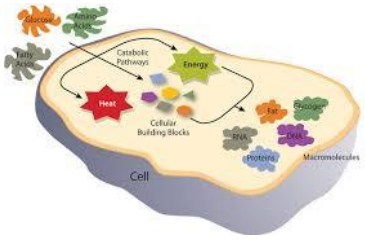
Nutritional SCIENCES

STUDENT HANDBOOK 2018-2019

A MAJOR EMPHASIZING THE SCIENCE OF NUTRITION FROM NUTRIENT METABOLISM THROUGH APPLICATION



Biomedical and Molecular Nutrition

Global Nutrition and Health

Public Health Nutrition

__Nutrition__ plays an important role in how we __manage health issues__ such as __obesity__, __fight diseases__ such as __diabetes__ and maintain __overall wellness__.

Students interested in __public health__, __medical careers__ and __international health care__ will benefit from understanding the __science of nutrition__ and the relationships between __nutrients and human health__.

MICHIGAN STATE UNIVERSITY

Department of Food Science and Human Nutrition

NUTRITIONAL SCIENCES HANDBOOK

Table of Contents

INTRODUCTION

The **Nutritional Sciences major** emphasizes intensive study in the biological and physical sciences as a foundation for understanding the science of nutrition and the relationships between food, nutrients and human health. This perspective prepares graduates for employment in public health or for continued study in graduate programs or professional medical schools. Course requirements for nutritional sciences include the study of energy metabolism, proteins, vitamins, minerals, community nutrition, and diet in the prevention and treatment of diseases. Supporting discipline courses emphasize biochemistry, biology, chemistry, mathematics and statistics, physiology, and additional coursework relating to each of our three major tracks.

Students choose one of the following **concentrations**. Selective courses in each track allow students to customize the program to suit their interests and goals.

• **Biomedical and molecular nutrition** – This track is designed to meet the admissions requirements of most medical, dental and paramedical colleges and related graduate programs including graduate programs in nutrition and other life sciences. Students will gain an advanced understanding of human nutrition as it relates to chronic disease prevention and overall human health. Strong focus on both nutrition and the core biomedical sciences (i.e., anatomy, biochemistry, pharmacology).

• **Global nutrition and health** – This track focuses on the global, systems aspects of nutrition in the context of sustainability, food security and agricultural systems. Students will supplement their nutrition coursework with courses addressing effective policy, program planning and evaluation, and intercultural communication.

• **Public health nutrition** – Students in this track will develop skills in biostatistics, epidemiology, and program planning and evaluation in the context of nutrition and population health. Sociology, social policy and social justice topics are woven into the curriculum to prepare graduates for graduate school in public health and work in public health agencies.

Graduates in Nutritional Sciences typically continue on for advanced degrees, but also qualify for positions in corporate wellness and health promotion programs, public health outreach programs, pharmaceutical sales, the food and nutrition products industries, and similar occupations.

ADVISING APPOINTMENTS

If you wish to obtain more information regarding the major, please contact:

Dr. Jennifer Ekstrom
Academic Adviser & Nutritional Sciences Instructor

Dept of Food Science and Human Nutrition
106 FSHN Bldg
469 Wilson Road,
Michigan State University
email: ekstrom@msu.edu
Phone: 517-353-3317
Website: http://www.fshn.msu.edu/

Advising appointments with Dr. Ekstrom *during the academic year* may be made through the Appointment Calendar located within the "Student Success Dashboard"

- To schedule an appointment with Dr. Ekstrom, please log in to the Dashboard at https://msu.campus.eab.com. Click "Schedule Appointment" in the upper right corner of the home page. To find my availability, choose "Advising" / "Ag & Nat Resources Advising" / "ANR Nutritional Sciences" (for both CANR and Lyman Briggs students).

For appointments over the MSU winter and summer breaks, send Dr. Ekstrom an email (ekstrom@msu.edu) to arrange a meeting. I can also help with many student concerns through email or via phone/teleconferencing.

It is recommended to meet at least once per year to plan courses and discuss your goals. My schedule gets very busy when course enrollment opens up in March/April, and it can be difficult to get a last-minute appointment. I recommend meeting with me earlier in the Spring semester (February, before Spring Break) to create your course plan for the next academic year.

Cancellation policy: It is imperative that you keep your appointment times. If you need to cancel, please cancel at least 24 hours in advance so that another student can claim your space. "No shows" are inconsiderate and will be recorded in your student file.

NUTRITIONAL SCIENCES ADVISING CENTER

- Room 106 in the G.M. Trout FSHN Building is **open for Nutritional Sciences students to use** from 8am–5pm Monday to Friday. Feel free to use this as a study space. Some of our courses (such as HNF 150) hold TA office hours in this location.

- Computers are available for student use. Nutritional sciences program info is also available, or can be found on the web at http://www.fshn.msu.edu/undergraduate_programs/nutritional_sciences

DEGREE REQUIREMENTS

Effective in the Fall Semester of 2016, the Nutritional Sciences major was revised to include three separate concentrations/tracks. **Students who were already in the major at the time of conversion are able to complete their degrees *under the requirements that were in place when they first joined the major*.** When we make future tweaks to the major requirements, you are held only to the requirements that were in place when you joined (unless you opt to switch to the newer iteration of the major). If you are completing under the old program and have questions about which courses you need in order to complete your degree, please meet with Dr. Ekstrom.

Your set of major requirements and progress to degree can always be confirmed through **Degree Navigator** (www.degnav.msu.edu). Degree navigator is the system the university uses to check for completion before conferring your final degree.

In the following pages you will find:

- Current Program Sheets: CANR Graduation Requirements for the BS in Nutritional Sciences (for each of the three concentrations)
- Suggested 4-year schedules (for each of the three concentrations)
- Important info on prerequisites and the sequence of courses
- Information on the Lyman Briggs Coordinate major in Nutritional Sciences
- Information on minors that mesh well with our major
- Information on Honors College membership

Nutritional Sciences-

Biomedical and Molecular Nutrition

The College of Agriculture and Natural Resources

Student Name _____

Student Number _____

I. UNIVERSITY REQUIREMENTS

INTEGRATIVE STUDIES

Arts & Humanities

IAH 2		4 Cr		Choice of "A" courses (201-210)	N - I - D
IAH 2		4 Cr		Choice of "B" courses (211-241)	N - I - D

Social, Behavioral, and Economic Sciences

ISS 2		4 Cr		Choice of 200-level ISS course	N - I - D
ISS 3		4 Cr		Choice of 300-level ISS course	N - I - D

*Biological & Physical Sciences**

Alternative Track to ISB and ISP	8 Cr	ISP/ISB not needed -- the chemistry & biology courses required for this major will fulfil the university physical/biological science and laboratory requirements

WRITING

WRA 101 *or* WRA195H *or* LB 133		4 Cr		MSU Tier I writing requirement *min 2.0 grade required.*

The Tier II Writing requirement is completed in the major with FSC 455 and HNF 450.

Cr	Total Integrative Studies Credits Completed

Required 28 credits

MATHEMATICS

The University mathematics requirement is met in the Nutritional Sciences major with MTH 124 or MTH 132.

II. COLLEGE OF AGRICULTURE & NATURAL RESOURCES REQUIREMENTS

a. Complete *one* of the following courses:

EC 201		3 Cr		Introduction to Microeconomics
EC 202		3 Cr		Introduction to Macroeconomics

Subtotal 3 credits

b. Mathematics: Met in Nutritional Sciences major with MTH 124 or 132.

*c. At least 26 credits in courses in the College: Nutritional Sciences / Biomedical and Molecular Nutrition students have approval to **waive** this requirement. In this major you will complete 24 CANR credits through the required HNF/FSC/CSS classes. You will not be required to take additional CANR classes to meet this (waived) college requirement.*

The specific requirements for a major in the College, listed in Section III below.

III. NUTRITIONAL SCIENCES MAJOR REQUIREMENTS

NUTRITION COURSES

Complete *all* of the following courses:

HNF 150		3 Cr		Introduction to Human Nutrition
HNF 250		3 Cr		Problem Solving in Human Nutrition
HNF 250L		1 Cr		Professional Development and Career Planning in Nutrition
HNF 350		4 Cr		Advanced Human Nutrition and Metabolism
HNF 450		3 Cr		Nutrition in the Prevention and Treatment of Disease
FSC 211		3 Cr		Principles of Food Science
HNF 310		3 Cr		Nutrition for Pre-Health Professionals
FSC 455		3 Cr		Food and Nutrition Laboratory
See T. Becker		3 Cr		Experiential Learning Requirement – see *D2L for info*

Subtotal 26 credits

SUPPORTING DISCIPLINE COURSES

Complete *all* the following courses:

COM 100		3 Cr		Human Communication
CSS 124		2 Cr		Sustainable Food and Agricultural Systems
CEM 141 or CEM 151 or CEM 181H or LB 171		4 Cr		General Chemistry General and Descriptive Chemistry Honors Chemistry I LB Principles of Chemistry I
CEM 161or CEM 185H or LB 171L		1 Cr		Chemistry Laboratory I Honors Chemistry Laboratory (2cr) LB Introductory Chemistry Lab I
CEM 142 or CEM 152 or CEM 182H or LB 172		3 Cr		General and Inorganic Chemistry Principles of Chemistry Honors Chemistry II (4cr) LB Principles of Chemistry II
CEM 162 or LB 172L		1 Cr		Chemistry Laboratory II LB Principles of Chemistry II – Reactivity Laboratory
CEM 251		3 Cr		Organic Chemistry I
CEM 252		3 Cr		Organic Chemistry II
CEM 255		2 Cr		Organic Chemistry Laboratory
BS 161 and BS 171 *or*		3 Cr 2 Cr		Cells and Molecules Cell and Molecular Biology Laboratory
BS 181H and BS 191H *or*		3 Cr 2 Cr		Honors Cell and Molecular Biology Honors Cell and Molecular Biology Lab
LB 145		5 Cr		LB Biology II: Cell and Molecular Biology
PHY 231 and PHY 251 *or*		3 Cr 1 Cr		Introductory Physics I Introductory Physics Laboratory I
LB 273		4 Cr		LB Physics I
PHY 232 and PHY 252 *or*		3 Cr 1 Cr		Introductory Physics II Introductory Physics Laboratory II
LB 274		4 Cr		LB Physics II
BMB 401 or		4 Cr		Comprehensive Biochemistry
BMB 461* and BMB 462		3 Cr 3 Cr		Advanced Biochemistry I Advanced Biochemistry II
PSL 310 or		4 Cr		Physiology for Pre-Health Professionals
PSL 431 and PSL 432		4 Cr 4 Cr		Human Physiology I Human Physiology II

***Note**: BS 162 is a pre-requisite for BMB 461/462.* *Subtotal 43-50 credits*

Complete *two* of the following courses:

ANTR 350		3 Cr		Human Gross Anatomy for Pre-Health Professionals
CEM 262		3 Cr		Quantitative Analysis
MMG 301		3 Cr		Introductory Microbiology
MMG 409		3 Cr		Eukaryotic Cell Biology
PHM 350		3 Cr		Introductory Human Pharmacology
PSY 320		3 Cr		Health Psychology
IBIO 341		4 Cr		Fundamental Genetics
IBIO 408		4 Cr		Histology

Subtotal 6-8credits

***One* of the following courses:**

MTH 124		3 Cr		Survey of Calculus I
MTH 132		3 Cr		Calculus I (prefer bio/medical applications sections)
LB 118		4 Cr		LB Calculus I

AND-

***One* of the following courses:**

STT 201		4 Cr		Statistical Methods w/Lab
STT 231		3 Cr		Statistics for Scientists

Subtotal 6-8 credits

Important: 120 semester credits is the minimum required for graduation, or 123 credits including MTH 1825.

