BIO-MEDICAL SCIENCE (BIOM)

Department of Biomedical Sciences and Department of Human Health and Nutritional Sciences

This joint program of the Department of Human Health and Nutritional Sciences (https://www.uoguelph.ca/hhns/) and the Department of Biomedical Sciences (https://ovc.uoguelph.ca/biomedical-sciences/) provides students with a broad and integrated foundational overview of human and animal health through the study of function (biochemistry and physiology), structure (anatomy and histology), and paraclinical sciences (epidemiology and pharmacology). The program prepares students well for more advanced studies or applied training in many health-related fields including clinical practice, business, government, research and education. Through the use of electives, students may structure a program emphasizing aspects of health and disease. For more information on recommended electives contact the Faculty Advisor of the major.

In addition, this program is designed to partially meet the current requirements for entry into medical schools in Ontario (a student interested in meeting these requirements should check the present admission requirements for the medical schools), as well as entry into the DVM program of the Ontario Veterinary College (https://ovc.uoguelph.ca/).

Live animals and/or animal tissues are used for teaching purposes in some courses in the Bio-Medical Science Major. This must be accepted by students admitted to the program. All animals are protected under the Animals for Research Act of Ontario (1980), the Guidelines for the Care and Use of Experimental Animals (Canadian Council on Animal Care (https://www.cccac.ca/)), and the Animal Care Policies (https://www.uoguelph.ca/research/document/university-guelph-animal-care-policy-and-procedures/) of the University of Guelph.

Students who are admitted into the Bio-Medical Science major from high school must meet additional requirements to continue in the major. Continuation from first to second year is based on the cumulative average in the first two semesters (total of 5.00 credits), including the eight core courses as prescribed by the Schedule of Studies (see below). Students with a minimum average of 75% average will be guaranteed continuation in this major. For students with a 70-74.9% average, continuation will be competitive based on available spaces. Students with an average below 70% will be changed to the Biological Sciences major. Students may subsequently change to another B.Sc. major of their choice.

B.Sc. students who wish to declare the specialization at the end of or beyond first year must apply directly to the Department of Biomedical Sciences by the last day of classes in the winter semester and meet the same requirements specified above.

Admission to the major will be based on the cumulative average in the two semesters (total of 5.00 credits) preceding application to the major (normally fall and winter). Acceptance will be competitive based on available spaces. Students with an average below 70% will not be considered for admission to the major. All decisions will be made at the end of June.

Major (Honours Program)

A minimum 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/)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOC*2580</td>
<td>Introduction to Biochemistry</td>
<td>0.50</td>
</tr>
<tr>
<td>MBG*2040</td>
<td>Foundations in Molecular Biology and Genetics</td>
<td>0.50</td>
</tr>
<tr>
<td>STAT*2040</td>
<td>Statistics I</td>
<td>0.50</td>
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<tr>
<td></td>
<td>1.00 electives or restricted electives</td>
<td>1.00</td>
</tr>
<tr>
<td>MCB*2050</td>
<td>Molecular Biology of the Cell</td>
<td>0.50</td>
</tr>
<tr>
<td>NUTR*3210</td>
<td>Fundamentals of Nutrition</td>
<td>0.50</td>
</tr>
<tr>
<td>BIOM*3200</td>
<td>Biomedical Physiology</td>
<td>0.50</td>
</tr>
<tr>
<td>or HK*2810</td>
<td>Human Physiology I - Concepts and Principles</td>
<td>0.50-1.00</td>
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<tr>
<td></td>
<td>Electives or Restricted Electives to a maximum of 2.50 total credits in this semester</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Students wishing to continue beyond first year must apply to the Department of Biomedical Sciences by the last day of classes in the winter semester and meet the same requirements specified above.

If HK*2810 Human Physiology I - Concepts and Principles is selected, then HK*3810 Human Physiology II - Integrated Systems must be taken in Semester 5.

BIOM*3210 Critical Thinking in the Health Sciences is recommended.
As part of the electives or restricted electives, students must select HK*3810 Human Physiology II - Integrated Systems in semester 5 if HK*2810 Human Physiology I - Concepts and Principles was selected in semester 4.

### Restricted Electives

**Anatomy Elective**

Select one of the following:

- **BIOM*3010** Biomedical Comparative Anatomy 1.25
- **& BIOM*3040** Biomedical Comparative Anatomy and Medical Embryology
- **HK*3402** Human Anatomy: Dissection 0.75
- **HK*3502** Human Anatomy 0.75

**Immunology Elective**

- **ANSC*4650** Comparative Immunology 0.50
- or **MICR*3230** Immunology

**Advanced Study Electives**

Select 2.00 credits from the following:

- **BIOM*4030** Endocrine Physiology 0.50
- **BIOM*4050** Biomedical Aspects of Aging 0.50
- **BIOM*4070** Biomedical Histology 0.50
- **BIOM*4090** Pharmacology 0.50
- **BIOM*4110** Mammalian Reproductive Biology 0.50
- **BIOM*4150** Cancer Biology 0.50
- **BIOM*4180** Cardiology 0.50
- **BIOM*4300** Biomedical Communications 0.50
- **BIOM*4500** Literature-based Research in Biomedical Sciences 0.50
- **BIOM*4510** Research in Biomedical Sciences 1.00
- **BIOM*4522** Research in Biomedical Sciences 1.00
- **HK*4070** Clinical Biomechanics 0.50
- **HK*4230** Advanced Study in Human Health and Nutritional Sciences 0.50
- **HK*4340** Genomics: Exercise and Disease 0.50
- **HK*4360** Research in Human Health and Nutritional Sciences 1.00
- **HK*4372** Research in Human Health and Nutritional Sciences II 0.50
- **HK*4442** Advanced Study in Human Anatomy 1.00
- **HK*4460** Regulation of Human Metabolism 0.50
- **NUTR*4320** Nutrition and Metabolic Control of Disease 0.50
- **NUTR*4360** Current Issues in Nutrigenomics 0.50
- **NUTR*4510** Toxicology, Nutrition and Food 0.50
- **TOX*4000** Medical Toxicology 0.50

**Liberal Education Electives**

At least 2.00 credits of Liberal Education electives 4 2.00

The list of Liberal Education electives for B.Sc. students can be found at: https://www.uoguelph.ca/bsc/

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### Credit Summary

(20.00 Total Credits)

- First year science credits 4.00
- Required science courses semesters 3 – 8 5 5.50-5.75
- Restricted electives 6 3.75-4.00
- Approved Science electives depending on which anatomy and physiology courses are completed above.
- Liberal Education electives 2.00
- Free electives - any approved elective for B.Sc. students 2.00

Total Credits 20

5 5.75 with HK*2810 Human Physiology I - Concepts and Principles, HK*3810 Human Physiology II - Integrated Systems) or 5.50 (with BIOM*3000 Biomedical Physiology)

6 4.00 with HK*3401 Human Anatomy: Dissection/HK*3402 Human Anatomy: Dissection or HK*3501 Human Anatomy: Prosection/HK*3502 Human Anatomy) 3.75 (with BIOM*3000 Biomedical Comparative Anatomy, BIOM*3040 Medical Embryology) (Restricted elective #1, #2 and #3)

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