bring them to my attention within 48 hours.

Credit for using the iClicker will start on **January 26, 2021**.

In order to participate in iClicker Cloud sessions and ensure that your grades are properly reflected in the gradebook, follow the steps below:

### 1. If you do not already have an iClicker Reef account, [create one](#).

- You can get a **free** app and use it for free by following the instructions [here](#).
- When creating your iClicker Reef account, make sure you enter your name and email exactly as they appear in UM Learn. Add your UM Learn Username in the "Student ID" field.
- **If you already have an account, DO NOT create a new one. You can only receive credit from one account.**

### 2. Add my iClicker course to your iClicker Reef account

- Log in to your iClicker Reef account and use the + sign to search for my course.
- In the "Find Your Institution" field, enter University of Manitoba
- In the "Find Your Course" field, enter Basic Principles of Nutrition.
- Double-check the details you see to make sure you select this course:
  - Basic Principles of Nutrition
  - Harold Aukema
  - HNSC 2140, Winter 2021
  - Tuesdays and Thursdays at 1 pm
- Select "Add This Course" and it will be added to the main Courses screen of your iClicker Reef account.

### 3. Participate in sessions during each class.

- Each time class meets, make sure you have selected this course from the main screen of your iClicker Reef account.
  - When I start a session, click the **Join** button that appears on your screen, then answer each question I ask in iClicker Reef.

- For short answer, numeric, and target questions, make sure you select **Send**

### **Academic Integrity Information**

iClicker activities fall under the provisions of our campus academic honesty policy. Students must not engage in academic dishonesty while participating in iClicker activities. This includes but is not limited to:

- Having another student check you into class
- Looking at other students' devices while answering live questions
- Using more than one iClicker remote or account at a time

Any student found to be in violation of these rules will lose their iClicker points for the entire term and will be reported.

### **Need help with iClicker Reef?**

- If you are having trouble with your iClicker Reef access code, check out this [guide to access code errors](#).
- If you are having issues connecting to iClicker Reef, check out these [iClicker Reef Connectivity Tips](#).
- Find answers to many of your questions and contact the iClicker Tech Support Team by visiting [iclicker.com/support](http://iclicker.com/support) at any time.
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You are responsible for bringing your iClicker device to class and ensuring that it is working correctly. There will be no special consideration given for unrecorded clicks. Please inform your instructor if you change or get a new iClicker account midway through the term.

#### EXPECTATIONS: I EXPECT YOU TO:

- Review or read the notes on the PowerPoint slides before coming to class to familiarize yourself with the topic to be covered.
- Ask questions during class to clarify anything that is unclear.
- Participate in class discussions and activities.
- Review class material after class and ask for clarification at the next class for anything that is not clear.
- Read through the syllabus so that you understand all expectations, rights and responsibilities.
- Follow the [Respectful Work and Learning Environment Policy](#).
- Follow the policies around Class Communication, Academic Integrity, and Recording Class Lectures ([Section 2.5 ROASS](#)).

#### POLICY ON CLASS COMMUNICATION

You are required to obtain and use your University of Manitoba email account for all communication between yourself and the university. All communication must comply with the Electronic Communication with Student Policy:

[http://umanitoba.ca/admin/governance/governing\\_documents/community/electronic\\_communication\\_with\\_students\\_policy.html](http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html).

You are required to obtain and use your U of M email account for all communication between yourself and the university.

#### RECORDING CLASS LECTURES

Dr. Harold Aukema and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without my permission. Course materials (both paper and digital) are for the participant's private study and research.

#### USING COPYRIGHTED MATERIAL

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by me, are made available for private study and research and 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, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact [um\\_copyright@umanitoba.ca](mailto:um_copyright@umanitoba.ca).

#### ACADEMIC INTEGRITY

Each student in this course is expected to abide by the University of Manitoba [Academic Integrity principles](#). Always remember to reference the work of others that you have used. Also be advised that you are required to complete your assignments independently unless otherwise

specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

#### STUDENTS ACCESSIBILITY SERVICES

The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services

520 University Centre

Phone: (204) 474-7423

Email: [Student\\_accessibility@umanitoba.ca](mailto:Student_accessibility@umanitoba.ca)

#### EXPECTATIONS: YOU CAN EXPECT ME TO

- Follow the [Respectful Work and Learning Environment Policy](#).
- Post the PowerPoint slides on UM Learn before class
- Allow for time at the beginning of each class to go over anything that was not clear in the previous class.
- Go through the slides during class and expand on the material on the slides when necessary.
- Provide active learning activities in class.
- Post sample test questions on UM Learn.
- Be available during office hours unless I inform you otherwise during class.

