

NUIP 6460-001 | Micronutrient Metabolism

INSTRUCTOR INFORMATION

Instructor:	Katherine Beals, PhD, RD, FACSM, CSSD
Office/Phone:	HPR-W 180 / 810-581-5916
Email:	katherine.beals@hsc.utah.edu (mailto:katherine.beals@hsc.utah.edu) (the best way to reach me!)
Office Hours:	Monday 2:00-3:00 pm; Thursday 12:05-2:00 pm and by appointment
Class Days/Times:	This course is fully online
Course Website:	Canvas: https://utah.instructure.com (class notes & assignments found here!)

COURSE DESCRIPTION

Examination of the biochemical and physiological roles of vitamins and minerals in humans. Micronutrient deficiency and toxicity syndromes, inborn errors of micronutrient metabolism, and the roles of micronutrients in health and disease will be discussed. Recommended Prerequisite: NUTR Masters Program students or instructor's consent.

LEARNING OUTCOMES

This course is designed to give the student a more detailed and advanced knowledge of nutrition with special emphasis on integrating the principles of nutrition and biochemistry. Upon successful completion of this course the student should be able to:

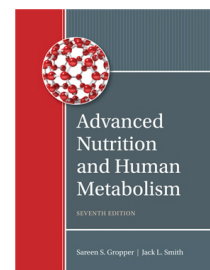
- Explain the historical context of the essential micronutrients.
- Identify recommended dietary intake levels of essential micronutrients for various age and gender groups.
- Describe the currently available methods of micronutrient assessment and critically evaluate their strengths and limitations.
- Describe the processes of digestion, absorption and metabolism of selected micronutrients.
- Identify food sources, physiological functions, deficiency symptoms and toxicity risks of selected micronutrients.
- Explain the potential association between micronutrient intake (at both physiological and supraphysiological doses) and disease states.
- Identify the physiological functions and potential health protective capacities of selected non vitamin and

mineral phytonutrients.

- Demonstrate the ability to critically evaluate scientific literature (i.e., research studies) related to micronutrient intake and metabolism.

REQUIRED READINGS

- Gropper SS and Smith JL. *Advanced Nutrition and Human Metabolism* 7th West Publishing, 2018
- Dietary Reference Intakes: <http://www.nal.usda.gov/fnic/etext/000105.html>
(<http://www.nal.usda.gov/fnic/etext/000105.html>)
- Articles pertaining to specific topic areas will be available via Canvas



COURSE CONTENT/LEARNING ASSESSMENTS

- **Exams:** There will be **four** exams each worth 100 points (see calendar for exam dates). Exams will be a combination of multiple choice, true/false, short answer and essay.
- **Quizzes:** There will be **eight** quizzes each worth 10 points distributed throughout the semester (generally pertaining to each module) to assess your understanding of the material covered in each major topic area. The quizzes will be timed, open-book and open-note and will be administered on CANVAS under the quiz icon.
- **Phytonutrient Handout:** In the broad sense of the term, a phytonutrient describes any nutrient that is derived from a plant. Thus, based on this description, vitamins and minerals would fall under the category of phytonutrients. When most people think of phytonutrients however, they think of non-vitamin and mineral nutrients (e.g., lycopene, allicin, sulforaphane, etc). These non-vitamin and mineral phytonutrients are gaining increasing interest from the scientific community and becoming increasingly popular among the general public. Each student will choose one phytonutrient (from a list provided) to create a one-page informational (client-centered) handout. Details for the assignment will be posted on Canvas.
- **Micronutrient Research Controversy:** Research regarding micronutrients is highly controversial. There are a number of reasons for the controversial research findings; however, more often than not, it is due to methodological differences in study design. For this assignment, students in groups of two will select a controversial topic related to vitamin/mineral metabolism; review the research and come to scientific conclusion that will be presented to the rest of the class. More detailed instructions along with a sign-up sheet will be provided on Canvas early on in the semester.
- **Micronutrient History Paper:** The science of nutrition has advanced considerably over the past 75 years and continues to evolve. This assignment will allow students to explore the historical underpinnings of a micronutrient of his or her choice and compare the state of knowledge during the period of time that the micronutrient was “discovered” to what is known about the micronutrient today. Specific instructions will

be posted on Canvas.

