Syllabus

ENERGY AND CARBOHYDRATE NUTRITION AND METABOLISM

ANSC 7450/HNSC 7450

Winter 2024

Faculty of Agricultural and Food Sciences

University of Manitoba

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COURSE DETAILS

Course Title & Number: **ENERGY AND CARBOHYDRATE NUTRITION AND METABOLISM: ANSC 7450**

Number of Credit Hours: **1.5**

Lecture: **9:30 – 11:30 am Wednesdays;** Feb 28 – April 03 ,2024

Location for classes/labs/tutorials: **J. H. Ellis building room 342**

Pre-Requisites: **none**

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Anna Rogieewicz Dr. Rogiewicz, Dr. Anna would also be acceptable
Office Location:	228 Animal Science Building
Office Hours or Availability:	Generally, open door policy but best to e-mail to schedule an appointment
Office Phone No.	204 474 9527
Email:	Anna.rogiewicz@umanitoba.ca
Contact:	All email communication must conform to the Communicating with Students university policy. Please familiarize yourself with the policy. Use the subject line to state the reason for your e-mail and add the course number. This will help to determine which e-mails may need a quick response. Do not expect detailed or lengthy e-mail responses. If your e-mail question(s) require such a response I may ask you to come and see me in person instead. Please avoid salutations such as 'Hey You' or 'Hi There'. Dear Dr. Rogiewicz will be fine. Email response may take up to 36 hours. E-mails will not be checked evenings or weekends. If you send an email on Friday afternoon or over the weekend you will most likely get a response no earlier than the following Monday. Students are encouraged to come to the office or approach the instructor immediately before or after the lecture. Use email communication only when necessary. Students are also welcome to phone the office but do not leave voicemail messages*Note:* How you frame this sets the tone for your relationship with your students.

Course Description

U of M Course Calendar Description

Lectures and critical reviews will be delivered by the course instructors to discuss recent/significant research advances in the fields of carbohydrate nutrition and metabolism, pertinent to mammalian physiology.

The course will also be based on student presentations of current literature (within the last 5 years) on energy and carbohydrate nutrition and metabolism.

General Course Description

Lectures and critical reviews will be used to discuss recent/significant research advances in the field of energy/carbohydrate nutrition and metabolism, pertinent to mammalian physiology. Students in the course will be introduced to important concepts in carbohydrates nutrition and metabolism.

Course Goals

To recognize and understand the carbohydrate content of foods and feeds, carbohydrate digestion, carbohydrate contribution to energy requirements and the strategies used to improve carbohydrate utilization.

- To understand the key nutritional, physiological and health effects of carbohydrate components of dietary fiber.
- To understand the involvement of carbohydrates in Maillard reaction and protein damage.
- To discuss experimental approaches and techniques used for the measurement of available energy content.

Course Learning Objectives

Learning outcomes:

At the end of the course, student will:

1. Knows and describes recent developments in carbohydrate nutrition and metabolism, knows the carbohydrate contribution to energy requirements,

2. Understands and explains and the new definition of dietary fiber, knows carbohydrate components of dietary fiber.

3. Acquires knowledge about the strategies used to improve carbohydrate utilization (i.e., feed enzymes), describes the process of Maillard reaction and protein damage.

4. Understands the role of resistant starch and prebiotics in the metabolism of the carbohydrates.

5. Describes the main issues related to the energy requirements and metabolism in humans (overweight and obesity, Glycemic index, the health consequences of high fructose consumption).

6. Understands the recent advances in energy systems for animals (net energy) and humans (accelerometry, Bod Pods, etc.)

Textbook, Readings, and Course Materials

There are no required texts for the course. However, students are encouraged to consult the recent books and scientific journals on animal and human nutrition. The following are good examples:

1. Lehninger Principles of Biochemistry (5th ed) – Chapters 11, 13, 14, and 15
2. Farm Animal Metabolism and Nutrition, J. P. F. D'Mello (Ed.).
3. Swine Nutrition, A. J. Austin and L. L. Southern (Eds.).
4. Scott's Nutrition of the Chicken, S. Leeson and J.D. Summers
5. Functional Food Carbohydrates, C.G. Billaderis and M.S. Izydorczyk (Eds.)
6. Dietary Fiber and Health, S.S. Cho and N. Almeida
7. Relevant scientific journals, e.g., J. of Nutrition, Br. J. of Nutrition, Nutrition Reviews, J. of Animal Science, Poultry Science, J. of Agricultural and Food Chemistry, American Journal of Clinical Nutrition, etc.

Using Copyrighted Material

Please respect copyright. Copyrighted content is used in this course. I have ensured that I will the acknowledged content I use appropriately and that it is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are available for your private study and research, and you must not distribute them in any format without permission. Do not upload copyrighted works to a learning management system (e.g., 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.

Students are encouraged to make use of technology, including generative artificial intelligence (genAI) tools to contribute to their understanding of course materials. Students may use artificial intelligence tools, including generative AI, in this course as learning aids or to help produce assignments. However, students are ultimately accountable for the work they submit to be assessed and assigned grades.