## CLASS SCHEDULE

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to Section 2.8 of the [ROASS-Procedure](#)).

The course will cover the topics in the order listed below.

- Test 1 will cover topics 1-3
- Test 2 will cover topics 4-6
- The final exam will be comprehensive, but weighted more heavily on sections 7-9

### 1. Dietary Reference Intakes (classes 1 and 2)

- Nutrition Research
- Dietary requirements and recommendations
- Concepts of nutrient classes
- Dietary requirements and rationale

### 2. Cell Physiology (chapter 1 in the text book) (class 3)

- Cell components and structure
- Gene expression and protein synthesis
- Nutrient effects on transcription, translation, epigenetic regulation
- Enzymes in metabolism

### 3. Digestion and Absorption (chapter 2) (classes 4, 5 and 6)

- Structure of digestive tract
- Physical mechanisms of digestion
- Enzymes, secretions, regulation of digestion
- Regulation of food intake
- Absorption of nutrients
- Regulation of water balance

Review class (class 7)

Test 1 (class 8 – Feb 11)

### 4. Energy transformations (chapter 1, 8) (class 9)

- Energy change in chemical reactions
- ATP/ADP
- Electron transport chain
- Role of micronutrients
- Food as source of energy
- Energy expenditure and measurement

### 5. Carbohydrates (chapter 3) (classes 10, 11 and 12)



- Nomenclature
- Digestion and absorption of carbohydrates
- Regulation of carbohydrate metabolism
- Role of micronutrients in carbohydrate metabolism

6. Fibre (chapter 4) (class 13)

- Nomenclature
- Fibre in the gastrointestinal tract
- Fibre and disease
- Fibre recommendations

Review class (class 15)

Test 2 (class 16 - March 18)

7. Lipids, Alcohol (chapter 5) (classes 14, 17, 18)

- Nomenclature and structure
- Digestion and absorption of lipids
- Lipid transport, storage and metabolism
- Micronutrients in lipid metabolism
- Health effects of lipids and recommendations
- Antioxidant nutrients
- Alcohol metabolism

8. Protein (chapter 6) (classes 19, 20, 21)

- Nomenclature
- Digestion and absorption of proteins
- Protein metabolism and the role of micronutrients
- Protein quality
- Nutrient effects on protein synthesis

9. Metabolic Integration (chapter 7) (class 22)

- Metabolic pathways involving nutrients
- Feeding and fasting
- Exercise and energy expenditure

Review classes (classes 23 & 24)

**Note:** Other selected readings may be assigned in class.

## COURSE EVALUATION METHODS

Term tests and the final exam are open book will consist of written short and long answer questions, as well as some fill-in-the-blanks or multiple-choice questions.

Results of the 2 term tests will be available before the Voluntary Withdrawal date.

The final exam will be cumulative. Students must remain available during the exam period set by the university.

Date:	Assessment Tool	Value of Final Grade
Feb 11	Term test 1	20%
March 18	Term test 2	25%
March 31	DRI assignment due	15%
In most classes	iClicker Participation	5%
After each section	iClicker quizzes	5%
Set by Student Records	Final exam	30%

Any student that misses a test must notify the instructor before or within 24 hours of the test to avoid getting a grade of 0. If one of the Term tests is missed and the appropriate notification is given, the test will not be written and the weighting of the other term test and final exam will be increased proportionately. If two Term tests are missed (with appropriate notification), another test will be administered and the weighting of this test and the final exam will be increased proportionately.

If a student is unable to write the final exam, the student must make arrangements with the Faculty to write the final exam at an alternate date.

