Objectives Evaluation:

What is Biomedical Informatics?

As a result of participating in this activity, learners will be able to:

1. Have a basic understanding of the components of medical informatics
2. Be able to characterize these components as technologies, concepts and skills

Standard Terminologies

As a result of participating in this activity, learners will be able to:

1. Gain familiarity with currently available standard terminologies
2. Gain experience with coding clinical cases with available standard terminologies

Meaningful Use

At the completion of the session, participants will:

1. Define the concept of "meaningful use" and explain how it aligns with improvement in the quality, safety, and efficiency of health care.
2. Explain why adoption, certification, and health information exchange are key components of the national health IT agenda--and describe the programs in place to achieve these goals.
3. Describe the challenges to achieving nationwide health information exchange, and how these challenges are being addressed.

Semantic MEDLINE

As a result of participating in this activity, learners will be able to:

1. Appreciate the need for an advanced biomedical information management application such as Semantic MEDLINE
2. Have a basic understanding of the components of Semantic MEDLINE
   a. Information retrieval
   b. Automatic summarization
   c. Language processing
   d. Knowledge visualization
3. Understand (through real scenarios) how Semantic MEDLINE supports enhanced access to the biomedical literature and literature-based discovery

Disaster Informatics

As a result of participating in this activity, learners will be able to:

1. Understand the NLM's Disaster Information Management Research Center (DIMRC) activities and disaster research programs
2. Be able to access, operate and understand web based and downloadable tools to guide first responders and first receivers
3. Understand how disparate information sources can be applied as solutions for specific problems
4. Learn and understand how hospital partnerships and informatics tools can be created to successfully respond to a large scale disaster

5. Understand how a network of Disaster Information Specialists can supply and support information and communication needs fro disaster preparedness and response
6. Understand how to apply informatics to "boots on the ground" activities.

Database and Terminology Principles

As a result of participating in this activity, learners will be able to:

1. Understand the historical evolution of computerized data handling methods
2. Understand the process of entity-relationship database design, including principles of normalized relational models
3. Be able to model simple normalized relational databases
4. Understand motivations and issues related to high-quality controlled terminologies
5. Understand the "desiderata" for controlled biomedical terminologies
6. Appreciate the complexities and advantages of reuse of clinical data coded with controlled terminologies

Human-Computer Interface

As a result of participating in this activity, learners will be able to:

1. Define Human Computer Interaction (HCI) and list two of the alternate names for the field.
2. Explain why HCI is critical in the development and deployment of Informatics systems, and cite an example of what can happen if HCI is not applied correctly.
3. Describe how HCI techniques could be applied in on project they are currently working on.
4. Describe at least two major emergent trends in HCI related to biomedicine.

National Library of Medicine Resources

As a result of participating in this activity, learners will be able to:

1. Find information on the latest developments from NCBI and PubMed
2. Have a basic understanding of the Unified Medical Language System (UMLS)
   2.1 Gain exposure to the UMLS Terminology Services interface
3. Have a basic understanding and gain exposure to the natural language processing tools developed at NLM
   3.1 MetaMap
   3.1 SemRep
4. Have a basic understanding and gain exposure to Clinical Question Answering (QA) research at NLM
   4.1 CQA

Genetics/Genomics and Why

As a result of participating in this activity, learners will be able to:

1. Have a basic understanding of the issues involved in genetics and genomics data
2. Have a basic understanding of the roles of Bioinformatics in the field of Biomedical Informatics
3. Relate genomics issues to the Informatics issues of providing healthcare via EMR's
4. Consider the relationships of consumer health informatics issues and genomics issues

Informatics Policy and Policy Informatics

As a result of participating in this activity, learners will be able to:

1. Understand the concept and how to develop "data governance" plans
2. Be able to evaluate regulatory and organizational needs for information systems development and implementation
3. Understand the roles of the main stakeholders in policy making on healthcare information systems
4. Have access to curriculum materials for teaching this topic to healthcare professionals

Computerized Provider Order Entry

As a result of participating in this activity, learners will be able to:

1. To provide an overview of the motivation behind care provider order entry (CPOE) in both inpatient and ambulatory settings
2. To introduce the functionality provided in typical CPOE systems
3. To address some challenges to idealized CPOE and how these challenges are being addressed with current research and potentially mitigated with future developments

Clinical Decision Support

As a result of participating in this activity, learners will be able to:

1. explain uses and benefits of Clinical Decision Support (CDS) and Clinical Knowledge Management (CKM)
2. describe the main components of a CDS system
3. describe the different modalities of CDS
4. describe CKM processes and associated tools
5. outline important challenges and opportunities related to CDS and CKM

Evaluation

As a result of participating in this activity, learners will be able to:

1. Appreciate the need for evaluation
2. Recognize why evaluation in medical informatics can be difficult
3. Understand how evaluation research questions can guide selection of methods
4. Describe the relationship between the different approaches to evaluation
5. Outline methods for evaluation of the sociotechnical issues related to informatics interventions
6. Review and discuss a case and determine what needs to be addressed in terms of evaluation.

Clinical Research Informatics

As a result of participating in this activity, learners will be able to:

1. Understand the regulatory context, information security and privacy applied to research data
2. Be aware of specialized information technologies, especially the Clinical Trials Management Systems (CTMS) and i2b2, that are useful for clinical research
3. Understand systems integration needed to improve clinical research workflows and data flows
4. Understand the role of research data repositories (data warehouses)

Consumer Health Informatics

As a result of participating in this activity, learners will be able to:

1. Have an understanding of topics in consumer health informatics
2. Have an appreciation for current issues in health information access and utilization
3. Have gained insight into the problems of health literacy
4. Have an appreciation for the impact of consumer health informatics applications

ViSTA

As a result of participating in this activity, learners will be able to:

1. Demonstrate basic competency in general HIT system use
2. Identify characteristics of an effective HIT system
3. Identify usability constraints & explain the impact of HIT usability on user satisfaction, adoption, and workarounds in error rates or unintended consequences.
4. Explain the concept of facilitated error in HIT.
5. Suggest HIT-enabled solutions/strategies to enhance patient involvement in health and healthcare

Infobuttons

As a result of participating in this activity, learners will be able to:

1. Characterize clinician information needs
2. Understand how information resources can be integrated into clinical information systems
3. Gain familiarity with the HL7 infobutton standard
4. Gain experience with creating Infobutton manager knowledge bases and the librarian Infobutton Tailoring Envisonment (LITE)

Telemedicine

At the completion of the session, the participant will:

1. Understand telemedicine as an information process
2. Understand the technical, regulatory and societal impediments to the utilization of telemedicine
3. Be familiar with advanced networking concepts and the relevance of advanced networks to healthcare delivery
4. Be familiar with NLM and other programs that demonstrate the relevance of advanced networking technology to telemedicine and healthcare delivery
5. Gain an appreciation of future telehealth directions and the challenges and opportunities they represent

Research Issues in Biomedical Informatics

As a result of participating in this activity, learners will be able to:

1. Understand the some important but unanswered research questions in bio-medical informatics.
2. Have an understanding of consumer health information access issues.
3. Have pointers to useful resources in digital library research.