MINOR IN DIGITAL HEALTH

Program Learning Outcomes for the Minor in Digital Health

Upon completing the minor in Digital Health, students will be able to:

1. Design and implement technical solutions to real-world digital health problems.
2. Apply biomedical and health science knowledge in the design and evaluation of AI-based digital health solutions and communication with stakeholders.
3. Evaluate and apply regulatory, ethical, and privacy concerns specific to technologies applied to diagnostics and personalized medical devices.

Requirements for the Minor in Digital Health

Students pursuing the minor in Digital Health must complete:

- A minimum of 6 courses (18-20 credit hours, depending on course selection) to satisfy minor requirements.
- A minimum of 3 courses (9 credit hours) taken at the 300-level or above.
- A maximum of 2 courses (6 credit hours) from study abroad or transfer credit. For additional program guidelines regarding transfer credit, see the Policies (p. 2) tab.

The courses listed below satisfy the requirements for this minor. In certain instances, courses not on this official list may be substituted upon approval of the minor's academic advisor or, where applicable, the Program Director. (Course substitutions must be formally applied and entered into Degree Works by the minor's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/)). Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

Code	Title	Credit Hours
Total Credit Hours Required for the Minor in Digital Health		18-20

Minor Requirements

Code	Title	Credit Hours
Core Requirements		
Introductory Core: Devices or AI [1]		
Select 1 course from the following:		*3*
ELEC 383	WEARABLE BIOSENSORS	
ELEC 384	MACHINE LEARNING OF BIOMEDICAL TIME SERIES	
Project-Based Capstone Core: Devices or AI [1]		
Select 1 course from the following:		*3*
ELEC 435	NEURAL INTERFACE ENGINEERING LABORATORY	
ELEC 482	ARTIFICIAL INTELLIGENCE FOR HEALTH	
Elective Requirements		
Select 4 courses from the following categories:		*12-14*
2 courses from Digital Health Technology (see course list below)		
1 course from Digital Health Sciences (see course list below)		
1 course from Ethics/Human Factors (see course list below)		
Total Credit Hours		**18-20**

Footnotes and Additional Information

[1] Coursework used to fulfill Core Requirements may not fulfill Elective Requirements. The same course may not be used to satisfy more than one requirement for this minor.

Course Lists to Satisfy Requirements

Elective Requirements

To fulfill the remaining Digital Health minor requirements, students must complete a total of 4 elective courses (12-14 credit hours, depending on course selection) from the following three categories as listed below. 2 courses (6-8 credit hours, depending on course selection) must be selected from Digital Health Technology, 1 course (3 credit hours) must be selected from Digital Health Sciences, and 1 course (3 credit hours) must be selected from Ethics/Human Factors.

Code	Title	Credit Hours
Digital Health Technology		
Select 2 courses from the following:		*6-8*
CMOR 438	DATA SCIENCE AND MACHINE LEARNING	
COMP 341	PRACTICAL MACHINE LEARNING FOR REAL WORLD APPLICATIONS	
DSCI 303	MACHINE LEARNING FOR DATA SCIENCE	
ELEC 326 / COMP 326	DIGITAL LOGIC DESIGN	
ELEC 378	MACHINE LEARNING: CONCEPTS AND TECHNIQUES	
ELEC 422	VLSI SYSTEMS DESIGN	
ELEC 424 / COMP 424	MOBILE AND EMBEDDED SYSTEM DESIGN AND APPLICATION	
ELEC 425 / COMP 425	COMPUTER SYSTEMS ARCHITECTURE	
ELEC 431	DIGITAL SIGNAL PROCESSING	
ELEC 436 / MECH 420	FUNDAMENTALS OF CONTROL SYSTEMS	
ELEC 447 / COMP 447	INTRODUCTION TO COMPUTER VISION	
ELEC 475	LEARNING FROM SENSOR DATA	
ELEC 478	INTRODUCTION TO MACHINE LEARNING	
ELEC 487	IMAGING OPTICS	
MECH 343	MODELING OF DYNAMIC SYSTEMS - LECTURE & LAB	
MECH 488	DESIGN OF MECHATRONIC SYSTEMS	

MECH 498 / COMP 498 / ELEC 498	INTRODUCTION TO ROBOTICS
STAT 410	LINEAR REGRESSION
STAT 413	INTRODUCTION TO STATISTICAL MACHINE LEARNING
STAT 425	INTRODUCTION TO BAYESIAN INFERENCE

Code	Title	Credit Hours
Digital Health Sciences		
Select 1 course from the following:		*3*
BIOE 383	BIOMEDICAL ENGINEERING INSTRUMENTATION	
ELEC 380 / BIOE 380 / NEUR 383	INTRODUCTION TO NEUROENGINEERING: MEASURING AND MANIPULATING NEURAL ACTIVITY	
ELEC 383	WEARABLE BIOSENSORS	
ELEC 384	MACHINE LEARNING OF BIOMEDICAL TIME SERIES	
ELEC 418	PRINCIPLES OF BIOMEDICAL OPTICS AND ULTRASOUND	
ELEC 435	NEURAL INTERFACE ENGINEERING LABORATORY	
ELEC 438	BIOMEDICAL OPTICAL IMAGING AND APPLICATIONS	
ELEC 481	ELECTROMAGNETISM AND THE BRAIN	
ELEC 482	ARTIFICIAL INTELLIGENCE FOR HEALTH	
ELEC 483	MACHINE LEARNING AND SIGNAL PROCESSING FOR NEURO ENGINEERING	
MECH 497	NEUROMUSCULOSKELETAL MODELING AND SIMULATION	
STAT 484 / CEVE 484	ENVIRONMENTAL RISK ASSESSMENT & HUMAN HEALTH	
STAT 453	BIOSTATISTICS	

Code	Title	Credit Hours
Ethics/Human Factors		
Select 1 course from the following:		*3*
MDHM 201	INTRODUCTION TO MEDICAL HUMANITIES	
MDHM 325	ETHICAL DEBATES IN MEDICINE: DIGNITY AND WELFARE	
MDHM 359	RESPONSIBLE AI FOR HEALTH	
PHIL 266 / MDHM 266	MEDICAL ETHICS	
PSYC 463	MEDICAL HUMAN FACTORS	
PSYC 468	HUMAN FACTORS IN ARTIFICIAL INTELLIGENCE	

Policies for the Minor in Digital Health

- As noted in Majors, Minors, and Certificates (https://ga.rice.edu/undergraduate-students/academic-opportunities/majors-minors-certificates/), i.) students may declare their intent to pursue a minor only after they have first declared a major, and ii.) students may not major and minor in the same subject.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit/). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the designated transfer credit advisor for the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content). The Office of Academic Advising maintains the university's official list of transfer credit advisors (https://oaa.rice.edu/advising-network/transfer-credit-advisors/) on their website: https://oaa.rice.edu. Students are encouraged to meet with the applicable transfer credit advisor as well as their academic program director when considering transfer credit possibilities.

Program Transfer Credit Guidelines

Students pursuing the minor in Digital Health should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the minor.

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.

Opportunities for the Minor in Digital Health

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/) (*summa cum laude*, *magna cum laude*, and *cum laude*) and Distinction in Research and Creative Work (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/). Some departments have department-specific Honors awards or designations.

Digital Health Research Opportunities

For additional information regarding digital health research opportunities, please see the Rice Digital Health Initiative's website: https://dhi.rice.edu/research/.

Additional Information

For additional information, please see the Electrical and Computer Engineering website: https://www.ece.rice.edu/.