The DRI assignment will be based on the copper chapter of the DRI. It is available online for free as a PDF. It can be found at: <https://www.nap.edu/catalog/10026/dietary-reference-intakes-for-vitamin-a-vitamin-k-arsenic-boron-chromium-copper-iodine-iron-manganese-molybdenum-nickel-silicon-vanadium-and-zinc>

Instructions for the DRI assignment will be given in class and posted on UMLearn.

iClicker quizzes will be given after each of the first seven sections. Each quiz will be composed of 5 multiple choice or true/false questions which will be answered using the iClicker, so be sure to have your iClicker technology ready. The results of the top 5 quizzes will be used to calculate the overall Quiz mark, so each quiz used will be worth 1% of the final grade. If a student misses a quiz there will not be a makeup quiz, unless more than 2 quizzes are missed. In this case, appropriate notification must be given within 24 hours of the quizz in order to be allowed to make up quizzes.

iClicker participation marks will be earned by participating in class questions throughout the semester. In order to earn the full 5% of these marks, the student must participate in >90% of

the classes in which the iClicker is used by responding to at least 75% of the questions posed that day. If participation is 80-89% of classes, 4% will be earned; for 70-79% participation, 3%; for 60-69% participation, 2%; for 50-59% participation, 1%; <50% participation, 0%.

#### GRADING

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.25-4.5	4.5
A	80-89	3.75-4.24	4.0
B+	75-79	3.25-3.74	3.5
B	70-74	2.75-3.24	3.0
C+	65-69	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

#### VOLUNTARY WITHDRAWAL

The voluntary withdrawal deadline is March 31, 2020. Students who do not drop the course by the deadline will be assigned a final grade. Withdrawal courses will be recorded on official transcripts. Refer to the [Registrar's Office](#) web page for more information. Note that I am willing to discuss your progress and strategies for improvement at any time.

#### UNIVERSITY SUPPORT OFFICES & POLICIES

##### **Writing and Learning Support**

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at:

<http://umanitoba.ca/student/academiclearning/>

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting

205 Tier Building.

### **University of Manitoba Libraries (UML)**

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject: <http://bit.ly/WcEbA1> or name: <http://bit.ly/1tJ0bB4>. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: <http://bit.ly/1sXe6RA>. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries' homepage: [www.umanitoba.ca/libraries](http://www.umanitoba.ca/libraries).

### **Student Counselling Centre**

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. *Student Counselling Centre:* <http://umanitoba.ca/student/counselling/index.html>

474 University Centre or S207 Medical Services

(204) 474-8592

**For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.**

### **Student Support Case Management**

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team.

*Student Support Intake Assistant* <http://umanitoba.ca/student/case-manager/index.html>

520 University Centre

(204) 474-7423

### **University Health Service**

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.

*University Health Service* <http://umanitoba.ca/student/health/>

104 University Centre, Fort Garry Campus

(204) 474-8411 (Business hours or after hours/urgent calls)

### **Health and Wellness**

Contact our Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault.

*Health and Wellness Educator* <http://umanitoba.ca/student/health-wellness/welcome.html>  
[Katie.Kutryk@umanitoba.ca](mailto:Katie.Kutryk@umanitoba.ca)  
469 University Centre  
(204) 295-9032

### **Live Well @ UofM**

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:  
<http://umanitoba.ca/student/livewell/index.html>

### **Copyright**

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community. Visit <http://umanitoba.ca/copyright> for more information.

### **Your rights and responsibilities**

As a student of the University of Manitoba you have rights and responsibilities. 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 your faculty, college or school.

The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.
- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

**Respectful Work and Learning Environment**

[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html)

**Student Discipline**

[http://umanitoba.ca/admin/governance/governing\\_documents/students/student\\_discipline.html](http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html) and,

**Violent or Threatening Behaviour**

[http://umanitoba.ca/admin/governance/governing\\_documents/community/669.html](http://umanitoba.ca/admin/governance/governing_documents/community/669.html)

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:

[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html)

More information and resources can be found by reviewing the Sexual Assault site

<http://umanitoba.ca/student/sexual-assault/>

- For information about rights and responsibilities regarding **Intellectual Property** view the policy [http://umanitoba.ca/admin/governance/media/Intellectual\\_Property\\_Policy\\_-\\_2013\\_10\\_01.pdf](http://umanitoba.ca/admin/governance/media/Intellectual_Property_Policy_-_2013_10_01.pdf)

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site <http://umanitoba.ca/faculties/>

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations <http://umanitoba.ca/academic-advisors/>

**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.

<http://umanitoba.ca/student/advocacy/>

520 University Centre

204 474 7423

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