- **Micronutrient Outline:** Along with the micronutrient history paper, each student will be responsible for preparing a one-page outline of the vitamin or mineral chosen for the history paper for distribution to the rest of the class. Specific instructions along with a sign up sheet will be posted on Canvas.
- **Discussions:** Throughout the semester I will post journal articles that cover recent research on a particular micronutrient. We will discuss some of these in class and some will be topics for online discussions. More details can be found on Canvas under the assignments tab.

GRADING SCHEME

Evaluation of Student Performance:

Course Components

Exams (4 @ 100 pt ea)	400
Quizzes (8 @ 10 pt ea)	80
Micronutrient Controversy	60
Phytonutrient Handout	30
Micronutrient History Paper & Outline	50
Discussions (4 @ 5 pt ea)	20
Total	640

Grading Scale

A	100 % to 92.5%	C	77.4 % to 72.5%
A-	92.4 % to 89.5%	C-	72.4 % to 69.5%
B+	89.4 % to 87.5%	D+	69.4 % to 67.5%
B	87.4 % to 82.5%	D	67.4 % to 62.5%
B-	82.4 % to 79.5%	D-	62.4 % to 59.5%
C+	79.4 % to 77.5%	E	≤ 59.4 %

COURSE RESPONSIBILITIES

Online courses require significant self-motivation. Online courses are different than on-campus courses and online learning is not ideal for everyone. Some lessons take a considerable amount of time to complete. Please note that not all modules are created equal. Some may take a bit more time than others. Some people believe this to be a much easier way to study this subject than in the on-campus frame work. Others may feel very intimidated at first. Be patient as you work your way through the first few modules. If you are serious about the material, you will learn as much as, if not more than, most on-campus students about this subject and develop reading and communication skills that are vital to the workforce of the 21st century.

- **Electronic or equipment failure:** It is your responsibility to maintain your computer and related equipment in order to participate in the online nature of the course.
- **Document archiving:** You are responsible for making sure your assignments, including attachments, are received before the deadline. Students are also responsible for ensuring that the documents submitted are the correct document to be graded.
- **Naming conventions and software type:** You are responsible for submitting the assignment with the required naming convention, correct file extension, and using the software type and version required for the assignment. See assignment instructions for acceptable formats.
- **Classroom equivalency:** Discussion threads, e-mails, and chat rooms are all considered to be equivalent to classrooms, and student behavior within those environments shall conform to the University of Utah Student Code. Specifically:
 - Posting photos or comments that would be off-topic in a classroom are still off-topic in an online posting.
 - Off-color language and photos are never appropriate.
 - Using angry or abusive language is called "flaming", is not acceptable, and will be dealt with according to the Student Code.
 - Course e-mails, e-journals, and other online course communications are part of the classroom and as such, are University property and subject to GRAMA regulations and the Student Code. Privacy regarding these communications between correspondents must not be assumed and should be mutually agreed upon in advance, in writing.

INSTITUTIONAL POLICIES

Drop/Withdrawal Policies

Students may drop a course within the first two weeks of a given semester without any penalties.

Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A "W" grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade "W" is not used in calculating the student's GPA.

For deadlines to withdraw from full-term, first, and second session classes, see the U's [Academic](#)

Calendar. [_ \(https://registrar.utah.edu/academic-calendars/index.php\)](https://registrar.utah.edu/academic-calendars/index.php)

Plagiarism & Cheating

It is assumed that all work submitted to your instructor is your own work. When you have used ideas of others, you must properly indicate that you have done so.

Plagiarism and cheating are serious offenses and may be punished by failure on an individual assignment, and/or failure in the course. Academic misconduct, according to the University of Utah Student Code,

"...Includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information...It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct."