Students must submit, as an appendix with their assignments, any content produced by an artificial intelligence tool, and the prompt used to generate the content. Any content produced by an artificial intelligence tool must be cited appropriately. Many organizations that publish standard citation formats are now providing information on citing generative AI (e.g. MLA: https://style.mla.org/citing-generative-ai/; APA 7: https://apastyle.apa.org/blog/how-to-cite-chatgpt).

Students may choose to use generative artificial intelligence (genAI) tools as they work through the assignments in this course carefully. This use must be documented in an appendix for each assignment. The documentation should include what tool(s) was/were used, how the tool(s) was/were used, and how the result(s) from the genAI was/were incorporated into the submitted work.

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. My policy on cell phones, lap tops etc. is that students should refrain from any behavior that may be distracting to other students. Therefore, avoid the use of cell phones and keep your laptop on the class lectures rather than using it for other purposes during class. I will monitor the use of technology in class. The student should not participate in personal direct electronic messaging/posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking [e.g., Facebook] online and offline "gaming") during scheduled class time. If a student is seen using the technology in class without instructor permission the student will be asked to leave the classroom and will receive 5% deduction of her/his final grade. If a student is on call (emergency) she/he should switch her/his cell phone on vibrate mode and leave the classroom before using it.

Class notes will be posted on UMLearn. You should be aware that the notes posted are not complete and will require you to attend class to fill in key details. I will spend a few minutes on the first day of classes demonstrating where these can be found in UMLearn. Lab material will be handed out during lab sessions.

Expectations: I Expect You To

I will treat you with respect and would appreciate the same courtesy in return.

1. Attend class and be on time as much as you can.

2. Follow the university student academic and conduct guidelines.

3. Participate in teaching and learning process. I always assume that each student has some knowledge and/or experience in the subject that could be shared or discussed during the class. Students are expected to be engaged and to give their best effort in class discussions but perfection is not expected.

4. Complement the notes that I provide with your own notes that you take during lectures. The

notes that I provide are incomplete and you will be expected to attend lectures in order to

complete your notes. You will also be evaluated based on your comprehension of material

supplied in Power-point notes, handouts and any relevant discussions during class.

5. Complete all assignments on time.

6. Produce university-level quality writing: legible and proofread. I encourage you to type and

submit hard copies of assignments. If there are a significant number of errors or if it is difficult to read, the assignment will be returned to you prior to grading for changes.

7. Be courteous and civil to me and to your fellow students.

See Respectful Work and Learning Environment Policy.

I expect you to follow these policies around Class Communication, Academic Integrity, and Recording Class Lectures.

Class Communication:
The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students, please visit: http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

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.

Recording Class Lectures:

The Course Instructor holds 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 permission from Anna Rogiewicz. Course materials (both paper and digital) are for the participant's private study and research.

Student 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

Expectations: You Can Expect Me To

1. I will be in class for 10 minutes prior to and after the class time to discuss any questions or comments you may have.
2. I will be respectful of your opinions, questions and response to questions.
3. Make every reasonable effort to answer your questions.
4. Mark your assignment in a fair, equitable and prompt fashion.
5. I will use the PowerPoint lectures in class in a large part of the teaching practice in class. Lectures provide a summary of key points.

CLASS SCHEDULE AND COURSE EVALUATION

This schedule is subject to change at the discretion of the instructor.

Date		Instructor	Topic
Feb.	28	A. Rogiewicz	Introductions, Course Outline, Schedules; - Carbohydrates of Foods and Feeds: Their digestion, contribution to energy requirements, physiological effects and the strategies used to improve their utilization. - Carbohydrate analysis (includes visit to the lab).
Mar.	6	A. Rogiewicz	**Carbohydrates of Foods and Feeds: Dietary Fibre**
Mar.	13	A. Rogiewicz C.M. Nyachoti	Bioenergetics and Carbohydrate Metabolism. Energy Bioavailability Measurements.
Mar.	20	A. Rogiewicz	Carbohydrates in Human Nutrition (effects of dietary fiber, glycemic index, resistant starch, etc.).
Mar.	27	A. Rogiewicz	Student presentations
Apr.	3	A. Rogiewicz	Student presentations

Date	Class Content & Teaching Strategies	Required Readings or any Pre-class Preparation	Evaluation		
			Type of Assessment	**Due Date**	**Value of Final Grade**
	Lectures		Review Paper	4:00 pm, Wed, March 27	55%
	Lectures		Oral presentation	March 27 and April 3	35%
	Lectures		Class Participation		10%
					100%

Grading

Indicate your grading scale. A sample is given below that you can adjust to your course expectations.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	91-100	4.25-4.5	4.5
A	84-90	3.75-4.24	4.0
B+	77-83	3.25-3.74	3.5
B	70-76	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 last day to drop the class and receive 100% refund is January 19, 2024 and the last day to withdraw with no refund is March 20, 2024. Students who did not drop the course by the deadline would be assigned a final grade. The withdrawal courses will be recorded on official transcript. Please refer to the Registrar's Office web page for more information.

