

HUMAN HEALTH AND NUTRITIONAL SCIENCES (HHNS)

Department of Human Health Sciences, College of Biological Science

The BSc in Human Health and Nutritional Sciences explores the biological, physiological, and nutritional foundations of human health, examining how food, beverages, and supplements influence health, performance, and disease prevention through an evidence-based scientific approach.

If lacking the fundamentals of word processing, spreadsheet use and data management, the student should select CIS*1200 Introduction to Computing as early in the program as possible.

Major Requirements (Honours)

This is a major within the degree: Bachelor of Science.

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major may wish to consult the Faculty Advisor. A total of 20.00 credits is required.

Students lacking Grade 12 or 4U Biology, Chemistry or Physics should follow the revised schedule of study for this major found at https://www.uoguelph.ca/bsc/revised_SS/ (https://www.uoguelph.ca/bsc/revised_SS/).

Code	Title	Credits
Semester 1		
BIOL*1080	Biological Concepts of Health	0.50
CHEM*1040	General Chemistry I	0.50
MATH*1080	Elements of Calculus I	0.50
PHYS*1080	Physics for Life Sciences	0.50
0.50 Liberal education electives		0.50
Semester 2		
BIOL*1070	Discovering Biodiversity	0.50
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
CHEM*1050	General Chemistry II	0.50
PHYS*1070	Physics for Life Sciences II	0.50
0.50 Liberal education electives		0.50
Semester 3		
BIOC*2580	Introduction to Biochemistry	0.50
MBG*2040	Foundations in Molecular Biology and Genetics	0.50
STAT*2040	Statistics I	0.50
0.50 Electives or restricted electives		0.50
0.50 Liberal education electives		0.50
Semester 4		
HK*2500	General Human Anatomy	0.50
HK*2810	Human Physiology I - Concepts and Principles	0.50
MCB*2050	Molecular Biology of the Cell	0.50
NUTR*3210	Fundamentals of Nutrition	0.50

0.50 Elective or restricted elective		0.50
Semester 5		
HK*3810	Human Physiology II - Integrated Systems	0.75
NUTR*3330	Micronutrients, Phytochemicals and Health	0.50
NUTR*3360	Lifestyle Genomics	0.50
NUTR*3390	Applied Nutritional and Nutraceutical Sciences I	0.75
Semester 6		
BIOC*3560	Structure and Function in Biochemistry	0.50
HHNS*3000	Special Topics in Lifestyle Medicine	0.50
NUTR*4090	Functional Foods and Nutraceuticals	0.50
NUTR*4320	Nutrition and Metabolic Control of Disease	0.50
0.50 Electives or restricted electives		0.50
Semester 7		
NUTR*4210	Nutrition, Exercise and Energy Metabolism	0.50
NUTR*4330	Applied Nutritional and Nutraceutical Sciences II	1.00
NUTR*4510	Toxicology, Nutrition and Food	0.50
0.50 Electives or restricted elective		0.50
Semester 8		
2.50 Electives or restricted electives		2.50

Restricted Electives

- Students must complete 2.00 credits of Liberal Education electives. HHNS*3000 Special Topics in Lifestyle Medicine is a Liberal Education course, 0.50 credit. 1.50 additional credits from Liberal Education courses are required. The list of liberal education electives for B.Sc. students can be found at: <http://www.uoguelph.ca/bsc/> (<http://www.uoguelph.ca/bsc/>).
- 1.00 credits from the following:

Code	Title	Credits
BIOM*3090	Principles of Pharmacology	0.50
FOOD*4260	Food Product Development I	0.50
FOOD*4270	Food Product Development II	0.50
HHNS*4230	Advanced Study in Human Health and Nutritional Sciences	0.50
HHNS*4360	Research in Human Health and Nutritional Sciences	1.00
HHNS*4371	Research in Human Health and Nutritional Sciences I	1.00
HHNS*4372	Research in Human Health and Nutritional Sciences II	1.00
HHNS*4510	Teaching, Learning and Knowledge Transfer	1.00
HHNS*4511	Teaching, Learning & Knowledge Transfer I	1.00
HHNS*4512	Teaching, Learning & Knowledge Transfer II	1.00
HK*4460	Regulation of Human Metabolism	0.50
NUTR*4360	Precision Health and Lifestyle	0.50
PATH*3610	Principles of Disease	0.50
POPM*3240	Epidemiology	0.50

Credit Summary

(20.00 Total Credits)

Code	Title	Credits
	First year science core	4.00
	Required science courses semesters 3 - 8	9.50
	Restricted Electives (# 2 in restricted electives list)	1.00
	Approved Science Electives	1.50
	Required Liberal Education Credit	0.50
	Liberal Education Electives (# 1 in restricted electives list)	1.50
	Free Electives - any approved electives for B.Sc. students	2.00
Total Credits		20

Of the total credits required, students are required to complete 16.00 credits in science of which a minimum of 2.00 credits must be at the 4000 level and an additional 4.00 credits must be at the 3000 or 4000 level.

Co-op Requirements (Honours)

This is a major within the degree: Bachelor of Science.

The Co-op program in Human Health and Nutritional Sciences is a five-year program, including four work terms. Students must follow the academic work schedule as outlined below (also found on the Co-operative Education website: <https://recruitguelph.ca/cecs/> (<https://www.recruitguelph.ca/cecs/>)).

