WINONA STATE UNIVERSITY
REQUIRED CHECKLIST FOR ALL CURRICULAR PROPOSALS

This checklist enables A2C2 representatives to endorse that their departments have accurately followed the Process for Accomplishing Curricular Change. For each course or program proposal submitted to A2C2, this checklist must be completed, signed by the submitting department's A2C2 representative, and included with the proposal when forwarded for approval. Peer review of proposals is also strongly advised, e.g., departments should discuss and vote on the proposals as submitted to A2C2, rather than on just the ideas proposed or drafts of proposals.

If a proposal fails to follow or complete any aspect of the process, the Course and Program Proposal Subcommittee will postpone consideration of the proposal and return it to the department's A2C2 representative for completion and resubmission. Resubmitted proposals have the same status as newly submitted proposals.

Note: This form need not be completed for notifications.

1. The appropriate forms and the "Approval Form" have been completed in full for this proposal. All necessary or relevant descriptions, rationales, and notifications have been provided.
   - Completed

2a. The "Financial and Staffing Data Sheet" has been completed and is enclosed in this proposal, if applicable.
   - Completed NA

2b. For departments that have claimed that "existing staff" would be teaching the course proposed, an explanation has been enclosed in this proposal as to how existing staff will do this, e.g., what enrollment limits can be accommodated by existing staff. If no such explanation is enclosed, the department's representative is prepared to address A2C2's questions on this matter.
   - Completed NA

3. Arrangements have been made so that a department representative knowledgeable of this proposal will be attending both the Course and Program Proposal Subcommittee meeting and the full A2C2 meeting at which this proposal is considered.
   - Completed
   Name and office phone number of proposal's representative:

4. Reasonable attempts have been made to notify and reach agreements with all university units affected by this proposal. Units still opposing a proposal must submit their objections in writing before or during the Course and Program Proposal Subcommittee meeting at which this proposal is considered.
   - Completed NA

5. The course name and number is listed for each prerequisite involved in this proposal.
   - Completed NA

6. In this proposal for a new or revised program (major, minor, concentration, etc.), the list of prerequisites provided includes all the prerequisites of any proposed prerequisites. All such prerequisites of prerequisites are included in the total credit hour calculations.
   - Completed NA

7. In this proposal for a new or revised program, the following information for each required or elective course is provided:
   a. The course name and number.
   b. A brief course description.
   c. A brief statement explaining why the program should include the course.
   - Completed NA

8. This course or program revision proposal:
   a. Clearly identifies each proposed change.
   - Completed NA

9. This course proposal provides publication dates for all works listed as course textbooks or references using a standard form of citation. Accessibility of the cited publications for use in this proposed course has been confirmed.
   - Completed NA

Department's A2C2 Representative or Alternate

Date

2/1/06
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<th>Department Recommendation</th>
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<tr>
<td><strong>Ellen Thompson</strong></td>
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<td><strong><a href="mailto:ethompson@winona.edu">ethompson@winona.edu</a></strong></td>
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Please forward to Registrar.

**Registrar**

Date entered

Please notify department chair via e-mail that curricular change has been recorded.
WINONA STATE UNIVERSITY
PROPOSAL FOR NEW COURSES

Department  **BIOLOGY**

Course No.  **440**
Course Name  **CLINICAL PHYSIOLOGY**
Credits  **3**

This proposal is for a(n)  **X** Undergraduate Course  **_____** Graduate Course

Applies to:  **X** Major (CLS)  **_____** Minor  **_____** University Studies*

Prerequisites  **BIOL 323, BIOL 308 and CHEM 340 or CHEM 350 and 351**

Grading method  **_____** Grade only  **_____** P/NC only  **X** Grade and P/NC Option

Frequency of offering:  **yearly**

*For University Studies Program course approval, the form *Proposal for University Studies Courses* must also be completed and submitted according to the instructions on that form.

Provide the following information (attach materials to this proposal):

A. Course Description
   1. Catalog description.
   2. Course outline of the major topics and subtopics (minimum of two-level outline).
   3. Basic instructional plan and methods.
   4. Course requirements (papers, lab work, projects, etc.) and means of evaluation.
   5. Course materials (textbook(s), articles, etc.).
   6. List of references.

B. Rationale
   1. Statement of the major focus and objectives of the course.
   2. Specify how this new course contributes to the departmental curriculum.
   3. Indicate any course(s) which may be dropped if this course is approved.

