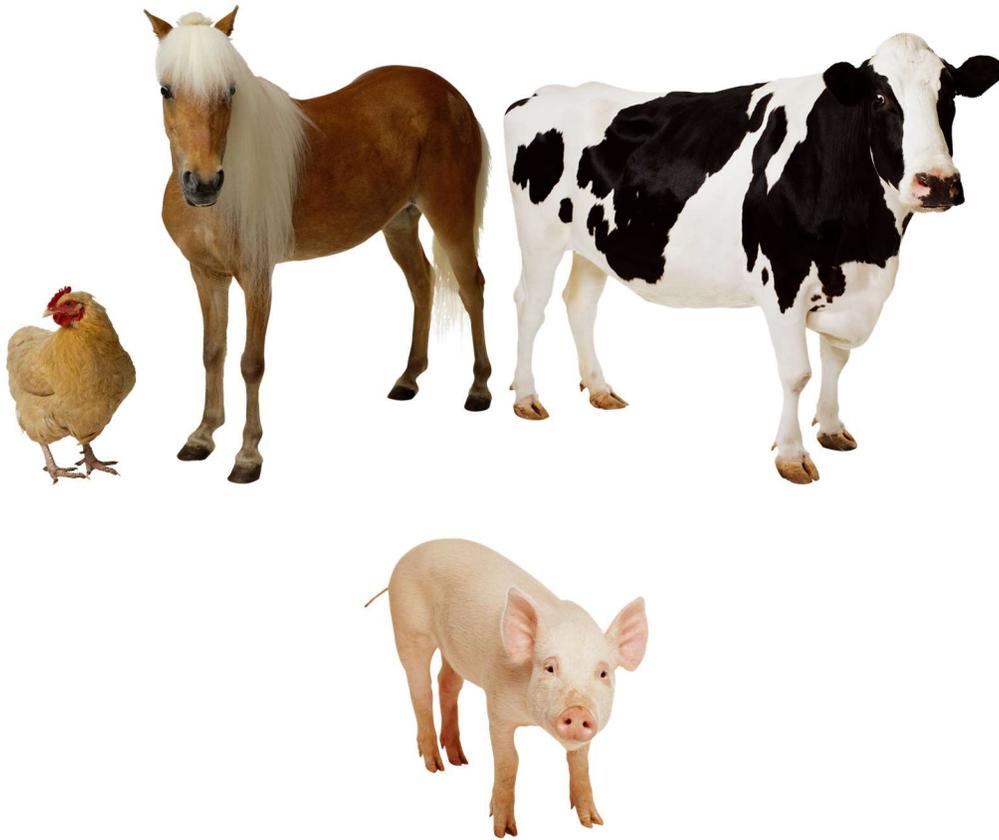




**University
of Manitoba**

**University of Manitoba
Faculty of Agricultural and Food Sciences
Department of Animal Science**



ANSC 2520 Anatomy and Physiology 2: Nutrient Utilization

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COURSE DETAILS

Course Title & Number:	ANSC 2520 Anatomy and Physiology 2: Nutrient Utilization
Number of Credit Hours:	3.0
Class Times & Days of Week:	10:30 AM – 11:20 AM Monday, Wednesday and Friday (Class) 2:30-5:25 PM Wednesday (Lab)
Location for classes/labs/tutorials:	Online for class ANIMAL SCIENCE BUILDING Rm: 142 (Lab) or online
Pre-Requisites:	Prerequisite: ANSC 2510 Co requisite: CHEM 2780 or MBIO 2780, or CHEM 2370 or MBIO 2370

Instructor Contact Information

Instructor(s) Name:	Dr. Chengbo Yang
Preferred Form of Address:	Chengbo
Office Location:	227 Animal Science Building
Office Hours or Availability:	Individual assistance is always available by appointment. I look forward to seeing you during office hours (virtual).
Office Phone No.	(204) 474-8188
Email:	<u>chengbo.yang@umanitoba.ca</u> Use the University of Manitoba email accounts for all communication, quote the number of the course to which your query is directed (e.g. ANSC 3510) to avoid ambiguity. In person communication is preferred. Telephone communication is welcome but do not leave voicemail messages. I will respond to e-mail within 24 h during the week (Mon to Fri). Do not expect detailed or lengthy e-mail responses. If your e-mail question(s) require such a response I may ask you to meet through Webex.
Contact:	You are welcome to contact us in person (virtual), by phone or email during the time outlined above.
TA:	Xiaoya Zhao, Email: zhaox1@myumanitoba.ca