Nutritional Sciences-
Global Nutrition and Health
The College of Agriculture and Natural Resources

Student Name _____

Student Number _____

I. UNIVERSITY REQUIREMENTS

INTEGRATIVE STUDIES

Arts & Humanities

IAH 2		4 Cr		Choice of "A" courses (201-210)	N - I - D
IAH 2		4 Cr		Choice of "B" courses (211-241)	N - I - D

Social, Behavioral, and Economic Sciences

ISS 2		4 Cr		Choice of 200-level ISS course	N - I - D
ISS 3		4 Cr		Choice of 300-level ISS course	N - I - D

*Biological & Physical Sciences**

Alternative Track to ISB and ISP	8 Cr	ISP/ISB not needed -- the chemistry & biology courses required for this major will fulfil the university physical/biological science and laboratory requirements

WRITING

WRA 101 *or* WRA195H *or* LB 133		4 Cr		MSU Tier I writing requirement *min 2.0 grade required.*

The Tier II Writing requirement is completed in the major with FSC 455 and HNF 450.

Cr	Total Integrative Studies Credits Completed

Required 20 credits

MATHEMATICS

The University mathematics requirement is met in the Nutritional Sciences major with MTH 124 or MTH 132.

II. COLLEGE OF AGRICULTURE & NATURAL RESOURCES REQUIREMENTS

a. Complete *one* of the following courses:

EC 201		3 Cr		Introduction to Microeconomics
EC 202		3 Cr		Introduction to Macroeconomics

Subtotal 3 credits

b. Mathematics: Met in Nutritional Sciences major with MTH 124 or 132.
c. At least 26 credits in courses in the College: Nutritional Sciences / Global Nutrition & Health students will exceed this requirement upon completion of the needed HNF/FSC courses from the Dept of Food Science & Human Nutrition.
d. The specific requirements for a major in the College, listed in Section III below.

III. NUTRITIONAL SCIENCES MAJOR REQUIREMENTS

NUTRITION COURSES

Complete *all* of the following courses:

HNF 150		3 Cr		Introduction to Human Nutrition
HNF 250		3 Cr		Problem Solving in Human Nutrition
HNF 250L		1 Cr		Professional Development and Career Planning in Nutrition
HNF 350		4 Cr		Advanced Human Nutrition and Metabolism
HNF 450		3 Cr		Nutrition in the Prevention and Treatment of Disease
FSC 211		3 Cr		Principles of Food Science
HNF 377		4 Cr		Applied Community Nutrition
HNF 406		3 Cr		Global Foods and Culture
HNF 453		3 Cr		Nutrition and Human Development
HNF 415		3 Cr		Global Nutrition
FSC 455		3 Cr		Food and Nutrition Laboratory
See T. Becker		3 Cr		Experiential Learning Requirement – *D2L for more info*

Subtotal 36 credits

SUPPORTING DISCIPLINE COURSES

Complete *all* the following courses:

COM 100		3 Cr		Human Communication
CSS 124		2 Cr		Sustainable Food and Agricultural Systems
CSUS 215		3 Cr		International Development and Sustainability
SOC 362		3 Cr		Developing Societies
CEM 141 or CEM 151 or CEM 181H or LB 171		4 Cr		General Chemistry General and Descriptive Chemistry Honors Chemistry I LB Principles of Chemistry I
CEM 161or CEM 185H or LB 171L		1 Cr		Chemistry Laboratory I Honors Chemistry Laboratory (2cr) LB Introductory Chemistry Lab I
CEM 143 or		4 Cr		Survey of Organic Chemistry
CEM 251 and CEM 252		3 Cr 3 Cr		Organic Chemistry I Organic Chemistry II
BS 161 and BS 171 *or*		3 Cr 2 Cr		Cells and Molecules Cell and Molecular Biology Laboratory
BS 181H and BS 191H *or*		3 Cr 2 Cr		Honors Cell and Molecular Biology Honors Cell and Molecular Biology Lab
LB 145		5 Cr		LB Biology II: Cell and Molecular Biology
BMB 200 or		4 Cr		Introduction to Biochemistry
BMB 401		4 Cr		Comprehensive Biochemistry
PSL 310 or		4 Cr		Physiology for Pre-Health Professionals

Subtotal 33-36 credits

Complete *one* of the following courses:

AL 200		3 Cr		Cultural Difference and Study Abroad
ANP 200		2 Cr		Navigating Another Culture
ANP 370		3 Cr		Culture, Health and Illness
COM 391		4 Cr		Topics in Verbal, Intercultural or Gender Communication
GSAH 230		3 Cr		Values, Experience and Difference in Global Contexts

Subtotal 2-4credits

Complete *one* of the following courses:

CSUS 429		3 Cr		Program Evaluation
CSUS 433		3 Cr		Grant Writing

Subtotal 3 credits

Complete *one* of the following courses:

ANP 270		3 Cr		Women and Health: Anthropological & Internatl Perspectives
CSS 431		3 Cr		International Agricultural Systems
CSUS 463		3 Cr		Politics of Food
EEM 260		3 Cr		World Food, Population and Poverty
FOR 466		3 Cr		National Resource Policy
GEO 435		3 Cr		Geography of Health and Disease
PHL 453		3 Cr		Ethical Issues in Global Public Health
SOC 161		3 Cr		International Development and Change

Subtotal 3 credits

***One* of the following courses:**

MTH 124		3 Cr		Survey of Calculus I
MTH 132		3 Cr		Calculus I (prefer bio/medical applications sections)
LB 118		4 Cr		LB Calculus I

AND-

***One* of the following courses:**

STT 201		4 Cr		Statistical Methods w/Lab
STT 224		3 Cr		Introduction to Probability and Statistics for Ecologists
STT 231		3 Cr		Statistics for Scientists
STT 464		3 Cr		Statistics for Biologists

Subtotal 6-8 credits

Important: 120 semester credits is the minimum required for graduation, or 123 credits for students who have credit in MTH 1825

Nutritional Sciences-
Public Health Nutrition
The College of Agriculture and Natural Resources

Student Name _____

Student Number _____

I. UNIVERSITY REQUIREMENTS

INTEGRATIVE STUDIES

Arts & Humanities

IAH 2		4 Cr		Choice of "A" courses (201-210)	N - I - D
IAH 2		4 Cr		Choice of "B" courses (211-241)	N - I - D

Social, Behavioral, and Economic Sciences

ISS 2		4 Cr		Choice of 200-level ISS course	N - I - D
ISS 3		4 Cr		Choice of 300-level ISS course	N - I - D

*Biological & Physical Sciences**

Alternative Track to ISB and ISP	8 Cr	ISP/ISB not needed -- the chemistry & biology courses required for this major will fulfil the university physical/biological science and laboratory requirements

WRITING

WRA 101 *or* WRA195H *or* LB 133		4 Cr		MSU Tier I writing requirement *min 2.0 grade required.*

The Tier II Writing requirement is completed in the major with FSC 455 and HNF 450.

Cr	Total Integrative Studies Credits Completed

Required 20 credits

MATHEMATICS

The University mathematics requirement is met in the Nutritional Sciences major with MTH 124 or MTH 132.

II. COLLEGE OF AGRICULTURE & NATURAL RESOURCES REQUIREMENTS

a. Complete *one* of the following courses:

EC 201		3 Cr		Introduction to Microeconomics
EC 202		3 Cr		Introduction to Macroeconomics

Subtotal 3 credits

b. Mathematics: Met in Nutritional Sciences major with MTH 124 or 132.
c. At least 26 credits in courses in the College: Nutritional Sciences / Public Health Nutrition students will exceed this requirement upon completion of the needed HNF/FSC courses from the Dept of Food Science & Human Nutrition.
d. The specific requirements for a major in the College, listed in Section III below.

III. NUTRITIONAL SCIENCES MAJOR REQUIREMENTS

NUTRITION COURSES

Complete *all* of the following courses:

HNF 150		3 Cr		Introduction to Human Nutrition
HNF 250		3 Cr		Problem Solving in Human Nutrition
HNF 250L		1 Cr		Professional Development and Career Planning in Nutrition
HNF 350		4 Cr		Advanced Human Nutrition and Metabolism
HNF 450		3 Cr		Nutrition in the Prevention and Treatment of Disease
FSC 211		3 Cr		Principles of Food Science
HNF 385		3 Cr		Public Issues in Health and Nutrition
HNF 377		4 Cr		Applied Community Nutrition
HNF 485		3 Cr		Advanced Research Methods in Nutrition and Health
FSC 455		3 Cr		Food and Nutrition Laboratory
See T. Becker		3 Cr		Experiential Learning Requirement – *D2L for more info*

Subtotal 33 credits

SUPPORTING DISCIPLINE COURSES

Complete *all* the following courses:

COM 100		3 Cr		Human Communication
CSS 124		2 Cr		Sustainable Food and Agricultural Systems
HM 101		3 Cr		Introduction to Public Health
CEM 141 or CEM 151 or CEM 181H or LB 171		4 Cr		General Chemistry General and Descriptive Chemistry Honors Chemistry I LB Principles of Chemistry I
CEM 161or CEM 185H or LB 171L		1 Cr		Chemistry Laboratory I Honors Chemistry Laboratory (2cr) LB Introductory Chemistry Lab I
CEM 143 or		4 Cr		Survey of Organic Chemistry
CEM 251 and CEM 252		3 Cr 3 Cr		Organic Chemistry I Organic Chemistry II
BS 161 and BS 171 *or*		3 Cr 2 Cr		Cells and Molecules Cell and Molecular Biology Laboratory
BS 181H and BS 191H *or*		3 Cr 2 Cr		Honors Cell and Molecular Biology Honors Cell and Molecular Biology Lab
LB 145		5 Cr		LB Biology II: Cell and Molecular Biology
BMB 200 or		4 Cr		Introduction to Biochemistry
BMB 401		4 Cr		Comprehensive Biochemistry
PSL 310 or		4 Cr		Physiology for Pre-Health Professionals

Subtotal 30-33 credits

Complete *one* of the following courses:

CSUS 429		3 Cr		Program Evaluation
CSUS 433		3 Cr		Grant Writing

Subtotal 3 credits

Complete *two* of the following courses:

ANP 270		3 Cr		Women and Health: Anthropological & Internatl Perspectives
ANP 370		3 Cr		Culture, Health and Illness
ANP 443		3 Cr		Human Adaptability
HNF 453		3 Cr		Nutrition and Human Development
EPI 240		3 Cr		Epidemiological Investigations in Nutrition and Health
EPI 390		4 Cr		Disease in Society: Introduction to Epi and Public Health
GEO 435		3 Cr		Geography of Health
PHL 453		3 Cr		Ethical Issues in Global Public Health
PLS 313		3 Cr		Public Policy Analysis
SOC 451		3 Cr		Dynamics of Population
SOC 475		3 Cr		Health and Society

Subtotal 6-7 credits

***One* of the following courses:**

MTH 124		3 Cr		Survey of Calculus I
MTH 132		3 Cr		Calculus I (prefer bio/medical applications sections)
LB 118		4 Cr		LB Calculus I

AND-

***Both* of the following courses:**

STT 421		3 Cr		Statistics I
STT 422		3 Cr		Statistics II

Subtotal 9-10 credits

Students need at least 12 credits per semester for full-time student status.

