

PATHOLOGY AND MICROBIOLOGY

M-ID-720 Laboratory Medicine: The Role of the Clinical Laboratory in Patient Care

Credit Hours: 4

Number of Weeks: 4

Available Times: March

Student Limit: 3-9 *

Faculty: Dept. of Pathology & Microbiology faculty

Primary Contact: Sara Shunkwiler, MD

Program Contact: Kimberly Curry

Students must make arrangements with Kimberly Curry (Room 3569 Medical Services Building, 402-559-7212 or kim.curry@unmc.edu) before signing up for ANY Pathology selectives.

Objectives:

- Encourage use of the library and other resources
- Train students in morphology of peripheral blood and bone marrow cells
- Correlate clinical diseases, laboratory methods and their underlying principles

Course Topics

- The use and limitation of lab tests as aids to diagnosis.
- Sources of error due to patient factors (pre-analytical) or due to sample, reagent or equipment problems (analytical).
- Automated instrumentation and unique sources of error with these technologies.
- Pre-transfusion tests, problems in testing, and sources of discrepancy in blood typing.
- Red cell membrane abnormalities and disease.
- Clinical chemistry testing and disease.
- Immunohematology and adverse outcomes of transfusion.
- Methods of molecular diagnostic testing, chemistry, histocompatibility testing and immunopathology.
- Testing for bleeding and thrombosing disorders.
- Methods of long-term living cell preservation.
- Microbiology topics.
- Introduction to flow cytometry and immunopathology methods.

Course Format

The course consists of morning didactic sessions, some case reviews and practical lab cases, as well as participation in bone marrow signout with hematopathology faculty during afternoons as available. The selective requirement for student independent intellectual effort is fulfilled by library research in preparation for a short (20-minute) student oral presentation to the other members and faculty of the course, plus a short written paper due on the last day of the course. A final written examination is required.

*** Note:** If registration for a course offering is less than the minimum number (3), the course will ***not*** be offered at that time.

ONE MONTH OF A SENIOR SELECTIVE IS REQUIRED DURING THE SENIOR YEAR.

YOU MAY ELECT TO TAKE TWO SELECTIVES. HOWEVER, ANY MORE THAN THAT MUST BE CLEARED WITH DR. MacDONALD. THE ONLY POSSIBLE EXCEPTION TO THIS TWO-MONTH SELECTIVE LIMIT WOULD BE AN HONORS THESIS OR THE COMPLETION OF ONGOING RESEARCH.

THE SENIOR SELECTIVE IS NOT TO BE CONSIDERED AS A TIME TO TAKE A VACATION OR TO DO RESIDENCY INTERVIEWS.

ALL SENIOR SELECTIVES MUST BE PRE-ARRANGED BY THE STUDENT AND APPROVED BY THE INSTRUCTOR/ADVISOR BEFORE THE START OF THE SENIOR YEAR.

ONCE PRE-ARRANGED, SELECTIVES SHOULD NOT BE CHANGED THROUGHOUT THE SENIOR YEAR (if at all possible).

All courses in this catalog are 4 credits and meet the defined criteria of a 4 credit course as listed in below:

One credit hour is equivalent to one hour (50 minutes minimum) of lecture and two (2) hours of out-of-class work each week. For all standard 15-week semesters of instruction, and for non-standard (condensed) and online courses the following contact times (minimums) are assigned for every one (1) credit hour based upon the specific type of learning activity:

- Synchronous Classroom: 1 hour of contact time and 2 hours of out-of-class work for each week of instruction
- Laboratory: 2-4 hours of contact time for each week of instruction
- Research/Field Work: 2-4 hours of contact time for each week of instruction
- Clinical: 2-4 hours of contact time for each week of instruction
- Simulation: 2-4 hours of contact time for each week of instruction
- Other Activities: 3 hours of contact time (Exam time can be considered part of contact time if an instructor chooses to count time spent on assessment as part of contact time)
- Asynchronous Education (i.e. Online or Distance Learning): 3 hours of student work for each week. Student work includes reading, research, online discussion, instruction, and assigned group activities, preparation of papers or presentations.

The Curriculum Committee of each College approves the number of credit hours for all courses, regardless of mode of delivery. The determination/assignment of credit hours should reflect the educational content of the course and the time required for a typical student to achieve the College's desired outcomes.

SENIOR SELECTIVE

The intention of the Senior Selective is to allow students to go back to an area of the basic sciences, defined as those areas that were studied during the thirteen “morning cores” that compose the first two years of the curriculum, and re-examine it from both a clinical and basic science vantage point.