Academic and Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Semester 1	Academic Semester 2	Off
2	Academic Semester 3, COOP*1100	Academic Semester 4	COOP*1000 Work Term I
3	Academic Semester 5	Academic Semester 6	COOP*2000 Work Term II
4	COOP*3000 Work Term III	COOP*4000 Work Term IV	Off
5	Academic Semester 7	Academic Semester 8	N/A

Please refer to the Co-operative Education program policy with respect to work term performance grading, work term report grading and program completion requirements.

For additional program information, students should consult with their Co-op Coordinator and Co-op Faculty Advisor, listed on the Co-operative Education web site.

Credit Summary

(22.00 Total Credits)

Code	Title	Credits
	First year science core	4.00
	Required science courses semester 3-8	9.50
	Restricted elective (# 2, in restricted electives list)	1.00
	Approved Science Elective	1.50
	Required Liberal Education course	0.50

Liberal Education Elective (# 1, in restricted electives list)	1.50
Free Electives	2.00
Co-op Work Terms	2.00
Total Credits	22

Of the total credits required, students must complete 16.00 credits in science of which a minimum of 2.00 credits must be at the 4000 level and an additional 4.00 credits must be at the 3000 or 4000 level.

Recommended Program Sequence

Students lacking Grade 12 or 4U Biology, Chemistry or Physics should follow the revised schedule of study for this major found at https://www.uoguelph.ca/bsc/revised_SS/ (https://www.uoguelph.ca/bsc/revised_SS/).

Code	Title	Credits
Semester 1 - Fall		
BIOL*1080	Biological Concepts of Health	0.50
CHEM*1040	General Chemistry I	0.50
MATH*1080	Elements of Calculus I	0.50
PHYS*1080	Physics for Life Sciences	0.50
0.50 Liberal education electives		0.50
Semester 2 - Winter		
BIOL*1070	Discovering Biodiversity	0.50
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
CHEM*1050	General Chemistry II	0.50
PHYS*1070	Physics for Life Sciences II	0.50
0.50 Liberal education electives		0.50
Summer Semester		
No academic semester or work term		
Semester 3 - Fall		
BIOC*2580	Introduction to Biochemistry	0.50
COOP*1100	Introduction to Co-operative Education	0.00
MBG*2040	Foundations in Molecular Biology and Genetics	0.50
STAT*2040	Statistics I	0.50
0.50 Electives or restricted electives		0.50
0.50 Liberal education electives		0.50
Semester 4 - Winter		
HK*2500	General Human Anatomy	0.50
HK*2810	Human Physiology I - Concepts and Principles	0.50
MCB*2050	Molecular Biology of the Cell	0.50
NUTR*3210	Fundamentals of Nutrition	0.50
0.50 Liberal education electives		0.50
Summer Semester		
COOP*1000	Co-op Work Term I	0.50
Semester 5 - Fall		
HK*3810	Human Physiology II - Integrated Systems	0.75
NUTR*3330	Micronutrients, Phytochemicals and Health	0.50
NUTR*3360	Lifestyle Genomics	0.50
NUTR*3390	Applied Nutritional and Nutraceutical Sciences I	0.75
Semester 6 - Winter		

BIOC*3560	Structure and Function in Biochemistry	0.50
HHNS*3000	Special Topics in Lifestyle Medicine	0.50
NUTR*4090	Functional Foods and Nutraceuticals	0.50
NUTR*4320	Nutrition and Metabolic Control of Disease	0.50
0.50 Electives or restricted electives		0.50
Summer Semester		
COOP*2000	Co-op Work Term II	0.50
Fall Semester		
COOP*3000	Co-op Work Term III	0.50
Winter Semester		
COOP*4000	Co-op Work Term IV	0.50
Summer Semester		
No academic semester or work term		
Semester 7 - Fall		
NUTR*4210	Nutrition, Exercise and Energy Metabolism	0.50
NUTR*4330	Applied Nutritional and Nutraceutical Sciences II	1.00
NUTR*4510	Toxicology, Nutrition and Food	0.50
0.50 Electives or restricted electives		0.50
Semester 8 - Winter		
2.50 Electives or restricted electives		2.50

Restricted Electives

- 1.
2. Students must complete 2.00 credits of Liberal Education electives. HHNS*3000 Special Topics in Lifestyle Medicine is a Liberal Education course, 0.50 credit. 1.50 additional credits from Liberal Education courses are required. The list of liberal education electives for B.Sc. students can be found at: <http://www.uoguelph.ca/bsc/> (<http://www.uoguelph.ca/bsc/>)
3. 1.00 credits from the following:

Code	Title	Credits
BIOM*3090	Principles of Pharmacology	0.50
FOOD*4260	Food Product Development I	0.50
FOOD*4270	Food Product Development II	0.50
HHNS*4230	Advanced Study in Human Health and Nutritional Sciences	0.50
HHNS*4360	Research in Human Health and Nutritional Sciences	1.00
HHNS*4371	Research in Human Health and Nutritional Sciences I	1.00
HHNS*4372	Research in Human Health and Nutritional Sciences II	1.00
HHNS*4510	Teaching, Learning and Knowledge Transfer	1.00
HHNS*4511	Teaching, Learning & Knowledge Transfer I	1.00
HHNS*4512	Teaching, Learning & Knowledge Transfer II	1.00
HK*4460	Regulation of Human Metabolism	0.50
NUTR*4360	Precision Health and Lifestyle	0.50
PATH*3610	Principles of Disease	0.50
POPM*3240	Epidemiology	0.50