Course Description

The digestion, absorption and utilization of nutrients by farmed species. Basic characteristics of the digestive system, aspects of regulation of feed intake and rates of passage, intermediary metabolism of nutrients, growth and development, health and other factors influencing nutrient utilization.

General Course Information

Read through the syllabus at the beginning of the semester to ensure that you understand how overall performance in this course will be assessed. Two term tests, laboratory exercises/assignments, a case study and presentation, and a final examination are the components of evaluation in this course. It is important to know at the onset, the percentage contribution and the due date of each component in order to avoid rushing at the last minute to complete the assignments.

Course Goals

1. This course provides students with a solid understanding of:
 - Major digestive systems in livestock
 - The digestion, absorption and utilization of nutrients in livestock
2. The course provides students with an opportunity to enhance their critical thinking skills, and oral and written communication skills through assignments
3. Students also learn basic concepts in feed intake regulation and nutrient metabolism
4. Students will develop problem-solving skills involved in the feeding of domesticated animals through case studies

Learning Outcomes

By the end of this course, students will be able to:

- Identify different digestive systems
- Define major chemical components and their functions in animal feeds and feed ingredients; and
- Describe how nutrients are digested, absorbed and utilized by animals.

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.

Recording Class Lectures

The instructor 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 permission of the instructor. Course materials (both paper and digital) are for the participant's private study and research.

Textbook, Readings, Materials

Required textbook – none required.

Recommended/ reference texts:

Cheeke, P.R. 2005. Applied Animal Nutrition (3rd edition), Pearson/ Prentice Hall Publishers

NRC, 1994. Nutrient Requirements of Poultry (9th edition), National Academies Press

NRC, 2001. Nutrient Requirements of Dairy Cattle (7th edition), National Academies Press

NRC, 2016. Nutrient Requirements of Beef Cattle (8th edition), National Academies Press

NRC, 2012. Nutrient Requirements of Swine (11th edition), National Academies Press

Leeson, S. and J. D. Summers. 2009. Commercial Poultry Nutrition (3rd edition), Nottingham University Press

Wu, G. 2018. Principles of Animal Nutrition, CRC Press.

All books can be found at the library of the University of Manitoba. I have several copies of these books in my office, and you can borrow them from me.

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. 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 student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it.

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/media/Electronic Communication with Students Policy - 2014_06_05.pdf](http://umanitoba.ca/admin/governance/media/Electronic_Communication_with_Students_Policy_-_2014_06_05.pdf)

Please note that all communication between us (you as a student and myself) 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.

Expectations: I Expect You To

- Attend class and be on time as much as you can and to ask for help.
- Adhere to university student academic and conduct guidelines.

- Complement the notes that I provide with your own notes that you take during lectures. The notes that I provide may be 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.
- Complete all assignments on time.
- 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.
- I will treat you with respect and would appreciate the same courtesy in return. See Respectful Work and Learning Environment Policy.

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.

You are reminded that:

- I. Group projects are subject to the rules of academic dishonesty;
- II. Group members must ensure that a group project adheres to the principles of academic integrity;
- III. Students should also be made aware of any specific instructions concerning study groups and individual assignments;
- IV. The limits of collaboration on assignments should be defined as explicitly as possible; and
- V. All work should be completed independently unless otherwise specified.

Students Accessibility Services

Student Accessibility Services

If you are a student with a disability, please contact SAS for 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* <http://umanitoba.ca/student/saa/accessibility/>

520 University Centre

204 474 7423 Student_accessibility@umanitoba.ca

Expectations: You Can Expect Me To

A large part of the course content is delivered in the form PowerPoint presentations that are made available through UMLearn ahead of classes.

Be respectful of your questions and make every reasonable effort to answer them.

