
**Lectures:**
Wednesdays/2:30-4:30pm/ KB-K103

**Accessibility Statement**
Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

### 2. Instructor Information

<table>
<thead>
<tr>
<th>Instructors</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Office Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Terry Moschandreou</td>
<td><a href="mailto:tmoschan@uwo.ca">tmoschan@uwo.ca</a></td>
<td>TBA</td>
<td>TBA</td>
<td>TBD, Or by appointment</td>
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<tr>
<td>(Course Coordinator)</td>
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**WebCT:**
Students with WebCT issues should contact the Computer Support Centre at 519 661-3800 or fill out the WebCT webform: [https://servlet.uwo.ca:8081/vistahelpdesk/controller.jsp](https://servlet.uwo.ca:8081/vistahelpdesk/controller.jsp)

*Slides/notes and assignments will be posted online using WebCT OWL.*
3. Course Syllabus

Course Objectives
Students will be able to demonstrate understanding of basic principles of blood flow in both arteries and the microcirculation, and will be able to apply these principles to analyze specific flow problems. Students will achieve these abilities through solving problem assignments and participating in class discussions.

Course Topics and Assignments

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>Sep 14</td>
<td>Intro/The circulatory system: Blood, heart, arteries and veins</td>
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<tr>
<td>Sep 21</td>
<td>Basic flow dynamics: Pressure, flow, resistance, and Poiseuille’s Law</td>
<td>#1</td>
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<td>Sep 28</td>
<td>Applications of Poiseuille’s Law: Electrical analogues and optimality</td>
<td>#2</td>
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<tr>
<td>Oct 5</td>
<td>Equations of fluid flow: Continuity, Bernoulli, Navier-Stokes</td>
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<tr>
<td>Oct 12</td>
<td>Womersley flow: Pulsatile flow in rigid vessels</td>
<td>#3</td>
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<tr>
<td>Oct 19</td>
<td>Wave propagation: Pulsatile flow in elastic vessels</td>
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<td>Oct 26</td>
<td>Midterm Test (28%)</td>
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<tr>
<td>Nov 2</td>
<td>Pulsatile flow</td>
<td>#4</td>
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<tr>
<td>Nov 9</td>
<td>Ultrasound measurement of blood flow</td>
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<tr>
<td>Nov 16</td>
<td>Structure of the microcirculation</td>
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<td>Nov 23</td>
<td>Microvascular blood rheology</td>
<td>#5</td>
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<td>Nov 30</td>
<td>Regulation of blood flow in skeletal muscle</td>
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<td>Dec 7</td>
<td>Microvascular oxygen delivery and modeling flow regulation</td>
<td>#6</td>
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<td>TBA</td>
<td>Final Exam (42%)</td>
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4. Course Materials

**Recommended Textbook**

**Supplementary Textbooks**
Fung YC, Biomechanics: Circulation, Springer-Verlag, 1997
Oates C, Cardiovascular Hemodynamics and Doppler Waveforms Explained, Greenwich Medical Media, 2001

5. Evaluation

30% Assignments: There will be a total of 6 assignments, each worth 5%. They will be handed out (or posted online) during the lecture on the date noted, and will be due at the beginning of the following lecture. Late assignments will usually not be accepted. If you work on an assignment as a group, you may hand in a single assignment as long as the names and student numbers of all contributing students are indicated.

28% Midterm Test: Closed-book format, covering up to and including Womersley flow in rigid vessels.

42% Final Exam: Closed-book format, covering all course material.

Regular class attendance and participation are expected.

6. Additional Information/Statements

**Statement on Use of Electronic Devices**
During tests and exams, calculators are permitted for numerical evaluation of results, but may not be used for graphing or symbolic calculations (algebra, integration, etc.). No other electronic devices are allowed.

**Absence from course commitments**

**Attendance Policy:**
All classes, laboratories, and tutorials are mandatory, unless otherwise stated. Any student who, in the opinion of the course co-ordinator is absent too frequently from class or laboratory periods in any course, will receive a failing grade after due warning has been given in writing from the course co-ordinator and Graduate Chair.
Cheating and Plagiarism Policy:
Students are encouraged to work together, but each student must take total responsibility for his/her submitted work. Students must write their laboratory reports and final projects in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. University policy states that cheating, including plagiarism, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties which might include expulsion from the program. If a student is caught cheating, there will be no second warning. All written reports and projects may be subject to submission for textual similarity review to commercial plagiarism detection software under license to the University for the detection of plagiarism. All reports will be included as source documents on the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between the University of Western Ontario and Turnitin.com (http://www.turnitin.com).

See the School of Graduate and Postdoctoral Studies Scholastic Offence Policy: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

Use of Electronic Devices Policy:
No electronic devices (e.g., cell phones, MP3 players) may be used during lectures or examinations. The use of non-programmable calculators is permitted during examinations; programmable calculators are prohibited during examinations.

OWL Internet/Bulletin Board Policy:
It is the student’s responsibility to read the course website posted on Western’s on-line learning management system, OWL (https://owl.uwo.ca/portal). This includes the course bulletin board and all information and/or assignments posted about the course. If the student fails to act on information that has been posted on the course site and does so without a legitimate explanation (i.e., those covered under the illness/compassionate form), then there are NO grounds for an appeal.

Request for Assignments Extensions:
Students are advised to inform the course co-ordinator as soon as possible regarding an extension for assignment submissions due to medical reasons or other compassionate reasons. Extensions will only be granted by the course co-ordinators at their discretion.

Absence Due to Medical Illness:
Students must familiarize themselves with the Policy on Accommodation for Medical Illness: https://studentservices.uwo.ca/secure/index.cfm
If you are unable to meet a course requirement due to illness or other serious or compassionate circumstances, you must provide valid medical or other supporting documentation to the course coordinator immediately. It is the student's responsibility to make alternative arrangements with the coordinator to complete missing course requirements.

A student requiring academic accommodation due to illness, should use the Student Medical Certificate: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf when visiting an off-campus medical facility or request a Record's Release Form for visits to Student Health Services.

The form is available at: http://www.health.uwo.ca/services/students/policies.html. The release form will allow the course co-ordinator to confirm with Student Health Services that a student’s absence from regular attendance or inability to meet scheduled course commitments is due to medical reasons. The nature of the illness will not be divulged by Student Health Services.

**Graduate Students’ Mental Health and Physical Wellness:**
As part of a successful graduate student experience at Western, students are encouraged to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western’s Campus Recreation Centre: http://www.uwo.ca/campus_life/athletics.html

All facets of extracurricular campus life in which graduate students can participate are available on this URL: http://www.uwo.ca/campus_life/arts_culture.html

Information regarding health and wellness-related services available to students may be found at http://www.health.uwo.ca. Students seeking help regarding mental health concerns are advised to speak to someone in whom they feel comfortable confiding, such as their graduate supervisor, their program director (Graduate Chair), or other relevant administrators in their unit. Campus mental health resources may be found at: http://www.health.uwo.ca/mental_health/resources.html

**Accessibility to the Course and Course Materials:**
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