UM | Faculty of Agricultural and Food Sciences

Syllabus

FOOD 4160: Food Analysis I

(Fall 2023)

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

Department of Food and Human Nutritional Sciences

University of Manitoba

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COURSE DETAILS

Course Title & Number:	FOOD 4160 Food Analysis I
Number of Credit Hours:	3
Class Times & Days of Week:	Tuesday, Thursday: 8.30 am – 9.45 am Lab Section B01: Wednesday 2.30 pm-5.25 pm Lab Section B02: Thursday 2.30 pm-5.25 pm
Location for classes/labs/tutorials:	Lectures: Agriculture Building Room 134 Labs: J.H. Ellis Building Lab 241
Pre-Requisites:	FOOD 2500: Food Chemistry

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Dr. Chamila Nimalaratne Instructor will respond to any civil form of address such as first name, last name or Dr. etc
Office Location:	J.H. Ellis Building room 244
Office Hours or Availability:	Available immediately after class (for quick questions and without prior arrangements; some exceptions might apply), AND by appointment for an in-person meeting (arrange a time by email)
Phone No.	204-474-6287 (Work); 780-966-1320 (Mobile)
Email:	Chamila.Nimalaratne@umanitoba.ca (preferred method of communication) All emails should contain FOOD 4160 at the start of the subject line, followed by student's given name, family name.
Contact:	Email is the preferred method of communication. All emails will be answered within 24-48 hours. For urgent reasons, you can contact by mobile phone.

Course Description

U of M Course Calendar Description

This course exposes students to the principles, methods, and techniques of qualitative and quantitative physical, chemical and biological analyses of foods. Major emphasis is placed on understanding the basic principles of classical and instrumental methods of analysis. Criteria for the choice of various analytical methods, methods for treating data and sampling techniques will be studied.

General Course Description

This course will provide the fundamental knowledge and hands-on experience on basic food analytical methods used to analyze basic components in different food matrixes. This course will provide the basic food analysis knowledge required by both food science and human nutrition undergraduate students.

Course Goals

1. Be familiar with the current state of knowledge on food composition
2. Describe the principles and practical importance of analytical techniques associated with proximate food analysis
3. Know methods of selecting appropriate analytical techniques when presented with a practical problem
4. Demonstrate practical proficiency and teamwork in a food analysis laboratory and effective communication of the laboratory results
5. Be able to use library and internet resources pertaining to food analysis

Course Learning Objectives

By the end of the course, students should:

1. Be familiar with the current state of knowledge on food composition
    - *Identify reasons for determining composition and characteristics of food*
    - *Locate and interpret data for food composition in scientifically sound sources*
    - *Describe the role of food analysis in relation to food standards and regulations*
    - *Apply statistical principles to evaluation of food*

2. Describe the principles and practical importance of analytical techniques associated with proximate food analysis
    - *Describe principles and relevant theory used to determine moisture, carbohydrate, lipid, proteins, and ash content of a food*

3. Know methods of selecting appropriate analytical techniques when presented with a practical problem
    - *Identify and prioritize factors to be considered when selecting a method of analysis*
    - *Independently research scientific information*
    - *Discuss the pros and cons of classical methods*

4. Demonstrate practical proficiency and teamwork in a food analysis laboratory and effective communication of the laboratory results
    - *Determine proximate analyses of food*
    - *Work effectively in groups*
    - *Apply appropriate statistical principles to evaluate analytical results*
    - *Write concise, organized laboratory reports that demonstrate proper data handling and interpretation*

5. Be able to use library and internet resources pertaining to food analysis
    - *Identify publications in which standard methods of food analyses and nutrient composition are found*

- *Select appropriate academic and professional journals in the field*
- *Use online library data bases to search and acquire articles*
- *Identify reliable internet sources*
- *Use correct referencing techniques*

Textbook, Readings, and Course Materials

Required textbook:

Food Analysis, 5th Edition. S. Suzanne Nielsen (ed.) 2017. Springer.

