May 05, 2005

Memorandum

TO: Jeannine Blackwell, Dean of the Graduate School
FR: Sharon R. Stewart, Associate Dean for Academic Affairs
RE: New Course request from the Department Clinical Sciences

The College of Health Sciences Academic Affairs Committee recommends approval of the following application for a new course:

CSC 677: Erythrocyte Disorders

This course has been requested by students presently studying for a graduate degree in the Hematology/Transplantation programs. It completes a triad of courses addressing different aspects of myeloproliferative disorders. Although the course is being offered primarily for students in hematology/transplantation, it may also be of interest to students in other health related professions, such as medicine, nursing, and pharmacy.

CONTACT PERSON: Linda Gorman, Ph.D. 323-1100, ext. 80855
CSC 677 Red Cell  3 credit hours

Course Description: Advanced review of inherited and acquired disorders of erythrocyte production, destruction and loss including the hemoglobinopathies. The course will address the pathophysiology, laboratory testing and treatment of each disorder.

Prerequisites: CSC674

Instructor: E. Anne Stiene-Martin, Ph.D.
APPLICATION FOR NEW COURSE

1. Submitted by College of Health Sciences ____________________________ Date __Nov 12, 2004__
   Department/Division offering course ________________________________
   Clinical Science/Clinical Laboratory Science _________________________

2. Proposed designation and Bulletin description of this course
   a. Prefix and Number    CSC 677        b. Title* Erythrocyte Disorders
      *NOTE: If the title is longer than 24 characters (including spaces), write
      A sensible title (not exceeding 24 characters) for use on transcripts
   c. Lecture/Discussion hours per week 3 d. Laboratory hours per week __________
   e. Studio hours per week __________ f. Credits 3
   g. Course description
      Advanced review of inherited and acquired disorders of erythrocyte production, destruction and loss including the
      hemoglobinopathies. The course will address the pathophysiology, laboratory testing and treatment of each disorder.
   h. Prerequisites (if any)
      CSC674
   i. May be repeated to a maximum of ________________ (if applicable)

4. To be cross-listed as
   Prefix and Number ____________________________ Signature, Chairman, cross-listing department

5. Effective Date Fall, 2005 ____________________________
   (semester and year)

6. Course to be offered
   x Fall     □ Spring     □ Summer

7. Will the course be offered each year?
   (Explain if not annually)
   x Yes    □ No

8. Why is this course needed?
   This course has been requested by students presently studying for a graduate degree in the Hematology/Transplantation. It
   completes a triad of courses addressing different aspects of myeloproliferative disorders.

9. a. By whom will the course be taught? E. Anne Stiene-Martin, Ph.D.
   b. Are facilities for teaching the course now available?
      If not, what plans have been made for providing them?
      x Yes    □ No
APPLICATION FOR NEW COURSE

10. What enrollment may be reasonably anticipated? 3-5 students

11. Will this course serve students in the Department primarily? □ Yes □ No
Will it be of service to a significant number of students outside the Department?
If so, explain. □ Yes □ No
This course could conceivably be of interest to students in other health related professions (medicine, nursing or pharmacy)

Will the course serve as a University Studies Program course? □ Yes □ No
If yes, under what Area?

12. Check the category most applicable to this course

☐ traditional; offered in corresponding departments elsewhere;
☐ relatively new, now being widely established
☒ not yet to be found in many (or any) other universities

13. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? □ Yes □ No

14. Is this course part of a proposed new program:
If yes, which?

15. Will adding this course change the degree requirements in one or more programs?* □ Yes □ No
If yes, explain the change(s) below

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

17. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted. □ Check here if 100-200.

18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. □ Check here if 400G-500.

19. Within the Department, who should be contacted for further information about the proposed course?
Name  Linda Gorman, Ph.D.  Phone Extension  323-1100 ext80855

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.
APPLICATION FOR NEW COURSE

Signatures of Approval:

[Signature]
Department Chair

[Signature]
Dean of the College

14 April, 2005
Date

4/14/05
Date

Date of Notice to the Faculty

Date

Date

Date

7/20/05
Date

Date of Notice to University Senate

Date

*Undergraduate Council

*University Studies

*Graduate Council

*Academic Council for the Medical Center

*Senate Council (Chair)

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL

Rev 3/04
CSC 677
ERYTHROCYTE DISORDERS
FALL, 2005
M, W, F – 1:00-1:50 PM

SYLLABUS

I. COURSE DESCRIPTION

CSC 677 is a three credit hour graduate course addressing normal red cell development and reactive, hereditary as well as malignant disorders of erythrocytes including abnormal production and destruction or loss of erythrocytes. The course will consist of lectures, microscopic identification of cell types and specific disorders, case study review, one student presentation of a journal article, three intra-semester examinations and one final consisting of both practical and written parts.

