The healthcare industry is in the early stages of a massive explosion of digital information. Spurred by incentives in the Affordable Care Act, the use of electronic health records (EHRs) has increased from 10 percent of U.S. medical practices in 2008 to 70 percent in 2014. Clinical Informatics is a field that has arisen out of a demand for expertise in mechanisms to collect, process, and analyze these copious health-related data. Informaticians study medical decision-making, create risk prediction models, build clinical decision support tools, and aid in the implementation of these tools into the clinical workflow.

Course Overview
This course will introduce participants to the core content of clinical informatics and encourage ongoing learning in this rapidly evolving field. Content will include ethical issues in EHR research, risk prediction models and decision science, mobile health, and the application of Clinical Decision Support tools, as well as several computer labs covering the use of Tableau, i2b2, Web services and APIs, and R software. The course will be led by Dr. Brian Wells, a board-certified clinical informatician, and will include lectures and labs from other professionals actively involved in clinical informatics-related work at Wake Forest.

Course Objectives
At the conclusion of this course, participants should be better able to:
1. Describe the characteristics, challenges, and opportunities of clinical informatics in the era of big data analytics.
2. Discuss the benefits, limitations, and approaches for integrating patient-reported outcomes (PRO) in clinical and translational research.
3. Describe the obstacles and potential solutions to the use of clinical decision support in medical decision making.
4. Apply appropriate data quality and statistical methods in the analysis of electronic health record data.
5. Explain approaches for managing, analyzing, and integrating massive amounts of high-throughput omics data in clinical and research settings.
6. Apply approaches to protect research participant privacy and confidentiality when conducting EHR research.
7. Discuss key principles of decision science which impact the development of risk prediction models.
8. Determine the potential for using mobile health applications to improve health outcomes and enhance clinical research.
9. Identify opportunities to integrate a clinical care pathway with quality improvement and research initiatives in a learning healthcare system.
10. Utilize selected WFBMC clinical informatics tools in the design and conduct of clinical research studies.

Target Audience
This course is designed for both clinicians and researchers who are interested in an introductory overview of clinical informatics. It is anticipated that most participants will be in the early stages of their careers, but researchers of all skill levels are welcome to enroll. Participants do not need to have a strong background in computer science or information technology.
Tuesday, March 14
Comprehensive Cancer Center, Room 10B

6:00 - 7:00pm  The Discipline of Informatics
Brian Wells, MD, PhD, Associate Professor and Program Leader, CTSI Clinical Informatics

7:00 - 8:00pm  Overview of CTSI Services Available for Clinical Informatics Research
Brian Wells, MD, PhD, Associate Professor and Program Leader, CTSI Clinical Informatics

Tuesday, March 21
Ardmore Cafeteria Computer Lab

6:00 - 7:00pm  Computer Lab: Application of i2b2
Brian Ostasiewski, Staff Supervisor, Clinical and Translational Science Institute

7:00 - 8:00pm  Computer Lab: Data Visualization Using Tableau
Don Babcock, Sr. Programmer/Analyst, Enterprise Information Management

Tuesday, March 28
Comprehensive Cancer Center, Room 10B

6:00 - 7:00pm  Ethical Issues in EHR Research
Brian Moore, Director, Institutional Review Board

7:00 - 8:00pm  Implementation of the Heart Pathway
Simon Mahler, MD, Associate Professor, Emergency Medicine

Tuesday, April 4
Comprehensive Cancer Center, Room 10B

6:00 - 7:00pm  Utilization of Genomics Data and Clinical Data Integration
Umit Topaloglu, PhD, Associate Professor, Cancer Biology

7:00 - 8:00pm  Mobile Health
David Miller, MD, MS, Professor and Director of Research, Internal Medicine Residency Program

Tuesday, April 18
Comprehensive Cancer Center, Room 10B

6:00 - 8:00pm  Patient Reported Outcomes
Pamela Duncan, MD, Professor, Neurology
Alysha Jo Taxter, MD, Assistant Professor, Pediatrics
Lynne Wagner, PhD, Professor, PHS Social Sciences and Health Policy
Tuesday, April 25
Comprehensive Cancer Center, Room 10B

6:00 - 7:00pm  Risk Prediction Models and Decision Science  
Brian Wells, MD, PhD, Associate Professor and Program Leader, CTSI Clinical Informatics

7:00 - 8:00pm  Application of Clinical Decision Support  
Ajay Dharod, MD, Assistant Professor and Vice Chair of Informatics and Analytics, Department of Internal Medicine

Tuesday, May 2
Ardmore Cafeteria Computer Lab

6:00 - 7:00pm  Computer Lab: Tools for Data Querying and Analysis  
Ajay Dharod, MD, Assistant Professor and Vice Chair of Informatics and Analytics, Department of Internal Medicine

7:00 - 8:00pm  Computer Lab: EHR Data Analysis Using R Software  
Brian Wells, MD, PhD, Associate Professor and Program Leader, CTSI Clinical Informatics

Tuesday, May 9
Ardmore Cafeteria Computer Lab

6:00 - 7:00pm  Computer Lab: Introduction to Web Services and APIs for Data Integration  
TJ Colvin, Programmer/Analyst, Comprehensive Cancer Center

7:00 - 8:00pm  Computer Lab: Data Manipulation Using R Software  
Brian Wells, MD, PhD, Associate Professor and Program Leader, CTSI Clinical Informatics

Attendance Limits: This course is limited to 30 participants. Priority will be given to those who can commit to attend all eight sessions.

Accreditation: The Wake Forest School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Credit: The Wake Forest School of Medicine designates this live activity for a maximum of 2_AMA PRA Category 1 Credits™_ for each session attended. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Registration: Registration is required by March 3, 2017. To register, please complete the online registration form.