Course Information
Physiology 3120: Human Physiology

Fall /Winter 2015-2016

Physiology 3120 is a core course in Human Physiology. Students study, in great detail, the physiological processes of nerve, muscle, central nervous system, renal, cardiovascular, respiratory, endocrine, reproductive and gastrointestinal control systems as they function in living humans. The majority of the material makes reference to human physiology and uses human examples to help explain the various physiological processes.

Lectures:
All lectures take place on Mondays, Wednesdays and Fridays from 10:30 to 11:20 AM in Arthur and Sonya Labatt Health Sciences Building room HSB-40.

Laboratories:
There is no laboratory component for this course although some of you may be registered in Physiology 3130z – a physiology lab course which complements physiology 3120.

Tutorials:
There are no tutorials for this course.

Prerequisites:
Prerequisite(s): one of Physics 1028A/B, 1301A/B or 1501A/B and one of Physics 1029A/B, 1302A/B or 1502A/B, or the former Physics 1020 or 1024; 1.0 course from: Calculus 1000A/B or 1100A/B or 1500A/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 or the former Calculus 1201A/B, Applied Mathematics 1413, or the former Mathematics 030; one of Biology 1001A or 1201A and one of Biology 1002B or 1202B, or the former Biology 1222 or 1223; 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.
Corequisite(s) – there are no corequisites
Antirequisite(s) - The former Physiology 310 or Biology 310

Senate regulation regarding the student’s responsibility regarding prerequisites:
Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.
**Instructor Information**

This course is "team-taught". That is, each physiological system is taught by a different lecturer. Usually this is a person in the department who is actively engaged in research in that area and who will be one of the local "experts". If you have any questions concerning the material in any section of the course you should take them to the person who taught that part.

Please appreciate that all participants in this course have research, administrative and other teaching duties besides this course and may not always be available. The best arrangement is to **make an appointment** for a time that is mutually convenient. Also, the lecturers in this course as well as the other members of the department **welcome you to visit** their research laboratories. Again, however, you should **make prior arrangements** to avoid disturbing an experiment.

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<thead>
<tr>
<th>Instructors</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Office Hours</th>
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<tbody>
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<td>Tom Stavraky (Course Manager)</td>
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**Owl/Sakai:**

This course uses Owl for course notes, PowerPoint slide posting, Discussion boards and important information pertaining to exams and tests. It is very important to monitor this site often.

Students who are having trouble using Owl should contact The Computer Support Centre at 519 661-3800

**University Support Services:**

Registrarial Services: [http://www.registrar.uwo.ca](http://www.registrar.uwo.ca)

Academic Counselling (Science and Basic Medical Sciences): [http://www.uwo.ca/sci/counselling/index.html](http://www.uwo.ca/sci/counselling/index.html)

USC Student Support Services: [http://westernusc.ca/service](http://westernusc.ca/service)

Student Development Services: [http://www.sdc.uwo.ca](http://www.sdc.uwo.ca)

Student Health Services: [http://www.shs.uwo.ca/](http://www.shs.uwo.ca/)

Students that are in emotional/mental distress should refer to Mental Health@Western [http://www.uwo.ca/uwocom/mentalhealth/](http://www.uwo.ca/uwocom/mentalhealth/) for a complete list of options about how to obtain help.
**Course Materials**

You will find that **ALL** the material you require for this course is found in this study guide. However, you may still want a textbook for personal use or to look up other information. Below are some suggestions.

**Textbook:**

*Essential Medical Physiology. Third Edition by Johnson – Lippincourt Raven Publishers*

This text is **NOT essential nor mandatory for this course.** You are not required to purchase it. It is available in the bookstore. This text is an up-to-date summary of human physiology. You can find any number of textbooks in the library dealing with physiology (see below) so you may wish to save your money.

Throughout the course lecturers will make reference to other textbooks, review articles, and occasionally to original research reports published in scientific journals. These will be available in the library also. Please take full advantage of the good library facilities that we have available here at Western. Anyone who believes that his/her study begins and ends with the lectures has misunderstood completely the basis of university education.

