Innovative Teaching Strategies:
Distance Learning, Web-Based Teaching, and Simulation

COURSE DIRECTOR:  Barbara Barnes, M.D.
James B. McGee, MD
GUEST LECTURERS:  Drs. Restiani Andriati, Cindy Gadd, Diane Davis, Goutham Rao,
John Schaefer, Paul Rogers
LOCATION  McKee Place 600.8  (unless otherwise noted)
TIMES:  1:00-3:00 PM
CREDITS  2

Grading:  Letter Grades
Class Participation:  60%
Research Proposal:  25%
Critique of Research Proposals:  15%
<table>
<thead>
<tr>
<th>SESSION DATE</th>
<th>SESSION CONTENT</th>
<th>SESSION LEADER</th>
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</thead>
<tbody>
<tr>
<td>SESSION I</td>
<td>Wednesday, March 5</td>
<td>Overview of course</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delineation of personal learning objectives</td>
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<td>Introduction to course assignments</td>
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<td>Barbara Barnes, MD</td>
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<td>J.B. McGee, MD</td>
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<tr>
<td>SESSION II</td>
<td>Wednesday, March 12</td>
<td>An introduction to educational technology</td>
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<tr>
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<td>Barbara Barnes, MD</td>
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<tr>
<td>SESSION III</td>
<td>Friday, March 14</td>
<td>Evaluating technology applications in medical education</td>
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<tr>
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<td>Cindy Gadd, PhD</td>
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<tr>
<td>SESSION IV</td>
<td>Wednesday, March 19</td>
<td>Helping faculty use technology</td>
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<td>Restiani Andriati, PhD</td>
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<td>Faculty Instructional Development Laboratory,</td>
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<td>Basement, Alumni Hall</td>
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<tr>
<td>SESSION V</td>
<td>Friday, March 21</td>
<td>Organizational issues</td>
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<td>J. B. McGee, MD</td>
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<tr>
<td>SESSION VI</td>
<td>Wednesday, March 26</td>
<td>Using electronic information resources</td>
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<td>Falk Library Staff</td>
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<td>Falk Library Computer Lab</td>
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<tr>
<td>SESSION VII</td>
<td>Friday, March 28</td>
<td>Teleconferencing</td>
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<td>Barbara Barnes, MD</td>
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<td>BST Conference Center and McKee Place</td>
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<tr>
<td>SESSION VIII</td>
<td>Wednesday, April 2</td>
<td>Using technology in continuing education</td>
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<td>Barbara Barnes, MD</td>
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<td>Suite 200, Medical Arts</td>
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<td>SESSION IX</td>
<td>Friday, April 4</td>
<td>Using technology to support the undergraduate medical curriculum</td>
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<td>J.B. McGee, MD</td>
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<td>Scaife Hall 2M</td>
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<tr>
<td>SESSION X</td>
<td>Wednesday, April 9</td>
<td>Principles of medical simulation</td>
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<td>John Schaefer, MD</td>
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<td>SESSION XI</td>
<td>Friday, April 11</td>
<td>Medical simulation in action</td>
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<td>Paul Rogers, MD</td>
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<td>SESSION XIII</td>
<td>Wednesday, April 23</td>
<td>Using portable computing devices in graduate and continuing education</td>
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<td>Goutham Rao, MD</td>
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<td>SESSION XIV</td>
<td>Friday, April 25</td>
<td>Preparation of project and critiques</td>
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<td>Analysis of technology presented in the course</td>
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<td>SESSION XV</td>
<td>Wednesday, April 30</td>
<td>Presentation of projects and critiques</td>
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<td>SESSION XVI</td>
<td>Friday, May 2</td>
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<td>Course wrap-up</td>
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LEARNING OBJECTIVES:
- Determine personal learning objectives for this course
- Explore opportunities for using technology across the continuum of health professional education
- Discuss opportunities for conducting research in the use of educational technology.

DESCRIPTION:
The class will discuss the intent of this course and mechanisms by which the content can be designed to meet the individual needs of participants. The assignment, development of a grant proposal for a medical education project involving the use of technology, will be explained.

ASSIGNMENT
- Read “Computers in Medical Education by Dev, et. al. in Shortliffe T, et. al. Medical Informatics, Springer, NY, 2nd ed, 2001. (will be distributed in class)
- Review and further refine personal learning objectives for the course
- Review and critique the sample grant proposal distributed in class
- Develop a concept for a grant proposal that uses technology to address an issue in medical education.

SESSION II
Wednesday, March 12
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LEARNING OBJECTIVES
- Evaluate the potential benefits and challenges of using technology to improve the effectiveness, efficiency, and accessibility of educational activities.
- Explain the factors that mitigate for the use of technology in health professional education.
- Recognize how the principles of educational theory can be used to develop technology applications that are effective and meet learner and curricular needs.
- Review the core components of educational technology: hardware, software, human resources, facilities, etc. as well as the steps in the development process.

