Artificial Intelligence in Medicine

The Graduate Certificate in AI in Medicine provides a unique credential that will help physicians, entrepreneurs, students, and scientists become knowledgeable about the growing and influential field of artificial intelligence in medicine. The certificate emphasizes the practical application and integration of artificial intelligence principles and tools to design and implement effective approaches for improving health of people through increased precision in predictive modeling, improved diagnostics and other advances.

Courses will apply toward the Masters of Healthcare Innovation. Certificates may be combined to obtain an Interdisciplinary Master's Degree.

Courses are held asynchronously with optional weekly synchronous sessions.

The Graduate Certificate in AI in Medicine is awarded by the University of Alabama at Birmingham Heersink School of Medicine.

Admission Requirements:

Admission requirements include eligibility for admission to the UAB Graduate School. There is no GRE required. An admissions committee reviews applications and makes final decisions. Students may begin the program in the Fall or Spring semesters.

Required Coursework:

Graduate Certificate Artificial Intelligence in Medicine

Requirements		Hours
HCI 611	Foundations of Artificial Intelligence in Medicine	3
HCI 612	Applications of Artificial Intelligence in Medicine	3
HCI 613	Leadership and Ethics for Artificial Intelligence in Medicine	3
HCI 614	Integration of Artificial Intelligence into Clinical Workflow	3
HI 620	Security and Privacy in Health Care	3
Total Hours		**15**

Courses

HCI 611. Foundations of Artificial Intelligence in Medicine. 3 Hours.
This course introduces students to the fundamentals needed for implementing Artificial Intelligence (AI) in clinical settings. Introduction to AI, Introduction to Healthcare System and Clinical data and Introduction to tools and techniques used in AI.

HCI 612. Applications of Artificial Intelligence in Medicine. 3 Hours.
This course introduces students to Applications of AI in medicine, Machine Learning- Applications of AI to EHR data, Deep Learning- Applications of AI to Medical Imaging data, and Natural Language Processing- Applications of AI to Clinical Documentation.
Prerequisites: HCI 611 [Min Grade: C](Can be taken Concurrently) or HCI 611 [Min Grade: C](Can be taken Concurrently)

HCI 613. Leadership and Ethics for Artificial Intelligence in Medicine. 3 Hours.
This course introduces students to leadership, ethical and strategic skills, responsible AI, AI strategy, people, organization, and implementation of AI in medicine.
Prerequisites: HCI 611 [Min Grade: C](Can be taken Concurrently) or HCI 611 [Min Grade: C](Can be taken Concurrently)

HCI 614. Integration of Artificial Intelligence into Clinical Workflow. 3 Hours.
This course introduces students to strategies and processes for integrating AI into existing clinical workflows. Using AI for Medical Diagnosis, Using AI for Medical Prognosis, and Using AI for Medical Treatment.
Prerequisites: HCI 611 [Min Grade: C](Can be taken Concurrently) or HCI 611 [Min Grade: C](Can be taken Concurrently)

HCI 641. Foundations of Digital Health. 3 Hours.
This course introduces students to the basic concepts needed for implementing digital health solutions in health care. Digital Health Concepts and Key Components, Digital Health Technologies, and Digitally Enabled Care Models.

HCI 642. Leadership & Ethics for Digital Health. 3 Hours.
This course introduces students to leadership, ethical and strategic skills for digital health. Business and Commercialization Strategies, Ethics, Digital Health Technology Assessment.
Prerequisites: HCI 641 [Min Grade: C](Can be taken Concurrently) or HCI 641 [Min Grade: C](Can be taken Concurrently)

HCI 643. Special Topics for Digital Health. 3 Hours.
This course introduces students to special topics in digital health including blockchain in health care, mixed reality in health care and data science for digital health.

HCI 644. Health Care Innovation and Management. 3 Hours.
This course introduces students to the concepts of healthcare innovation and builds knowledge of managing healthcare innovations, fostering an innovative culture in healthcare settings, and assessing and prioritizing innovation from a strategic perspective.

HCI 645. The Organization of Healthcare Innovation. 3 Hours.
This course exposes students to organizational theories and practice related innovation. The course specifically builds knowledge and skills in analyzing the healthcare innovation case using organizational theories, as well as evaluating possibilities and limitations of organizational theories in encouraging and sustaining innovation.

HCI 646. Business Skills for Healthcare Innovation. 3 Hours.
This course provides in-depth knowledge and skills in the financial aspects of healthcare innovation, analyzing healthcare markets and marketing and considerations for start-ups and social enterprises in healthcare.

HCI 647. Healthcare Innovation Metrics and Assessment. 3 Hours.
This course builds student knowledge and skills in economic approaches to health care evaluations, health technology assessment, cost-benefit analysis, and application of health economic approaches to analyze healthcare innovations.

HCI 648. New Technologies and Healthcare. 3 Hours.
This course develops student knowledge of emerging technologies in healthcare including but not limited to digital health innovations, AI and Robotics, Internet of Things and Biosensors.

HCI 649. Design Thinking in Healthcare. 3 Hours.
Design Thinking and Innovation will teach you how to leverage fundamental design thinking principles and innovate problem solving tools to address business challenges and build products, strategies, teams and environments for optimal use and performance.

HCI 650. Making New Healthcare Markets. 3 Hours.
This course focuses on how to identify and capitalize upon marketplace design opportunities. Defines markets and marketplaces and describes the basic functions of each. Discusses attributes (e.g., heterogeneity of participants' preferences and asymmetry in available information) that determine whether and how marketplaces create value. Explains common causes of market failure; presents a framework for designing marketplaces in response. Discusses tactics for building trust and liquidity when launching new market places as well as challenges encountered as marketplaces mature (e.g. congestion and disintermediation).

HCI 685. Healthcare Innovation Practicum I. 3 Hours.
This course consists of a group project and of classes addressing issues typically encountered in health care innovation projects in companies, start-up or in the health care provider organizations. Examples of these issues are concerned with innovation design, needs analysis, development of value propositions, markets and pricing of medical products, or issues in organizational implementation of innovation. Students focus on a specific innovation challenge in a specific company or health provider organization (typically a hospital). The project carries out fieldwork in its host organization to obtain the most fruitful problem statement, to collect data and to present and discuss solutions.

HCI 686. Healthcare Innovation Practicum II. 3 Hours.
This course consists of a project addressing issues typically encountered in health care innovation projects in companies, start-up or in the health care provider organizations. Examples of these issues are concerned with innovation design, needs analysis, development of value propositions, markets and pricing of medical products or issues in organizational implementation of innovation. Students focus on a specific innovation challenge in a specific company or health provider organization. The students carry out field work in its host organization to obtain the most fruitful problem statement, to collect data and to present and discuss solutions.