There is unlimited access to this book via UofM license agreement with Springer Publishing Co. It can be obtained at the following link: https://link-springer-com.uml.idm.oclc.org/book/10.1007%2F978-3-319-45776-5. Note that the link is also available through UM Learn, Reading materials

Supplementary readings:

Food Chemistry, 5th Edition. S. Damodaran (ed.) 2017. CRC Press, Taylor and Francis. Only Chapters 2,3,4 and 5.
This book is available through following link through libraries website.
https://search.lib.umanitoba.ca/discovery/fulldisplay?docid=cdi_askewsholts_vlebooks_9781482208139&context=PC&vid=01UMB_INST:UMB&lang=en&search_scope=MyInst_and_CI&adaptor=Primo%20Central&tab=Everything&query=any,contains,Food%20Chemistry%20Fenema&offset=0

Using Copyrighted Material

Please respect copyright. Copyrighted content used in this course is appropriately acknowledged and has been used in accordance with copyright laws and University guidelines. Copyrighted works, including those created by the instructor, 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.

Course Technology

The instructor's general policy is that students should refrain from any behaviour that may be distracting to other students. Accordingly, the use of cell phones for personal reasons or frivolous use of personal computer devices (e.g. not for following lecture slides posted to UM Learn) is not permitted. Such use of electronic accessories is invariably a distraction for other students at the very least and interferes with the effectiveness of the classroom learning environment in general.

Expectations: I Expect You To

- Attend classes and actively engage in questions and answer sessions
- Participate in **MANDATORY** lab sessions and prepare lab reports according to the guidelines
- Submit assignments as required
- Regularly check UMLearn for announcements and updates

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

Specific course requirements for academic integrity for individual and group work:

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 will work on assignments with provided lab data (for each group), but need to submit a individual lab reports.
IV. All work should be completed independently unless otherwise specified.

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 from Dr. Chamila Nimalaratne. Course materials (both paper and digital) are for the participant's private study and research only.

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

I will be available about 10 minutes prior to and after the class time to discuss any questions or comments you may have.
Also, I will respond to any email related to class within 24 hrs – 48 hrs.

CLASS SCHEDULE AND COURSE EVALUATION

The schedule provided below is subject to change at the discretion of the instructor but such changes are subject to Section 2.8 of the – ROASS- Procedure.

Overall Mark Allocation for Course (Note: Students can expect to have marks for 2 quizzes, 1 midterm exam, and 5 lab reports before the Voluntary Withdrawal date, November 21, 2023)

Midterm test		25%
10-15 min quizzes, 3@ 6%		18%
Lab Reports[a] (7@ ~ 3%*) *Refer to table below for precise % value		21%
Final Examination (all lecture sections, 3 hr)[b]		36%
	Total	100%

[a]Lab reports are due 2 weeks after laboratory session according to schedule and instructions below. Penalty for late submission is deduction of 10%/day of original mark. Refer to LAB SCHEDULE below for due dates.

[b]Final exam date will be set by the Registrar's Office.

Date	Class Content & Teaching Strategies	Required Readings or any Pre-class Preparation	Evaluation		
			Type of Assessment	Due Date	Value of Final Grade
	Major concepts to be covered				
Sep 07	Course Outline				
Sep 12	Food Analysis: Rationale & background	Chapter 1			
Sep 14	Government standards	Chapter 2			
Sep 19	Databases and methods	Chapter 3			
Sep 21	Statistics in Food Analysis - Class 1	Chapter 4			
Sep 26	Statistics in Food Analysis - Class 2	Chapter 4			
Sep 28	Scale of Analytical Measurement	Chapter 4			
Oct 03	Moisture Analysis – Introduction **(Quiz 1 during class)**	Chapter 15	Quiz 1	3rd Oct 2023	6.0%
Oct 05	Moisture Analysis - Methods 1	Chapter 15			
Oct 10	Moisture Analysis - Methods 1	Chapter 15			
Oct 12	Moisture Analysis - Methods 2	Chapter 15			
Oct 17	Ash Analysis	Chapter 16			
Oct 19	Lipid Analysis - Introduction	Chapter 17			