II. INSTRUCTOR

Anne Stiene-Martin, Ph.D.
Professor Emeritus
CTW Rm 210B
323-1100, Ext 80850
Asmart00@uky.edu
Office hours: M, W, F 8:00 – 10:45 am

III. OBJECTIVES

Upon the completion of this course the student will be able to

1. Discuss the pathophysiology, associated laboratory testing and treatment of
   a. inherited disorders of red cell production leading to anemia
   b. acquired disorders of red cell production leading to anemia
   c. inherited disorders of red cell production leading to erythrocytosis.
   d. acquired disorders of red cell production leading to erythrocytosis.

2. Discuss normal and abnormal iron metabolism, relevant laboratory findings and treatment characteristics of
   a. inherited and acquired iron overload
   b. iron lack anemias
CSC 677  
Course Syllabus

c. iron block anemias  
d. poor iron utilization anemias.

3. Discuss the megaloblastic processes leading to anemia, their  
pathophysiology, associated laboratory testing and treatment  
including

a. vitamin B₁₂ and folate deficiencies  
b. vitamin independent megaloblastic anemias.

4. Discuss the basic molecular defect and consequences of the major  
hemoglobin production disorders including

a. Thalassemia  
b. Hemoglobinopathies

5. Discuss the pathophysiology, associated laboratory testing and  
treatment of the major red cell enzymopathies.

6. Compare and contrast the inherited and acquired red cell  
membrane abnormalities leading to red cell destruction.

7. Discuss inherited and acquired extracorpuscular hazards that may  
lead to red cell destruction including hemolytic anemias related to

a. red cell fragmentation (microangiopathic)  
b. immune and autoimmune disturbances  
c. drugs/chemicals/toxins and thermal red cell injury

8. Discuss the consequences and laboratory findings following acute  
and chronic blood loss.

9. Discuss the laboratory tests (routine and special) used to detect red  
cell disorders.

10. Present a critique of a journal article that addresses either clinical  
or basic research into a specific erythrocyte disorder of the  
student’s choosing.

IV. Schedule of Topics (using dates for fall, 2005)

August 24 Introduction to course
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Red cell development</td>
</tr>
<tr>
<td>29</td>
<td>Anatomy of a red cell</td>
</tr>
<tr>
<td>31</td>
<td>Hemoglobin synthesis</td>
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<tr>
<td>September</td>
<td>ROUTINE LABORATORY TESTS FOR RED CELLS</td>
</tr>
<tr>
<td>2</td>
<td>Abnormal red cell morphology</td>
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<tr>
<td>5</td>
<td>LABOR DAY</td>
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<tr>
<td>7</td>
<td>Classification of red cell disorders</td>
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<tr>
<td>12</td>
<td>Erythrocytosis</td>
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<td>14</td>
<td>Bone marrow aplasia</td>
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<td>16</td>
<td>Pure red cell aplasia</td>
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<tr>
<td>19</td>
<td>Myelophthisic anemia/ Class Discussion</td>
</tr>
<tr>
<td>21</td>
<td>EXAMINATION #1</td>
</tr>
<tr>
<td>23</td>
<td>The Spleen</td>
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<td>26</td>
<td>Iron overload</td>
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<td>30</td>
<td>Iron Lack</td>
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<tr>
<td>October</td>
<td>IRON BLOCK</td>
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<tr>
<td>3</td>
<td>Poor iron utilization</td>
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<tr>
<td>5</td>
<td>FALL BREAK</td>
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<td>7</td>
<td>The Porphyrias</td>
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<td>10</td>
<td>Megaloblastic Anemia I</td>
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<tr>
<td>12</td>
<td>Megaloblastic Anemia II/Class Discussion</td>
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<tr>
<td>14</td>
<td>The hemolytic anemias -- overview</td>
</tr>
<tr>
<td>17</td>
<td>Inherited membrane abnormalities</td>
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<tr>
<td>19</td>
<td>Acquired membrane abnormalities</td>
</tr>
<tr>
<td>21</td>
<td>EXAMINATION #2</td>
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<tr>
<td>24</td>
<td>The enzymopathies I</td>
</tr>
<tr>
<td>26</td>
<td>The enzymopathies II</td>
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<tr>
<td>28</td>
<td>The hemoglobinopathies I</td>
</tr>
<tr>
<td>31</td>
<td>The hemoglobinopathies II</td>
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<tr>
<td>November</td>
<td>THE HEMOGLOBINOPATHIES II</td>
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<tr>
<td>2</td>
<td>Thalassemia I</td>
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<tr>
<td>4</td>
<td>Thalassemia II</td>
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<td>7</td>
<td>The immune hemolytic anemias I</td>
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<td>9</td>
<td>The immune hemolytic anemias II/Class Discussion</td>
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<td>11</td>
<td>The microangiopathic hemolytic anemias I</td>
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<td>The microangiopathic hemolytic anemias II</td>
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<td>16</td>
<td>EXAMINATION #3</td>
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<td>21</td>
<td>Hemolytic anemia caused by infectious agents</td>
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<td>23</td>
<td>THANKSGIVING BREAK</td>
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<td>November</td>
<td>THANKSGIVING BREAK</td>
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<tr>
<td>25</td>
<td>Other causes of hemolytic anemia</td>
</tr>
<tr>
<td>28</td>
<td>Special laboratory tests for Red cells</td>
</tr>
</tbody>
</table>
CSC 677
Course Syllabus