C. Impact of this course on other Departments, Programs, Majors, or Minors
   1. Does this course increase or decrease the total credits required by a major or minor of any other department? If so, which department(s)?
   2. List the departments, if any, which have been consulted about this proposal.

D. University Studies Course Proposals
   The form *Proposal for University Studies Course* must also be completed and submitted according to the instructions on that form.

Attach a **Financial and Staffing Data Sheet**.

Attach an **Approval Form**.

Department Contact Person for this Proposal:

**Dr. Frances R. Ragsdale**
Name (please print)  **5462**
Phone  **fragsdale@winona.edu**
e-mail address
A. Course Description: **Clinical Physiology**

1. Catalog description:

This course will review applied theory and practice in clinical chemistry and human physiology. This will be a review of the basic and advanced information in clinical laboratory chemistry and how it relates to patient health and care – in other words, what do all those numbers from a lab report really mean. Prerequisites include: acceptance into the CLS degree program and BIOL 323

2. Course Outline of the major topics and subtopics (minimum of two-level outline)

Course Objectives: Students will be expected to know and perform the listed tasks and achieve a score of 70% or better on the course assessments.

a. Prepare specimens
   i. prepare serum/plasma/whole blood specimens
   ii. Determine validity of a specimen according to laboratory protocol
   iii. Prepare specimens for shipment

b. Review general chemistry principles
   i. Review laboratory calculations
   ii. Review basic laboratory terminology
   iii. Discuss Beer’s law and its application to instrumentation

c. Comply with quality control procedures
   i. Define terms
   ii. Construct a Levey-Jennings quality control chart
   iii. Calculate coefficient of variation
   iv. Calculate standard deviation
   v. Evaluate charts for shifts/trends

d. Discuss electrolyte analysis
   i. Review basic ions in body
   ii. Calculate the anion gap
   iii. Review reference ranges for electrolytes
   iv. Describe the seat chloride purpose and procedure
   v. Discuss the functions of electrolytes
   vi. Examine methods for electrolyte measurement
   vii. Relate critical values for electrolytes

e. Examine blood gas chemistry
   i. Examine blood gas tests
   ii. Compare measured and calculated parameters
   iii. Describe the electrodes used in a blood gas analyzer
   iv. Compare/contrast metabolic acidosis/alkalosis
   v. Compare/contrast respiratory acidosis/alkalosis
   vi. Discuss body buffer systems in acid-base disturbances

f. Examine mineral testing
   i. Discuss mineral evaluations
   ii. Discuss methods of mineral evaluations
   iii. Relate abnormal values to patient disease/care

g. Discuss protein analysis
   i. Evaluate the function of proteins
   ii. Compare methods of measuring proteins
   iii. Discuss protein reference ranges
   iv. Discuss protein critical ranges
   v. Explain an A/G ratio
   vi. Calculate the globulin and A/G ratio
vii. Discuss cryoglobulin
viii. Relate protein values to patient disease/care
h. Examine carbohydrate testing
   i. Compare glucose methodologies
   ii. Differentiate between forms of diabetes
   iii. Calculate glucose amounts issues
   iv. Interpret glucose tolerance test
   v. Examine A/C test
   vi. Relate reference/critical values
   vii. Compare carbohydrate values to patient disease/care
i. Analyze lipid chemistry
   i. List the lipid tests
   ii. Discuss methodology of lipid analysis
   iii. Compare/contrast HDL, LDL, VLDL
   iv. Discuss triglyceride/cholesterol levels
   v. Discuss lipid reference ranges
   vi. Calculate LDL
   vii. Interpret L/S ratio and PG on amniotic fluid
   viii. Relate abnormalities to patient disease/care
j. Discuss enzyme analysis
   i. List enzymes measured
   ii. Discuss the function of common enzymes
   iii. Discuss enzyme production
   iv. Differentiate between kinetic and end point measurement
   v. State the enzyme reaction in common methodology
   vi. List references ranges/critical values
   vii. Discuss isoenzymes
k. Discuss non-protein nitrogen testing
   i. List testing methods for non-protein nitrogen
   ii. Compare methodologies of testing
   iii. Recognize reference range/critical values
   iv. Assess patient test results with patient disease/care
l. Examine bilirubin analysis
   i. Define total/direct bilirubin
   ii. Compare methodology of testing
   iii. Recognize reference ranges
   iv. Assess patient test results with patient disease/care
m. Discuss toxicology
   i. List drugs routinely monitored
   ii. State the pharmacological classification
   iii. Define terms related to therapeutic drug monitoring
n. Examine Newborn chemistry procedures
   i. List test common for neonates
   ii. Compare reference ranges/critical values with children and adults
o. Explore special chemistry procedures
   i. Describe electrophoresis techniques
   ii. Construct isoenzyme abnormal results diagram
   iii. Illustrate the principle of RIA
   iv. Recognize immunotechniques used in instrumentation
p. Examine site-specific information
   i. Discuss instrumentation
   ii. Describe procedure run on each instrument
   iii. Identify primary operating components
iv. Explain function of each component
v. Compare/contrast the chemical principles underlying each determination.

