The following course descriptions are taken from the web version of the Western Academic Calendar for 2019.

All applicants must have taken approved courses in the following subjects: Biochemistry, Organic Chemistry and Human or Mammalian Physiology.

1. BIOCHEMISTRY

**Biochemistry 2280A - Biochemistry and Molecular Biology**
An introduction to biochemistry with emphasis on protein structure and function, intermediary metabolism and nucleic acid structure and function.

*Antirequisite(s):* Biochemistry 2288A.

*Prerequisite(s):* Either Biology 1001A or 1201A and either Biology 1002B or 1202B; Chemistry 1301A/B and 1302A/B, or the former Chemistry 1100A/B and 1200B. Integrated Science 1001X can be used as a prerequisite in place of Biology 1002B and Chemistry 1302A/B.

*Extra Information:* 3 lecture hours, 0.5 course.
Note: It is strongly recommended that a course in organic chemistry be taken previously or concurrently (e.g. Chemistry 2213A/B or 2273A).

**OR**

**Biochemistry 2288A – Biochemistry and Molecular Biology For Foods and Nutrition**
An introduction to biochemistry with emphasis on protein structure and function, intermediary metabolism and nucleic acid structure and function.

*Antirequisite(s):* Biochemistry 2280A.

*Prerequisite(s):* Chemistry 1301A/B and Chemistry 1302A/B; Biology 1290B; and registration in senior years of Food and Nutrition modules.

*Extra Information:* 3 lecture hours, 0.5 course.
Note: It is strongly recommended that a course in organic chemistry be taken previously or concurrently (e.g. Chemistry 2213A/B or 2273A).

**OR**

**Biochemistry 3381A – Biological Macromolecules**
A consideration of the structure of proteins and nucleic acids; enzymology; elements of recombinant DNA technology and related methodology.

*Prerequisite(s):* A minimum mark of 65% in either Biochemistry 2280A or Biochemistry 2288A; a minimum mark of 60% in either Chemistry 2213A/B or Chemistry 2273A; and a minimum mark of 60% in either Chemistry 2223B or Chemistry 2283G.

*Extra Information:* 3 lecture hours, 1 tutorial hour, 0.5 course.
Biochemistry 3382A – Biochemical Regulation
Among the topics discussed will be principles of metabolic control, mechanisms of signal transduction, regulation of DNA replication, regulation of gene expression, and epigenetic mechanisms of gene regulation.

Prerequisite(s): A minimum mark of 65% in either Biochemistry 2280A or Biochemistry 2288A; a minimum mark of 60% in either Chemistry 2213A/B or Chemistry 2273A; and a minimum mark of 60% in either Chemistry 2223B or Chemistry 2283G.

Extra Information: 3 lecture hours, 1 tutorial hour, 0.5 course.

OR

Chemistry 4493A/B - Chemistry of Biological Macromolecules
A survey of the chemistry of monosaccharides, amino acid and nucleosides with modern synthetic methods to oligosaccharides, polypeptides and polynucleotides.

Prerequisite(s): Chemistry 3373F.
Extra Information: 3 lecture hours, 0.5 course.

OR

Chemical and Biochemical Engineering 2290A/B - Fundamentals of Biochemical and Environmental Engineering
The overall objective of the course is to apply the principles of microbiology, biochemistry to understand and solve environmental problems. This course covers the fundamental concepts of biological processes that are important in natural and engineered environmental systems. Students will gain basic skills of biochemistry and microbiology in laboratory section.

Antirequisite(s): The former Biology 1222 or Biology 1223.
Prerequisite(s): Chemistry 1302A/B or the former Chemistry 1024A/B 1050 or 1020.
Extra Information: 3 lecture hours, 3 laboratory hours, 0.5 course.

2. ORGANIC CHEMISTRY

Chemistry 2213A/B - Organic Chemistry for Life Sciences
An introduction to the basic concepts of structure, stereochemistry and reactions in organic chemistry with an emphasis on its connections to the biological, health or medical sciences.

Antirequisite(s): Chemistry 2273A.
Prerequisite(s): Chemistry 1301A/B and Chemistry 1302A/B, or the former Chemistry 1100A/B and 1200B, or the former Chemistry 1050.
Extra Information: 3 lecture hours, 1.5 laboratory hours (3 hours every other week) 0.5 course.
Note: The combination of Chemistry 2213A/B and Chemistry 2223B provides the equivalent of a full course in Organic Chemistry with a laboratory, which is a prerequisite for some professional programs.

