



NUTR*3210 Fundamentals of Nutrition

Winter 2023

Section(s): DE01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.50

Version 1.00 - January 12, 2023

1 Course Details

1.1 Calendar Description

This is the foundation course for the study of nutrition. The occurrence, uptake and metabolic role of nutrients will be discussed in relation to growth, reproduction and longevity in human subjects, domestic animals and other species.

Pre-Requisites: BIOC*2580

1.2 Timetable

All course activities will occur online

1.3 Final Exam

TBA

2 Instructional Support

2.1 Instructional Support Team

Instructor: Justine Keathley PhD, RD
Email: jkeathle@uoguelph.ca
Telephone: 519-824-4120 ext 56751
Office Hours: Mondays, 1-2pm via Zoom

2.2 Teaching Assistants

Teaching Assistant (GTA): TBA TBA

3 Learning Resources

3.1 Required Resources

CourseLink (Website)

CourseLink (powered by D2L's Brightspace) is the course website and will act as your classroom. It is recommended that you log in to your course website every day to check for announcements, access course materials, and review the weekly schedule and assignment requirements. <https://courselink.uoguelph.ca/shared/login/login.html>

Ares (Readings)

For this course, you will be required to access course reserve materials through the University of Guelph McLaughlin Library. To access these items, select Ares on the navbar in CourseLink. Note that you will need your Central Login ID and password in order to access items on reserve. For further instructions on accessing reserve resources, visit [How to Get Course Reserve Materials](#).

4 Learning Outcomes

In this course, you will be exploring the foundations, or building blocks, of nutrition. You will have the opportunity to explore how macronutrients (carbohydrates, lipids, and proteins) and micronutrients (vitamins and minerals) are involved in a diverse array of biological roles, particularly in humans. By the end of this course, you will have developed a strong understanding how what we eat truly determines (or at least influences) what we are. We hope this course will encourage your interest in one of the most important determinants of health and disease. In the words of Hippocrates, "Let food be thy medicine and medicine be thy food."

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Identify and describe the compounds and elements of nutritional importance, primarily to human beings, as related to digestion, absorption, metabolism, and physiological processes
 2. Discuss relevant nutritional methodologies, including proximate analysis, digestibility, determination of protein quality and nitrogen balance, basal metabolic rate and calorimetry
 3. Apply the scientific method to the critical evaluation and management of nutritional information from a variety of sources
 4. Formulate critical solutions to nutrition-related problems that are accurate, clear, and audience-appropriate
 5. Improve scientific literacy through the exploration of nutrition-related case studies
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5 Teaching and Learning Activities

Course Structure:

This course examines the foundations of nutrition. Topics examined in this course include: food composition, digestive systems, energy, metabolism, macronutrients, and micronutrients.

This course consists of 12 units:

- Unit 01: Introduction
- Unit 02: Food/Feed Composition Analysis & Digestive Systems
- Unit 03: Energy
- Unit 04: Review of Intermediary Metabolism
- Unit 05: Carbohydrate Digestion, Metabolism, and Impact on Health
- Unit 06: Lipid Classification, Digestion, Metabolism, and Impact on Health
- Unit 07: Protein Classification, Digestion, Metabolism, and Impact on Health
- Unit 08: Metabolic Integration
- Unit 09: Micronutrients I
- Unit 10: Micronutrients II
- Unit 11: Micronutrients III
- Unit 12: Micronutrients IV

Unit 01 will introduce you to the history of nutritional sciences, the major nutrient classes, and nutrient intake recommendations. Unit 02 will describe how food (or animal feed) is analyzed and digested. Unit 03 will explain the energy content of food, and how this can be measured. Unit 04 will provide a review of intermediary metabolism, in which nutritional compounds are converted to cellular material. Units 05, 06, and 07 will describe the three macronutrients, carbohydrates, lipids, and proteins respectively, and how each is digested, metabolized, and impacts health. Unit 08 will integrate all of the macronutrients and look at how metabolism changes under different physiological conditions. Units 09 through 12 will explore vitamins and minerals that impact health, and will consider these according to physiological functions including binding to type II steroid hormone receptors, and functioning as antioxidants or enzyme cofactors.

