

Introduction to Clinical Thinking MED INF 402

Instructor:

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Description:

This course provides students with insight into the clinical care process. It is designed for students not previously involved in clinical medicine as a nurse, pharmacist, or physician, as well as those trained in medicine outside the U.S. Course content will include some basic medical terminology and introductory pathophysiology. Topics include eliciting information from patients, synthesizing the history and physical examination, decision making for ordering tests, establishing diagnoses, treatment planning, integrating evidence-based medicine, and using an intelligent medical record in a complex environment. This is an entry track course for students with little clinical experience and should be completed before attempting core course work beyond MED INF 403. This course will normally be offered in fall and spring terms.

Texts:

The primary text for the course will be Problem Solving in Clinical Medicine: From Data to Diagnosis by Paul Cutler, MD. Readings will be assigned in advance of each class. Additionally, a course packet will be provided with readings to supplement the text. The text is specifically intended to provide a framework for understanding how clinicians think, not as a textbook of medical illness/terms.

Student Goals:

The goals for the course are to:

- Understand the clinical environment in which problem solving occurs.
- Understand the process of acquiring both narrative and structured content and assimilating both into a medical record.
- Understand the techniques used by clinicians to formulate clinical hypotheses when caring for patients
- Understand how precise use of an electronic medical record facilitates clinical thought and decision making.
- Stimulate thought for how future technologies and care approaches may better utilize information management
- Use these new skills in practice scenarios.

Prerequisites:

There are no formal prerequisites to the course.

Teaching Method:

The course content will be delivered in a series of synchronous and asynchronous lectures and class discussions. Selected external experts may teach specific sessions. Online discussion group participation by students is encouraged and evaluated.

Projects:

Assigned groups of ~4 students will complete a required class role-playing presentation of a clinical encounter. Concepts discussed in the class should be explored and include use of an electronic medical record and evidence based reference sources. Groups will be assigned early in the course for the presentations to be delivered in the last sessions.

Evaluation Method:

The final grade for the course will be based on the following activities:

Discussion Board and Class Participation (30%)

Group Presentation (20%)

Homework (25%)

Final exam (25%).

Class participation will be graded on three factors: attendance, preparation for course by reading materials, and engagement during course presentations and discussions.

Discussion board participation will be graded on submission of meaningful comments (not overly lengthy but advancing the discussion) to each week's section (above and beyond group project discussion) with an expected volume of 2 per week over the duration of the course.

Group presentations will be evaluated on the basis of: content of the presentation, format of presentation, depth of analysis of the issues, and thoughtfulness of the solutions and or recommendations.

The final examination will be online.

University Policy**Students with Disabilities**

In compliance with Northwestern University policy and equal access laws, we are available to discuss appropriate academic accommodations you may require as a student with a disability. Request for academic accommodations need to be made during the first week of the quarter, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Services for Students with Disabilities (SSD) for

disability verification and for determination of reasonable academic accommodations. For more information, visit <http://www.northwestern.edu/disability/>

Academic Integrity at Northwestern

Students are expected to comply with University regulations regarding academic integrity. If you are in doubt about what constitutes academic dishonesty, please speak to us before the assignment is due and/or examine the University web site, "How to Avoid Plagiarism at <http://www.northwestern.edu/uacc/plagiar.html>

Academic dishonesty includes, but is not limited to cheating on an exam (e.g., copying others' answers, providing information to others, using a crib sheet) or plagiarism of a paper (e.g., taking material from readings without citation, copying another student's paper). Failure to maintain academic integrity on an assignment will result in a loss of credit for that assignment – at a minimum. Other penalties may also apply. For more information, visit http://www.scs.northwestern.edu/student/issues/academic_integrity.cfm

Sexual Harassment Policy

It is the policy of Northwestern University that no male or female member of the Northwestern community – students, faculty, administrators or staff – may sexually harass any other member of the community. Sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute harassment when: submission to such conduct is made or threatened to be made, either explicitly or implicitly, a term or condition of an individual's employment or education; or submission to or rejection of such conduct is used or threatened to be used as the basis for academic or employment decisions affecting that individual; or such conduct has the purpose or effect of substantially interfering with an individual's academic or professional performance or creating what a reasonable person would sense as an intimidating, hostile, or offensive employment, educational, or living environment. . For more information, visit <http://www.northwestern.edu/sexual-harassment/policy/index.html>.

LOCATION: ONLINE

FINAL EXAM: Week following last session

Course Calendar (*Note: scheduled visiting expert sessions may be exchanged as needed for other scheduled class dates. Notice will be provided in advance.*)

Week 1:

The Clinical Encounter

This session will explore the complex set of variables at play during an outpatient clinic visit by a patient. Initially the patient's perspective will be reviewed. The thought process utilized by the physician will then be explored in detail focusing on information needs and data management.

- Competing agendas
- Empathy and objectivity
- Open-ended approach

- Full characterization of symptoms
- Flexibility
- Enter the computer: barrier or assistant

Readings: Chapters 1 and 2

Week 2

Problem Solving Methods and Clues

The essential elements to a complete and accurate medical record will be discussed. Electronic medical records systems will be shown and critically reviewed for how they facilitate precision yet may suffer from workflow inefficiency.

- Problem Lists
- Medication Lists

Readings: Chapter 3 and 4

Week 3

Using Medical References, new technology, the thought process, and the write-up

How do physicians answer clinical questions? This session will present the common medical references used by clinicians with a goal of developing basic usage skills. References discussed will include PubMed, UpToDate, and online textbooks. Common handheld references such as ePocrates will also be presented. This session will also focus on understanding the potential impact (positive and negative) of new technology. Cases will be discussed culminating in a review of a patient write-up. Recording essential elements in a useful way within the medical records and facilitating pulling elements together for successful communication will be discussed. The process by which physicians present succinct and focused clinical presentations will be discussed with clinical examples.

Readings: Chapters 5, 6

Week 4

Basic Decision Making

Are diagnostic dilemmas typical? How do physicians decide when to order tests? How do we know if tests are helpful? Clinical examples will be discussed.

- Bayesian analysis
- Sensitivity
- Specificity
- Likelihood ratios

Readings: Chapters 7, 8

Week 5

Non-physician Decision Making

A nurse and a pharmacist will lead this discussion emphasizing their roles caring for hospitalized patients. The thought processes used by nurses and pharmacists as they perform their clinical duties and how systems may best support them will be discussed with clinical examples.

Readings:

The epidemiology of prescribing errors: the potential impact of computerized prescriber order entry. [Arch Intern Med.](#) 2004 Apr 12;164(7):785-92.

Week 6

Designing systems for use by Physicians

This session will present a process by which electronic systems may be designed to incorporate physician workflow. Clinical scenarios will be reviewed to illustrate steps in the decision making process physicians follow. These steps will be translated into flowsheets to illustrate how electronic systems can capture and optimize clinical workflow.

Week 7

Data Resolution Skills

Cases, patterns, and clinical scenarios will be reviewed with an emphasis on understanding the process of refining a differential diagnosis and beginning treatment.

Readings: Chapters 9, 10, 11

Week 8

Selected advanced topics/Group Presentations depending on group schedule

Week 9 Final exam (asynchronous final exam)

Selected advanced topics/Group Presentations depending on group schedule