OR
Chemistry 2273A - Organic Chemistry I: Structure and Spectroscopy

Introduction to 3D structure, spectroscopy and chemical reactions of alkanes, alkenes, alkynes, benzene, and alkyl halides. Introduction to reaction mechanisms and the interpretation of IR and NMR spectra. Laboratory: techniques of experimental organic chemistry; illustrative preparations of organic compounds.

Antirequisite(s): Chemistry 2213A/B.
Prerequisite(s): Chemistry 1301A/B and Chemistry 1302A/B with a minimum average mark of 60%, or the former Chemistry 1100A/B and 1200B with a minimum average mark of 60%, or the former Chemistry 1050 with a minimum mark of 60%.
Extra Information: 3 lecture hours, 1.5 laboratory hours/week (3 hours every other week), 0.5 course.

3. PHYSIOLOGY

Physiology 1020 - Human Physiology

A survey course outlining the principles of human/mammalian physiology: general properties of the living cell and internal environment; neural, muscle, cardiovascular, respiratory, gastro-intestinal, renal and endocrine system; metabolism, reproduction, and homeostasis.

Antirequisite(s): Physiology 1021, 2130, 3120.
Prerequisite(s): Grade 12U (SBI4U) Biology and Grade 12U (SCH4U) Chemistry, or their equivalent. First-year courses in Biology and Chemistry are recommended.
Extra Information: Limited to students enrolled in the Nursing program. 2 lecture hours, 1 tutorial hour, 1.0 course.

OR

Physiology 1021 - Human Physiology

An introductory course, outlining the principles of human/mammalian physiology along with a general survey of various physiological systems (e.g. cardiovascular, renal, neuro, motor, gastrointestinal, endocrine, respiratory, etc.).

Antirequisite(s): Physiology 1020, 2130, 3120.
Prerequisite(s): Grade 12U Biology or its equivalent. Grade 12U Chemistry is recommended.
Extra Information: Limited to students enrolled in first year Kinesiology. 2 lecture hours, 1 tutorial hour, 1.0 course.

OR

Physiology 2130 - Human Physiology

A survey course outlining the principles of human/mammalian physiology: general properties of the living cell and internal environment; neural, muscle, cardiovascular, respiratory, gastro-intestinal, renal and endocrine system; metabolism, reproduction, and homeostasis.

Antirequisite(s): Physiology 1020, 1021, 3120.
Prerequisite(s): First-year courses in Biology and Chemistry are recommended.
Extra Information: 2 lecture hours, 1 tutorial hour, 1.0 course.
Physiology 3120 - Human Physiology
A survey of the physiology of various systems (e.g. neural, endocrine, renal, cardiovascular, digestive, respiratory, etc.) of the human.

Prerequisite(s): one of Physics 1028A/B, 1301A/B or 1501A/B and one of Physics 1029A/B, 1302A/B or 1502A/B; 1.0 course from: Calculus 1000A/B or 1500A/B or the former 1100A/B, Calculus 1301A/B or 1501A/B, Mathematics 1600A/B or the former Linear Algebra 1600A/B, Mathematics 1225A/B, 1228A/B, 1229A/B, Statistical Sciences 1024A/B, Applied Mathematics 1201A/B, 1413; one of Biology 1001A or 1201A and one of Biology 1002B or 1202B; or permission of the department. It is strongly recommended that Biochemistry 2280A and Biology 2382B be taken prior to Physiology 3120. Open only to students who are registered in Years 3 or 4.
Extra Information: 3 lecture hours, 1.0 course.

Physiology Challenge Exam

Candidates who are competitive in the applicant pool and have been invited to interview, but whose physiology backgrounds have not been approved as being equivalent to the dental curriculum’s requirement will be asked to take the Physiology Challenge Exam. The exam is similar to the instrument used to evaluate students who take Physiology 2130. It is a three-hour exam in the multiple choice format. A grade of 74.5% is required in order for one’s physiology requirement to be deemed fulfilled. If the minimum grade is not achieved on this exam the application will no longer be eligible for admission consideration. There is an administrative charge to cover the costs of administering the exam.

To be successful in the Challenge Exam, students should be familiar with human systems physiology at the level presented in a recent edition of one of the following textbooks:


A course synopsis on which the physiology challenge exam is based can be found at the following website:

http://www.schulich.uwo.ca/dentistry/docs/future_students/Physiology_Course_Challenge_Exam.pdf.

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