Provide feedback on tests and assignments in a fair, equitable and prompt fashion.

I will be in class for 10 minutes prior to and after the class time to discuss any questions or comments you may have.

Unit 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 schedule should include dates and times of classes, including missed classes due to holidays or other commitments of the teacher. It also includes dates of assignments/quizzes/exams and alternate forms of assessments, date for voluntary withdrawal, and dates when students can expect to receive their assignment or test grades.

Class Schedule

Date (2021)	Lecture	Unit
Mon-Jan-18		<i>First day of classes for most faculties and schools.</i>
Mon-Jan-18	1	Introduction to the Course
Tue-Jan-19		
Wed-Jan-20	2	Nutrients-1
Thu-Jan-21		
Fri-Jan-22	3	Nutrients-2
Mon-Jan-25	4	Digestive systems and gastric mechanical functions-1
Tue- Jan-26		
Wed- Jan-27	5	Digestive systems and gastric mechanical functions-2
Thu- Jan-28		
Fri- Jan-29	6	Digestive tract epithelial tissue <i>Last date for refund for dropped Winter Term courses</i>
Mon- Feb-1	7	Ruminant digestion-1
Tue- Feb-2		
Wed- Feb-3	8	Ruminant digestion-2
Thu- Feb-4		
Fri- Feb-5	9	Monogastric digestion-1
Mon- Feb-8	10	Monogastric digestion-2
Tue- Feb-9		
Wed- Feb-10	11	Avian digestion
Thu- Feb-11		
Fri- Feb-12	12	Revision
Mon- Feb-15		<i>Louis Riel Day (University closed)</i>

Tue- Feb-16		Winter Term break: No classes or examinations
Wed- Feb-17		
Thu- Feb-18		
Fri- Feb-19		
Mon- Feb-22		TERM TEST ONE (Covers lectures 1-12 and all materials covered in tutorials and labs from January 18 to February 12, 2021)
Tue- Feb-23		
Wed- Feb-24	13	Protein-1
Thu- Feb-25		
Fri- Feb-26	14	Protein-2
Mon-Mar-1	15	Carbohydrates-1
Tue- Mar-2		
Wed- Mar-3	16	Carbohydrates-2
Thu- Mar-4		
Fri- Mar-5	17	Lipids-1
Mon- Mar-8	18	Lipids-2
Tue- Mar-9		
Wed- Mar-10	19	Lipids-3
Thu- Mar-11		
Fri- Mar-12	20	Fat soluble vitamins-1
Mon- Mar-15	21	Fat soluble vitamins-2
Tue- Mar-16		
Wed- Mar-17	22	Water soluble vitamins-1
Thu- Mar-18		
Fri- Mar-19	23	Water soluble vitamins-2
Mon- Mar-22		Mineral metabolism/Revision
Tue- Mar-23		
Wed- Mar-24	24	TERM TEST TWO
Thu- Mar-25		
Fri- Mar-26	25	Review Term Test 1 1. Student presentation
Mon- Mar-29	26	1. Student presentation 2. Student presentation
Tue- Mar-30		
Wed- Mar-31	27	Review Term Test 2 1. Student presentation Last date for Voluntary Withdrawal (VW)
Thu- Apr-1		
Fri- Apr-2	28	1. Student presentation 2. Student presentation
Mon- Apr-5	29	1. Student presentation 2. Student presentation
Tue- Apr-6		
Wed-Apr-7		1. Student presentation

		2. Student presentation
Thu- Apr-8		
Fri- Apr-9		1. Student presentation 2. Student presentation
Mon- Apr-12		1. Student presentation 2. Student presentation
Tue- Apr-13		
Wed-Apr-14		1. Student presentation 2. Student presentation
Thu- Apr-15		
Fri- Apr-16		Review
Apr 19 to May 1		<i>Final examination period. Students must remain available until all examination obligations have been fulfilled.</i>

Laboratory Expectations

I expect students to fully participate in laboratory and tutorial activities. Students are not required to have completed any safety training such as WHMIS because student participation is kept to a minimum/ observation only. Students will be expected to complete laboratory exercises during the lab period and submit them before leaving. There will not be any make-up exercises for missed labs.