Important: 120 semester credits is the minimum required for graduation, or 123 credits for students who have credit in MTH 1825

SUGGESTED COURSE SEQUENCE

Nutritional Sciences – Biomedical and Molecular Nutrition

FALL SEMESTER		SPRING SEMESTER	
YEAR 1			
WRA 101	4	CEM 142	3
CEM 141	4	CEM 162	1
CEM 161	1	BS 161	3
MTH 124 or MTH 132	3	BS 171	2
FSC 211	3	HNF 150	3
		COM 100	3
	15 cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 2			
CEM 251	3	CEM 252	3
STT 231	3	CEM 255	2
PHY 231	3	PHY 232	3
PHY 251	1	PHY 252	1
HNF 250	2	ISS 200-Level	4
HNF 250L	1	CSS 124	2
	14cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 3			
BMB 401	4	HNF 350	4
PSL 310	4	HNF 310	3
IAH Below 211	4	Experiential Learning	3
ISS 300-Level	4	Electives	5
	16 cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 4			
FSC 455	3	HNF 450	4
IAH 211 or Higher	4	ANTR 350 (or option)	3
MMG 301 (or option)	3	EC 201 or EC 202	3
Electives	5	Electives	6
	15 cr		15 cr

Students need at least 12 credits per semester for full-time student status.
Important: 120 semester credits is the minimum required for graduation.

updated for Fall Semester 2018

SUGGESTED COURSE SEQUENCE

Nutritional Sciences – Global Nutrition and Health

FALL SEMESTER		SPRING SEMESTER	
YEAR 1			
WRA 101	4	CSUS 215	3
CEM 141	4	BS 161	3
CEM 161	1	BS 171	2
MTH 124 or MTH 132	3	HNF 150	3
FSC 211	3	COM 100	3
	15 cr		14 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 2			
CEM 143*	4	PSL 310	4
STT 201	4	EC 201	3
SOC 362	3	ANP 370 (or option)	3
HNF 250	3	ISS 200-Level	4
CSS 124	2	HNF 250L	1
	16 cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 3			
BMB 200*	4	HNF 350	4
IAH Below 211	4	HNF 406	3
HNF 377	4	ISS 300-Level	4
Electives	4	Experiential Learning	3
	16 cr		14 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 4			
FSC 455	3	HNF 450	3
GEO 435 or Option	3	HNF 453	3
CSUS 429 or CSUS 433	3	HNF 415	3
Electives	6	IAH 211 or Higher	4
		Electives	2
	15 cr		15 cr

Students need at least 12 credits per semester for full-time student status.

Important: 120 semester credits is the minimum required for graduation

* CEM 143 may be replaced by CEM 251/252 sequence; BMB 200 may be replaced with BMB 401

SUGGESTED COURSE SEQUENCE

Nutritional Sciences – Public Health Nutrition

FALL SEMESTER		SPRING SEMESTER	
YEAR 1			
WRA 101	4	BS 161	3
CEM 141	4	BS 171	2
CEM 161	1	HNF 150	3
MTH 124 or MTH 132	3	COM 100	3
FSC 211	3	HM 101	3
	15 cr		14 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 2			
CEM 143*	4	STT 422	3
STT 421	3	PSL 310	4
HNF 250	3	ISS 200-Level	4
CSS 124	2	EC 201	3
IAH Below 211	4	HNF 250L	1
	16 cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 3			
BMB 200*	4	HNF 350	4
HNF 385	3	ISS 300-Level	4
HNF 377	4	Experiential Learning	3
Electives	4	Electives	4
	15 cr		15 cr

FALL SEMESTER		SPRING SEMESTER	
YEAR 4			
FSC 455	3	HNF 450	3
CSUS 429 or CSUS 433	3	HNF 453 or Option	3
IAH 211 or Higher	4	SOC 475 or Option	3
Electives	5	HNF 485	3
		Electives	3
	15 cr		15 cr

Students need at least 12 credits per semester for full-time student status.

Important: 120 semester credits is the minimum required for graduation

* CEM 143 may be replaced by CEM 251/252 sequence; BMB 200 may be replaced with BMB 401

IMPORTANT NOTES ON COURSE SCHEDULING

It is important to create a 4-year plan, with careful attention to course sequencing. Classes have prerequisites, and many are offered only in Fall or in Spring. The suggested schedules are a template – but be sure to meet with Dr. Ekstrom regularly for advising and scheduling assistance. Missteps can result in unintended delays in graduation.

Note on the Science Prerequisite Stream:
Your Biochemistry and Physiology courses ***must*** be completed *BEFORE* the Spring of the junior year in order to be eligible to enroll in HNF 350 on schedule. Since Biochemistry has organic chemisty as its prerequisite this means that organic chemisty *must* be finished *BEFORE* the Fall of the junior year.

If this is not met, some accommodations are possible, but in some cases graduation may need to be extended out an additional year. Please refer to sample schedules and plan accordingly… Organic chemistry (either CEM 143 or the CEM 251/CEM 252 sequence, depending on chosen concentration) can be taken over the summer in the case that a student finds themselves behind schedule.

The prereqs for HNF 350 are PSL 310 (physiology) and BMB (biochemistry)
The prereq for PSL 310 is BIO 161 (cell and molecular bio)
The prereq for Biochemistry is organic chemistry:

CEM 141 → CEM 251 → CEM 252 → BMB 401 (biomedical track)
or CEM 141 → CEM 143 → BMB 200 (global or public health tracks)

Note: *the less-rigorous organic/biochem series (CEM 143/BMB 200) is allowed in the global & public health concentrations, but it may not meet the requirements for admission to med school or many pre-professional programs. Consider your long-term goals when choosing which organic/biochemistry sequence to pursue; consult the MSU pre-professional advising office and also the admissions office for any targeted graduate program.*

LYMAN BRIGGS – COORDINATE MAJOR IN NUTRITIONAL SCIENCES

The Lyman Briggs college is focused on the study of science in a societal context, integrating the study of science with the humanities and arts. Students in the **Lyman Briggs College** interested in the major may select the **Lyman Briggs Coordinate Major in Nutritional Sciences.**

Students in Lyman Briggs complete their core introductory science classes and History and Philosophy of Science (HPS) classes within Lyman Briggs, and take their nutrition and advanced science classes with the rest of the NutSci program students.

The current LB program sheet may be found online at:
http://www.lymanbriggs.msu.edu/majors/PDF/Nutritional-Sciences.pdf

- LB students, please **be sure to take STT 231** -- *STT 201 does **not** meet the Lyman Briggs mathematics requirement*, and the LB college is not willing to accept STT 201 in substitution.
- Be sure to consult Dr. Ekstrom and degree navigator www.degnav.msu.edu for your specific requirements (the LB publications may not reflect the most recent program changes).

HONORS COLLEGE

Information on the Honors College may be found at: http://honorscollege.msu.edu/

Honors College membership is *by invitation*. Membership is offered to a select group of admitted students upon acceptance to MSU. Additional invitations are offered after the first semester of classes. The Honors College targets the top 10% of students in each college (CANR or Lyman Briggs for Nut Sci majors) based on first-semester GPA. **If you are able to earn a 4.0 GPA during your first semester, you are guaranteed to receive an invitation.** Incoming freshmen: this is a wonderful goal to work for! If you are offered Honors College membership, I *strongly recommend* that you accept.

Honors College Facebook: https://www.facebook.com/msuhc/?fref=nf

Educational Benefits:

Students in the Honors College have opportunities to take special *honors sections* of core classes (smaller sections, with interesting spins on content), and can also work closely with faculty on additional course-based projects called "Honors Options". This helps you get to know your professors better and can lead to helpful mentoring relationships.

Honors College membership opens up additional opportunities for scholarships.

Honors college members receive special recognition during the graduation ceremonies, and have an honors notation on their final university transcripts.

The Honors College also sponsors several exclusive Honors study-abroad opportunities (including summer lab research experiences at European universities).

Course-enrollment benefits (special access and early access):

Students in the Honors College are able to:

- replace their IAH and ISS general education requirements with their choice of courses from the humanities and social sciences.
- enroll in classes before other students, providing the best access to courses and desired course sections.
- enroll in upper-level classes without necessarily completing all of the required prerequisites (recommended to ask advisors for advice first)
- enroll in graduate-level courses
- enroll in classes that are otherwise restricted (i.e. courses that are normally limited to students in another major)

ELECTIVE COURSES

The Nutritional Sciences program of study contains a considerable number of required courses. However, all students have space to take electives, which are used to bring your credit total to (or above) the minimum of 120 credits required for graduation from MSU. *Note: 123 credits are needed for graduation for students who have credit in MTH 1825 (introductory pre-college math).*

Listed below are several elective courses you might consider, especially if you have interest in pursuing medicine or graduate programs in the life sciences. Of course, the list of possibilities is almost endless and the choice of elective classes really depends on your personal interests and professional goals. Electives may also be used to explore interests outside of your major area, and to broaden your educational experience. (psychology, world religions, art history, music, etc). Some students add courses pertaining to another nutritional sciences track in which they have interest (i.e., classes in global or public health). Some students will apply their elective credits to a minor or second major. Others will use elective credits to fulfil prerequisites for PA school, accelerated nursing programs, etc).

The transition to **block tuition** (where the same tuition price covers anywhere from 12-18 credits) will allow most students to adding electives at no increased tuition cost.

University general ed requirements (scan the listings on www.schedule.msu.edu – there are occasionally sections offered that have subjects tied to Nutrition, Food, & Health):

- IAH 206 Biotechnology and the Human Condition (section topic) 4 cr
- IAH 206 World Hunger (section topic) 4 cr
- IAH 221C Food Culture Identity 4 cr
- IAH 231B Ethics and Empathy in Medicine and the Humanities 4 cr

Some elective courses relevant to premed/preprofessional students:

- ANTR 355 Human Gross Anatomy laboratory 1 cr
- ANTR 485 Directed Study Human Prosection (Cadaver Lab) (F, Sp, Sum) 2 cr
- ANTR 440 Human Anatomic Variation (Sp of even years) 2 cr
- BLD 204 Mechanisms of Disease 3 cr
- IM 401 Clinical Emergency Medicine Research 1 (F, Sp) 4 cr
- OST 401 Selected Topics in Osteopathic Medicine (F,Sp) 1 cr
- PHL 344 Ethical Issues in Health Care (F, Sp, Sum) 4 cr
- PSL 311L Physiology Laboratory (F, Sp) 2 cr

Others

- SOC 463 Food Fight: Politics of Food (F of even years) 3 cr

For other interesting courses:

Look at the course lists for the other Nutritonal Sciences concentrations
Look at the course lists for some of the minors
Browse through the course offerings at www.schedule.msu.edu

Also, the preprofessional advising office posts a list of electives. See: https://natsci.msu.edu/current-students/preprofessional-resources/curriculum-planning/health-related-elective-courses/

FREQUENTLY SELECTED MINORS

Many students are interested in completing a minor, perhaps in a foreign language or music (this is common) or in another area that either complements your study in Human Nutrition or adds diversity to your overall education. Listed below are a few to consider, depending on your academic interests and eventual career goals.

