Health Informatics Orientation

August 16, 2022

Michigan Technological University
College of Computing

Purpose of Today's Meeting

- We are here to discuss the MS in Health Informatics and Applied Computing policies and rules which will lead you to success in your graduate studies, and to introduce you to the initial set of key people.
- We'll discuss where you should go for information.
- Our overarching goal is to help you become independent!
- ***Help you understand that your academic success is our highest priority!***

Agenda

- Poll
- Key Personnel
- What to Expect in Graduate School?
- MS in Health Informatics Graduate Program
- MS Degree Requirements
- Graduate Student Handbook Fall ‘22
- Research Focus and Opportunities in the MS in Health Informatics Program
- The following campus units will visit in this session:
    - Housing - 9:15am
    - IPS - 9:30am
    - Graduate School - 9:45am
- I will stay online after the session to answer additional questions

Let’s take a Poll

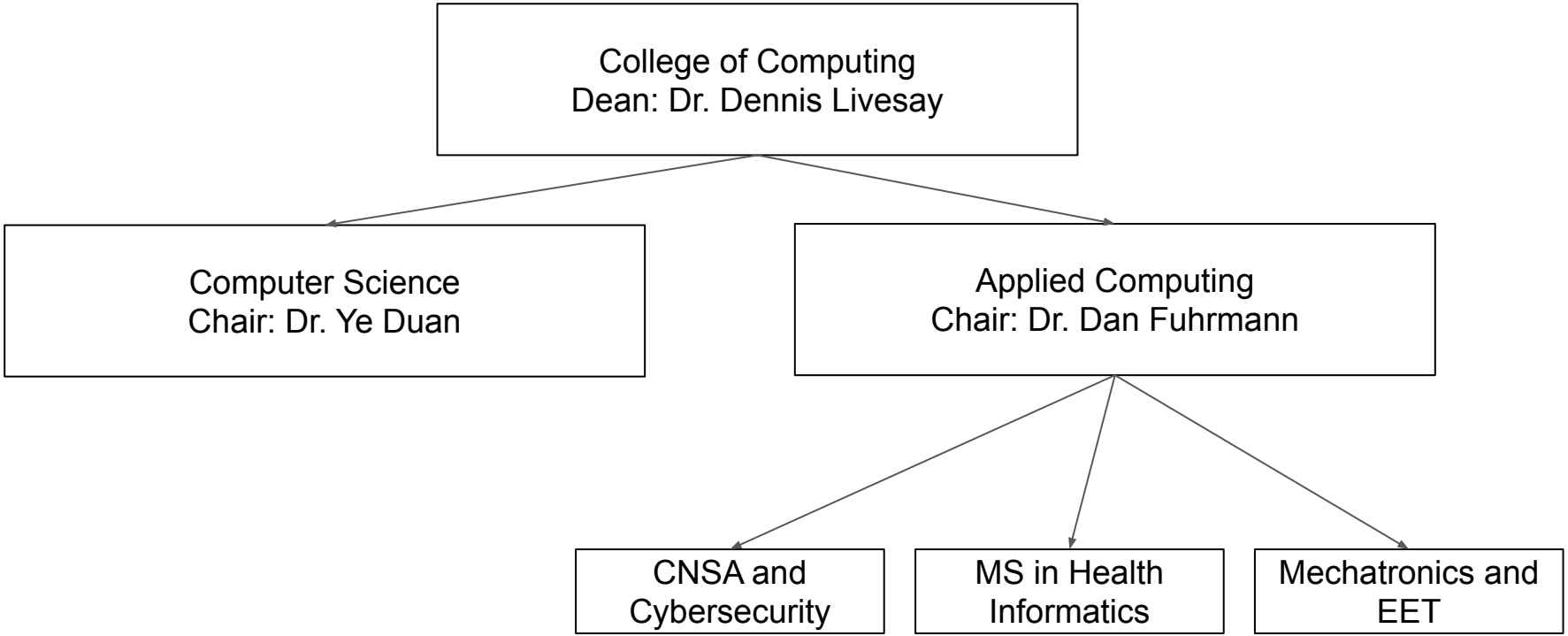
This poll will help us better understand your current status in entering the MS in Health Informatics at Michigan Tech. This will help us to provide you with additional assistance if needed.