| December | 2 | Red Cell Loss |
| December | 5 | Case Studies |
| December | 7 | Journal Presentations |
| December | 9 | Course Review |

December 12-16 | FINALS WEEK

V. CLASS DISCUSSIONS

There will be three 30-minute class discussions shortly before each of the first three examinations. These periods are to allow students to bring questions regarding the material to be discussed among all students.

VI. CASE STUDIES

Approximately 15-20 clinical cases representing each of the major erythrocyte disorders will be discussed. Each case will give a short history, pertinent laboratory findings and 4-6 questions for students to answer. The purpose of these case studies is to correlate all the data learned in the course in order to arrive at conclusions relative to the cases.

VII. JOURNAL ARTICLE REPORT AND CRITIQUE

The report should include the following elements:

1. Description of the purpose of the study (why was it done?)
2. Description of the methods used
3. Discussion on how the results were analyzed and evaluated.
4. A critique of the article to include:
   a. The usefulness of the information
   b. How understandable was the article?
   c. Was the amount of data sufficient?
   d. Were all possibilities taken into account?
   e. Did the author's conclusions match the results?
5. How would you rate the study on a scale of 1 to 10?

VIII. LABORATORY

There will be four laboratory sessions that will address 1) the morphology of normally developing red cells in bone marrow as well as pure red cell aplasia; 2) the bone marrow and peripheral blood morphology associated with iron lack anemia and with the megaloblastic process; 3) bone marrow and peripheral blood morphology associated with hemolytic anemias including Thalassemia and
hemoglobinopathies; and, 4) Review. These will take place in CTW, Rm 425. Each student will be assigned a microscope and a set of study slides. There will also be sessions using a multi-head teaching microscope with the instructor. The final practical examination will consist of selecting a peripheral blood and bone marrow set from each of three groups and answering a series of questions relative to the microscopic findings.

IX. COURSE GRADE

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Examination #1</td>
<td>15%</td>
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<tr>
<td>Examination #2</td>
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<td>Examination #3</td>
<td>15%</td>
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<tr>
<td>CSC 677</td>
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<tr>
<td>Course Syllabus</td>
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<tr>
<td>Journal presentation (one)</td>
<td>10%</td>
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<tr>
<td>Final practical</td>
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<tr>
<td>Final written</td>
<td>30%</td>
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</tbody>
</table>

Letter grades will be assigned as follows:

- 90-100% A
- 80-89% B
- 70-79% C
- 60-69% D
- <60% Fail

X. Textbook

There is no required textbook for this course for two reasons: Acceptable texts are extremely expensive (over $200); and, by the time a textbook is published in this field, it is already out of date. Consequently, it is the philosophy of this instructor that students would be better served if they read recent journal articles addressing the subject of Erythrocytes and hence the requirement of a Journal article critique.

XI. COURSE POLICIES

1. Attendance at lectures is the decision of the student; however, attendance is mandatory for examinations and laboratory sessions. Should a student find it necessary to be absent for an examination or laboratory session, he or she must notify the instructor at least by the morning of the day in question (call the instructor’s office). Examinations will be rescheduled but laboratory periods cannot be repeated.