For a complete list of minors offered at MSU, see:
https://reg.msu.edu/academicprograms/Programs.asp?PType=MNUN (there are many interesting options!)

Bioethics Minor

The Bioethics Minor is a program for students interested in bioethical issues from an interdisciplinary perspective. Courses draw on several disciplinary perspectives—philosophy, history, literature, anthropology, and sociology, among others. The mission of the minor is to cross the disciplinary boundaries that tend to produce the isolated cultures of scientists on the one hand and humanists and social scientists on the other. The program facilitates efforts to acknowledge and respond to the interdisciplinary nature of health and medicine, especially with respect to the humanities and social sciences.
This minor has significant overlap with Nutritional Sciences course options.

http://lbc.msu.edu/hps/HPSMinor.cfm
https://www.lymanbriggs.msu.edu/majors/PDF/Bioethics.pdf
(Explore BHS program pull-down menu at very top of page for requirements, how to enroll,)
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=2853

Minor in Global Public Health and Epidemiology

The Minor in Global Public Health and Epidemiology provides an opportunity for a deep and sustained study of public health and epidemiology-related topics and research. The minor focuses on public health, rather than clinical medicine, and treats public health from a global perspective. It addresses the core principles of public health.
This minor may be of interest to students in the Nutritional Sciences major who are interested in taking additional coursework in public health and epidemiology. For students in the public health concentration, this minor provides an opportunity to delve even deeper into public health topics, and get to know additional public health faculty.

Students must apply for admission to this minor: see their webpage for details.
Applications are accepted starting in January of the freshman year.

http://www.epi.msu.edu/mgphe/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=2852

Minor in Environment and Health

The Minor in Environment and Health, administered by the Department of Geography, Environment and Spatial Sciences, enhances the education and training of students who are interested in issues relating to the environment and health, including students who wish to prepare themselves for advanced degree programs in environmental studies, health studies or careers in related fields. *This minor's requirements have significant overlap with the requirements for the Public Health and Global Nutrition and Health concentrations.* Students who plan to complete the requirements of the minor should notify the undergraduate advisor for the Geography Department.

https://reg.msu.edu/AcademicPrograms/ProgramDetail.aspx?Program=7769

Minor in Pharmacology and Toxicology

The Minor in Pharmacology & Toxicology is designed to provide a coherent set of courses to introduce science-oriented students to the field of pharmacology and toxicology. This minor would be valuable for students who are interested in the interaction between nutrition and pharmacology/toxicology. This is a growing field of research, several professors in the FSHN department work in this interdisciplinary area.

https://phmtox.msu.edu/education/ug/minor/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=4926

Minor in Food Processing and Technology

The primary educational objective of the minor is to provide students with basic knowledge of food processing. *This would be a useful minor for Nutritional Sciences students who are considering careers in food science/food industry as an alternate/parallel plan.*

https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=5398

Health Promotion Minor

The Health Promotion Minor is designed to assist students in gaining a deeper understanding of health issues and their impact on overall quality of life. The multidisciplinary course options provide a basis for personal and professional growth, emphasize positive lifestyle choices and explore global health/wellness concerns. The minor is administered by the Department of Kinesiology. *There is significant course overlap between this minor and each of the three concentrations in Nutritional Sciences.*

http://education.msu.edu/academics/undergraduate/kinesiology/health-promotion.asp
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=6763

To enroll in the Health promotion minor, fill out the following form:
https://msucoe.az1.qualtrics.com/jfe/form/SV_eKH96f6TvFS3Jyd

Minor in History, Philosophy and Sociology of Science

Open only to students in the Lyman Briggs College. Requires two classes on top of the two HPS courses already required for your Lyman Briggs major.

https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=2749

Minor in Entrepreneurship and Innovation

The Minor in Entrepreneurship and Innovation will allow students to gain the skills and knowledge needed to start their own business, change the world through social innovation or innovate within an established organization.

The **Social Innovation Track** is a variation on the Minor in Entrepreneurship and Innovation. As the name suggests, it takes a deeper dive into topics related to social innovation such as social impact, non-profits and social change. It is recommended for students who imagine themselves solving social problems or helping communities more so than launching a for-profit company.

General Entrepreneurship Track: https://entrepreneurship.msu.edu/academics/courses/
Social Innovation Track: https://entrepreneurship.msu.edu/academics/courses/social-innovation-track/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=6072

Minor in Peace and Justice Studies

The minor explores issues of human rights, social justice, environmental justice, economic justice, activism, peace, violence, and conflict, examining their connections and distinctions through an interdisciplinary curriculum that stimulates students to develop the critical thinking skills necessary to face global challenges. The minor allows students to explore a range of thematic issues by developing a series of critical analytics that enable them to discern how power and injustice operate. Students will use critical thinking skills to analyze particular case studies or thematic issues. *This minor may be of interest to students in the Global Health and Nutrition concentration, especially those interested in activism and social justice movements. Courses that overlap: ANP 270, COM 100, EEM 260, PHL 453*.

http://peacejustice.msu.edu/minor/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=7750

Minor in Geographic Information Science

The Minor in Geographic Information Science provides a program for students interested in the application of information technology to the spatial dimensions of Earth's human and physical systems. Students attain technical skills, as well as practical experience applying them to important problems in settings ranging from local to global. *This minor may be of interest to students who would like the ability to use GIS methods to map and visualize parameters such as disease prevalence, epidemic spread, health outcomes, and food scarcity across geographic areas and populations.*

http://geo.msu.edu/undergraduate-information/undergraduate-degrees-2/#MinorinGeographicInformationScience
https://reg.msu.edu/AcademicPrograms/ProgramDetail.aspx?Program=7672

Minor in Science, Technology, Environment and Public Policy (STEPPS)

Students who pursue the STEPPS minor are interested in how science and politics relate to one another. It allows students to personalize their classes to allow them to pursue specific science policy topics that interest them. The minor will expose students to policy-making processes at the local, state, national and international levels; examine historical trends and analyze social relationships; build a strong understanding of scientific principles used to formulate sound policy initiatives; and facilitate a linkage between policy-making and science, technology and the environment. *This minor may be of interest to students in the Global Health and Nutrition concentration and/or Lyman Briggs students*. Class options include FSC 421 Food Laws and Regulation, EPI 390, PHL 344.

http://jmc.msu.edu/minor/stepp/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=3207

Minor in Sustainable Agriculture and Food Systems

The Minor in Sustainable Agriculture and Food Systems is designed to foster active learning about agriculture and food systems for undergraduate students from different disciplinary backgrounds. Contemporary agriculture and food systems issues will be considered in biological, ecological, social, and economic contexts. Require coursework includes field visits to farm and food system operations that utilize sustainable practices in Michigan. *There is overlap with NutSci program requirements (HNF 150, CSS 124), and further overlap for students in our Global Nutrition and Health Curriculum (EEM 260, HNF 406). This minor may be of interest to students concerned about sustainability within our agricultural and food systems.*

http://www.safss.msu.edu/
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=5410

Minor in Women's and Gender Studies

The Minor in Women's and Gender Studies provides students with in-depth opportunities to study gender and its intersections with other aspects of identity within the students' field of interest.

There is potential for significant course overlap with the Nut Sci major, as their "Gender Applied: Health, Urban, and Public Policy" minor option includes classes such as:

- ANP 270 - Women and Health: Anthropological and International Perspectives
- ANP 370 - Culture, Health, and Illness
- EPI 390 - Disease in Society: Introduction to Epidemiology and Public Health
- PSY 320 - Health Psychology
- SOC 475 - Health and Society

http://www.cal.msu.edu/files/9914/3947/9556/MajorCards_online_womens.pdf
https://reg.msu.edu/academicprograms/ProgramDetail.asp?Program=5703

Minor in Leadership in Integrated Learning (Bailey Scholars Program)

This minor provides an opportunity for students to develop a leadership identity that reflects integration of ideas across social, economic, environmental, and cultural domains in addition to disciplinary learning. Students participate actively in the learning experience by developing individualized plans of study and assessment through course work in the minor. Students develop a variety of inquiry strategies though exploration of service learning, social justice and diversity, community building, problem solving, meaning making, and transformative systems thinking. Leadership, learning experiences, and reflections are documented in the student's learning e-portfolio and are presented during the culminating experience.

https://www.canr.msu.edu/bsp/prospective_students
https://reg.msu.edu/AcademicPrograms/ProgramDetail.aspx?Program=5391

EXPERIENTIAL LEARNING

Your education does not end in the classroom! Students in the Nutritional Sciences major are expected to engage on campus, in the community, and with their chosen profession. Throughout your time at MSU, actively seek out experiences that give you breadth, help you assess your career goals, deepen your skill base, improve your cultural competency, and provide practical exposure to issues of nutrition and health.

Each student completing their major under the *new* program (effective Fall 2016) is expected to participate in at least one significant Experiential Learning (EXP) experience (THIS IS A GRADUATION REQUIREMENT). Many of our most successful students will pursue *multiple* co-curricular opportunities during their undergraduate years (internships, volunteering, undergraduate research, summer programs, study abroad) – if you participate in several cool activities/projects, you can choose *one* of them to document and use to meet your official graduation requirement for experiential learning.

Dr. Tyler Becker (beckert4@anr.msu.edu) and Dr. Julia Bello-Bravo (bellobra@anr.msu.edu) are managing the EXP requirement and have developed the EXP assignments and evaluation materials. Please contact either Dr. Becker or Dr. Bello-Bravo with questions on the requirement and approval for your selected experiences. They are sharing this role -- Dr. Becker is the lead person to contact *during Spring and Summer Semesters* and Dr. Bello-Bravo is the lead contact *during the Fall Semester*.

After you declare your major in Nutritional Sciences, please ask either Dr. Becker or Dr. Bello-Bravo to give you access to their **Experiential Learning D2L community**. This D2L group provides specifics on what you need to do to complete the EXP requirement, copies of the required forms and info on the related assignments. For further information, please refer to the Nutritional Sciences Experiential Learning syllabus/handbook (provided in the D2L group).

To meet the **graduation requirement**, students have the option of pursuing:

1. Undergraduate Research in nutritional sciences or a related area (biomedical/health/food systems/etc)
2. An Internship
3. An approved study-abroad (these include several study abroad options that are related to nutrition/health/sustainable foods and have a research component)

Note: The one-credit hybrid-format career-prep course **HNF 250L** has been designed with an objective of preparing students for their EXP, post-baccalaureate education/training, and future careers. If possible, we recommend that you complete HNF 250L *before* starting your EXP.

To meet the graduation requirement, students must also enroll in a **minimum of 3 credits** associated with their EXP experience. If your EXP entity (internship/research/study abroad) does not provide college credit, you should enroll in either HNF 490 (research experience), HNF 494 (internship), or ANR 475 (International Studies in Ag and Natural Resources) for a minimum of 3 credits during the time of your EXP. See Dr. Becker or Dr. Bello-Bravo to be placed into HNF 490/494. **If you are already set to receive credit from your EXP entity (i.e., as with many study abroad trips), you still need to complete the EXP requirements (the assignments, presentation and enrollment forms) as described in Nutritional Sciences Experiential Learning syllabus/handbook**. These requirements will include reflective exercises, a written report and an oral presentation on your chosen experience.

On planning: We recommend that you research potential EXP opportunities **at least one semester prior to** your planned involvement.