I am willing to discuss student's progress and strategies for improvement prior the withdrawal date.

ASSIGNMENT DESCRIPTIONS

Details for all of the assignments.

1. TITLE: Review paper/Scholary paper

GOAL: Assignment going to evaluate the learning objectives for this course (1 to 6)

PROCEDURE:

- Prepare and submit a review paper on a topic relevant to carbohydrate and energy nutrition and metabolism.
- Your paper should critically discuss the current state of knowledge in the area and highlight areas requiring further research.
- Concepts and ideas covered in your paper must be adequately supported with key references.
- You may discuss with instructor the selection of a topic for your review paper. Alternatively, you can come up with your own topic but you should discuss this with the instructor before you start.
- NOTES:
- Maximum length: 10 pages, including references. Calibri, font 12, space 1 line.
- Use suggested method of referencing. This must be consistent throughout the manuscript.
- U of M Policy on Plagiarism will be reinforced. Please refer to statement on "Attendance at Class and Debarment" and "Plagiarism and Cheating" in the University of Manitoba's Graduate Calendar.

EVALUATION CRITERIA:

- Rubric for evaluation of the review paper: Clarity of introduction and content, proper paraphrasing, organization of the content, sentence structure, grammar and spelling, conclusions, reference quality, citation format, length.

2. TITLE: Oral presentation
GOAL: Assignment going to evaluate the learning objectives for this course (1 to 6)
PROCEDURE:

- Select a recent (last 5 years) peer reviewed article related to the lecture objectives and topics listed above and use it as a basis for an oral presentation to be made in class.
- Use the peer reviewed article to:
  -Introduce the class to pertinent background information leading up to the described research.
  - Highlight the specific techniques used in the research.
  - Highlight the significance of the research to the scientific literature.
  - Position the research relative to carbohydrate and energy nutrition and metabolism.
- Give a 35 minutes review of the background, research methodologies, and key findings of the work.
- Provide a one-page abstract of your review and a handout of your PowerPoint presentation to the class.
- Evaluation will be done by the instructor.
- Evaluation criteria: clarity of presentation, organization and flow of ideas, quality of presentation, evidence of additional reading, quality of abstract, etc.

EVALUATION CRITERIA:

- Rubric for evaluation of the oral presentation: Clarity of introduction and content, clarity of presentation, engagement with the audience, organization of the content, reference quality, length.

3. TITLE: Class participation
GOAL: Assignment going to evaluate the learning objectives for this course (1 to 6)
PROCEDURE AND EVALUATION CRITERIA:

- It will include asking questions, providing insights/comments and attendance.

Referencing Style

If applicable: Assignments should use the citation format adopted by the Canadian Journal of Animal Science. **Example of correct citation:**
Journal: Waterer, J.G., and Evans, L.E. 1985. Comparison of Canadian and American hard red spring wheat cultivars. Can. J. Plant Sci. **65**: 831–840.
Book:
Cochran, W.G., and Cox, G.M. 1968. Experimental design. 2nd ed. John Wiley and Sons, Inc., New York, NY. 611 pp.
Internet:
Irvine, B. 1998. Can producers use an in-row liquid suspension to inoculate pulse crops? [Online]. Available: http:// res.agr.ca/brandon/brc/newsnote/newsI91.htm [1998 Oct. 01].
More information available on-line:
http://www.nrcresearchpress.com.uml.idm.oclc.org/page/cjas/authors#28

Make sure you cite only literature that is highly relevant and avoid multiple citations on the same point. Check each reference with the original article and refer to it in the text by the author and date. List multiple references in the text in chronological order. Use "et al." when there are more than two authors but give all authors in the reference list at the end of your assignment.

Assignment Feedback

Both, formative (i.e., comments) and summative (i.e., grade) feedback will be provide to students. Feedback will be delivered on paper and electronically.

Assignment Extension and Late Submission Policy

Late Assignments: Hand-in, hard-copy assignment must be submitted by the end of the day (4:30 pm) on the date that it is due.

Missed Assignments: I do not anticipate any missed assignment.

UNIVERSITY SUPPORT OFFICES & POLICIES

Please see below the information on university support offices and policies.

Section (a)

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.

As the University of Matitoba as an institution and all academic community members, we value the mental health and will strimgly suggest to reach out for help in time of crisis. Please refer to:

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

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

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 peer support from *Healthy U* or 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 https://umanitoba.ca/student/health-wellness/welcome-about.html
britt.harvey@umanitoba.ca

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

Section (c): Copyright policy:

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.

Section (d) sample: Please refer to University and Unit policies, procedures, and supplemental information available on-line:

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 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

Student Discipline
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

- 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
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 https://umanitoba.ca/governance/sites/governance/files/2021-06/Intellectual Property Policy - 2013_10_01 RF.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