Oct 24	Lipid Analysis - Sample preparation & solvent consideration	Chapter 17			
Oct 26	Lipid Analysis - Proximate analysis for dry and dairy samples	Chapter 17			
Oct 31	Lipid Analysis – Extra revisions **(Quiz 2 during class)**		Quiz 2	31st Oct	6.0%
Nov 02	Protein Analysis - Introduction	Chapter 18			
Nov 07	**Class revisions for midterm**				
Nov 09	**Midterm test**		Midterm exam	9th Nov	25%
Nov 14	**Fall Term Break - No Classes**				
Nov 16	**Fall Term Break - No Classes**				
Nov 21	Protein Analysis - Methods - Class 1	Chapter 18			
Nov 26	Protein Analysis - Methods - Class 2	Chapter 18			
Nov 28	Carbohydrate Analysis - Introduction	Chapter 19			
Nov 30	Carbohydrate Analysis – Methods 1	Chapter 19			
Dec 05	Carbohydrate Analysis – Methods 2 **(Quiz 3 during class)**	Chapter 19	Quiz 3	5th Dec	6.0%
Dec 07	Review of past materials – final exam preparations		Final exam	To be Decided [a]	36.0%
			Lab Reports	See the lab schedule	21.0%
			Total		**100%**

[a]Final exam date will be set by the Registrar's Office.

Important Information about Evaluation Procedures

- There are no makeup quizzes, if absent for a quiz without a proper physician note or substantiated and compelling personal matter documented in writing, the quiz mark = 0. If a valid excuse is provided, the value of the quiz mark to be added to the next following term test or final exam.
- If a student is absent for a term test and provides a proper physician note or written explanation of a substantiated and compelling personal matter, a makeup test will be scheduled as soon as possible. Otherwise, a term test mark of 0 will be applied.
- If you are a student with a disability, please contact Student Accessibility Services (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, phone: 204-474 7423, email: Student_accessibility@umanitoba.ca

Lab Expectations

Any communication related to the lab section of the course have to be primarily directed to the lab TA. If you need further clarifications on the lab section you can reach me using my email (preferred method of communication - Chamila.Nimalaratne@umanitoba.ca)

Lab Schedule (tentative)

Date	Lab Content & Teaching Strategies	Required Readings or Pre-Class Preparations	Evaluation		
			Type of Assessment	Due Date	Value of Final Grade
B01 - Sep 13 **B02 – Sep 14**	Lab #1 Assessment of lab accuracy and precision. includes safety review and chemistry essentials	Lab Manual Chapters 1, 2, 3, 4	Lab Report	B01 - Sep 28 B02 – Sep 29	3.4%
B01 – Sep 20 **B02 – Sep 21**	Lab #2 Moisture determination of ground-beef	Lab Manual Chapter 5	Lab Report	B01 - Oct 05 B02 – Oct 06	2.7%
B01 – Sep 27 **B02 – Sep 28**	No labs				
B01 – Oct 04 **B02 – Oct 05**	Lab #3 Crude fat in ground beef by Soxhlet method In-person demonstration of Soxhlet extraction Lab tour – Ovens, pipettes etc	Lab Manual Chapter 6	Lab Report	B01 - Oct 19 B02 – Oct 20	3.0%
B01 – Oct 11 **B02 – Oct 12**	Lab #4 Protein determination of ground beef by Kjeldahl method In-person demonstrations of Kjeldahl method	Lab Manual Chapter 7	Lab Report -	B01 - Oct 26 B02 – Oct 27	2.7%
B01 – Oct 18 **B02 – Oct 19**	Lab #5 Total carbohydrate determination in a beverage product In-person demonstration of Phenol-Sulfuric method, use of cuvettes etc.	Lab Manual Chapter 8	Lab Report	B01 - Nov 02 B02 - Nov 03	3.2%
B01 – Oct 25 **B02 – Oct 26**	Lab #6 Glucose content by enzymatic method	Lab Manual Chapter 9	Lab Report	B01 - Nov 09 B02 - Nov 10	3.2%
Week of Oct 30–Nov 03	Lab #7 Nutritional labeling: Genesis R & D software	Lab Manual Chapter 10	Lab Report	B01 - Nov 16 B02 - Nov 17	2.7%

