

Syllabus

Informatics in Healthcare

Overview description:

Healthcare increasingly relies on effective information systems and information professionals to ensure high quality, cost-effective care that improves patient experience and population health. Clinical informatics is the study and practice of information technology applied in healthcare to meet these aims. This course introduces clinical informatics systems and applications in the context of healthcare. The course is organized in three modules that 1) Overview the American healthcare delivery system, 2) Establish an understanding of clinical information systems used in healthcare delivery, including electronic health records and ancillary systems, and 3) Survey applications in clinical informatics, such as clinical decision support, virtual care, healthcare data analytics, and clinical research informatics. Modules incorporate informatics opportunities (e.g., learning healthcare system) and challenges (e.g., privacy, security, and sociotechnical considerations for system implementation and use). Course evaluation is based on a blend of projects, individual assignments, and participation.

Logistics: 5 Credits, with 2 lectures and one lab session per week.

Prerequisites: Enthusiastic interest in biomedical informatics

No required text: readings will come from selected textbook chapters and primary literature.

- Select chapters from “Understanding health policy” Bodenheimer & Grumbach
- Select chapters from “Careers in Health information technology” Malec
- Select chapters from “Health Informatics” Hoyt
- Select primary articles from the literature

Syllabus:

Module I: Context: The American healthcare delivery system

Week 1: How health care is organized I: Primary, secondary, & tertiary care

Week 2: Health delivery systems & workforce, including careers in clinical informatics

Readings: Goldhill 2009; Bodenheimer chapters 1, 5, & 7; Malec chapters 4 & 5

Assignments: Quiz 1, Writing reflection 1, Labs 1 & 2

Module II: Foundations of informatics in healthcare

Week 3: Healthcare data, information, knowledge; security/privacy/HIPAA

Week 4: Clinical information systems I: Electronic health records

Week 5: Clinical information systems II: Health information exchange, privacy, security & ethics

Readings: Hoyt chapters 1, 2, 4, 5, 6, 10, & 11; selected primary articles

Assignments: Quiz 2, Writing reflection 2, Labs 3-5

Module III: Applications in clinical informatics

Week 6: Clinical decision support

Week 7: Virtual care

Week 8: Healthcare data analytics

Week 9: Clinical Research Informatics

Week 10: Team project presentations

Readings: Hoyt chapters 8, 17, 7, 22, & 20; selected primary articles

Assignments: Labs 6-10; Class project

Evaluation

Class project (40%): Students will complete a project in which they will apply course concepts, including written essays and presentations

Quizzes (10%): Students will be evaluated through short assessments of course-related knowledge and skills.

Writing reflections (10%): Students will complete readings and prepare written responses that demonstrate mastery of course material.

Labs (30%): Students will complete lab assignments in which they will apply informatics tools and resources to healthcare data

Participation (10%): Students will be evaluated on their level of active engagement in class discussions and lab.