Obviously, opinions about the "facts" and their interpretation differ among physiologists just as controversies exist in every other science. Do not be surprised when you find discrepancies in what you read in various books and what you are told in lectures. Becoming aware of these differences in opinion and their bases and learning to reach and defend your own conclusions intelligently are all part of developing scientifically.

**Other Textbooks**

The following are other textbooks of human physiology that are "on reserve" in the Taylor Library. You might wish to consult these also.


*Human Physiology - Foundations and Frontiers,* David Moffett, Stacy Moffett and Charles Schauf, C.V. Mosby, Toronto

Exams/Evaluation:

There are 3 formal evaluations in this course – 2 midterm tests and one final exam. You are required to write all of them and at the time assigned. Our policy is to permit exemptions or alternate arrangements only under circumstances such as illness or compassionate reasons but you must have documentation.

The tests and exams are designed to measure your knowledge of the material presented in lectures and assigned reading. We believe that this is a very difficult course. You will have to learn a lot of material, including a large vocabulary of physiological terms, in a short time. There will be a lot of help but it will be important for you to keep up with the schedule.

The questions will be the "multiple-choice" type. We use a number of basic kinds of multiple-choice questions and these are described, with examples, below. If you have difficulty with this type of examination we urge you to review carefully the examples given and to practice answering exam questions from previous years. Copies of representative tests and exams are reproduced in your Study Guide at the end of the appropriate lecture sections.

This year's examinations will be similar to those in your study guide with respect to the:

- number of questions
- format of the questions
- level of difficulty
- level of cognitive ability required to answer the questions correctly

Please note when using other old examinations -- this is an active science and our understanding of physiological processes is being improved and corrected continually. Do not be surprised to find a few discrepancies between "correct" answers on previous exams and what you are taught this year. If you have any problems, be sure to consult your the lecturer. It is wise to limit your use of old examinations to the last 3 years. However, you should be aware that most questions in the exams are new and are not recycled.

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<tr>
<th>Component</th>
<th>Duration/# of Qs</th>
<th>Date</th>
<th>% of Final Mark</th>
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<tr>
<td>Test 1:</td>
<td>2 hrs, 60 Qs</td>
<td>November 20th, 7:00 PM</td>
<td>30%</td>
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<tr>
<td>Test 2:</td>
<td>2 hrs, 60 Qs</td>
<td>January 29th, 7:00 PM</td>
<td>30%</td>
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<tr>
<td>Final exam</td>
<td>3 hrs, 90 Qs</td>
<td>TBA – April exam period</td>
<td>40% (cumulative)</td>
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Rooms will be announced on Owl
Important! Please Read The Following:

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

This software is used by the Department of Physiology on a regular basis and has been successful in catching students who cheat. In cases where one student cheated off a second student without the second student’s knowledge, it is the University’s policy that BOTH students are guilty. The Department has a zero tolerance policy for cheaters.

The course instructor is required to report to the Dean’s office all statistically significant results which suggest that cheating may have occurred. All such incidents will be subject to further investigation by the Dean’s office. All proven cases of cheating will be subject to severe academic penalties.

**During any exam, DO NOT sit near someone with whom you studied, and you think you may choose many of the same answers as that person.**

**It is YOUR responsibility to ensure that no one can see your answers!!**

**Also – no programmable calculators, personal digital assistants (PDAs), cell/smart phones or smart watches are allowed during the exam! Keep these devices at home or they will be confiscated during the exam!**

The Department of Physiology and Pharmacology and its personnel are not responsible for any items lost or stolen during an exam. It is not advisable to bring your backpack, if it contains your laptop, to an exam since someone could walk off with it.

Read the Academic Policies/Regulations concerning Examinations in the Academic Calendar for Academic Rights and Responsibilities.

**Statement on Academic Offences**

“Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf.”

See Exam Conduct by the student at the end of this outline.
Types of Multiple Choice Questions

Type 1 - Five Choice Completion

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the ONE that is BEST in each case and blacken the appropriate space on the answer card.