Lab Schedule

Lab	Date (2020)	Topic
1	Wed-Jan-20	No lab
2	Wed-Jan-27	Digestive systems of livestock: a basic look video
3	Wed-Feb-3	No lab
4	Wed-Feb-10	Monogastric digestive system
6	Wed-Feb-24	No lab
7	Wed-Mar-3	Avian digestive system
8	Wed-Mar-10	No lab
9	Wed-Mar-17	Ruminant digestive system
10	Wed-Mar-24	No lab

11	Wed-Mar-31	Guest Speaker from Jefe Nutrition Inc. on feed additives such as enzymes
	Wed-April-7	No lab
11	Wed-Apr-14	No lab

Course Evaluation Methods

Each term test will comprise of multiple-choice questions (max 10 marks), short answer questions (max 15 marks) and long answers with calculations or applied animal nutrition focus (max 30 marks). Total marks for each term test is 50 marks.

The final examination will have the components described above but multiple-choice and some short answer questions will come from the last portion of the syllabus not tested in term test 1 and term test 2. Some of the short answer questions and most of the long answer type questions would come from the portions of the syllabus previously tested in the term test.

The format of the laboratory assignments will be dictated by the topics covered.

Due Date:	Assessment Tool	Value of Final Grade, %
As per Class schedule	Term test 1	20
As per Class schedule	Term test 2	20
As per Lab schedule	Lab assignments	15
As per Class schedule	Case study	10
TBA	Final examination	35

Grading

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	92-100	4.25-4.5	4.5
A	85-91.9	3.75-4.24	4.0
B+	78-84.9	3.25-3.74	3.5
B	70-77.9	2.75-3.24	3.0
C+	62-69.9	2.25-2.74	2.5
C	55-61.9	2.0-2.24	2.0
D	50-54.9	Less than 2.0	1.0
F	Less than 50		0

Referencing Style

Assignments should use the citation format adopted by the Canadian Journal of Animal Science:

<http://www.nrcresearchpress.com/page/cjas/authors>

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;

Examples of correct citations:

Following the overnight incubation, membranes were washed (6×10min) in 1×TBS with 0.1% Tween-20 and incubated at room temperature for 1 h with a secondary donkey anti-rabbit HRP-conjugated IgG (1:10 000 dilution in 6% skim milk powder, Promega) (Yang et al. 2016).

Gozho et al. (2005) used a threshold of a rumen pH depression between pH 5.2 and 5.6 for at least 3 h/day, and feed intake was only reduced and inflammation only occurred at equal or greater rumen pH depressions.

Studies by Gozho et al. (2007) and Khafipoor et al. (2006) showed that grain-induced SARA also increased SAA in lactating dairy cows (Table 1).

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.

Example of how references should be compiled at the end of your assignment (note bolding, spacing of initials, capitalization, and punctuation).

Assignment Grading Times

Students can expect to receive their graded assignments within one week of submission. Once graded, marks will be uploaded to UMLearn and students will have an opportunity to know the marks even before they pick up their assignments.

Criteria for grading assignments

There are three assignments in this course. Rubric for each assignment is on UM Learn course directory.

Assignment Extension and Late Submission Policy

Late submissions are discouraged and may not be accepted without valid reasons (such as a doctor’s note etc.). Even where such submissions are accepted, they will attract a 10% reduction in the final mark achieved. Electronic submissions will strictly be set such that the system would not accept submissions past the stipulated time (such as midnight).

University Support Office & Polices

Instructors shall provide to every student the information on university support offices and policies in [Schedule “A”](#) within the first week of classes, either through a paper copy and/or via the

university's student information system (i.e., Aurora, UM Learn, or such other university information system as may be approved by the university from time to time).

Schedule "A"

Section (a) sample re: A list of academic supports available to Students, such as the Academic Learning Centre, Libraries, and other supports as may be appropriate:

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.

Section (b) sample: re: A statement regarding mental health that includes referral information:

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 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

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>

Section (c) sample: re: A notice with respect to 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.

Section (d) sample: re: A statement directing the student 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) <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 to 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

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