For details on plagiarism and other important course conduct issues, see the U's **[Code of Student Rights and Responsibilities.](http://regulations.utah.edu/academics/6-400.php)** [_ \(http://regulations.utah.edu/academics/6-400.php\)](http://regulations.utah.edu/academics/6-400.php)

Safety at the U

The University of Utah values the safety of all campus community members. You will receive important emergency alerts and safety messages regarding campus safety via text message.

For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu (<http://safeu.utah.edu>).

To report suspicious activity or to request a courtesy escort, contact:

Campus Police & Department of Public Safety

📞 801-585-COPS (801-585-2677)

🌐 dps.utah.edu ([https://dps.utah.edu/](https://dps.utah.edu))



📍 1735 E. S. Campus Dr.
Salt Lake City, UT 84112

Wellness at the U

Your personal health and wellness are essential to your success as a student. Personal concerns like stress, anxiety, relationship difficulties, depression, or cross-cultural differences can interfere with a student's ability to succeed and thrive in this course and at the University of Utah.

Please feel welcome to reach out to your instructor or TA's to handle issues regarding your coursework.



For helpful resources to manage your personal wellness and counseling options, contact:

Center for Student Wellness 801-581-7776 wellness.utah.edu ([http://wellness.utah.edu/](http://wellness.utah.edu)) 2100 Eccles Student Life Center
1836 Student Life Way
Salt Lake City, UT 84112**Women's Resource Center** 801-581-8030 womenscenter.utah.edu (<https://womenscenter.utah.edu/>) 411 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Addressing Sexual Misconduct

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status, or genetic information.

If you or someone you know has been harassed or assaulted, you are encouraged to report it to university officials:

Title IX Coordinator & Office of Equal Opportunity and Affirmative Action 801-581-8365 oeo.utah.edu (<https://oeo.utah.edu/>) 135 Park Building
201 Presidents' Cir.
Salt Lake City, UT 84112**Office of the Dean of Students** 801-581-7066 deanofstudents.utah.edu (<https://deanofstudents.utah.edu/>) 270 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

To file a police report, contact:

Campus Police & Department of Public Safety 801-585-COPS (801-585-2677) dps.utah.edu (<https://dps.utah.edu/>)

📍 1735 E. S. Campus Dr.
Salt Lake City, UT 84112

If you do not feel comfortable reporting to authorities, the U's Victim-Survivor Advocates provide **free, confidential** and **trauma-informed** support services to **students, faculty, and staff** who have experienced interpersonal violence.

To **privately** explore options and resources available to you with an advocate, contact:

Center for Student Wellness

📞 801-581-7776

🌐 wellness.utah.edu (<http://wellness.utah.edu/>)

📍 328 Student Services Building
201 S. 1460 E.
Salt Lake City, UT 84112

Americans With Disabilities Act (ADA)

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access. The CDA will work with you and the instructor to make arrangements for accommodations.

All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

If you will need accommodations in this class, contact:

Center for Disability & Access

📞 801-581-5020

🌐 disability.utah.edu (<https://disability.utah.edu/>)

📍 162 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Diverse Student Support

Student Support Services (TRIO)

TRIO federal programs are targeted to serve and assist low-income individuals, first-generation college students, and individuals with disabilities.

Student Support Services (SSS) is a TRIO program for current or incoming undergraduate university students who are seeking their first bachelor's degree and need academic assistance and other

services to be successful at the University of Utah.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Student Support Services (TRIO)

 801-581-7188

 trio.utah.edu [\(https://trio.utah.edu/\)](https://trio.utah.edu/)

 Room 2075

1901 E. S. Campus Dr.

Salt Lake City, UT 84112

American Indian Students

The AIRC works to increase American Indian student visibility and success on campus by advocating for and providing student centered programs and tools to enhance academic success, cultural events to promote personal well-being, and a supportive “home-away-from-home” space for students to grow and develop leadership skills.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

American Indian Resource Center

 801-581-7019

 diversity.utah.edu/centers/airc [\(https://diversity.utah.edu/centers/airc/\)](https://diversity.utah.edu/centers/airc/)