Once you locate an experience of interest, complete the EXP Site Application (**Form A**) and upload to D2L. If your EXP is a new option (not already listed on the Experiential Learning Opportunities document), please obtain approval for your activity/project/internship from either Dr. Becker or Dr. Bello-Bravo.

Next, you will need to identify your site supervisor/advisor. This is typically your internship supervisor, research director/PI, or study abroad trip coordinator. You should work with your site advisor to complete the EXP Learning Agreement (**Form B**). This form will map out your roles, responsibilities, expectations and goals for your EXP experience. To complete the EXP Learning Agreement, you will need to generate and discuss learning objectives with your site advisor. For further information on generating learning objectives, refer to the supplementary pages in the EXP Learning Agreement (on D2L). Additionally, you will need to complete a Pre-EXP video biography prior to the start of your EXP.

After your project is approved, you can enroll for the credits associated with your opportunity. Please contact Drs. Becker or Bello-Bravo for assistance in enrolling in 3 credits of one of the following: HNF 490, HNF 494, HNF 490H and, or ANR475. Dr. Becker or Bello-Bravo with be listed as the instructor and responsible for your grade (based on the written report and oral presentation of your work).

Prior to, during, and after your EXP, you will be required to work on a written document summarizing your EXP experience and expanding on a nutrition or health problem related to your project/internship. Upon return or completion of your internship/study abroad/research experience, you will present your project, and record your presentation (either during the presentation itself or you can make a recording of yourself at a later date). The presentation venue will depend on the type of EXP, the semester enrolled, etc. UURAF is a good venue for undergraduate research, and internship students may choose to present at the Nutritional Sciences student symposium (typically held on the last day of the semester).

If you believe you already have completed an eligible EXP project (i.e., through a previous internship or research experience), please contact either Dr. Becker or Dr. Bello-Bravo to inquire whether your prior experience can be used to satisfy the Nutritional Sciences EXP requirement. If so, you would still be required to complete the written work document and give a presentation about your EXP (as described in the D2L EXP materials).

STUDY ABROAD / EDUCATION ABROAD

Study-abroad is a highly enriching experience that all students should consider. Summers are often an ideal time to participate in a Study Abroad. It is also possible to complete a short Study Abroad over Spring Break (or Winter Break). Some students plan an entire Fall or Spring semester abroad (or even an entire academic year) – this requires advanced planning and schedule coordination.

Nutritional Sciences majors have participated in a wide variety of Study Abroad Programs. You are encouraged to visit the MSU Education Abroad website (http://educationabroad.isp.msu.edu/), look through their complete list of programs, and attend the informational sessions available each semester to learn more about options of interest to you. (Info session schedule: http://educationabroad.isp.msu.edu/other-do-not-delete/events/)

In the current offerings, there are public health, medicine, and medical ethics-related trips in a wide range of countries. One Nutritional Sciences student recently did a two-semester research-based study abroad in South Africa. Other students have chosen trips that mesh with interests outside the major (Ecology, anthropology), trips that support a language minor (German, Spanish, etc) or are in locations of personal interest (Costa Rica, New Zealand, the Galapagos Islands). Some study abroad trips include coursework that can be used to satisfy the MSU IAH/ISS general education requirements. Do your research and **Plan ahead!**

Browse/search through the programs: http://educationabroad.isp.msu.edu/students/getting-started/program-search/

You can choose to *direct enroll* or be an *exchange student* at a University that offers specific courses that you want to complete (i.e., search https://osa.isp.msu.edu/programsearch/ for Biochemistry) – this is a less structured option.

Or you can choose a *faculty-led program* with guided activities focused on public health or another topic area.

Here are a few Study Abroad Programs that have been approved for our *experiential learning credit*:

- International Food Laws, Global Food Systems and Health (sponsored by the FSHN department)
  - Program details ..... http://osa.isp.msu.edu/Programs/belgfoodlaw.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100024.pdf
  - Dietetics student experiences http://educationabroad.isp.msu.edu/student-stories?id=1298
    http://educationabroad.isp.msu.edu/student-stories?id=1291
    http://educationabroad.isp.msu.edu/student-stories?id=1267
    http://educationabroad.isp.msu.edu/student-stories?id=1239
  - Food Sci student experiences http://educationabroad.isp.msu.edu/student-stories?id=1256
    http://educationabroad.isp.msu.edu/student-stories?id=1251
    http://educationabroad.isp.msu.edu/student-stories?id=888
    http://educationabroad.isp.msu.edu/student-stories?id=882
  - Other student experiences .... http://educationabroad.isp.msu.edu/student-stories?id=2770
    http://educationabroad.isp.msu.edu/student-stories?id=2736
    http://educationabroad.isp.msu.edu/student-stories?id=1841

- Sustainable Food, Environment and Social Systems in Australia – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/ausfoodenvss.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100137.pdf

- One Health in Nepal – epidemiology, public heath, disease control in Nepal – Summer
  - Program details ..... https://osa.isp.msu.edu/Programs/nepalonehealth.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100816.pdf
  - A student experience ..... http://educationabroad.isp.msu.edu/student-stories?id=3261

- Cooking for Health (LaSalle-Beauvais University, France) – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/francelasalle.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100770.pdf
  - A Nut Sci student experience http://educationabroad.isp.msu.edu/student-stories?id=3253

Additional Study Abroad Programs related to health care and the biological sciences:

- Community Medicine in Yucatan, Mexico – Spring Break
  - Program details https://osa.isp.msu.edu/Programs/program/index/108545
  - PDF flyer https://osa.isp.msu.edu/ProgramProfile/pdf/pdf/programId/100629/preview/
  - Student experiences ..... http://educationabroad.isp.msu.edu/student-stories?id=2325
    http://educationabroad.isp.msu.edu/student-stories?id=1735
    http://educationabroad.isp.msu.edu/student-stories?id=1208
    http://educationabroad.isp.msu.edu/student-stories?id=1179
    http://educationabroad.isp.msu.edu/student-stories?id=794

- Community Medicine, Healthcare Delivery System, and Culture- South Korea – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/japanskoreacommmed.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100741.pdf

- Costa Rica: Development, Health and Environment – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/costaricadevelopment.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100153.pdf

- Euroscholars Research Abroad (Honors College only) – Fall, Spring (18 weeks)
  - Program details http://osa.isp.msu.edu/Programs/europeeuroscholars2.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100764.pdf
  - Student experiences ..... http://educationabroad.isp.msu.edu/student-stories?id=2825

- History of Science in Europe (Rotating locations – London, Paris, Rome etc) – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/francehistoryofscience.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100731.pdf
  - A Nut Sci student experience http://educationabroad.isp.msu.edu/student-stories?id=1433
  - Other student experiences .... http://educationabroad.isp.msu.edu/student-stories?id=1440
    http://educationabroad.isp.msu.edu/student-stories?id=1399
    http://educationabroad.isp.msu.edu/student-stories?id=1363
    http://educationabroad.isp.msu.edu/student-stories?id=1358
    http://educationabroad.isp.msu.edu/student-stories?id=1333
    http://educationabroad.isp.msu.edu/student-stories?id=937

- Medical Ethics and Health Policy in London – Summer
  - Program details ..... http://osa.isp.msu.edu/Programs/ukmed.html
  - PDF flyer https://osa.isp.msu.edu/cache/profiles/100085.pdf
  - Student experiences ..... http://educationabroad.isp.msu.edu/student-stories?id=2859
    http://educationabroad.isp.msu.edu/student-stories?id=2819
    http://educationabroad.isp.msu.edu/student-stories?id=2827
    http://educationabroad.isp.msu.edu/student-stories?id=2747
    http://educationabroad.isp.msu.edu/student-stories?id=1869
    http://educationabroad.isp.msu.edu/student-stories?id=1448
    http://educationabroad.isp.msu.edu/student-stories?id=1000
    http://educationabroad.isp.msu.edu/student-stories?id=975
    http://educationabroad.isp.msu.edu/student-stories?id=976
    http://educationabroad.isp.msu.edu/student-stories?id=1048

- Molecular Biology Research in Dusseldorf, Germany – Summer
  - Program details …… http://osa.isp.msu.edu/Programs/germanyhhud.html
  - PDF flyer …….. https://osa.isp.msu.edu/cache/profiles/100570.pdf
  - Student experiences …… http://educationabroad.isp.msu.edu/student-stories?id=2755
    http://educationabroad.isp.msu.edu/student-stories?id=1432
    http://educationabroad.isp.msu.edu/student-stories?id=1389

- Pre-Clinical Observation, Culture & Medicine (Dominican Republic) – Spring Break
  - Program details …… http://osa.isp.msu.edu/Programs/drpreclinical.html
  - PDF flyer …….. https://osa.isp.msu.edu/cache/profiles/100573.pdf
  - A Nut Sci student experience http://educationabroad.isp.msu.edu/student-stories?id=2828
  - Other student experiences …. http://educationabroad.isp.msu.edu/student-stories?id=894
    http://educationabroad.isp.msu.edu/student-stories?id=874

- Pre-Clinical Observation, Culture & Medicine (Merida, Mexico) – Spring Break (past)
  - A Nut Sci student experience http://educationabroad.isp.msu.edu/student-stories?id=2918
  - Other student experiences …. http://educationabroad.isp.msu.edu/student-stories?id=2919
    http://educationabroad.isp.msu.edu/student-stories?id=2921
    http://educationabroad.isp.msu.edu/student-stories?id=2922

- Spanish for Healthcare Professions – Summer
  - Program details …… https://osa.isp.msu.edu/Programs/program/index/108225
  - PDF flyer …….. https://osa.isp.msu.edu/cache/profiles/100730.pdf
  - Student experiences …… http://educationabroad.isp.msu.edu/student-stories?id=2801
    http://educationabroad.isp.msu.edu/student-stories?id=2807

Scholarship opportunities are available – 74% of students receive some form of aid towards study abroad costs. (See: http://educationabroad.isp.msu.edu/students/getting-started/financing/)

If you would like to use your study abroad to meet your **Experiential Learning requirement**, please contact Dr. Tyler Becker or Dr. Julia Bello-Bravo for guidance before booking your trip.

Leadership opportunities for students passionate about study abroad:

- Be a study abroad Peer advisor: http://educationabroad.isp.msu.edu/alumni/peer-adviser-program/

  and/or

- Be a Spartans Abroad Global Ambassador: contact sagaMSU@gmail.com (a NutSci student, Joey DeMaria was the founder and first president of this group). https://www.facebook.com/SAGAmsu/.

UNDERGRADUATE RESEARCH

Students may work in university laboratories as volunteers, for course credit, or (sometimes) for pay. Some of these opportunities are posted online at http://venture.msu.edu, or on handshake, however the majority of professors heading research labs will never post ads, instead selecting from students who contact them personally via email or networking. Faculty usually can take only a few students per year into their labs, so you should plan early, be targeted and persistent in your search, and be somewhat flexible. I recommend that students look up faculty research descriptions in each of the bioscience departments (FSHN, PSL, BMB, MMG and beyond), and write targeted letters to a handful of professors whose research area really inspires you. A good match is key to a great experience!