Schedule to be posted later					
					~21.0%

LABORATORY EXPECTATIONS

- The overall goal is to give students practical experience in the analysis of proximate components in foods, and for students to learn to effectively work in groups. The labs for this course are group projects that require students to attend the labs they are registered for. There will be a total of 21% of the final grade given for labs. **Students must pass the lab component with minimum 60% of lab marks to pass the course.** Failure to reach this standard will result in assignment of "F" grade. The lab manual is available on UMLearn.
- **Lab attendance is mandatory** (there are no makeup labs). 100% of mark allocated to a lab will be deducted if absent without a physician note or documentation of a compelling personal matter.
- For labs, students will work in groups as assigned, but each student will submit his/her own report. Any evidence of plagiarism in lab reports (e.g. whether from another lab partner, or group, or lab report from previous courses) will result in "0" mark and matter will be subject to disciplinary action in accordance with university policy on academic misconduct.

Grading

Letter Grade	Percentage out of 100	Final Grade Point
A+	90-100	4.5
A	80-89.9	4.0
B+	75-79.9	3.5
B	70-74.9	3.0
C+	65-69.9	2.5
C	60-64.9	2.0
D	50-59.9	1.0
F	Less than 50	0

Voluntary Withdrawal

The last day to drop the class and receive 100% refund is 19th September 2023. And the last day to withdraw with no refund (voluntary withdrawal) is 21st November 2023. Students who did not drop the course by the 21st of November 2023 deadline would be assigned a final grade. However, withdrawal of courses will be recorded on official transcript. Please refer to the Registrar's Office web page for more information.

ASSIGNMENT DESCRIPTIONS / FEEDBACK / RUBRICS

- Lab reports are to be submitted to the relevant folder on UMLearn course page and will be marked using the rubric provided below. For each lab, students will be able to access their marks on UM Learn for each part of the rubric, usually after 1 week from the report submission due date.

Assignment Extension and Late Submission Policy

Lab reports are generally due 2 weeks after laboratory session according to schedule and instructions. Penalty for late submission is deduction of 10%/day of original mark. Refer to LAB SCHEDULE for due dates.

FOOD 4160 Lab Marking Summary (basic lab with no questions = 15 points)

Lab Report Section	Criteria
Introduction (3.0 pts)	Importance of lab with respect to both food analysis and the food industry is discussed (1.0 pts). Objectives of practical work are clearly stated (0.5 pts). Relevant theory or background (Lab#7) is clearly summarized (1.5 pts).
Materials and Methods (0.5 pts)	Do not copy information that is already in lab manual. All reagents, procedures, sampling techniques, etc., used are stated by correct reference to lab manual (include citation and reference). Do indicate changes or modifications made, if any.
Results (2.5 pts)	All data presented with proper units and precision (1.0 pts) Sample of each calculation is given (0.5 pts) Tables and figures have appropriate titles. Tables and figures and should be self-explanatory even if standing alone (0.5 pts) Statistical analysis is presented where appropriate (0.5 pts)
Discussion (3.0 pts)	Results are restated with reference to appropriate tables and figures (0.5 pts). Results are concisely and completely interpreted and related to the objectives of the lab (1.5 pts). Possible sources of error are discussed (0.5 pts). Results are compared to values found in scientific literature (0.5 pts).
Summary and Conclusions (1.5 pts)	Under the heading “Summary”, the most pertinent results are concisely summarized – bullet form is recommended (0.5 pts). Conclusions stated relate to the main objectives of the lab (1.0 pts). No new information is introduced.
References (1.0 pts)	In-text citations are included and referencing style is correctly and consistently used (0.5 pts). The lab manual and a minimum of two additional sources are cited (peer-reviewed journals and textbooks are acceptable) (0.5 pts).
Presentation and Formatting (3.5 pts)	Title page present including the following: Lab title and number, course name and number, date, student name and number, group number and lab partner(s) name(s) (0.25 pts). Generally free of errors in spelling and grammar (1.0 pts). Text is easy to understand with logical flow (1.0 pts). Tables and figures are formatted correctly, and style is consistent (1.25 pts).
Questions (variable)	Lab #1: Q1-Q3 = 1 point each, Q4 = 0.5 pts Lab #3: Q1 = 0.5 point, Q2 = 1.0 pts Lab #5: Q1, Q2 = 1 point each, Q3 = 0.5 pts Lab #6: Q1, Q2 = 1 point each, Q3 = 0.5 pts

