

**Annual Course Directors Report
2004__ to 2005__ Academic Year**

Course Title **Mammalian Physiology**

Department **Integrative Biology and Pharmacology**

Course Director(s): **Norman Weisbrodt**

Offered in: **X** Year 1 Year 2

Semester: Fall **X** Spring

Part A: Course Planning and Management

Use as much space as needed for your answers.

Course Goals and Objectives and Session Goals and Objectives: see attachment (CurrMIT) and update as necessary. Return your edited form with this report.

NOTE: Are the course goals and objectives consistent with the [Goals and Objectives for UTMSH Undergraduate Medical Education?](#) (click link to goals and objectives)

 X Yes No

**How are goals and objectives communicated to those involved in the course?
Indicate all that apply in the table below:**

| | Students | Lecturers | Others |
|-------------------------|---------------------|------------------------------------|--------|
| Orientation | | | |
| Syllabus | | | |
| Website | <u> X </u> | <u> X </u> | |
| Handouts | | | |
| Other (describe) | | <u> Faculty meetings </u> | |

Describe the role of your departmental course education committee.

The entire faculty, but mostly the faculty teaching in the course, review and approve any changes made in the course. Monthly updates about the course are presented at regular meetings of the faculty. Last year we reconstituted a departmental education committee primarily to deal with the increased duties associated with the dental school courses; however, this committee also deals with Mammalian Physiology as well.

What steps (i.e., instructional materials, training sessions, books, etc) are taken to help instructors prepare for their roles as teachers and evaluators?

Faculty members new to the course are provided with materials currently being used for the course and sit in and/or review lectures being given by current and previous faculty. They are encouraged to avail themselves of any seminars or training sessions being offered. The course director and other senior faculty attend training and other sessions offered locally and at societal meetings. Information and materials from these meetings are brought back and distributed to the rest of the faculty.

During the past academic year, did you make any modifications to educational components of your course?

 X Yes No

If yes, what were the changes and why were they made? Indicate if these changes were recommended or reviewed by the Curriculum Committee.

In addition to the replacement of a lab on hemodynamics with a team-learning exercise on that same topic that was instituted last year, we dropped a lecture so that an Integrated Exercise on skeletal muscle could be presented as a team-learning exercise. These changes were made in order to improve student understanding of a difficult concept (hemodynamics) and also to make the topics (hemodynamics and neuro-muscular physiology) more relevant to clinical medicine. They also were made to pilot team learning in the course and to pilot integrating material from several courses.

Part B: Student Performance

Use as much space as you need to answer the questions.

Indicate the contribution of each of the following methods to a student’s final grade in the table below: (sum should equal 100%)

| Weight | Method | Weight | Method |
|--------|----------------------------------|--------|---------------------------------------|
| | Computer Case Simulation | 68% | In House Multiple Choice Examination |
| 1% | Computer Exams | | Clinical Exam (Standardized Patients) |
| | Conferences | | Oral Exam |
| | Critical Appraisal of Literature | 30% | NBME examination |
| | Faculty Observation | | Peer Review |
| | Group Presentation | | Research paper |
| | Lab/Practical Examination | | Self-Evaluation |
| | Written Assignment | | Small Group Participation |
| | Essay | | Tutor Evaluation |
| | | | Preceptor Evaluation |
| | | 1% | Other: Team Learning Group Response |

Describe the criteria for minimum performance that each student must achieve in order to receive the following grades in the table below:

| Grade | Criteria for Minimum Performance |
|----------------------|---|
| Honors | Cumulative average of 88 and above |
| High Pass | Cumulative average of 78-87 |
| Pass | Cumulative average of 65-77 |
| Marginal Performance | Cumulative average of 60-64 |
| Fail | Cumulative average below 60 |
| Incomplete | |

Methods for remediation of students:

With the permission of the Dean's Office, certain students are eligible to enroll in the summer remedial course in Mammalian Physiology. This course is open ONLY to UT-Houston students and is offered without charge. A general outline of procedures and the schedule are presented below. If you need more information, please contact Dr. Weisbrodt (Phone: 500-6324, Room 5.102 MSB, email: Norman.W.Weisbrodt@uth.tmc.edu).