3. Basic Instructional plan and methods

Modes of instruction will be explanation, discussion, handouts, reading assignments, observation, and practice problems.

4. Course Requirements (papers, labwork, projects etc.) and means of evaluation

There will be a series of assessment tools used: quizzes, exams, exercises and worksheets. Each will be translated into points earned and grades will be based on the following:

(Sum of quizzes, exercises and worksheets) * 0.5 =
(Sum of exams ) * 0.5 =

5. Course Materials (textbook(s), articles, etc.)


6. List of some of the relevant references


Biochemistry Texts and physiology texts as well as procedure manuals used in the clinical affiliation setting.

B. Rationale
1. Statement of the major focus and objectives of the course

The goal of this course is to provide students with an introduction into clinical chemistry which will prepare them for future studies in the clinical sciences, internships at participating clinics, and career opportunities.

Specific Course Objectives:
  a. The student will be able to prepare specimens used in clinical settings.
  b. The student will be able to review general chemistry principles as they apply to a clinical setting.
  c. The student will be able to comply with quality control procedures as they apply to a clinical setting.
  d. The student will be able to discuss electrolyte analysis as it applies to the clinical setting.
  e. The student will be able to examine blood gas chemistry as it applies to the clinical laboratory setting.
f. The student will be able to examine mineral testing as it applies to the clinical laboratory setting.
g. The student will be able to discuss protein analyses as they apply to the clinical laboratory setting.
h. The student will be able to examine carbohydrate analysis as it applies to the clinical setting.
i. The student will be able to examine lipid analysis as it applies to the clinical setting.
j. The student will be able to discuss enzyme analysis as it applies to the clinical setting.
k. The student will be able to discuss non-protein nitrogen testing as it applies to the clinical setting.
l. The student will be able to examine bilirubin analysis as it applies to the clinical setting.
m. The student will be able to discuss toxicology results as they apply to the clinical setting.

2. Specify how this new course contributes to the department's curriculum.

This will be an integral course in the curriculum of the Clinical Laboratory Scientist degree Option for the Biology Department. It is designed specifically to prepare students for clinical internships and research where blood and body fluid analyses are performed. Historically students needed to know the wet chemistry for this degree path, but with the advent of instrumentation the focus has shifted for students to have better interpretative skills.

3. Indicate any course(s) which may be dropped if this course is approved.

We do not foresee that any courses will be dropped. In terms of staffing, the instructor will teach this course rather than Anatomy and Physiology Labs in the Spring Semester.

C. Impact of this course on other departments, Programs, Majors and Minors
1. Does this course increase or decrease the total credits required by a major or minor of any other department? If so, which department(s)?

This should not impact any other department at this time.

2. List the departments, if any, which have been consulted about this proposal.

Chemistry department has been consulted.
Include a Financial and Staffing Data Sheet with any proposal for a new course, new program, or revised program.

Please answer the following questions completely. Provide supporting data.

1. Would this course or program be taught with existing staff or with new or additional staff? If this course would be taught by adjunct faculty, include a rationale.

   This course will be taught by existing staff. The instructor will be released from laboratory instruction in a service course, which can be assigned to other (and existing) faculty.

2. What impact would approval of this course/program have on current course offerings? Please discuss number of sections of current offerings, dropping of courses, etc.

   This course will not affect current course offerings. It has been developed for the new MLS program.

3. What effect would approval of this course/program have on the department supplies? Include data to support expenditures for staffing, equipment, supplies, instructional resources, etc.

   Equipment to support this course will be purchased under recently approved funding through the WSU Center for Integrated Health Science Education and Practice. Supplies will be purchased through this grant and through current supply funds of the WSU Biology department.