Detailed Laboratory Rubric

Criteria	Level 5	Level 4	Level 3	Level 2	Level 1
Introduction (3.0 pts)					
Objectives of practical work are clearly stated. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Importance of lab with respect to both food analysis and the food industry is discussed. (1.0 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Relevant theory is clearly outlined. (1.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Materials and Methods (0.5 pts)					
All reagents, procedures, sampling techniques, etc., used in the lab are stated. However, do not copy information that is already in the lab manual; give references and indicate changes or modifications made, if any. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Results (2.5 pts)					
All data is precisely presented with proper units and precision. (1.0 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.

A sample of each calculation is given. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Tables and figures are given appropriate titles. Tables and figures should be self-explanatory even if standing alone. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Statistical analysis is present where appropriate. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Discussion (3.0 pts)					
Results are restated with reference to appropriate tables and figures. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Results are concisely and completely interpreted and related to the objectives of the lab. (1.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Possible sources of error are discussed. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Results are compared to values found in scientific literature. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Summary and Conclusions (1.5 pts)					

The most pertinent results are summarized concisely. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Conclusions stated which relate to the main objectives of the lab. (1.0 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
No new information is introduced. ie. Do not add any new information in this section (potential loss of marks)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
References (1.0 pts)					
In-text citations and referencing style are correctly implemented. (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
The lab manual and a minimum of two additional sources are cited (peer-reviewed journals and textbooks are acceptable). (0.5 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Presentation and Formatting (3.5 pts)					
Title page present including the following: Lab title and number, course name and number, date, student name and number, group number and lab partner(s) name(s). (0.25 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.

Generally free of errors in spelling and grammar. (1.0 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Text is easy to understand with logical flow. (1.0 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.
Tables and figures are formatted correctly, and style is consistent. (1.25 pts)	Excellent: All aspects of criteria are clearly met.	Good: Expectations are nearly met with minor elements missing.	Satisfactory: Some aspects not present or unclear.	Insufficient: Below expectations.	Not present: Criteria are not met.

Examples of Properly Prepared Table and Figures.

Table 1. Physical and compositional characteristics of selected wheat samples.

Data type	Sample set	Particle size index (%)	Wheat ash (%)	Wheat protein (%)	Wheat total pentosan (%)
Mean	2011S1	60.6	1.38	12.5	4.64
	2011S2	58.7	1.45	12.2	4.51
	2011All	59.7	1.41	12.3	4.58
	2012	54.9	1.44	13.1	4.46
Range	2011S1	56.1-65.1	1.21-1.64	11.3-14.4	4.03-5.31
	2011S2	50.2-62.9	1.26-1.60	11.1-13.0	4.08-5.02
	2011All	50.2-65.1	1.21-1.64	11.1-14.4	4.03-5.31
	2012	47.6-61.8	1.22-1.72	12.0-15.1	3.84-5.56
Relative standard deviation	2011S1	4.37	8.61	6.51	8.56
	2011S2	5.54	7.45	4.76	6.45
	2011All	5.15	8.21	5.78	7.59
	2012	4.36	7.09	4.98	8.08

