CSC8210: Healthcare Cybersecurity, Safety, Law, and Ethics Summer 2021
Meeting days and times: Online only via Zoom. ***Tuesdays, June 8 - July 27; 6 – 9:30 PM***

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Course Description: **CSC 8210 - Summer '21: Healthcare Cybersecurity, Safety, Law, and Ethics**

Course Description:

The goal of this course is to provide participants with an overview of the range of contemporary cybersecurity concepts, applications, and regulations in the Health Informatics (HI) field. This course will also leverage the immense growth and learning that the COVID-19 pandemic has required.

Historically, over the several decades information systems have become increasingly critical to the management of heath services delivery. In the US, a Nationwide Healthcare Information Network (NwHIN) was designed, piloted, and implemented under a 10-year initiative that President George W. Bush launched by Presidential Executive Order in 2004. Similar efforts are under way in most nations around the world, and the research and applications in the HI field are therefore undergoing major new changes to meet 21st Century healthcare, finance, policy, and technology challenges. President Obama greatly expanded the 2004 programs with major government HI funding (approx. $2 billion USD) under the ARRA/HITECH legislation in 2009. Similarly, the Trump administration has continued to increase the use of HI standards to drive efficiency, cost-effectiveness, and patient care outcomes.

In order to be paid by the US Government or Insurers (aka payers), hospitals, Community Health Networks (CHNs), Health Maintenance Organizations (HMOs), Integrated Delivery Networks (IDNs), Accountable Care Organizations (ACOs), government agencies, medical groups, private physicians, and nurses are all required to implement and use certified, standardized information systems to handle the large flow of information.

Because of the Coronavirus/COVID-19 pandemic, health informatics tools, such as tracking infections, hospitalization, homecare, deaths, public health planning, etc, many cybersecurity, privacy, and confidentiality gaps have had to be overlooked or deferred. This course will consider some of the consequences and opportunities that the pandemic has created around the globe. Low and Middle Income Countries (LMIC's) have been forced to implement HI systems for COVID-19 management, too, which has accelerated adoption even in smaller rural regions.

Topics covered in this course will include: Cybersecurity and Privacy aspects of global HI frameworks, theories, methods, and applications; Systems and Systems of Systems concepts that underlie health care delivery; Coronavirus/COVID-19 teleheath, telemedicine, eHealth, and mHealth explosion (incl IoT) and emerging cybersecurity and ethics challenges; Fundamental concepts of management information systems (MIS); The Data, Information, Knowledge, and Wisdom pyramid; Information-, patient-, work-, and finance-flows; Hospital Information Systems – Electronic Health Records (EHRs) & Electronic Medical Records (EMRs); Clinical and operational nomenclature standards & systems and interoperability frameworks; Management functions and roles in health care; and Systems development methodologies as applied to health care.

The course will also survey various cybersecurity concerns of contemporary HI innovations, including: Medical/Clinical/Health informatics – Clinical/Physician Decision Support Systems (CDSS), Nursing informatics - Nursing station support, Telemedicine, eHealth, Integrated data/knowledgebases, Data communications and Networks, Artificial Intelligence, incl Expert Systems & Neural Network applications in medicine; HI on the world wide web and internet - sources, retrieval techniques; TQM in health care; Health Information Resource Management; Operational Efficiency, Safety, and Efficacy, Security and Privacy Issues; Law, ethics, and regulatory topics in HI.

Course Objectives:

By completing this course, students will be able to:

- describe the current state of Global, LMIC, and US Healthcare, Health IT, IT Security, and Health IT Security and Privacy industries, and be able to follow and interpret innovations in the US and other countries;
- identify the conflicting and overlapping roles, goals and needs of key HIT stakeholders, including physicians, patients, families, government, and insurers;
- list critical success factors for HIT Security and Privacy from each stakeholder's point of view;
- articulate the pros and cons of various Health IT Security and Privacy alternatives and initiatives;
- recognize the key management issues associated with implementing and supporting contemporary Health IT Safety, Security and Privacy resources; and
- explain the unique importance of the security, legal, ethical, and privacy issues in HIT, and the core HIPAA and HITECH regulations, and understand how they are impacting society, industry, and clinician actions and HIT development.