 Fort Douglas Building 622

1925 De Trobriand St.


Salt Lake City, UT 84113

Black Students

Using a pan-African lens, the Black Cultural Center seeks to counteract persistent campus-wide and global anti-blackness. The Black Cultural Center works to holistically enrich, educate, and advocate for students, faculty, and staff through Black centered programming, culturally affirming educational initiatives, and retention strategies.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Black Cultural Center

 801-213-1441

 diversity.utah.edu/centers/bcc [\(https://diversity.utah.edu/centers/bcc/\)](https://diversity.utah.edu/centers/bcc/)

 Fort Douglas Building 603

95 Fort Douglas Blvd.

Salt Lake City, UT 84113

Students with Children

Our mission is to support and coordinate information, program development and services that enhance family resources as well as the availability, affordability and quality of child care for University students, faculty and staff.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Center for Childcare & Family Resources

📞 801-585-5897

🌐 childcare.utah.edu [\(https://childcare.utah.edu/\)](https://childcare.utah.edu/)

📍 408 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Students with Disabilities

The Center for Disability & Access is dedicated to serving students with disabilities by providing the opportunity for success and equal access at the University of Utah. They also strive to create an inclusive, safe, and respectful environment.

For more information about what support they provide and links to other resources, view their website or contact:

Center for Disability & Access

📞 801-581-5020


🌐 disability.utah.edu [\(https://disability.utah.edu/\)](https://disability.utah.edu/)

📍 162 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Students of Ethnic Descent


The Center for Ethnic Student Affairs offers several programs dedicated to the success of students with varied cultural and ethnic backgrounds. Their mission is to create an inclusive, safe campus community that values the experiences of all students.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Center for Ethnic Student Affairs 801-581-8151 diversity.utah.edu/centers/cesa/ [\(https://diversity.utah.edu/centers/cesa/\)](https://diversity.utah.edu/centers/cesa/) 235 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

English as a Second/Additional Language (ESL) Students

If you are an English language learner, there are several resources on campus available to help you develop your English writing and language skills. Feel free to contact:

Writing Center 801-587-9122 writingcenter.utah.edu [\(http://writingcenter.utah.edu/\)](http://writingcenter.utah.edu/) 2701 Marriott Library
295 S 1500 E
Salt Lake City, UT 84112**English for Academic Success (EAS) Program** 801-581-8047 linguistics.utah.edu/eas-program [\(https://linguistics.utah.edu/eas-program/\)](https://linguistics.utah.edu/eas-program/) 2300 LNCO
255 S. Central Campus Dr.
Salt Lake City, UT 84112**English Language Institute** 801-581-4600 continue.utah.edu/eli [\(http://continue.utah.edu/eli\)](http://continue.utah.edu/eli/) 540 Arapeen Dr.
Salt Lake City, UT 84108

Undocumented Students

Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles that prevent you from engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center.

Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families.

For more information about what support they provide and links to other resources, view their website or contact:

Dream Center

📞 801-213-3697

🌐 dream.utah.edu (<http://dream.utah.edu>)

📍 1120 Annex (Wing B)
1901 E. S. Campus Dr.
Salt Lake City, UT 84112

LGBTQ+ Students

The LGBTQ+ Resource Center acts in accountability with the campus community by identifying the needs of people with a queer range of [a]gender and [a]sexual experiences and responding with university-wide services.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

LGBTQ+ Resource Center

📞 801-587-7973

🌐 lgbt.utah.edu (<http://lgbt.utah.edu>)

📍 409 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Veterans & Military Students

The mission of the Veterans Support Center is to improve and enhance the individual and academic success of veterans, service members, and their family members who attend the university; to help them receive the benefits they earned; and to serve as a liaison between the student veteran community and the university.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Veterans Support Center

📞 801-587-7722

🌐 (<http://lgbt.utah.edu>) veteranscenter.utah.edu (<http://veteranscenter.utah.edu>)

📍 418 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Women

The Women's Resource Center (WRC) at the University of Utah serves as the central resource for educational and support services for women. Honoring the complexities of women's identities, the WRC facilitates choices and changes through programs, counseling, and training grounded in a commitment to advance social justice and equality.