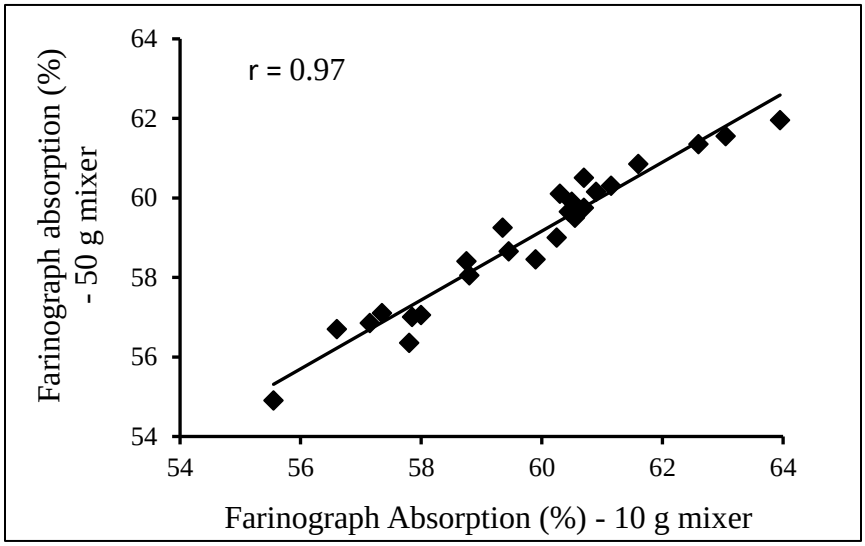

Figure 1. Relationship between farinograph absorption determined using 50 and 10 g mixing bowls.

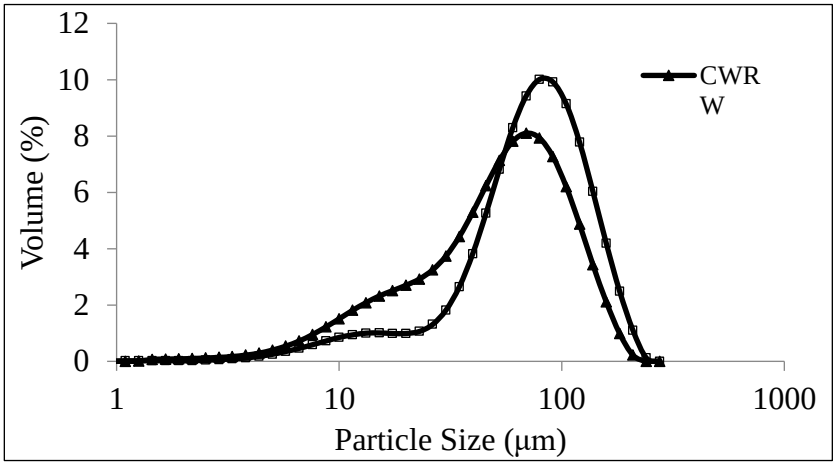

Figure 2. Average flour particle size distribution by laser diffraction of commercial Canada Western Red Winter (CWRW) wheats and Canada Western Red Spring (CWRS) wheats.

Referencing Style

Assignments should use the APA reference style as outlined in the text: American Psychological Association. (2009). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.

Please see a reference document here.

UNIVERSITY SUPPORT OFFICES & POLICIES
UM Learner Supports

Below you will find a select list of important supports for learners at the UM, both academic supports and otherwise. For a complete listing of all learner supports at the University of Manitoba, visit the Student Supports website (https://umanitoba.ca/student-supports).

Academic Advising

Contact an Academic Advisor (https://umanitoba.ca/student-supports/academic-supports/academic-advising) for support with degree planning and questions about your academic program and regulations.

Academic Learning Centre (ALC)

The Academic Learning Centre (https://umanitoba.ca/student-supports/academic-supports/academic-learning) offers one-to-one tutoring, groups study sessions and workshops, as well as video and tip-sheet resources to help you throughout your academic program. All Academic Learning Centre programing, supports, and services are free for UM students.

Make an appointment for **free one-to-one tutoring** (https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study#individual-tutoring). **Content tutors** (over 90 UM courses) can help you understand concepts and learn problem-solving strategies. **Study skills tutors** can help you improve your skills such as time management and goal setting, reading and note-taking, as well as learning and test-taking strategies. **Writing tutors** can give you feedback on your academic writing, whether you are just getting started on a written assignment or already have a draft. **English as an Additional Language** specialist, Antoanela Denchuk, is available for one-to-one tutoring to help you improve your English-language academic writing skills. Use the drop-down menu, read the tutor biographies, and make an appointment for tutoring on the Academic Learning Centre schedule (https://manitoba.mywconline.com/).