Some faculty from our department (FSHN) with research relating to Human Nutrition:
(see http://www.canr.msu.edu/fshn/directory/faculty)

- Dr. Katherine Alaimo – Community food security; urban agriculture; policy and environmental supports for promoting healthy eating and physical activity; school nutrition; and community-based participatory research
- Dr. Julia Bello-Bravo – development of informal education and communication strategies (based on simple cell-phone animations) to bring health and farming training to low- or non-literate learners in developing and developed countries.
- Dr. Les Bourquin – Diet and colon cancer: Impact of plant flavonoids on intestinal tumorigenesis, dietary carbohydrate sources and their influence on colon cancer development, gastrointestinal fermentations of plant cell wall polysaccharides and other indigestible dietary carbohydrates.
- Dr. Joseph Carlson – Role of nutrition on training, performance and cardiovascular health status in youth and collegiate athletes
- Dr. Courtney Carignan – Effects of environmental exposures on reproductive and child health. My research aims to protect reproductive and child health by investigating human exposure to ingredients in consumer products, personal care products, food, and food packaging.
- Dr. Sungeun Cho – internship/research possibility with the MSU Product Center (create nutritional labels for Michigan food entrepreneurs and small businesses).
- Dr. Sarah Comstock – Influence of nutrition on immune development of the neonate; Influence of maternal obesity on child growth and intestinal health; role of lipids in child health and development; Maternal & child health; gastrointestinal microbiota; food allergy
- Dr. Jenifer Fenton – Effect of Dietary Factors on Inflammatory Processes of Chronic Disease (omega 3 fatty acids)
- Dr. Venugopal Gangur – Food allergens, food allergy, anaphylaxis, asthma, immunology, breast milk immunology, assessment of allergenicity of food using mouse model of food allergy, and dietary modification to prevent/treat food allergy
- Dr. Elizabeth Gardner – Nutritional Immunology. The effects of nutritional interventions (antioxidants and nutraceuticals) on immune response (influenza); the effects of caloric restriction on immune response (influenza infection or vaccination).
- Dr. Mike Hamm – Community-based food systems, food security, sustainable agriculture and nutrition education.
- Dr. Jim Pestka – Autoimmune disease: Can omega-3 fatty acid consumption prevent environmental triggering of autoimmunity?
- Dr. Won Song – Nutritional epidemiology; community nutrition; food consumption behaviors in relation to chronic diseases. Emphasis on subgroups who are economically disadvantaged in the US, including migrant seasonal farm workers, WIC recipients, and SNAP participants
- Dr. Rita Strakovsky – Maternal determinants of fetal development and offspring health (maternal diet, endocrine disruptors, maternal adiposity, gestational estrogen status)
- Dr. Robin Tucker – Biological and environmental factors that influence ingestive behaviors with a particular focus on taste and sleep

- Dr. Nancy Turner – focus on identifying bioactive compounds in the diet that suppress colon carcinogenesis and inflammatory bowel disease. Studies address the regulation of colonocyte proliferation and apoptosis, and the effects of dietary components on apoptosis induction. Exploration of how diet and radiation exposures influence the intestinal environment, with particular attention to the interaction between microbiota and colon epithelia. Recent outcomes have detected changes in the metabolic profile of microbiota after radiation exposure and have identified dietary interventions that protect against colon disease through the establishment of beneficial bacterial populations that produce desirable microbial metabolic byproducts. A current NASA-funded project will determine the response of colon microbiota, the microbial metabolites and epigenetic state of colonocytes to radiation exposures.
- Dr. Lorraine Weatherspoon – Role of dietary, lifestyle and ecological factors in the risk, prevention and management of diet-related health disparities and chronic diseases. Special Interest in Type 2 diabetes, maternal and child nutrition, and nutrition in HIV/AIDS.
- Dr. Felicia Wu – Her research applies health economic and mathematical modeling techniques to understand the public health impacts of agricultural practices, both in the United States and worldwide. (Economic and health impacts of mycotoxins, world food trade and the impact of food safety regulations, the global burden of disease caused by food contaminants)

Some faculty outside FSHN who research topics that may match the interests of Nutritional science students:

<u>Pharmacology/Toxicology:</u>

- Dr. Jamie Bernard (Pharmacology & Toxicology) – research aims to identify the specific mechanisms of obesity-promoted cancer with a focus on visceral fat inflammation, investigates natural products as possible chemopreventive agents.
- Dr. Gregory Fink (Pharmacology & Toxicology) – research investigates the causes of systemic arterial hypertension, a major world-wide risk factor for cardiovascular disease morbidity and mortality.
- Kin Sing Stephen Lee (Pharmacology & Toxicology) – The ultimate goal of this research is to improve human health through understanding the mechanism of the biological effects induced by dietary lipids. (What is the molecular mechanism responsible for the effects of dietary omega-3 to omega-6 ratio on human diseases?)

<u>Physiology / Microbiology & Molecular Genetics / Biochemistry:</u>

- Dr. Julia Busik (Physiology) – diabetic retinopathy
- Andrea Doseff (Biochemistry) – we study the role of plant compounds (phytochemicals) in the regulation of immune cell function. We have developed new approaches to identify targets of phytochemicals in humans, contributing to the discovery of new mechanisms by which dietary phytochemicals control cancer and immune-function. Our research revealed the role of phytochemicals in halting cancer development and metastasis by modulating gene expression and RNA splicing. Towards the development of foods for health, we are working in functional foods that increase the efficacy of phytochemicals, facilitating the implementation of novel alternative approaches for the prevention and treatment of cancer and other inflammatory diseases.
- John Fyfe (MMG) – investigation of and genetic testing for congenital diseases in companion animals (Vitamin B12 malabsorption, Glycogen Storage Diseases, Hypothyroidism, etc)
- Dr. Gina Leinninger (Physiology) – studies how the brain regulates energy balance and weight (investigating how neurons in the lateral hypothalamic area (LHA) influence energy balance and obesity).
- Dr. Laura McCabe (Physiology) – bone metabolism
- Dr. Richard Schwartz (MMG) – investigates the link between a high-fat diet in puberty to increased incidences of breast cancer using a mouse model.
- Dr. Tim Zacharewski (Biochemistry) – studies how gene expression changes induce the progression of fatty liver to more complex metabolic human diseases (i.e. diabetes, cardiovascular disease, and liver cancer); hepatotoxicity.

<u>Neuroscience and/or Psychology:</u>

- Dr. Alex Johnson (Neuroscience and Psychology) – neuronal mechanisms of learning and motivation. Current research themes include the modulation of food intake and procurement via learning, and the transition to habitual behavior that follows addiction.

  Dr. Kelly Klump (Psychology Department) – biological and genetic eating disorders

Other departments on campus:

- Dr. Evangelyn C. Alocilja (Biosystems and Agricultural Engineering) – developing biosensors for the rapid diagnosis of infectious disease agents which are of concern to public health, homeland defense, food supply chain, and economic infrastructures.
- Dr. Jennifer Carrera (Sociology) – uses citizen science and community based participatory research (CBPR) methods to explore access to affordable and clean water in low-income and minority communities. Her current projects include water quality affordability and shutoffs in Detroit, Michigan, failing septic systems in Lowndes County, Alabama, and the relationship between the politics of water governance and health in Flint, Michigan.
- Dr. James Dearing (Communication) – research on which effective and low-cost healthcare practices from other countries could be successful if implemented in the United States.
- Stephen Gasteyer (Sociology) – research focuses on community development, environmental justice, and the political ecology of landscape change, with specific attention food, energy, water, and public health. Recent research has addressed the food access and impacts urban greening in small US cities. interest in the development and maintenance of sustainable regional food systems, both within and outside the U.S. His past research has included work on the social aspects of Community Supported Agriculture in Iowa, on sustainable agriculture farmers in the Midwest, on alternative regional food systems in rural Illinois, and on food supply chains and nutrition in the Palestinian territories. His more recent research has been on social networks, local food systems, and urban farming systems in Michigan, and the nexus between food security, nutrition, community building, and urban farming. He is interested in the researching the nexus between community capacity and the development of local food systems, and the role of social capital in development of local food systems. His research is often at the community level and as such he uses a participatory assessment approach that works with local stakeholders to development assessment systems that can be used to assess change over time.
- Steven Gold (Sociology) – interests involve immigrant and ethnic businesses and their role in distributing food, especially in urban areas, to low income and minority populations.
- Dr. Sue Grady (Geography, Environment and Spatial Sciences) – focus of my research is medical (health) geography, human ecology, spatial epidemiology, and health disparity research. I utilize geographic information system applications and multilevel modeling to conduct exposure and health assessments. I am currently focusing on estimating spatial/geographic variations in adverse birth outcomes with respect to demographic, socioeconomic and environmental risk factors.
- Dr. Jennifer Hodbod (Community Sustainability) – social scientist specializing in resilient food systems. Her research explores how to promote food systems that are environmentally and economically sustainable, can equitably feed a growing global population, and are able to adapt to shocks such as climate change, changing dietary preferences, and market price fluctuations.
- Dr. Phil H. Howard (Community Sustainability) – My research focuses on investigating the relationships between food, agriculture and public health, as well as assisting communities to characterize and respond to changes in the food system. My current projects focus on: Consolidation in the food system, particularly in the rapidly growing organic sector; 'Food environments' and their potential influence on obesity and hypertension; National consumer interest in 'ecolabels' as a potential strategy for improving the livelihoods of small- and medium-scale farms.
- Dr. Raymond Jussaume (Sociology) – Ray has become involved in research on sustainability issues, including questions about food access and its relationship to community health issues, particularly in the context of the United States, Europe and Asia.
- Dr. Maria Lapinski (Communication) – Dr. Lapinski's research examines the impact of messages and social-psychological factors on health and environmental risk behaviors with a focus on culturally-based differences and similarities.
- Dr. Joseph P. Messina (Geography, Environment and Spatial Sciences) – Medical Geography including, Geographic Information Systems and Remote Sensing, I am currently working on sleeping sickness (NIH) and malaria (NSF) projects in Kenya, LULCC (NASA) in Urumqi and Shanghai, and health care access (MDCH) in Michigan.
- Dr. Laura Schmitt Olabisi (Community Sustainability) – working in West Africa on climate change adaptation, food security, and development projects funded by NSF and USAID; and in Detroit and Flint, Michigan, on food security and urban agriculture systems.
- Dr. Ashton Shortridge (Geography, Environment and Spatial Sciences) – Health Geography
- Dr. Amber Pearson (Geography, Environment and Spatial Sciences) – health geographer with a focus on social justice. Her research relates to aspects of the built, physical and social environment that bolster health in the

face of adversity. Topics include access to healthy foods, air pollutants, social isolation, and understanding social deprivation of neighborhoods.

- David Poulson (Communications/Journalism) – director of MSU translational scholars corps and editor of The Food Fix. Interest is in telling research and science stories. Connect with him if you are interested in science communications/journalism.
- Richard Sadler (Medicine) – his work in local food systems stems from early projects mapping gaps in access to healthy food retailers, and a recognition of the need for small-scale, local solutions like urban gardening and farmers' markets. He works alongside with organizations such as Edible Flint, the Flint Farmers' Market, Michigan State University Extension, and the Hurley Children's Center to address issues of food access, food insecurity, and malnutrition. *Works in FLINT with MSUCHM.*
- Dr. Brad L. Upham (Pediatrics & Human Development) – projects involve determining the cellular mechanisms by which nutrition, oxidative stress, and environmental and food-borne contaminants affect cell proliferative, differentiation and apoptotic processes that ultimately cumulates into states of human diseases such as cancer.

The **MSU Undergraduate Research Website** http://urca.msu.edu/ is full of valuable info.