This is a self study course. Students should review lectures on the web from the spring course, read the assignments, make use of the programs written by Dr. Weems on cardiovascular physiology on the web, and study the syllabi and lecture notes. Faculty members are available throughout the summer to answer individual questions. Group sessions (see schedule) to discuss particular problems in each section will be held two-three days prior to each of the six hour-long examinations (each exam is worth 11.67% of the final grade; see schedule for material covered and dates).

The scheduled portion of the course starts Tuesday, July 5, 2005 when general procedures will be reviewed, and questions about general physiology will be answered by the attending faculty. Since the course moves along rapidly, with exams every 4-5 days, students are encouraged to start studying well in advance of the first day of the course. We strongly urge you to begin your review as soon as possible, as the first exam is Thursday, July 7.

The first exam, on July 7, 2005, will cover General Physiology. The second exam, on July 11, will cover cardiovascular physiology including hemodynamics. The final examination will be a National Board of Medical Examiners Subject Exam and will be worth 30% of the final grade. ALL STUDENTS MUST TAKE EACH EXAM AT THE DESIGNATED TIME. Students must earn an overall grade of "Pass" (65%) or higher to remediate successfully. The same grading schedule used during the spring course (see the Physiology web pages) will be used to assign grades of H, HP, P, MP and F. The grade recorded in the Office of the Registrar will be both the initial grade, and the remedial grade, e.g., MP/H).

Schedule: Remedial Physiology Course, Summer 2005

Meetings and exams (except for the final) will be held from 10:00 am to 12:00 noon (Room to be decided later).

| <u>Date</u> | <u>Activity</u> |
|--------------------------|--|
| Tuesday, July 5, 2005 | Orientation: General physiology discussion |
| Thursday, July 7, 2005 | General physiology examination |
| Friday, July 8, 2005 | Hemodynamics and cardiovascular |
| physiology discussion | |
| Monday, July 11, 2005 | Hemodynamics and cardiovascular |
| physiology exam | |
| Wednesday, July 13, 2005 | GI physiology discussion |
| Friday, July 15, 2005 | GI physiology examination |
| Monday, July 18, 2005 | Renal physiology discussion |
| Wednesday July 20, 2005 | Renal physiology examination |
| Friday, July 22 2005 | Respiratory physiology discussion |
| Monday, July 25, 2005 | Respiratory physiology exam |
| Wednesday, July 27, 2005 | Endo/Integrative discussion |
| Friday, July 29 2005 | Endo/Integrative examination |
| Monday, August 1, 2005 | Final examination – 9:00am - noon |

Part C: Educational Program

Use as much space as needed for your answers.

SCHEDULED LEARNING ACTIVITIES:

In the table below, please indicate the method of instruction, the numbers of hours and the type of instructor for all scheduled learning activities.

Instructor column – indicate all that apply. See legend below.

Hrs column – Indicate number of hours or not applicable

| Method | Type of Instructor* | #Hrs | Method | Type of Instructor | # Hrs |
|----------------------------------|---------------------------|------|--------------------------|--------------------|-------|
| Case-based lecture | | | Panel Discussion | | |
| Case-based, small group tutorial | | | Peer Teaching | | |
| Clinical Correlation | F | 11 | Problem-Based Learning | | |
| Computer-assisted Instruction | Cardiovascular courseware | prn | Review Session | | |
| Conference/seminar | | | Shadowing Physician | | |
| Discussion | | | Standardized Patient | | |
| Independent study | Problem sets | prn | Tutorial | | |
| Journal Club | | | Workshop | | |
| Lecture | F | 65 | Other: | | |
| Preceptor | | | Problem-solving Sessions | F | 5 |
| Patient Physical Exam | | | Team Learning | F | 2 |
| Patient Interview | | | | | |
| Patient Write-Up | | | | | |
| Basic Science Correlate | | | | | |
| Oral Presentation | | | | | |

*F = faculty on campus; FC = community based faculty; G = post graduate faculty, residents, fellows, interns; N = nurses; PE = physician extenders (nurse practitioner, physician assistant, EMT); O = other staff (MSW, dietician, business office)

PART D: Resources

Use as much space as you need to answer the question.

Comment on the adequacy of faculty and other resources to teach your course (educational space, computer hardware and software, support personnel).