Attend **Supplemental Instruction (SI)** (https://umanitoba.ca/student-supports/academic-supports/academic-learning/tutoring-group-study) sessions in historically difficult courses (including Chemistry, Engineering, and Computer Science). These free weekly review sessions are facilitated by a peer mentor who has previously taken the course and provide an

opportunity to discuss course content, ask questions, compare notes, solve practice problems, and develop study strategies. See online for a list of SI courses and meeting times.

Register for an **Academic Success Workshop** (https://umanitoba.ca/student-supports/academic-supports/academic-learning/academic-success-workshops), where you can learn strategies to improve your writing and studying. More information on topics, dates, and registration, are found online.

Register for **Faculty of Graduate Studies *Grad Steps* Workshops** (https://umanitoba.ca/graduate-studies/student-experience/graduate-student-workshops). These workshops are specifically designed for students working towards **Master's degrees or PhDs.** More information on topics, dates, and registration can be found online.

Access the Academic Learning Centre's collection of **videos and tip sheets** (https://umanitoba.ca/student-supports/academic-supports/academic-learning#tip-sheets-for-writing-and-study-skills) to help you with many of the academic tasks you'll encounter in university.

Contact the Academic Learning Centre by calling 204-480-1481 or emailing academic_learning@umanitoba.ca. Bannatyne students can contact the Bannatyne Student Services office at 204-272-3190.

Basic Needs

It can be difficult to learn and succeed in courses when you are struggling to meet your or your family's basic needs. Several UM and community resources are listed below if you would benefit from support with regards to housing, food, finances, and/or childcare:

- *Housing*
  - UM Housing (https://umanitoba.ca/housing)
  - Winnipeg Rental Network (https://www.winnipegrentnet.ca/)
  - Manitoba Residential Tenancies Branch (https://www.gov.mb.ca/cca/rtb/)
  - HOPE End Homelessness Winnipeg Services & Supports (https://umanitoba.ca/housing)
- *Food*
  - U of M Food Bank (https://umanitoba.ca/financial-aid-and-awards/u-m-food-bank)
  - Food Matters Manitoba (https://foodmattersmanitoba.ca/find-emergency-food-in-winnipeg/)
- *Finances*
  - UM Financial Aid and Awards (https://umanitoba.ca/financial-aid-and-awards)
  - Manitoba Student Aid (https://www.edu.gov.mb.ca/msa/)
- *Child Care*
  - UM Child Care (https://umanitoba.ca/about-um/child-care)
  - Manitoba Child Care Subsidy (https://bit.ly/3yG3ijy)
  - Manitoba Child Care Association (https://mccahouse.org/looking-for-child-care/)

English Language Centre

The English Language Centre (ELC) (https://umanitoba.ca/english-language-centre) provides courses, tests, accommodations and individual support to students whose first language is not English in order to support academic success and participation in the University of Manitoba community.

Health and Wellness

Physical, mental, emotional, and spiritual health and wellness play a critical role in student success. See all of UM's resource on their Health and Wellness (https://umanitoba.ca/student-supports/student-health-and-wellness) website, and make note of several specific UM and community supports listed below.

Winnipeg Urgent Physical and Mental Health Care

If you are an adult experiencing a mental health or psychosocial crisis, contact the Klinic Community Health (https://klinic.mb.ca/crisis-support/) 24/7 crisis line at 204-786-8686, visit the Crisis Response Centre (https://sharedhealthmb.ca/services/mental-health/crisis-response-centre/) located at 817 Bannatyne Avenue, or contact the Mobile Crisis Service at 204-940-1781.

To speak with a nurse for guidance on what health-care path to take for the issue you are facing or for general information about health resources available in Manitoba, contact Health Links (https://misericordia.mb.ca/programs/phcc/health-links-info-sante/) at 1-888-315-9257 (toll free).

If you need urgent medical care, visit the Winnipeg Regional Health Authority's Emergency Department & Urgent Care Wait Times webpage (https://wrha.mb.ca/wait-times/) for a list of locations and current wait times.