DESCRIPTION:
Using case studies, the class will discuss the opportunities and challenges of using educational technology. Building on material presented in previous courses, the group will examine how educational research and theory can be used to design innovative and effective models of technology-assisted instruction. Key components of the development team will be discussed. Case examples will be used to illustrate the important steps in the development process.

ASSIGNMENT
- Develop a research question for the proposal
- Determine the educational theory and research that support the research proposal
SESSION III
Friday, March 14
Evaluating technology applications in medical education
Cindy Gadd, PhD

LEARNING OBJECTIVES
- Analyze the challenges associated with evaluating the use of technology in health professional education
- Describe the various dimensions on which educational technology can be evaluated.
- Discuss the process used to design evaluation tools, conduct evaluation studies, and analyze results.
- Identify the characteristics of qualitative and quantitative methodologies and explain circumstances under which each approach can be used.

DESCRIPTION
The class will discuss principles of evaluation, including the challenges of determining the benefits and pitfalls of using instructional technology. Particular attention will be given to the levels of evaluation and constituencies that must be considered. The group will discuss the indications for using quantitative and qualitative techniques, giving examples of how these approaches can be used in a health professional educational setting.

ASSIGNMENT
- Begin to formulate the evaluation methodology for the research proposal. Compare and contrast the applicability of quantitative and qualitative approaches for assessing the outcomes of your project.
- Develop and evaluation tool that will be used to assess the technology demonstrated in subsequent sessions.

SESSION IV
Wednesday, March 19
Helping faculty use technology
Restiani Andriati, PhD
Faculty Instructional Development Laboratory, Basement, Alumni Hall

LEARNING OBJECTIVES
- Identify the competencies required of faculty in order to use technology in teaching
- Describe how an institution can provide support to faculty interested in using technology
- Discuss how the health sciences schools can take advantage of the resources provided by CIDDE
- Students will have an opportunity to use the facilities in the Faculty Instructional Development Laboratory. Courseware used throughout the university will be demonstrated.

DESCRIPTION
Staff of the University of Pittsburgh Center for Instructional Development will demonstrate resources available to faculty wishing to use instructional technology. Students will be able to use the facilities of the instructional development laboratory and will be given demonstrations of different courseware and other instructional tools being used at the University of Pittsburgh.

ASSIGNMENT
- Reflect on the instructional support needs of the health sciences schools. How do these differ from those in the rest of the university? This issue will be relevant to the discussions in Session V.
SESSION V
Friday, March 21
Organizational issues
J. B. McGee, MD

LEARNING OBJECTIVES:
- Identify the organizational issues affecting successful deployment of technology
- Review examples of failed and successful educational technologies and the reasons for each
- Create strategies for common technology implementation issues
- Outline the steps for taking a technology from the project stage to programmatic implementation
- Address issues of sustainability of a new technology

DESCRIPTION:
This session will review, through examples, strategies for professional educators and software designers to resolve institutional, physical, and social barriers to innovation and how to participate in the technology development process.

ASSIGNMENT
- Identify the organizational issues that will affect your project proposal:
  - What are the organizational resources that you can draw on: technology, consultation, human resources, training, facilities, etc.?
  - What are the institutional barriers: organizational structure, funding mechanisms, etc.?

SESSION VI
Wednesday, March 26
Using electronic information resources
Falk Library Staff
Falk Library computer lab

LEARNING OBJECTIVES:
- Describe the types of on-line resources that might be incorporated into instructional materials.
- Discuss the advantages and disadvantages of providing information electronically.
- Examine the challenges confronting faculty and students in regard to information management.
- Describe the skills that must be incorporated into education and training throughout the health professional educational continuum in order to maximize the use of electronic information resources.

DESCRIPTION
Library staff will present examples of on-line information resources available at the University of Pittsburgh. The group will discuss strategies for incorporating these resources into instructional materials and how to assist students and practitioners in dealing with the plethora of information now available.

ASSIGNMENT
- Synthesize relevant literature for your proposal
- Prepare a 5 minute presentation on a non-clinical, non-scientific topic. The presentation will be made via the teleconferencing system during Session VII.
SESSION VII
Friday, March 28

Teleconferencing
BST Conference Center and McKee Place

B. Barnes

LEARNING OBJECTIVES
• Discuss the potential applications of synchronous telecommunications technologies.
• Describe the resources required for teleconferencing, including hardware, telecommunications systems, financing, human resources, and training.
• Review the costs and benefits of this technology.

DESCRIPTION
The class will be divided between two locations linked by video conferencing. Following an overview of teleconferencing technology and a summary of how it is currently being used at the University of Pittsburgh and UPMC, students will make brief presentations that will be critiqued by the rest of the class. The group will discuss how this technology can be used in undergraduate, graduate, and lifelong education. Examples will be used to illustrate how to evaluate the educational value and cost-effectiveness of this technology.