Currently the course is taught primarily by senior faculty in the Department of Integrative Biology and Pharmacology. The pulmonary section is taught by a senior physiologist from the Department of Anesthesiology. Two faculty members from the Department of Internal Medicine present one of the Pathophysiology Correlates, as does one faculty member from the department of Surgery. Thus, there is adequate faculty to present the course. However, concern for the future exists. We are in the process of incorporating and mentoring additional faculty, but our numbers are dwindling.

The lecture halls and A-V equipment are adequate. It would be nice if the computer projector in room 2.006 were placed so that one of the two smaller screens could be used rather than the large screen that blocks the entire whiteboard. The support personnel for the A-V equipment and rooms are excellent.

The use of Blackboard to post course information, announcements, and course materials was very successful. Ms. Bassham was particularly helpful in supporting the course director in the use of Blackboard

What other departments are involved in the teaching of your course? Please complete the table below:

| Department | Number of faculty involved |
|--------------------------|-----------------------------------|
| Anesthesia | 1 |
| Internal Medicine | 2 |
| Surgery | 1 |

PART E: Summary

Please write a narrative that includes these points:

Strengths of your course

The course is taught by a relatively small number of senior faculty members who have a deep interest in and understanding of medical physiology. Also, most are seasoned instructors who have participated in educational activities sponsored by the school and by national organizations. Several have authored chapters for textbooks dealing with physiology. The course builds upon previous courses and sets the stage for courses and learning taking place during the rest of the students' medical careers. There is some coordination between physiology and neurobiology, especially at the beginning and end of the semester. This year, first-year course directors designed and delivered several Integrated Exercises (within the framework of the ICM course) in which physiology was a component. These seemed to be well received by the students and will be modified and continued next year.

The course contains a mix of lectures and of correlates, problem-solving sessions, and a team-learning exercise (separate from the Integrated Exercise) all of which the students find useful. The correlates, problem-solving sessions, and team learning exercise help the students learn how to apply the information they are gaining in order to evaluate and solve clinical problems. Students were particularly positive about the endocrinology correlate given by Drs. Nader and Orlander.

Weaknesses of your course

The major weakness of the course comes from the limited amount of time the students have to assimilate and become familiar with the material. Of course, this is a major weakness of most courses. The course also may rely too much on lecture and syllabus material. There is a limited amount of active learning on the part of the students. The problem-solving sessions and the pathophysiology correlates are helpful, but there is no incentive for the students to prepare for the sessions in order to gain maximum benefit; thus, too few students prepare. The team learning exercises have addressed some of these issues and we look to expand their use next year. The use of online tests prior to the sessions stimulated the students to prepare ahead of time. The discussions during the sessions got students involved in their learning.

A summary of your student feedback for the last two years

In general students continue to find the course challenging yet interesting. High marks are received for organization and for content. Most lecturers are rated favorably for being informative and responsive. Also, the problem-solving sessions, the pathophysiology correlates, and this year's team learning sessions are judged to be helpful. Thus, overall ratings are favorable.

The major criticisms continue to be with the syllabuses and with the exams. Most syllabuses are considered “incomplete” although many students find them too detailed. The exams are thought by many to not reflect what was being taught or for testing at a level not consistent with the lectures. This is especially true for the final exam which is a NBME shelf exam. Although students did well this year (the class average was above the reference group average and 15% of the students scored at or above the 90th percentile), many feel that they are not prepared.

This year it was the opinion of many students that the Gastrointestinal Section of the course was too compressed considering the amount of material.

Plans to correct any weaknesses that you identified.

Once again, faculty will be encouraged to consider requests from the students for more detailed syllabuses. Most faculty have formatted their syllabus materials such that they can be posted on Blackboard. Our goal is to have all material in such a format for next year.

We plan to incorporate more team learning into our course, especially during the cardiovascular section. We hope that earlier, more intense student involvement with the material will help understanding. Also, we hope that by allowing for more student-centered learning and fewer lectures in the cardiovascular section we will be able to decompress the gastrointestinal physiology section.

Dr. Orlander will be working with us to revamp our exams so that the questions are more clinically relevant and scenario based. As suggested, we will not be giving exams back to students next year but will be providing feedback in other formats (to be determined).

More participation by junior faculty will take place over the next few years.

Please attach the following with your completed summary:

A blank copy of all evaluation instruments used in your course (student evaluation and course evaluation)

STUDENT EVALUATION, Section I, Mammalian Physiology, 2005

Name and ID not required. Please answer the questions and place form in the box in the front of the room.