Student Counselling Centre (SCC)

The Student Counselling Centre (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc) provides free counselling and mental health support to UM, English Language Centre, and International College of Manitoba (ICM) students. We are open year-round, Monday through Friday from 8:30 am to 4:30 pm. Our commitment is to offer a support service to every student who contacts us.

Visit the SCC's For Urgent Help (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) webpage or the urgent care resources listed above if you require immediate support.

Visit the SCC's Our Services (https://umanitoba.ca/student-supports/student-health-and-wellness/student-counselling-centre-scc#for-urgent-help) webpage for more information on accessing a variety of services including individual counselling, counselling workshops and groups, support resources, and learning disability assessment services.

The SCC is located is located at 474 UMSU University Centre (Fort Garry Campus).

Health and Wellness Office

Students often juggle multiple demands, and we recognize that it can be difficult to find balance. For any changes you want to make to your health and wellness, the Health and Wellness Office at the University of Manitoba would like to support you in your journey. We are here to help you take control of your own health and make your own decisions. We are a judgment-free space and we avoid labels whenever possible. For more information, please visit the Health and Wellness Office (https://umanitoba.ca/student-supports/health-wellness) website.

Spiritual Care and Multifaith Centre

Spiritual care services are available to all, whether you identify as spiritual, atheist, religious or agnostic. Spiritual Services (https://umanitoba.ca/student-supports/spiritual-services) also offer specific denominational support for certain religious groups and by Indigenous Elders-in-Residence.

Student Support Case Management (SSCM)

Contact the Student Support Case Management team (https://umanitoba.ca/student-supports/academic-supports/student-advocacy/case-management) 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.

University Health Service (UHS)

The University Health Service (https://umanitoba.ca/student-supports/health-wellness/university-health-service) offers a full range of medical services to students, including psychiatric consultation, via two health clinics:

- Fort Garry Campus: (204) 474-8411, ACW-Lot temporary trailer (behind the Isbister building)
- Bannatyne Campus: (204) 474-8411, P309 – Pathology Building

Student Services at Bannatyne Campus

Student Services at Bannatyne Campus (SSBC) offers a full range of mental health supports to students and residents in the Rady Faculty of Health Sciences, along with other academic and

personal supports. Visit the SSBC website (https://umanitoba.ca/student-supports/student-services-bannatyne-campus) for a list of services available.

Indigenous Students

Staff, faculty and Elders are well-equipped to ensure your university experience is as beneficial, accessible, and successful as possible. Visit the Indigenous Student Experience (https://umanitoba.ca/indigenous/student-experience) website for more information on the supports and services available.

International Students

The transition to a new country and a new academic system can be both exciting and overwhelming. The International Centre (IC) is here to help you settle into life at University of Manitoba. Visit the International Students website (https://umanitoba.ca/current-students/international) for more information.

Sexual Violence Support and Education

Sexual violence affects people of all ages, sexual orientations, genders, gender identities, abilities and relationship statuses. At the U of M, we are committed to ensuring a respectful work and learning environment for all. We want to build a safe and inclusive campus community where survivors of sexual violence know they can receive the supports they need to succeed, both academically and personally.

The Sexual Violence Resource Centre (https://umanitoba.ca/sexual-violence), located at 537 UMSU University Centre (Fort Garry campus) provides support, resources, information and referral services for any student, faculty or staff member who has been affected by sexual violence.

Student Accessibility Services (SAS)

The University of Manitoba is committed to providing an accessible academic community. Student Accessibility Services (https://umanitoba.ca/student-supports/accessibility) 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 health, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation. SAS is located at 520 University Centre (Fort Garry Campus).

Student Advocacy

Student Advocacy (https://umanitoba.ca/student-supports/academic-supports/student-advocacy) is a safe place for students. We help you navigate university processes and advocate for your rights as a student at UM. If anything in your personal or academic life is affecting your studies, contact our confidential intake assistant by phone (204-474-7423) or email (stadv@umanitoba.ca).

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 (http://bit.ly/WcEbA1) can be found by subject.

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 UM Libraries and Departments (https://libguides.lib.umanitoba.ca/c.php?g=298526) webpage. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the University of Manitoba Libraries' homepage (https://umanitoba.ca/libraries/)