ASSIGNMENT
• Students will apply the evaluation tool developed in Session 3 to assess the use of this technology in a case example.
• Reading assignment: Barnes BE. The Practice Learning Environment
• Look at examples of on-line CME at: www.cmelist.com/list.htm. Evaluate the use of technology in these learning activities.

SESSION VIII
Wednesday, April 2

Using Technology in Continuing Education
Suite 200, Medical Arts

B. Barnes

LEARNING OBJECTIVES:
• Compare and contrast the learning needs of practicing health professionals with those of students and trainees.
• Discuss the opportunities offered by technology to meet the unique educational needs of practicing health professionals
• Review the barriers associated with introducing educational technology to practicing health professionals
• Critically evaluate an example of courseware used for continuing medical education.

DESCRIPTION
Students will meet with a courseware development team to examine the process used to develop an application that permits rapid development and deployment of educational content.

ASSIGNMENT
• Students will use the evaluation tool developed in Session 3 to assess the rapid deployment CME model.
SESSION IX  
Friday, April 4

| Using Technology to Support the Undergraduate Curriculum | J.B. McGee, MD  
Educational Technology Lab  
Scaife 2M |

LEARNING OBJECTIVES
- Assess the benefits and limitations of developing versus purchasing courseware
- Discuss issues associated with the use of multi-media
- Examine the benefits of providing and archiving course materials electronically.

DESCRIPTION
Students will tour the Educational Technology Lab, meeting with staff and viewing hardware and software. The Pitt Med Navigator system will be demonstrated. Discussions will be undertaken regarding the use of technology in the classroom setting.

ASSIGNMENT
Students will use the evaluation tool developed in Session III to assess the Pitt Med Navigator courseware.

SESSIONS X and XI  
Wednesday, April 9  
Friday, April 11

| Simulation | John Schaefer, MD  
Paul Rogers, MD  
WISE Center |

LEARNING OBJECTIVES
- To review the role of simulation technology in teaching new skills and competencies, improving team performance, and assessing competency and performance.
- To assess methods for developing simulation scenarios and teaching in this environment.
- To determine appropriate methods of evaluating learners in a simulation setting.

DESCRIPTION
These sessions will take place in the WISER Simulation Center. During the first session, students will tour the center, viewing the training rooms, mannequins, and simulation software. Simulation developers and instructors will discuss the processes used to develop scenarios and create realistic training and assessment situations. Instructors will discuss how simulation has been used by students, residents, faculty, and pre-hospital care personnel. Evaluation data will be presented and discussed. In the second session students will be able to observe and participate in an actual simulation training session.

ASSIGNMENT
Reflect on additional applications of simulation technology, including the following questions:
- What are the benefits and limitations of using simulation rather than standardized patients for training and assessment?
- What types of institutional resources are required to establish a simulation training and assessment center?
- Is there a viable business model to support a simulation center?
SESSION XII
Wednesday, April 16
The Classroom of the Future
J.B. McGee, MD
Educational Technology Lab
Scaife 2M

LEARNING OBJECTIVES

ASSIGNMENT

SESSION XIII
Wednesday, April 23
Using Portable Computing Devices in Graduate and Continuing Education
Goutham Rao, MD

LEARNING OBJECTIVES
• Discuss the potential and existing roles of portable and wireless devices for education and provision of information in the clinical setting
• Review the capabilities of currently available hardware, software, and connectivity.
• Discuss the implications of future advances in this technology

DESCRIPTION
The class will discuss a case example involving deployment of portable computing devices in a family medicine residency program. There will also be a demonstration of a continuing education application using a portable computing device and voice synthesis.

ASSIGNMENT
• Students will use the evaluation tool developed in Session III to assess this technology.
• Research proposals are due on or before this class. They must be provided in electronic form and will be distributed to the remainder of the class on or before this date.
• Students will critique proposals of other class members

SESSION XIV
Friday, April 25
Analysis of Technology Presented in the Course Development of Proposal Critiques
Barbara Barnes, MD
J.B. McGee, MD

LEARNING OBJECTIVES
• To develop and use an instrument to assess the merits and opportunities for improvement of funding proposals using educational technology.

DESCRIPTION
Students will work individually or in small groups to assess the research proposals.

ASSIGNMENT
• Complete critiques of research proposals
LEARNING OBJECTIVES
• To critically evaluate proposals for the deployment of educational technology based on the principles learned in this course.

DESCRIPTION
Students will present research proposals with critique by the rest of the class. Constructive suggestions will be solicited for strengthening the proposals and improving potential for funding.

ASSIGNMENT
• Complete course evaluation
• Develop a plan to refine and implement the research proposal, based on feedback provided by the class.