1. In the human heart, the fastest frequency of spontaneous depolarization is the

   (A) Sinoatrial node
   (B) Atrial muscle
   (C) Atrioventricular node
   (D) Bundle of HIS
   (E) Ventricular muscle

Type 2 - Five Choice Completion - Situations

Directions: This section of the test consists of situations each followed by a series of questions. Study each situation and select the ONE BEST answer to each question following it, and blacken the appropriate space on the answer card.

Question 2 - 3

A 30 year old man was studied in the cardiovascular laboratory and the following data were collected:

   Hematocrit 25 per cent
   Plasma Volume (by dye dilution) 6.0 litres
   Arterial Oxygen Content 12 ml per 100 ml of blood
   Mixed Venous Oxygen Content 8 ml per 100 ml of blood
   Oxygen consumption 320 ml per minute

Answer the following questions relating to the information provided.

2. The cardiac output of the man is approximately

   (A) 6 litres per minute
   (B) 7 litres per minute
   (C) 8 litres per minute
   (D) 9 litres per minute
   (E) 10 litres per minute
3. The total circulating blood volume of the man is approximately
   (A) 7.5 litres
   (B) 8.0 litres
   (C) 9.0 litres
   (D) 10.0 litres
   (E) 12.0 litres

Type 3 - Matching Type

Directions: Each group of questions below consists of five lettered headings or a diagram or table with five lettered statements. For each numbered word, phrase or statement select the one lettered heading or lettered component that is most closely associated with it. Each lettered heading or lettered component may be selected once, more than once, or not at all.

Questions 4 - 6

   (A) Inulin
   (B) Para-aminohippuric acid
   (C) Phlorhizin
   (D) Urea
   (E) Glucose

4. Used to measure glomerular filtration rate.

5. Both filtered in the glomerulus and secreted by the renal tubules.

6. Used to measure approximate renal plasma flow.

Type 4 - Quantitative Relationships

Directions: The following paired statements describe two entities that are to be compared in a quantitative sense. Answer

   (A) if (a) is greater than (b)
   (B) if (b) is greater than (a)
   (C) if the two are equal or very nearly equal

7. (a) Intracellular potassium ion concentration
     (b) Extracellular potassium ion concentration

8. (a) Velocity of blood flow in the aorta
     (b) Velocity of blood flow in the capillaries
Type 5 - Functional Relationships

Directions: Each of the following pairs of phrases describes conditions or quantities that may or may not be related. Answer

(A) if an INCREASE in the first results in an INCREASE in the second or if a DECREASE in the first results in a DECREASE in the second
(B) if an INCREASE in the first results in a DECREASE in the second or if a DECREASE in the first results in an INCREASE in the second.
(C) if changes in the first are not necessarily accompanied by changes in the second

9. 1. Extracellular potassium ion concentration
    2. Resting membrane potential

Type 6 - Multiple Completion Type

Directions: For each of the incomplete statements below, ONE or MORE of the completions given is correct. Answer

(A) if only 1, 2, and 3 are correct
(B) if only 1 and 3 are correct
(C) if only 2 and 4 are correct
(D) if only 4 is correct
(E) if all are correct

Mark only one space on your answer card for each question

10. The two muscles in the middle ear of man function to

1. increase the range of frequencies that can be discriminated
2. dampen the movements of the ossicles
3. offer protection against explosive sounds
4. offer protection against prolonged intense sounds
Absence for medical illness:

Students must familiarize themselves with the Policy on Accommodation for Medical Illness:  https://studentservices.uwo.ca/secure/index.cfm

Statement from the Dean's Office, Faculty of Science
If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see: http://www.uwo.ca/univsec/handbook/appeals/medical.pdf

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services.

The form can be found at: https://studentservices.uwo.ca/secure/medical_document.pdf
**Special Examinations**

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents.

A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved but will generally be written within one week of the original date. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean of the Faculty. The Dean will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to Registrarial Services. If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with the permission of the Dean in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered.

**Appealing exam marks**

Appeals must be made **no more than 6 weeks** after receiving the mark for each midterm exam, minitest or final grade and must be accompanied by a written letter and supporting documentation.