We will be visited by Michigan Tech Housing, IPS, and Graduate School later in this session.

Key Personnel Associated with the Health Informatics Graduate Program

- **Dr. Guy Hembroff** – Graduate Program Director, Associate Professor
  Office: 105 Rekhi Hall, 7-3248, hembroff@mtu.edu
  MS coursework, report, or thesis academic advisor | admissions | GTA coordinator
- **Kay Oliver** – Graduate Academic Advisor, Applied Computing Department
  Office: 221 Rekhi Hall, 7-2524, koliver@mtu.edu
  Course scheduling | Program communication | General academic advisor
- **Dr. Weihua Zhou** – Assistant Professor
  Office: 109 Rekhi Hall, 7-2666, whzhou@mtu.edu
- **Dr. Xiaoyong (Brian) Yuan** – Assistant Professor
  Office: 111 Rekhi Hall, 7-4303, xyyuan@mtu.edu
- **Daniel Boyle** – Adjunct Instructor
  Off-campus, 906.360.6143, dboyle@mtu.edu
- Your Advisor – Key person who will most often chair your report or thesis committee and give you specific guidance on courses, research, and professional development
- **Tom Cogswell** – College of Computing Coordinator
  Office: 221 Rekhi Hall, 7-1597, tkcogswe@mtu.edu
  Student payroll, GTA assistance, University Senator
- **Dr. Daniel Fuhrmann** – Chair, Department of Applied Computing Office: 106 Rekhi Hall, 7-2871, fuhrmann@mtu.edu

Organizational Chart



Graduate School - What to Expect

- Typically smaller size classes, and… everybody in there is above the average of your undergraduate days. The expectations are higher and the topics both deeper and broader. You have top students with whom to study and collaborate.
- We expect you to take an active role in your education. Anticipate what needs to be done. Ask questions during lecture, see your professors outside of class, dig into the literature –don't be intellectually lazy! ***Grad school is not a spectator sport!***
- There will be more open-ended problems and projects, with larger scope and longer deadlines. These may challenge your time management skills –don't wait until the last second!
- Stress concept-based approaches (instead of procedural), abstract thinking, reward for developing creative innovative approaches.
- Communications –develop excellent speaking and writing skills.
- Research –scientific method, make an advancement on existing state of the art.
- ***Professors will create an environment (lecture, lab, research) for you to succeed, to be successful -> you need do the rest.***

The Health Informatics Graduate Program

- The minimum University degree requirements linked off the Graduate School's Degree Requirements webpage:
  - http://www.mtu.edu/gradschool/administration/academics/requirements
- Note that in some cases there are both university and departmental/program policies that might seem inconsistent at first glance.
  - University policies establish a minimum set of expectations for every program, but individual programs can, and in our case do, have higher requirements.
  - When in doubt, you can generally assume the departmental/program policies apply and check with Kay Oliver or Dr. Hembroff.
  - The student is responsible for following all rules and getting everything done in time.
- The M-Forms and D-forms are available at the Graduate School webpage: http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/
- What happens when the rules change?
  - The rules for graduation evolve slowly over time as we make adjustments based on our experience, and outside influences from year to year.
  - You are subject to the rules as they exist TODAY.

HI Graduate Certification Focus Areas

- Foundations of Health Informatics (12 credits)
- Artificial Intelligence in Healthcare (9 credits)
- Security and Privacy in Healthcare (9 credits)
- Population Health Management and Monitoring (9 credits) - **coming soon!**

- Information regarding courses for each certificate can be found at https://www.mtu.edu/health-informatics/ms-degree/

- Degree schedules for graduate certificates - https://www.mtu.edu/gradschool/policies-procedures/timelines/certificates/

HI Graduate Certificate Courses

1. Foundations of Health Informatics Certificate (pending)
   (12 credits/4 courses required)
   - SAT 4650: Applied Computing in Python
   - SAT 5001: Introduction to Health Informatics
   - SAT 5111: Security and Privacy
   - SAT 5131: Systems Analysis and Design

