HONOURS BACHELOR OF SCIENCE IN TRANSLATIONAL AND MOLECULAR MEDICINE

The Bachelor of Science with Honours in Translational and Molecular Medicine (TMM) is a unique collaborative effort between the Faculty of Medicine’s researchers and its affiliated institutes. The program integrates theoretical and practical courses with e-learning, offering students an enriching educational environment and exposing them to innovative research throughout their studies. TMM offers the largest number of advanced laboratories for an undergraduate program in Canada. Students are taught by both basic scientists and clinicians, providing them with the skillsets required to perform cutting-edge biomedical research.

Program Requirements

The French immersion stream is available with this program.

Requirements for this program have been modified. Please consult the 2023-2024 calendars for the previous requirements.

Basis of admission
Two full years of study in a BSc program 60 Units

Compulsory courses at the 3000 level
TMM 3009 Biomedical Research Laboratory 9 Units
TMM 3101 Molecular Biology and Inherited Disorders 3 Units
TMM 3102 Proteins: Structure, Function and Disease 3 Units
TMM 3103 Metabolic Pathways of Human Diseases 3 Units
TMM 3104 Cellular Basis of Disease 3 Units

Compulsory courses at the 4000 level
TMM 4012 Honours Research Project 12 Units
TMM 4950 Science Communication 3 Units

Optional Courses
6 optional course units from: 6 Units

PHS 3341 Physiology of Sensation, Regulation Mechanisms, Movement and Reproduction
PHS 3342 Physiological Regulation of Intake, Distribution, Protection and Elimination
TMM 3105 Introduction to Immunology
TMM 3106 Introduction to Neurobiology
TMM 3107 Introduction to Genomics
TMM 3108 Introduction to Medical Bioinformatics
TMM 3300 Selected Topics in Translational and Molecular Medicine
TMM 3301 Introduction to Inquiry Based Research
TMM 3302 Current Topics in Precision Medicine
TMM 3902 Current Topics in Precision Medicine
3 optional course units in advanced methodology courses: 3 Units
TMM 4903 Advanced Methods in Biomedical Research: Experimental Models of Human Disease
TMM 4904 Advanced Methods in Biomedical Research – Genome Editing

TMM 4905 Advanced Methods in Biomedical Research: Stats 101 for Biomedical Research
TMM 4906 Life in a Lab I
TMM 4907 Life in a Lab II
TMM 4910 Advanced Methods in Biomedical Research: Special Topics
TMM 4911 Advanced Methods in Biomedical Research - Cell Biology and Microscopy
TMM 4912 Advanced Methods in Biomedical Research - Biochemistry and Biophysics
TMM 4913 Advances Methods in Biomedical Research - Nucleic Acids
TMM 4914 Advanced Methods in Biomedical Research - Flow Cytometry and Immunophenotyping
TMM 4915 Specialized Workshops in Biomedical Research - Epigenetics and Genomics
TMM 4916 Advanced Methods in Biomedical Research - Electrophysiology
TMM 4917 Advanced Methods in Biomedical Research - Microbiology
TMM 4921 Advanced Methods in Biomedical Research – RNA-seq analysis
TMM 4922 Special topics in Epidemiology
TMM 4923 Behavioural Assessment of Rodent Models of Human Disease
TMM 4924 Artificial intelligence (AI) in biology and medicine
9 optional course units from the list of optional courses 9 Units

Elective Courses
6 elective course units from another faculty 6 Units

Total: 120 Units

Note(s)
1 PHI 2396 is strongly recommended.

List of Optional Courses

CMM 3350 Principles of Neurobiology 3 Units
PHA 4107 Introductory Pharmacology - Drugs and Living Systems 3 Units
PHS 3300 Pathophysiology 3 Units
TMM 3107 Introduction to Genomics 3 Units
TMM 4101 Introduction to Cancer Biology 3 Units
TMM 4102 Regenerative Medicine 3 Units
TMM 4103 Metabolomics and Integrative Research Methods in Metabolic Diseases 3 Units
TMM 4104 Probability and Statistics for Molecular Medicine and Genomics 3 Units
TMM 4105 Neurological Diseases 3 Units
TMM 4106 Model Systems of Disease 3 Units
TMM 4107 Viral Pathogenesis 3 Units
TMM 4108 Bacterial Diseases 3 Units
TMM 4301 Special Topics in Biochemistry 1.5 Units
TMM 4302 Special Topics in Epidemiology 1.5 Units

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<th>Course Code</th>
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<td>TMM 4303</td>
<td>Special Topics in Neuroscience</td>
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<td>TMM 4304</td>
<td>Special Topics in Infectious Diseases</td>
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<td>TMM 4305</td>
<td>Biology of Aging</td>
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<td>TMM 4306</td>
<td>Molecular Imaging and Radiochemistry</td>
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<td>TMM 4307</td>
<td>Biomaterials and Tissue Engineering</td>
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<td>TMM 4308</td>
<td>Hormonal Regulation of Metabolism</td>
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<td>TMM 4309</td>
<td>Nanomedicine</td>
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<td>TMM 4310</td>
<td>Genome Instability and Chromosome Dynamics</td>
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<td>Seminars in Translational Molecular Medicine</td>
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<td>TMM 4903</td>
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