Appeals must be based on one or more of the following grounds:

1. medical
2. compassionate circumstances
3. extenuating circumstances beyond the appellant's control
4. bias
5. inaccuracy
6. unfairness

**University Support Services:**

Registrar Services: [http://www.registrar.uwo.ca](http://www.registrar.uwo.ca)

Academic Counselling (Science and Basic Medical Sciences): [http://www.uwo.ca/sci/counselling/index.html](http://www.uwo.ca/sci/counselling/index.html)

USC Student Support Services: [http://westernusc.ca/service](http://westernusc.ca/service)

Student Development Services: [http://www.sdc.uwo.ca](http://www.sdc.uwo.ca)

Student Health Services: [http://www.shs.uwo.ca/](http://www.shs.uwo.ca/)

Students that are in emotional/mental distress should refer to Mental Health@Western [http://www.uwo.ca/uwocom/mentalhealth/](http://www.uwo.ca/uwocom/mentalhealth/) for a complete list of options about how to obtain help.
Exam conduct by the student (candidate)

1. Candidates are responsible for arriving at the examination room on time with adequate supplies (pens, pencils, erasers, calculator, current I.D. card) and may be admitted five minutes before the beginning of the examination. Upon entering the examination room, candidates will refrain from talking to or communicating with other candidates. Candidates will read any posted Instructions concerning seating and other arrangements within the examination room. Candidates must place their I.D. card on the left corner of the desk.

2. No candidate may leave the examination room during the first thirty minutes of the examination.

3. Candidates must sign the nominal roll which will be circulated by the proctor during the first thirty minutes of the examination.

4. Candidates arriving later than thirty minutes after the commencement of the examination will not be allowed to write the examination. Under such circumstances candidates should proceed to the Dean of their Faculty for instructions. In the case of evening or Saturday examinations, candidates should proceed to the Department of Admissions and Academic Records for instructions.

5. Candidates prevented from writing an examination by circumstances such as illness, or death in the family shall submit a written petition to the Dean of their faculty. A petition made because of illness should be accompanied by a medical certificate stating the time and duration of the illness, a petition for other reasons should be supported by evidence from a responsible person acquainted with the circumstances.

6. Candidates are forbidden to give information or to receive it from any other candidate during the examination.

7. Candidates will not make use of any books, notes, diagrams or other aids, unless authorized by the examiner, such authorization being clearly stated on the question paper. Candidates who bring any unauthorized notes, books or other aids into the examination room must leave them in an area designated by the Chief Proctor.

8. Smoking is not permitted in the examination room.

9. In the case of an emergency, candidates will be permitted to leave and re-enter the examination room only if accompanied by a proctor. Candidates may be granted permission to move to another available seat if they can provide a legitimate reason.

10. Candidates are responsible for ensuring that they receive the proper question paper.
11. Candidates will use only the approved answer form supplied (question paper, markex card, or answer booklet). When answer booklets are employed, candidates will use them even for rough work and will not write on any other paper. Pages will not be removed from answer books. Candidates must keep all papers on their desk.

12. Candidates who require additional answer books during the examination will not leave their seat but will attract the attention of the proctor by raising a hand.

13. Any suspected irregularities in the question paper or any unusual distractions in the vicinity of the candidates should be brought to the attention of the proctor (Senate, May 23, 2958).

14. Upon completion of the examination, candidates will ensure that their student number, name, course number, book number and total number of books, and the name of the instructor are lettered legibly on all answer books. If more than one book has been used they should be numbered consecutively and placed inside Book 1. No answer books or parts of answer books will be taken from the examination room.

15. Candidates will not be allowed to leave the examination room during the last fifteen minutes. Under no circumstances including late arrival, will the time beyond the designated period be extended.

16. At the conclusion of the examination, candidates will remain seated until a proctor has collected their completed examination booklets. CANDIDATES WHO LEAVE THE ROOM AND NEGLECT TO SIGN THEIR NAME AND SUBMIT THEIR COMPLETED BOOKLETS TO THE PROCTOR WILL BE CONSIDERED AS NOT HAVING WRITTEN THE EXAMINATION.

STUDENTS MAY OBTAIN A COPY OF THESE REGULATIONS AT THE DEPARTMENT OF ADMISSIONS AND ACADEMIC RECORDS.

Senate, April 1984