A=strongly agree **B=agree** **C=disagree** **D=strongly disagree** **E=no opinion**

1. The general physiology section was well organized.
2. The pace of the first section was appropriate.
3. The lectures were informative.
4. The lecturers were well informed.
5. The required textbook was useful.
6. The syllabus was useful.
7. The material posted on the physiology course web page on Blackboard was useful.
8. The examination adequately reflected the material covered in the section.
9. Having lectures available via computer was of assistance to me.
10. The pathophysiology correlate on ion asymmetry and bioelectricity was helpful.
11. The pathophysiology correlate on body fluid volumes and capillary dynamics was helpful.
12. The problem set on muscle mechanics was helpful.
13. The problem-solving session was helpful.
14. I study on occasion with another person or group.
15. Dr. Schultz's lectures (membrane transport) were well presented.
16. Dr. Schultz was available to students.
17. Dr. Walters' lectures (autonomics, cardiac muscle) were well presented.
18. Dr. Walters was available to students.
19. Dr. Weisbrodt's lecture (skeletal muscle) were well-presented.
20. Dr. Weisbrodt was available to students.
21. Dr. Rich's lecture (smooth muscle) was well-presented.
22. Dr. Rich was available to students.

Please turn over

Major strengths of this section:

Major weaknesses of this section:

Additional comments and recommendations:

Do not write below this line

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**STUDENT EVALUATION, Section II (Cardiovascular, Gastrointestinal)
Mammalian Physiology, 2005**

Name and ID not required. Please answer the questions and place form in the box in the front of the room.

A=strongly agree B=agree C=disagree D=strongly disagree E=no opinion

1. The cardiovascular section was well organized.
 2. The pace of the cardiovascular section was appropriate.
 3. The required textbook was useful.
 4. The required cardiovascular **COURSEWARE** was useful.
 5. The cardiovascular syllabus was useful.
 6. The examination adequately reflected the material covered in the cardiovascular section.
 7. The videotapes of lectures were of assistance to me.
 8. I found the hemodynamics Team Learning Session helpful.
 9. I found the hemodynamics problem set helpful.
 10. I found the pathophysiology correlate on the cardiac cycle helpful.
 11. I found the problem-solving session helpful.
 12. Dr. Weisbrodt's lectures (hemodynamics) were well-presented.
 13. Dr. Weisbrodt was available to students.
 14. Dr. Weems' lectures (cardiovascular) were well presented.
 15. Dr. Weems was available to students.
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16. The gastrointestinal (GI) physiology section was well organized
 17. The pace of the GI section was appropriate.
 18. The required textbook was useful.
 19. The GI syllabus was useful.
 20. The examination adequately reflected the material covered in the GI section.
 21. The videotapes of lectures were of assistance to me
 22. I found the GI problem-solving session helpful.
 23. Dr. Weisbrodt's lectures (motility) were well presented.
 24. Dr. Weisbrodt was helpful to students.
 25. Dr. Castro's lectures (digestion/absorption) were well presented.
 26. Dr. Castro was helpful to students.
 27. Dr. Lichtenberger's lectures (secretion, biliary) were well presented.
 28. Dr. Lichtenberger was helpful to students.
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Please turn over

Major strengths of this section:

Major weaknesses of this section:

Additional comments and recommendations:

Do not write below this line

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**STUDENT EVALUATION, Section III (Renal, Respiratory-Acid/Base)
Mammalian Physiology, 2005**

Name and ID not required. Please answer the questions and place form in the box in the front of the room.

A=strongly agree B=agree C=disagree D=strongly disagree E=no opinion

1. The renal physiology section was well organized.
2. The pace of the renal section was appropriate.
3. The required textbook was useful.
4. The renal syllabus was useful.
5. The examination adequately reflected the material covered in the renal section.
6. The videotapes were of assistance to me.
7. Dr. O'Neil's pathophysiology correlate on diuresis was helpful.
8. Dr. O'Neil's lectures (Filtration, Clearance, ADH, etc) were well presented.
9. Dr. O'Neil was helpful to students.
10. Dr. Schultz's lectures (Fluid Balance) were well presented.
11. Dr. Schultz was helpful to students.

