

Joint Certificate in Dental Informatics

The joint certificate in dental informatics focuses on the opportunities and challenges in integrating technology in modern oral health care. It is designed to introduce students to basic and practical solutions in developing health information solutions in dentistry. The certificate involves both online and in person courses.

Certificate in Dental Informatics: 1-year program

Term/School	Course Title	Semester Credit Hours
Summer/SBMI	BMI 5300 - Introduction to Biomedical Informatics	3
Fall/SBMI	BMI 5313 - Foundations of Electronic Health Records and Clinical Information Systems	3
Fall/SBMI	BMI 5315 - Quality and Outcome Improvement in Healthcare	3
Spring/UTSD	SOD 5520– Applications in Dental Informatics	6
	Total Semester Credit Hours for Program:	15

BMI 5300 Introduction to Biomedical Informatics (web-based instruction)

3 semester credit hours/meets part of basic informatics component

This introductory graduate level survey course provides an overview of Biomedical Informatics and Health Information Technology and introduces the student to the major areas of the evolving discipline. The competencies for graduate education in the discipline are presented as well as the definitions of biomedical informatics. A systems framework for understanding informatics is also considered. The course focuses on the application of health information technology for healthcare delivery, education and research as well as the multidisciplinary nature of biomedical informatics. The knowledge and skills presented in this course will help the student progress to other more advanced or specialized courses throughout the curriculum since an understanding of health care, health information technology and recent governmental efforts is necessary in order to function in the biomedical informatics discipline.

Upon successfully completing this course, students will:

- Define the discipline of biomedical informatics, data types and use of data, information and knowledge.
- Utilize foundational terminology and concepts for informatics, patient safety, and quality.
- Diagram the relationships between standards, vocabularies, databases, electronic health records, evidence based medicine, clinical decision support, and clinical practice guidelines.

- Compose a syntactically correct SQL statement using SELECT, WHERE, and JOIN.
- Utilize an electronic health record to enter data for a patient from the perspectives of the scheduler, medical assistant, physician, and billing coder.
- Collaborate with a team to investigate a specific research topic in biomedical informatics using current and relevant literature in the field.
- Compare and contrast the disciplines of health information technology, health informatics, biomedical informatics, and bioinformatics.

All students are required to take BMI 5300, Introduction to Biomedical Informatics, in their first semester.

BMI 5313 - Foundations of Electronic Health Records and Clinical Information Systems (web-based instruction)

Lecture contact hours: 2; Lab contact hours: 3

3 semester credit hours/meets part of basic informatics components

Admission to the SBMI program of studies

Although a basic understanding of the U.S. healthcare system and healthcare delivery may be helpful, it is not required

This course is designed to provide informatics students with an overview of the key concepts regarding implementation of a clinically-oriented information system (e.g., an electronic medical record, computer-based provider order entry). The course will examine how health data are collected, how they are used and the impact of electronic records on the health data. The course will review standards, standards development, languages used, usability and issues related to information processing in health care. The course will review the impact of electronic records and patient portals on health and health care including, legal, financial, and clinical design issues. Challenges encountered during training and go-live will be discussed. Students will receive hands-on experience with an electronic health record in the training environment.

Upon successfully completing this course, students will:

- Identify the government's definition and criteria of a certified EHR.
- Evaluate and critique an EHR product utilizing an IT model/framework
- Describe the relationship of quality, patient safety, and the EHR.
- Utilize Safer IT Guides in EHR design and implementation to prevent sentinel events.
- Determine user needs in relationship to problem and requirement analysis.
- Analyze issues with EHR and clinical information system implementation.
- Apply core competencies needed to perform technology assessment in healthcare.
- Evaluate clinical decision support models in healthcare.
- Create a Feasibility Report identifying a clinical decision support model that could solve a clinical problem.

BMI 5315 Quality and Outcome Improvement in Healthcare (web-based instruction)

3 semester credit hours/meets part of basic informatics components

Prerequisites: Basic statistics knowledge

This introductory course provides an overview to health care quality from the view of information science and the discipline of informatics. It takes a patient-centered approach that covers the complexities of quality and the scientific basis for understanding the measurement and improvement of quality, including exposure to multiple measures from a variety of organizations and measure comparison sites such as Medicare Compare. It provides the learner with a framework for key theories and concepts and models of quality improvement. Students will be introduced to health information technology safety issues, including tools for operationalizing HIT safety. Learners will be introduced to data quality, the challenges of data from devices and e-quality measures, as well as experience the challenge of calculating quality measures with data from the EHR. The merging of quality outcomes with evolving reimbursement paradigms and models will be examined.

Upon successfully completing this course, students will:

- Discuss the fundamentals of health care quality management including the improvement cycle.
- Analyze and apply methods for the measurement, assessment, and improvement of healthcare quality.
- Apply common quality tools including workflow diagrams, failure modes and effects analysis to common healthcare quality issues.
- Employ basic components of EHR safety elements that influence patient outcomes.
- Diagnose current quality issues in healthcare and the intersection of informatics in development of quality improvement programs.

SOD 5520: Applications in Dental Informatics (classroom instruction preferred, web-based offered on case-by-case basis)

This course provides a broad foundation in applying informatics principles to dentistry. Students will select an area of interest related to oral healthcare quality and safety which to apply the knowledge and skills gained during the didactic courses. Students will become active participants in the work of developing dental informatics-based applications and/or research projects.