For more information about what support they provide, a list of ongoing events, and links to other resources, view their website or contact:

Women's Resource Center

📞 801-581-8030

🌐 womenscenter.utah.edu [\(https://womenscenter.utah.edu/\)](https://womenscenter.utah.edu/)

📍 411 Union Building
200 S. Central Campus Dr.
Salt Lake City, UT 84112

Inclusivity at the U

The Office for Inclusive Excellence is here to engage, support, and advance an environment fostering the values of respect, diversity, equity, inclusivity, and academic excellence for students in our increasingly global campus community. They also handle reports of bias in the classroom as outlined below:

Bias or hate incidents consist of speech, conduct, or some other form of expression or action that is motivated wholly or in part by prejudice or bias whose impact discriminates, demeans, embarrasses, assigns stereotypes, harasses, or excludes individuals because of their race, color, ethnicity, national origin, language, sex, size, gender identity or expression, sexual orientation, disability, age, or religion.

For more information about what support they provide and links to other resources, or to report a bias incident, view their website or contact:

Office for Inclusive Excellence

📞 801-581-4600

🌐 inclusive-excellence.utah.edu [\(https://inclusive-excellence.utah.edu/\)](https://inclusive-excellence.utah.edu/)
<http://continue.utah.edu/eli>

📍 170 Annex (Wing D)
1901 E. S. Campus Dr.
Salt Lake City, UT 84112












Other Student Support






To learn more about some of the other resource groups available at the U, check out:

 diversity.utah.edu/student-groups [\(https://diversity.utah.edu/student-groups/\)](https://diversity.utah.edu/student-groups/)

 studentsuccess.utah.edu/resources/student-support [\(https://studentsuccess.utah.edu/resources/student-support/\)](https://studentsuccess.utah.edu/resources/student-support/)

Course Summary:

Date	Details	
Sun Jan 12, 2020	 Introduction: If I were a vitamin or mineral... (https://utah.instructure.com/courses/601402/assignments/7085913)	due by 11:59pm
Sat Jan 25, 2020	 Quiz #1 (https://utah.instructure.com/courses/601402/assignments/7085370)	due by 11:59pm
Sat Feb 1, 2020	 Quiz 2 (https://utah.instructure.com/courses/601402/assignments/7085374)	due by 11:59pm
Mon Feb 3, 2020	 Exam 1 (https://utah.instructure.com/courses/601402/assignments/7085392)	due by 3:05pm
Sat Feb 15, 2020	 Quiz 3 (https://utah.instructure.com/courses/601402/assignments/7085378)	due by 11:59pm
Sat Feb 22, 2020	 Quiz 4 (https://utah.instructure.com/courses/601402/assignments/7085383)	due by 11:59pm
Sat Feb 29, 2020	 Quiz 5 (https://utah.instructure.com/courses/601402/assignments/7085376)	due by 11:59pm
Mon Mar 2, 2020	 Exam 2 (https://utah.instructure.com/courses/601402/assignments/7085393)	due by 3:05pm
Sat Mar 28, 2020	 Quiz 6 (https://utah.instructure.com/courses/601402/assignments/7085373)	due by 11:59pm
Sat Apr 4, 2020	 Quiz 8 (https://utah.instructure.com/courses/601402/assignments/7085372)	due by 11:59pm
Mon Apr 6, 2020	 Exam 3 (https://utah.instructure.com/courses/601402/assignments/7085394)	due by 3:05pm

Date	Details	
Mon Apr 20, 2020	 Phytonutrient Paper & Outline (https://utah.instructure.com/courses/601402/assignments/7085397)	due by 11:59pm
Fri Apr 24, 2020	 Exam 4 (https://utah.instructure.com/courses/601402/assignments/7085395)	due by 3:30pm
Sat Apr 25, 2020	 Quiz 7 (https://utah.instructure.com/courses/601402/assignments/7085371)	due by 11:59pm
	 Micronutrient History Paper & Outline (https://utah.instructure.com/courses/601402/assignments/7085396)	
	 Micronutrient Research Controversy (https://utah.instructure.com/courses/601402/assignments/7239368)	