What to Expect for Each Unit:

There is no assigned textbook for this course. Instead, the following learning resources are provided:

- Online course notes: The online material for each unit is extremely comprehensive and provides the primary resource for learning. It is essential that you carefully review the online material for each unit every week.

- Case studies: Units 04 and 07 have associated case studies that are also accompanied by several questions and solutions. The primary purpose of the case studies is to serve as a model for the case study assignment, which you will begin in Week 9. Please note that you will not be tested on the content related to the clinical conditions presented in the two cases (glycogen storage disease in case study Unit 04, and urea cycle defect in case study Unit 07).
- Videos: Units 09, 10, and 11 include videos that describe complex topics presented in the online material, and should be watched at the appropriate point in the unit.
- Supplementary Readings: A series of supplementary readings taken from Nutrition Action, a popular nutrition magazine, are included for each unit. Nutrition Action includes articles on current topics in nutrition that are derived from academic publications and expert contributors. These readings are voluntary, and you will not be examined on their content. You can access these through Ares.

You should begin every unit by reading the unit outcomes. The outcomes will help guide your efforts as you work your way through the unit. Next, read through the online materials. Reading the online materials should comprise the primary learning activity for each unit.

The final activity for Units 04 and 07 should be the case study. Read through the case study and questions and solutions provided; these materials will later be used as models for the case study assignment to be submitted in Week 12.

One recurring feature in the online course notes will be the “Did You Know” boxes. They present interesting facts related to the unit topics. The information presented there is equally important to the other content presented in the notes.

5.1 Week One

Readings:

Course Website: Unit 01

Ares What’s the catch? Why the latest study is rarely the final answer? Non-trivial pursuit. Using case studies to teach science

Activities:

Familiarize yourself with the course website by selecting Start Here on the navbar.

Review Outline and Assessments on the course website to learn about course expectations, assessments, and due dates.

Confirm your access to the course reserve materials by selecting Ares on the navbar.

Review Unit 01 online course notes and videos (You can access videos by selecting the

Supplementary Materials link in the navbar)

Complete the Practice Test using Respondus through the Quizzes tool

Assessments

Participate in the Introductions Discussion (ALL students)

Participate in the Unit 01 Discussion (Students with last names A-M)

5.2 Week Two

Readings:

Course website: Unit 02

Ares: Gut myths: Clearing up confusion in the GI tract

Activities:

Review Unit 02 online course notes and videos

Assessments:

Participate in the Unit 02 Discussion (Students with last names N-Z)

5.3 Week Three

Readings:

Course website: Unit 03

Ares: Label Makeover

Activities:

Review Unit 03 online course notes and videos

Assessments:

Participate in the Unit 03 Discussion (Students with last names A-M)

Take Quiz #1

5.4 Week Four

Readings:

Course website: Unit 04

Ares: The Changing Canadian Diet

Activities:

Review Unit 04 online course notes and videos

Review Unit 04 Case Study: Glycogen Case – Baby Chloe

Assessments:

Participate in the Unit 04 Discussion (Students with last names N-Z)

5.5 Week Five

Readings:

Course website: Unit 05

Ares: Carb loading: Do you overdo refined grains?

Activities:

Review Unit 05 online course notes and videos

Assessments:

Participate in the Unit 05 Discussion (Students with last names A-M)

5.6 Week Six

Readings:

Course website: Unit 06

Ares: Fat under fire

Activities:

Review Unit 06 online course notes and videos

Take Practice Test using Respondus LockDown Browser and Monitor (if you haven't taken before)

Assessments:

Participate in the Unit 06 Discussion (Students with last names N-Z)

Take Online Midterm Exam using Respondus LockDown Browser and Monitor

5.7 Week Seven

Readings:

Course website: Unit 07

Ares: Protein: Is more better?

