Objectives and Expected Outcomes:

This course employs a comparative approach to study various physiological processes in animals. Specifically, the physiology of digestion, osmoregulation, excretion, circulation, gaseous exchange, metabolism, reproduction and growth will be covered in this course. First, the basic principles underlying the above-mentioned physiological activities will be explained and then the means by which different organisms perform them will be examined. The laboratory component will provide an opportunity for students to conduct representative experiments from most of the organ systems covered in the lecture. Upon completion, students are expected to have a solid understanding of how selected physiological processes take place in animals.

Course Director: Dr. Suraj Unniappan
Assistant Professor
Department of Biology
Room 221A, Lumbers Building
Phone: 416-736-2100 ext. 20999
E-mail: suralu@yorku.ca

Meeting: By appointment – please e-mail to schedule a meeting.

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Term Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Lab Reports (3X6.7%)</td>
<td>20%</td>
</tr>
<tr>
<td>Lab Exam</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Lectures: Mondays, Wednesdays and Fridays, 1:30-2:30 PM
Steadman Lecture Hall E (SLH E)

Labs: Mondays-Fridays: 2:30-5:30 PM
Location: Room 206, Farquharson Life Sciences
Please read the Animal Physiology II lab manual (available at the York U bookstore) for detailed guidelines on the laboratory component.

*(Purchase of this book is NOT essential.)*
Reference Books Used Include:

Important Dates (for Winter 2010 courses):

Last date to enroll in the course without instructor’s permission: January 19, 2010
Last date to enroll in the course with instructor’s permission: February 3, 2010
Last date to drop courses without receiving a grade: March 8, 2010
Winter Classes End: April 5, 2010
Winter Exams Start: April 7, 2010
More information about this can be found at:
www.registrar.yorku.ca/importantdates/index.htm

IMPORTANT NOTES:

Any student who is absent from the mid-term or lab exam without a valid reason will receive a grade of zero for the test they missed. There will be no alternate exams for the mid-term or lab exams. If you miss the final exam, you will have to petition for deferred standing and if become eligible, will have to write the final exam during the deferred exam dates scheduled by the Registrar’s office. Students who feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss that matter with the Course Director as soon as possible.

Students with physical, learning or psychiatric disabilities who require reasonable accommodations in teaching styles or evaluation methods should discuss this with the Course Director immediately so that appropriate arrangements can be made.
All students must read and be aware of the York University policies regarding student conduct, academic honesty and plagiarism, which can be found at:
http://www.yorku.ca/secretariat/policies/
http://www.yorku.ca/secretariat/senate_cte_main_pages/ccas.htm

Students are expected to know the lecture and lab schedule, deadlines for lab assignments and exam dates. Your teaching assistant (TA) will be responsible for lab instruction and evaluation of lab reports and the lab exam.

All e-mails to the course director must be from your York U e-mail ID, must address him as Dr. Unniappan and must include your full name and student ID. E-mails from private accounts and/or the ones that deviate from the above rules will not receive a reply.
**Tentative Lecture Contents and Schedule:**

*Note: Every attempt will be made to post lecture materials (as MS PowerPoint -.ppt files) online in the course website (available in Moodle) prior to each class.*

<table>
<thead>
<tr>
<th>Class/Dates</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 4</td>
<td>Introduction</td>
</tr>
<tr>
<td>Jan. 4,6,8,11</td>
<td><strong>Blood and Circulatory System</strong>&lt;br&gt;- Anatomy of the circulation system&lt;br&gt;- Blood cells&lt;br&gt;- Heart&lt;br&gt;- Hemodynamics and peripheral circulation&lt;br&gt;- Regulation of circulation</td>
</tr>
<tr>
<td>Jan. 13,15,18,20</td>
<td><strong>Gas Exchange</strong>&lt;br&gt;- Gas properties&lt;br&gt;- Transport of O2 and CO2 in the blood&lt;br&gt;- Gas exchange in air&lt;br&gt;- Gas exchange in water</td>
</tr>
<tr>
<td>Jan. 22,25,27,29</td>
<td><strong>Osmoregulation</strong>&lt;br&gt;- Body fluid composition and exchange of ions and water&lt;br&gt;- Osmoregulation in aquatic environments&lt;br&gt;- Osmoregulation in terrestrial environments&lt;br&gt;- Excretion</td>
</tr>
<tr>
<td>Feb.1,3,5,8</td>
<td><strong>Acid/Base Balance</strong>&lt;br&gt;- CO2 transport and acid-base balance&lt;br&gt;- Ventilation and acid-base balance&lt;br&gt;- Excretion and acid-base balance</td>
</tr>
<tr>
<td>Feb. 10,12</td>
<td><strong>Feeding, Digestion and Absorption</strong>&lt;br&gt;- Food and feeding – <em>to be continued</em></td>
</tr>
<tr>
<td>Feb. 15,17,19</td>
<td><strong>NO LECTURES/LABS – Reading Week</strong></td>
</tr>
<tr>
<td>Feb. 22</td>
<td><strong>MID-TERM EXAM (locations - to be announced)</strong></td>
</tr>
</tbody>
</table>
Feb. 24, 26, March 1  
*Feeding, Digestion and Absorption - continued*  
- Alimentary system, gut motility and GI secretion - Digestion, Absorption, Excretion

March 3, 5, 8, 10  
*Metabolism*  
- Metabolic pathways  
- Metabolic rate  
- Regulation of metabolism

March 12, 15, 17, 19  
*Thermal Regulation*  
- Heat and body temperature  
- Thermal regulation in ectotherms  
- Thermal regulation in endotherms

March 19, 22, 24, 26  
*Reproduction*  
- Reproductive strategies  
- Sexual determination, differentiation and maturation  
- Male reproductive physiology  
- Female reproductive physiology  
- Fertilization, pregnancy and lactation

April 2  
*NO LECTURE – GOOD FRIDAY*

March 29, 31, Apr 1 5  
*Growth*  
- Body growth  
- Regulation of intrauterine growth  
- Regulation of postnatal growth  
Review - for the final exam

Final Exam – Date to be decided, finalized and announced by the registrar’s office.

*Enjoy Animal Physiology! Wishing you the very best in this course!*