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12. The respiratory-acid/base (R-AB) physiology section was well organized.
 13. The pace of the R-AB section was appropriate.
 14. The R-AB syllabus was useful.
 15. The respiratory computer simulations shown during lecture were useful.
 16. The examination adequately reflected the material covered in the R-AB section.
 17. The videotapes were of assistance to me.
 18. Dr. Ware's pathophysiology correlate on respiration was helpful.
 19. Dr. Dubinsky's pathophysiology correlate on acid-base problems was helpful.
 20. The pulmonary problem-solving session was helpful.
 21. Dr. Drake's lectures (Mechanics, Ventilation, Oxygen Transport, Control of Respiration) were well presented.
 22. Dr. Drake was available to students.
 23. Dr. Dubinsky's lectures (Acid-Base) were well presented.
 24. Dr. Dubinsky was available to students.

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25. I found the course material posted on Blackboard useful

Please turn over

Major strengths of this section:

Major weaknesses of this section:

Additional comments and recommendations:

Do not write below this line

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STUDENT EVALUATION

Section IV: Endocrine, Metabolic and Integrative Physiology 2005

Name and ID not required. Please answer the questions and place form in the box in the front of the room.

A=strongly agree B=agree C=disagree D=strongly disagree E=no opinion

1. The endocrine and metabolism (E & M) section was well organized.
 2. The pace of the E & M section was appropriate.
 3. The required textbook was useful for this section.
 4. The E & M section of the syllabus was useful.
 5. The examination adequately reflected the material covered in E & M.
 6. I found the pathophysiology correlate (endocrine case presentations) helpful.
-
7. The integrative physiology section (Temperature, Diabetes, Shock, Congestive Heart Failure) was well organized
 8. The pace of the integrative section was appropriate.
 9. The required textbook was useful for this section.
 10. The integrative physiology section of the syllabus was useful.
 11. The examination adequately reflected the material covered in the integrative physiology section.
 12. The integrative physiology problem-solving session was useful
-
13. The videotapes were helpful.
 14. The Mammalian Physiology Blackboard site was helpful.
-
15. Dr. Rich's lectures (Menstrual Cycle, Testicular Function) were well presented.
 16. Dr. Rich was available to students.
 17. Dr. Schonbrunn's lectures (Calcium Metabolism, Growth) were well presented.
 18. Dr. Schonbrunn was available to students.
 19. Dr. Dubinsky's lectures (Pancreas, Metabolism) were well presented.
 20. Dr. Dubinsky was available to students.
 21. Dr. Knutson's lecture (Adrenal Cortex) was well presented.
 22. Dr. Knutson was available to students.
 23. Dr. Morris' lectures (Thyroid, Temperature Regulation) were well presented.
 24. Dr. Morris was available to students.
 25. Dr. Schultz's lectures (Diabetes, Shock, Gas Transport, Congestive Heart Failure) were well presented.
 26. Dr. Schultz was available to students.

Please turn over

Major strengths of this section:

Major weaknesses of this section:

Additional comments and recommendations:

Do not write below this line

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STUDENT EVALUATION
Mammalian Physiology, 2005 Overall Course Evaluation.

Name and ID not required. Please answer the questions and place form in the box in the front of the room.

A=strongly agree B=agree C=disagree D=strongly disagree E=no opinion

1. The sections of the course were presented in a logical sequence.
2. The length of time spent on each section seemed appropriate.
3. I attended most of the lectures.
4. I found most of the lectures to be informative.
5. I used the video versions of the lectures in place of attending lecture more than once.
6. I used the video versions of the lectures as supplements to the lectures more than once.
7. I found the videos to be helpful.
8. I utilized Blackboard at least once.
9. I found the course information/material posted on Blackboard to be helpful.
10. I did not use Blackboard because I found it difficult to use.
11. I sought help outside class from course faculty on at least one occasion.
12. I used email to communicate with the course director and faculty at least once.
13. When I sought help either in person or via email, I found the faculty to be accessible.
14. When I sought help either in person or via email, I found the faculty to be helpful.
15. I did not seek help from the faculty because I felt they were inaccessible.
16. The Board final adequately reflected the material covered in the course.

Please turn over

Major strengths of the course:

Major weaknesses of the course:

Please comment on Pathophysiologic Correlates and Problem Solving Sessions throughout the course.

Other comments:

Do not write below this line

Edited CurrMIT information

Return this form to:

Brenda Bassham

JJL 304

713-500-5136

Or as an attachment through email Brenda.L.Bassham@uth.tmc.edu