Activities:

Review Unit 07 online course notes and videos

Review Unit 07 Case Study: Protein Case – Timothy

Assessments:

Participate in the Unit 07 Discussion (Students with last names A-M)

5.8 Week Eight

Readings:

Course website: Unit 08

Ares: Glimmers of Light – New Clues to Weight Gain and Loss

Activities:

Review Unit 08 online course notes and videos

Assessments:

Participate in the Unit 08 Discussion (Students with last names N-Z)

Begin work on Group Case Study Assignment Submit Group Contract (via Dropbox)

5.9 Week Nine

Readings:

Course website: Unit 09

Ares: Breaking bad

Activities:

Review the description of micronutrients in Unit 01 prior to starting Unit 09

Review Unit 09 online course notes and videos

Assessments:

Participate in the Unit 09 Discussion (Students with last names A-M)

Continue working on Group Case Study Assignment

Take Quiz #2

5.10 Week Ten

Readings:

Course website: Unit 10

Ares: Antioxidants (Mostly) Disappoint

Does taking vitamin C protect you from colds?

Activities:

Review Unit 10 online course notes and videos

Assessments:

Participate in the Unit 10 Discussion (Students with last names N-Z)

Continue working on Group Case Study Assignment

5.11 Week Eleven

Readings:

Course website: Unit 11

Ares: The need for B12 as we get older

Is the folic acid in vitamins too much for you?

Activities:

Review Unit 11 online course notes and videos

Assessments:

Participate in the Unit 11 Discussion (Students with last names A-M)

Submit Group Case Study Assignment

5.12 Week Twelve

Readings:

Course website: Unit 12

Ares: Iron and diabetes

Activities:

Review Unit 12 online course notes and videos

Assessments:

Participate in the Unit 12 Discussion (Students with last names N-Z)

Submit Peer Evaluation via PEAR tool (Group Case Study Assignment)

6 Assessments

6.1 Assessment Details

Quizzes (10%)

Date: Weeks 3 and 9, Quizzes Tool on Courouselink

Learning Outcome: 1, 2, 3, 4

There will be two (2) multiple-choice quizzes throughout the course. Each quiz will consist of 20 multiple-choice questions that are focused on the content of the unit readings. Each quiz is worth 5% of your final course grade. The questions themselves will require you to have a firm understanding of the concepts and their application. In total, the quizzes will account for 10% of your final grade.

The content of the quizzes will be as follows:

Quiz 1: Units 01, 02, and 03

Quiz 2: Units 06, 07, and 08

You will only have one attempt for each quiz and this one attempt will be automatically timed by the CourseLink system. You will have 30 minutes to complete the quiz. The quizzes will open at 12:00 am ET on Friday and close at 11:59 pm ET on Sunday of the week when the quiz is assigned.

You can access the quizzes by selecting Quizzes from the Tools dropdown menu. The quizzes will require the use of Respondus Lockdown Browser and Monitor.

Discussion Assignment (5%)

Date: Throughout the Semester, Discussion Tool on Courselink

Learning Outcome: 1, 2, 3, 4, 5

The purpose of this assignment is to encourage you to engage in discussion with your peers and instructor on the topics covered in class.

You are required to post in six units (either an original post or a reply), so in total, you will make six posts which will be distributed across the 12 units of the course. If your last name starts with the letter A through M, you are expected to make a post in the Discussion forum for Units 1, 3, 5, 7, 9, and 11. If your name starts with the letter N through Z, you are expected to make a post in the Discussion forum for Units 2, 4, 6, 8, 10 and 12.

Each post should be a minimum of 75 words and should contribute to the discussion in a meaningful way. For example, original postings should encourage critical discussion or problem-solving, or attempt to clarify a misconception related to the unit content, while replies should present a critical and thoughtful response to the original threads.

Two of the six posts for each student will be randomly selected for grading (2.5% each).

You will be graded on your participation and on the quality of your posts, and will receive your grade at the end of the semester. Should you fail to make a post in either of your randomly assigned units, you will receive a grade of 0/2.5 for that post, even if you have made posts in other units. Students will not be informed in which units their posts will be graded, for obvious reasons. Remember that you are expected to make posts of sufficient length and critical quality in each unit; if you do this, you should receive full marks on this assignment. This assignment is meant to be an opportunity for you to be engaged in the course, and the instructor will be very active in these discussion boards to encourage your participation. In total, the discussion assignments will account for 5% of your final grade.

To access the discussion, select Discussions from the Tools dropdown menu, locate the Unit Discussions and then select the unit you would like to contribute to.