- Learn about Undergraduate Research: http://urca.msu.edu/learn
- Find Opportunities: http://urca.msu.edu/find
- Share your Research: http://urca.msu.edu/share
- News and Events: http://urca.msu.edu/current

Also see: https://www.facebook.com/urmsu/

Every April, students present their research projects at the **UURAF** (University Undergraduate Research and Arts Forum) as posters or short (10-minute) oral presentations. More than 880 students participated in this year's UURAF – a record-setting number for MSU. $500 awards are given for the best poster and oral presentation in each subject category. If you are considering research or looking for a lab project, attending the UURAF will give you a chance to speak with students that are currently doing research projects (and get helpful info and connections). The abstracts for previous years' presentations are archived online at http://urca.msu.edu/uuraf. Browsing through these will give you an idea of the types of projects students have done, and will also show you which faculty members regularly bring undergraduate researchers into their labs. Very Useful!

Special Summer Research Programs at MSU targeting underrepresented students

- **BRUSH** Summer Research Program – Biomedical Research for University Students in the Health Sciences – https://cvm.msu.edu/research/student-research/undergraduate-student-summer-research-program
- **REPID** – Research Education Program to Increase Diversity in Health Researchers http://repid.msu.edu/

Summer Research away from MSU: Many summer research programs can be found at universities and research institutions across the country. Enter "Summer Undergraduate Research Fellowship" (SURF) into Google and you will find thousands of potential opportunities. Here are a few links to launch your search.

- Summer research opportunity list *(gathered by the MSU UR staff)* - http://urca.msu.edu/summer
- Research abroad - http://urca.msu.edu/international
- Summer research at other universities
- NSF REU programs http://www.nsf.gov/crssprgm/reu/reu_search.jsp
- Biomedical/health summer internships: http://urca.msu.edu/files/resources/54/document/BiomedicalHealthInternships.pdf
- AAMC SURPs https://www.aamc.org/members/great/61052/great_summerlinks.html
- CDC ORISE http://www.cdc.gov/nceh/dls/orise.html

Leadership Role: Undergraduate Research Ambassadors: http://urca.msu.edu/ambassadors

- The Undergraduate Research Ambassador role is to promote research to other undergraduates on campus through workshops and events. Applications are due in March for the following academic year
- See https://web.archive.org/web/20160122140803/http://urca.msu.edu/people/david189 for a profile of Emily Davidson, a Nutritional Sciences student that served as an Undergraduate Research Ambassador.

Scholarships to support your research $$$:

- The FSHN department awards scholarships to support Nutritional Sciences students that are involved in undergraduate research projects. Applications are due in October, resulting in awards to cover that current academic year (Fall/Spring). Watch for the announcements that I send out in September.
- The College of Agriculture and Natural Resources takes applications for scholarships for research done in the Fall, Spring, or Summer semesters. You need to apply for funding one semester ahead of time, and can receive the $2000 CANR awards a maximum of two times. These awards are available only for students whose *primary major* is in CANR.
  See: http://www.canr.msu.edu/academics/undergraduate/undergraduateresearch/
- Lyman Briggs students or students whose *primary major* is in the College of Natural Sciences can apply for research support through their college's research scholarship awards program.
- Honors College students have additional opportunities to apply for research funding, listed here: https://honorscollege.msu.edu/programs/research.html

INTERNSHIPS

Internships are an excellent mechanism to explore various career options and gain experience. Internships could be in research laboratories, in public health offices, with MSU Extension, in the food industry, in community education settings, and many other options. The summers after your sophomore or junior years are ideal times to pursue internships, or you might arrange for an internship that coincides with the school year. Students MUST plan early to arrange an internship. It usually takes 3-6 months lead time to arrange an off-campus internship experience.

Handshake at http://careernetwork.msu.edu/ provides a listing of many on and off- campus jobs (part-time jobs, internships, and career positions), other opportunities can be found through networking or contacting organizations directly.

Some ideas:
MSU Cooperative Extension
On-campus:

- (S)partners for Heart Health, Spartan Performance, MSU Athletics, MSU Test Kitchen, MSU adaptive sports club, SPARTANfit through Student Health Services (and others)

Lansing-area community Organizations:

- Northwest Initiative, Lettuce Live Well, Greater Lansing Food Bank, Allen Neighborhood Center, Lansing City Market, Edgewood Village Network Center, The Power of We, Summer Americorps positions (and others)

Detroit

- Keep Growing Detroit, Detroit Food Policy Council (and others)

Flint

- Various groups focusing on the lead water and other public health issues

Michigan Government and Foundations

- Michigan Department of Community Health. Michigan American College of Sports Medicine, Michigan Public Health Association, Michigan Department of Education, Michigan Fitness Foundation, Michigan Nutrition Network, Michigan Academy of Nutrition and Dietetics, School Nutrition Association of Michigan, Food Bank Council of Michigan (etc)

Other ideas

- Women, Infants, and Children program, Blue Cross Blue Shield of Michigan, Crim Fitness Foundation, Kellogg Company, Kellogg Foundation, Ruth Mott Foundation, Public schools, Hospitals, etc.

If you would like to use your internship to meet your **Experiential Learning requirement**, please contact Dr. Tyler Becker and/or Dr. Julia Bello Bravo for guidance.

HNF 494 Practicum: HNF 494 is administered as a pass/no grade course for students who need (or are interested in getting) University credit for their Internship. HNF 494 can be taken for variable credit (1-10 credits). A minimum of 3 credits are needed to satisfy your EXP. See Dr. Tyler Becker and/or Dr. Julia Bello Bravo for guidance.

MSUFCU Internship Opportunity Award apply for $1000 stipend (support for students doing unpaid internships) http://careernetwork.msu.edu/jobs-internships/Internship-opportunity-award.html

UNDERGRADUATE LEARNING ASSISTANTS (ULAFs)

The Undergraduate Learning Assistant Program in FSHN provides opportunities for undergraduate students to assist FSHN faculty in teaching a course. Students are emailed an announcement/application each Spring Semester to apply for the following academic year. Some ULAFS may be hired to help with summer and online classes as well.

INFO FOR PREPROFESSIONAL STUDENTS

The coursework in the Nutritional Sciences **Biomedical and Molecular Nutrition** concentration meshes very well with the course requirements for admission to graduate and professional programs in medicine, osteopathic medicine, dentistry, pharmacy, and physician assistant studies.

Students interested in accelerated nursing programs, physician assistant programs, and some other prehealth programs may also find that the **Public Health Nutrition** concentration is a good match with the addition of needed prerequisite courses.

Some additional classes may be needed, depending on the targeted program and school.

- Medical schools typically require a second semester of general biology (BS 162/172) and many recommend a course in medical ethics (i.e., PHL 344)
- Physician Assistant requirements vary slightly with each school: some programs require classes in medical terminology (LB 270), child development (HDFS 225), anatomy laboratory courses, etc.
- Some additional classes may also be beneficial for MCAT preparation (i.e., PSY 101, SOC 100)

Explore the **MSU PreProfessional** webpage**:**
https://natsci.msu.edu/students/preprofessional/preprofessional-advising/

The PreProfessional website contains a wealth of *valuable info*: descriptions of health careers, information on preparation, application essays and application strategies. There are helpful videos, student-written blogs, lists of the required prerequisite coursework for each target program and school, plus tips for planning (from freshman year onward).

It is recommended that all students considering med school, dental school, PA programs, etc develop an *additional* advising relationship with a **PreProfessional adviser** (they are located in the Natural Sciences Building). These advisers keep current on requirements for each program, can guide you through your four years and give suggestions for shadowing, volunteer opportunities, and additional pre-professional coursework.

It is very important to consider "parallel paths" – the careers and options that you could pursue if you change your mind or do not get accepted to medical school. (Accelerated Nursing programs, MPH programs, post-Bacs, biomedical research, becoming a dietitian, etc.)

- MSU PreHealth Facebook page: https://www.facebook.com/MSUPreHealth/?fref=nf
- Another valuable resource for premeds: http://www.studentdoctor.net/
- Osteopathic Medical Scholars Program: http://www.com.msu.edu/Students/Osteopathic_Medical_Scholars/Osteopatic_Medical_Scholars.htm
- Rural Medicine Program: http://msururalhealth.chm.msu.edu/index.php/pipeline-program

GENERAL SCHOLARSHIPS

Nutritional Sciences students are eligible to apply for scholarships offered by the FSHN department. Thanks to generous private donations and an endowment, we are able to award approximately **$300k in undergraduate scholarships each year**, with one third of those funds going to undergraduate students in the Nutritional Sciences major. We are very fortunate to be able to support our students at this level. Many students are given awards each year *so it is definitely in your interest to apply*. Our cutoff for consideration is a 3.0 cumulative GPA.

Applications are due in December or January (with awarded funds released during the following Fall and Spring semesters). Students apply using the FSHN online scholarship application form. See: http://www.fshn.msu.edu/undergraduate_programs/undergraduate_scholarship_opportunities

Additional general scholarship opportunities (funded outside of the department) can be found through the **Financial Aid webpages**. https://finaid.msu.edu/sships.asp

RESEARCH SCHOLARSHIPS

An additional set of scholarships is announced by the FSHN department each fall – the majority of these support students who are actively involved in **undergraduate laboratory research**.

The **College of Ag and Natural Resources** also funds students involved in undergraduate research at up to $2000 per semester, which can be awarded for up to two semesters.

See: http://www.canr.msu.edu/undergraduate/undergraduateresearch

Additional research scholarship and funding opportunities are listed on the URCA website:

See: http://urca.msu.edu/funding (these include funds for conference travel for students who are presenting their work).

NIFS SCHOLARSHIPS

For exceptional students, there are opportunities to apply for **National and International fellowships and scholarships** (Rhodes, Goldwater, Udall, etc). The MSU NIFS office reviews pre-application inquiries and then decides which students to put forward for these prestigious national/international awards. Students that are nominated for these scholarships receive coaching and support from the MSU NIFS staff to perfect your application, prepare for any interviews, and optimize your chance of winning the award.

Browse through the NIFS website to learn about these opportunities, connect with the NIFS advisors, and attend the related informational sessions: https://nifs.msu.edu/

Article on Shelbie Shelder, a Nutritional Sciences student who won the prestigious **Udall Scholarship**: http://www.fshn.msu.edu/news/article/nutritional_sciences_junior_earns_udall_scholarship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STUDENT ACTIVITIES

Nutritional Sciences Student Organization

Students are encouraged to join and actively participate in the Nutritional Sciences Student Organization/Club. The goal of the Club is to enhance the professional and personal development of students majoring in Nutritional Sciences by presenting opportunities to:

- Interact with other Nutritional Sciences students;
- Learn first-hand about student jobs, internships, and volunteer experience;
- Speak with past Nutritional Sciences graduates;
- Learn how to package your Nutritional Sciences experiences for jobs in industry and admission to graduate and professional schools;
- Develop organizational and leadership skills.

Visit the Club Facebook page: https://www.facebook.com/groups/msunsso

Please contact one of the NSC Officers, or Dr. Wei Li (wli@anr.msu.edu) for further information.