Objectives to be met by all offered selections:

1. Under the direction of a basic scientist and/or a clinician, provide students the opportunity to be exposed to AND be involved in the clinical evaluation of current literature.
2. Examine an area of interest in more depth than was covered during the basic science years.
3. Under the direction of a basic scientist and/or a clinician, gain an overview of that area as it relates to the clinical practice of medicine.

Expectations for Senior Selectives:

1. Students will devote a minimum of 30 hours per week to participation in, or study of, the Selective topic.
2. Students will produce evidence of their work, of a quality commensurate with the expected rigor of this Selective, and will present that product to an appropriate group – as determined by the Selective instructor – for review.

Duration: Four weeks total

Instruction:

Taught under the direction of the basic science departments with input and assistance from one or more clinical departments

Coordinating Department:

The Department of Biochemistry and Molecular Biology will be the Basic Science Department responsible for the coordination of this selective. This will be under the direction of Dr. Richard G. MacDonald.

ALL SENIOR SELECTIVES MUST BE PRE-ARRANGED BY THE STUDENT AND APPROVED BY THE INSTRUCTOR BEFORE THE START OF THE SENIOR YEAR.

ONCE PRE-ARRANGED, SELECTIVES SHOULD NOT BE CHANGED THROUGHOUT THE SENIOR YEAR.

Format:

- Option 1. Total Didactic**
- Option 2. Total Research**
- Option 3. Journal club discussions**
- Option 4. Assist in teaching lectures and/or labs in basic science**
- Option 5. Research Paper/Patient evaluation**
- Option 6. Write a PBL Case**

OPTION 1: TOTAL DIDACTIC

Take a mini-class taught by one of the basic science departments. This class would be taught by a basic scientist or a clinician, preferably two faculty members, one representing each perspective. The class should focus on a specific, medically related topic. The slant would be from the basic science perspective with insights and clinical correlations provided by the clinician. During the presentation of the materials, the students would be required to examine current literature and be prepared to discuss it as to its scientific and clinical value/implications. At the end of the class, the students would be expected to provide a written summary in accordance with the expectations listed above. The discussion should indicate a familiarity with the basic literature in the field. These classes would be offered on a scheduled basis and enrollment would be limited by the faculty involved.

OPTION 2: TOTAL RESEARCH

Under the direction of either a basic scientist or a clinician involved in research, the student will conduct part or all of a research project, prepare the materials for presentation (paper, abstract, poster, or Power Point oral presentation) and be able to discuss the current literature related to the research project. If the project is under the direction of a basic scientist, the student should include a clinician as a consultant in order to bring clinical relevance to the project. At the end of the rotation, the student should provide a written summary in accordance with the expectations listed above.

OPTION 3: JOURNAL CLUB DISCUSSIONS

The student should become involved with journal club discussions held under the direction of a basic scientist with a clinician(s) involved in the group to help provide clinical relevance to the discussions. At the end of the rotation, the student should provide a written summary in accordance with the expectations listed above.

OPTION 4: ASSIST IN TEACHING LECTURES AND/OR LABS IN BASIC SCIENCE

Under the direction of a basic scientist or a basic science department, the student should prepare 2-3 hours of lecture material to be presented in a formal class setting (medical students, allied health, nurses, pharmacy students, PA students, etc.). During the preparation, the student should be prepared to discuss both the basic science and clinical implications of the materials. The student could also assist in teaching student labs. In the event that this option is taken, the student could research the literature in the area and be prepared to discuss it with their basic science and clinical advisor. At the end of the rotation, the student would provide a written summary in accordance with the expectations listed above.

OPTION 5: RESEARCH PAPER/PATIENT EVALUATIONS

Under the direction of a basic scientist and/or a clinician, of the student's choosing, the student will select an area in clinical medicine and review the recent scientific advances that are impacting the current practice of medicine. The paper should be a critical review of the literature and be presented in a concise manner.

OPTION 6: WRITE A PBL CASE

The topic of the PBL case should be determined primarily by the interest of the student and in consultation with the Selective director. If possible, it should come from a patient seen by the student in the M3 year. The process would be overseen by a basic scientist and a clinician. It is intended that a significant portion of the student's time will be spent researching the current literature and obtaining basic scientific material from texts and monographs on the area. Part of the process will involve time spent with the faculty members to review the literature and basic concepts with the student. The clinician will assist in making the information relevant to the clinical setting.