Group Case Study (10%)

Date: Week 11, Dropbox and PEAR Tools on Courselink

Learning Outcome: 3, 4, 5

In this assignment, you will develop a novel case study with associated learning outcomes and directed questions and answers that relates to one of the units from Units 02 to 09 in this course. This assignment will consist of five parts:

1. Your group will work together to identify learning outcomes that are uniquely oriented to the novel case study that you will develop.
2. Your group is asked to create an engaging vignette that reflects a real-life scenario. It may include a description of symptoms, the progression of a disorder, or a disturbance in the environment as experience by the main character.
3. Your group will collect supportive data in the form of figures and/or tables that will provide clues to the solution of the case.
4. You will provide directed questions and solutions of the case that facilitate critical thinking and problem solving skills and are supported by appropriate scientific references.
5. You complete peer evaluation to grade the participation of your group members in the assignment.

Midterm Exam (25%)

Date: Week 6, Quizzes Tool on Courselink

Learning Outcome: 1, 2, 3, 4

In Week 6, you will be required to take an online midterm exam. It will consist of different types of questions that cover Units 01 through 05. The questions themselves will require you to have a firm understanding of the unit concepts and the application of these learned concepts. The exam will consist of 40 multiple-choice questions; each question is worth 1 point.

The midterm exam will be delivered online via the Quizzes tool (select Quizzes from the Tools dropdown menu) and use Respondus Lockdown Browser and Monitor.

Final Exam (50%)

Date: TBD, Quizzes Tool on Courselink

Learning Outcome: 1, 2, 3, 4

The final exam will be delivered online via the Quizzes tool and will use Respondus Lockdown Browser and Monitor. All final exams are 2 hours in length and will be scheduled by Registrarial Services.

7 Course Statements

7.1 Course Specific Statements

CourseLink System Requirements:

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and

up to date. (Results will be displayed in a new browser window).

<http://spaces.uoguelph.ca/ed/system-requirements/>

<https://courselink.uoguelph.ca/d2l/systemCheck>

Respondus LockDown Browser and Monitor Requirements

Respondus LockDown Browser is a locked browser for taking quizzes in CourseLink. It prevents you from printing and copying; using other operating software; using search engines (e.g., going to another URL); communicating via instant messaging; and it blocks non-web-related software (e.g., Adobe PDF, Microsoft Word). Respondus Monitor is a companion application for LockDown Browser that uses webcam and video technology to ensure academic integrity during online exams. The software captures video during the exam and allows the instructor to review the video once the exam is completed. In order to use Respondus LockDown Browser and Monitor, you must meet the following technical requirements so that you can take the practice test and midterm exam:

1. Operating Systems: Windows 10, 8, 7; Mac OS X 10.10 or higher.
2. Memory: Windows 2 GB RAM; Mac 512 MB RAM.
3. For Mac users: Safari must function properly on the computer
4. Mac users must have Adobe Flash Player installed to Safari, even if a different browser is normally used.
5. Functioning webcam and microphone. The webcam and microphone can be built into your computer or can be the type that plugs in with a USB cable. (You will be required to do an environment scan of your room, so please ensure you can move your computer, laptop or webcam for this scan.)
6. A broadband Internet connection. It is recommended that you access the Internet via a wired connection.

If you have any concerns about meeting system requirements, contact CourseLink Support. They will work with you to find alternative solutions or make alternative arrangements. <http://spaces.uoguelph.ca/ed/contact-us/>

Technical Skills:

As part of your online experience, you are expected to use a variety of technology as part of your learning:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties)
- Install software, security, and virus protection
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents

- Be comfortable uploading and downloading saved files
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments)
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course)
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer)
- Perform online research using various search engines (e.g., Google) and library databases.

Netiquette Expectations

For distance education courses, the course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply, plus other policies and considerations that come into play specifically because these courses are online.

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors, and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your username and password.

8 Department of Human Health and Nutritional Sciences Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.
<http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.
<https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations.
<http://www.selfregulationskills.ca/>

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information

policies please see the Undergraduate Calendar.
(<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions
<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>

- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