To learn about other student organizations (covering all types of interests and activities):

- **Go to SPARTICIPATION!**:
  Typically the day before classes begin in August, Cherry Lane Field (just south of the Breslin Center and across from Wonders Hall).
- Browse the full list of student organizations:
  https://michiganstate-community.symplicity.com/?s=student_group

Some student organizations with a food systems/sustainability focus:

- **Slow Food MSU** https://www.facebook.com/groups/msuslowfood/
- **Spoon University MSU** https://spoonuniversity.com/chapter/msu/about

Some student organizations with a pre-professional focus:

- **Pre-professional Society for Health Careers (Alpha Epsilon Delta)**
  http://aedmsu.weebly.com/
- **Student Health Advisory Council** http://msushac.org/#intro
- **Undergraduate Bioethics Society** http://www.bioethics.msu.edu/ubs and

https://www.facebook.com/groups/890459494313830/

- **MSU Pre-SOMA** http://msupresoma.wix.com/msupresoma
- **MSU Pre-Physician Association** http://msuppa.weebly.com/about.html
- **MSU Pre-Physician Assistant Club** http://msuppa.weebly.com/
- **MSU Pre-Pharmacy Club** https://msu.edu/~prepharm/
- **MSU Pre-Dental Club** http://msupredent.weebly.com/
- **MSU Pre-Health Council** *membership by election/invite*
- **Spartan Pre-Professional Club** https://msu.edu/~sppc/Spartan_Pre-Professional_Club_%28SPPC%29/index.html

Volunteer Experience

It is especially important for premed students to secure long-term, in-depth work or volunteer experience where responsibility is being taken for the welfare of others (e.g. working in a hospital or clinic, being a scout leader, a camp counselor, providing day care for an individual who is developmentally disabled, volunteering in geriatric programs, etc.). These experiences not only let the student know whether he/she is pursuing the correct career path, but they also let medical/dental schools know that the student is serious about becoming a health care provider. The Michigan State University **Service Learning Center**, 27 Student Services Building will assist preprofessional students in finding a volunteer experience at a hospital or clinic near campus, and the **Student Employment Office**, 110 Student Services Building, will assist you with health-related work experience.

Students who are pre-PA need to accumulate 1000 or more hours of paid **"Direct Patient Care"** experience. The most common path to this is to be certified as a CNA (nursing assistant), other students get certified as a phlebotomist or EMT. *See the Preprofessional Advisors for guidance.*

CAMPUS RESOURCES - Tutoring

Neighborhood Student Success Collaborative (NSSC)
Website: http://www.nssc.msu.edu/academic-support.php

Tutoring in the Departments:

- Chemistry: https://www.chemistry.msu.edu/undergraduate-program/tutoring-information/
- Math Learning Center: https://www.math.msu.edu/mlc/
- Statistics helproom: https://www.stt.msu.edu/Academics/helproom.aspx
- Physics helproom: http://www.pa.msu.edu/~pratts/phy231/helproom.html
- Biochemistry helproom: https://bmb.natsci.msu.edu/undergraduate/tutoring/
- Econ and social science helproom: http://libguides.lib.msu.edu/econhelp

Writing Center
300 Bessey Hall
Phone: 517-432-3610
Email: writing@msu.edu
Website: http://writing.msu.edu/
Appointments: https://msuwriting.mywconline.com/

Experienced writing consultants talk one-on-one with writers of all levels of proficiency at all stages of a composition. Students receive assistance in brainstorming topics, organizing ideas, developing rough drafts, and fine-tuning their writing.

Also, utilize your professors and TAs – they are required to either have office hours or be able to meet with you by appointment. If you are having trouble with the material in a class, do not feel intimidated. Please reach out for help: your professors/TA, advisors such as myself, and your other mentors on campus.

If you are facing a serious challenge this semester, I can connect you with Dr. Dorcia Chaison, the Assistant Dean of Academic Advising Student Success for the college. Dorcia can help with all sorts of unusual circumstances. Remember, your success is important!

CAMPUS RESOURCES - Career

MSU Career Development and Placement Services
113 Student Services Building
Phone: 517-355-9510
Email: careerservices@csp.msu.edu
Website: http://careernetwork.msu.edu/

- Explore this website, so you will understand how the career office can help you
- Also lists career seminars, job fairs and other helpful events.

Handshake: https://app.joinhandshake.com/

College of Agriculture & Natural Resources Career Services office – additional help for students in the College of Agriculture and Nat Resources
Morrill Hall of Agriculture
446 W. Circle Drive, Room 121
Contact: Jill Cords (517) 355-0234

Lyman Briggs College Career Services office – additional help for students in Lyman Briggs
Holmes Hall
919 E. Shaw Lane, Room E-36A
Contact: Ed Tillett (517) 353-4607

Center for Service-Learning and Civic Engagement
26 Student Services Building
Phone: 517-353-4400
Website: http://www.servicelearning.msu.edu/

MSU students may receive placement assistance here for volunteer experiences and internships related to their majors.

CAMPUS RESOURCES - Counseling

Counseling Center
Main Office
207 Student Services Building
Phone: 517-355-8270

Branch Office
335 Olin Health Center
Phone: 517-355-2310

The MSU Counseling Center Walk-in Hours: Monday – Friday: 10:00am – Noon & 1:00pm – 3:00pm
Crisis walk-in hours are: Monday – Friday: 8:00am – 5:00pm

Website: http://counseling.msu.edu/

- Students should feel free to contact the Counseling Center for personal concerns and crises. Professional counseling and psychological services are offered to assist with both immediate personal concerns and ongoing needs. All services are confidential. Initial consultations are free of charge; all services are free to currently enrolled students carrying 1 or more credits. A multitude of specialized groups and workshops are offered each semester, with varying topics, which usually include stress management and test anxiety. Handouts about these groups and workshops are available in 207 Student Services.

The Testing Office
207 Student Services Building
(Located inside the Counseling Center)
Phone: 517-355-8385
Website: http://testingoffice.msu.edu/
Scores on standardized tests for entry into medical school (Medical College Admission Test-MCAT), dental school (Dental Admission Test-DAT), graduate school (Graduate Records Examination-GRE), and other professional schools receive considerable attention in documenting your academic and scholastic abilities. Advance preparation for these examinations is highly encouraged. Students should consider purchase of one or more of the available books on preparation for these examinations during the sophomore year. Refer to these books as courses in biology, chemistry, and physics, for example, are taken. This will provide a guide of expectation of the professional school examinations. Keep a complete set of notes and reference materials. Review materials from time-to-time during your academic program.

Registration materials for the LSAT, GRE, MCAT, and GMAT are available here, as well as foreign language placement tests.

Office of Study Abroad
109 International Center
Website: http://studyabroad.msu.edu/
This office can assist students who want to include an international study experience in their program of study.

Although it would still be some years before a Nutritional Sciences major would be officially established for the undergraduate student, Hilda Faust (Division of Home Economics) had already made Foods/Nutrition research a reality in 1918 by investigating food chemistry and other problems. The work was extended in 1919 by the investigations of Osee Hughes, and in 1922, Assistant Professor Dr. Marie Dye organized Research and Graduate Study in Nutrition. The group received extensive support from Jean Krueger, Dean of Home Economics. Thus, when the Home Economics (Human Ecology) Building was erected and opened in 1924, there were three food laboratories on the first floor and three nutrition laboratories on the second floor(1). The first Masters degrees in Nutrition were granted in 1927. Dr. Margaret Ohlson, who came in 1929 as an Assistant Professor but soon advanced to Chairperson of the Department, was a stalwart advocate for Nutrition Research from 1934 to 1956.

By the time Michigan State University (MSU) reached its centennial year in 1955, the Foods and Nutrition Research undergraduate curriculum was well established. In the late 1950's, a new Honors College curriculum released credits for students to pursue independent study and laboratory work. Shortly thereafter, several undergraduates in the Honors College and in Nutrition Research opted to work in the nutrition laboratories under the direction of Dr. Dorothy Arata (1957 to 1967). Dr. Olaf Mickelsen joined the faculty in 1962, and several undergraduates worked under his direction. One of these students received a College Centennial Recognition Award in 1996. Likewise, when Dr. Rachel Schemmel joined the graduate faculty in 1967, several undergraduates worked under her direction, most of whom now have a medical degree or a Ph.D.

When the College of Home Economics became the College of Human Ecology in 1970, the name of the Department of Foods and Nutrition was changed to Human Nutrition and Foods, and later the same year, the Department of Human Nutrition and Foods was combined with the Department of Food Science in the College of Agriculture and Natural Resources to become the Department of Food Science and Human Nutrition. Shortly thereafter, the nutrition laboratories were moved to the Food Science Building (now called G. Malcolm Trout Food Science and Human Nutrition Building). Since Foods Research was an integral part of the Food Science curriculum and the Foods and Nutrition Research major now seemed to be obsolete, a committee consisting of Dr. Gilbert Leveille (Chairperson of the Department), Dr. Richard Nicholas (Food Science) and Dr. Rachel Schemmel (Nutrition) convened to develop the Nutritional Sciences undergraduate major. The new curriculum was designed to fulfill the needs of undergraduate students interested in a career in Nutrition Research as well as for undergraduates interested in pursuing a preprofessional degree. Dr. Maurice Bennink, a new Assistant Professor in 1973, became the first coordinator for the Nutritional Sciences major. Additional advisors included Drs. Wanda Chenoweth and Rachel Schemmel.

In the early 1980's, an evaluation of the Nutritional Sciences major was completed by Kristi Stoddart (graduate student) and Rachel Schemmel. A questionnaire was mailed to previous graduates, and ninety percent of the respondents indicated that the Nutritional Sciences major was an excellent preparation for medical school (2). In an informal publication (3) one of the students majoring in Nutritional Sciences indicated that, “the Nutritional Sciences major helped her to launch her career in Nutrition Research.” Thomas Ziegler and Lorraine Leader (both currently physicians at Emory University) stated, “Medical School curricula have so many required courses that there is little time left to incorporate as much nutrition as is needed into the medical curriculum. Yet, nutrition is such an important component of positive good health.” Prior to the University change from the quarter system to the semester system in the fall of 1992, a committee consisting of Maurice Bennink, Dale Romsos, Maija Zile and Rachel Schemmel, Chairperson, developed the new semester curriculum for the Nutritional Sciences major. A capstone research experience (HNF 480) was formally

included within the major at that time although students had already informally conducted independent study and research with faculty members for more than 50 years. From 1993 to 2013 Dr. Dale Romsos was Coordinator of the Nutritional Sciences major. In Summer 2005, administration of the major officially moved from the College of Human Ecology to the College of Natural Science, and students had the option of a LBC-Nutritional Sciences major. In Fall 2009 a Nutritional Sciences Minor was made available to students. In Fall 2011 the major moved from the College of Natural Science to the College of Agriculture and Natural Resources.

1. Lee J., Hart K. and Mentzer R.B. From Home Economics to Human Ecology, a History Digest, 75th Anniversary. In Bubolz, M. Home Economics to Human Ecology: 100 years at Michigan State University, East Lansing, Michigan. University Printing. 1996, pp 24, 37-60.

2. Stoddart K., Schemmel R.A., Bennink, M.R., Chenoweth W.L. and Leveille G.A. Medical Education in Nutrition--A premedical major in Nutritional Sciences as an approach. Ecol. of Food and Nutrition. 1984, 14:165.

3. Schemmel R. Should I major in Nutritional Sciences? FHA Hero. 1982, Jan./Feb., p. 1.

[1]Special thanks to Rachel A. Schemmel, Ph.D., R.D. for preparing this chronology of the Nutritional Sciences major.

http://www.fshn.msu.edu/undergraduate_programs/nutritional_sciences

MICHIGAN STATE UNIVERSITY

Department of Food Science and Human Nutrition