2. Artificial Intelligence in Healthcare Certificate
   (9 credits/3 courses required)
   - SAT 5114: Artificial Intelligence in Healthcare
   - SAT 5141: Clinical Decision Modeling
   - SAT 5314: Applied Machine Learning in Healthcare

3. Security & Privacy in Healthcare Certificate
   (9 credits/3 courses required)
   - SAT 4520: Machine Learning in Security
   - SAT 5283: Information Governance & Risk Manag.
   - SAT 5815: Digital Forensics
   - SAT 5817: Security Penetration Testing & Audit

4. Population Health Management and Monitoring Certificate (pending)
   (9 credits/3 courses required)
   - SAT 5165: Introduction to Big Data Analytics
   - SAT 5424: Population Health Informatics
   - SAT 5317: Medical Internet of Things

Foundations of HI certificate + two 9 credit certificates = 30 credits and MS in Health Informatics degree

Example HI Student Paths of Certs and MS Degree

Table 1: Clinical student path example

Clinical - Two Year Curriculum Path Example

	Certificate Block	Credits	Courses	Certificate at Completion
Year 1:	Foundations of Health Informatics and starting Artificial Intelligence in Healthcare	15	5	Yes ☑
Year 2:	Finishing Artificial Intelligence in Healthcare and Population Health Management	15	5	Yes ☑ ☑
	TOTAL	30 credits	10 courses	MS in Health Informatics Completed ☑

Table 2: Computing/IT student path example

Information Technology (IT) - Two Year Curriculum Path Example

	Certificate Block	Credits	Courses	Certificate at Completion
Year 1:	Foundations of Health Informatics and starting Artificial Intelligence in Healthcare	15	5	Yes ☑
Year 2:	Finishing Artificial Intelligence in Healthcare and Security & Privacy in Healthcare	15	5	Yes ☑ ☑
	TOTAL	30 credits	10 courses	MS in Health Informatics Completed ☑

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What Courses should I take First Semester?

- Typically, students would take 9 credits (3 courses) of Health Informatics core courses their first semester in the program.

  Foundations of Health Informatics Certificate

  SAT 4650: Applied Computing in Python (3 credits) ←

  SAT 5001: Introduction to Health Informatics (3 credits) ←

  SAT 5111: Security and Privacy (3 credits) ←

  SAT 5131: Systems Analysis and Design (3 credits)

- Consult registrar's office web page for courses offered, which semester, course pre-reqs, etc.
- **Consult your individual development plan (IDP)** that has been shared with you on Google
- If a section is full, only the instructor can allow more students

MS Degree Options

Master of Science in Health Informatics:

- Thesis Option (Plan A)
- Report Option (Plan B)
- Coursework Option (Plan C)

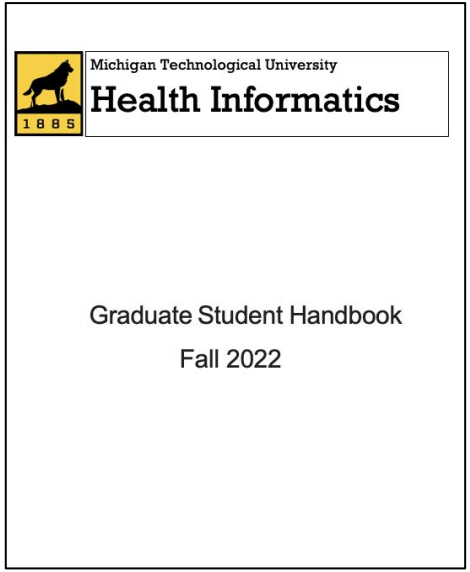
MS Degree Requirements

- Fill out Patent, Research and Proprietary Rights form.
- Choose an Advisor if Plan A or B (good mutual match).
- Plan out your course of study.
- Complete 30 Total approved credits.
- Grades of B or better in all Health Informatics courses.
- Grades of B or better for non-major courses.
- Note: all of the MS degree paths allow some 4000-level credits to be applied to the degree. It is very important that you understand that the intent is for these credits to be used to broaden your educational experience, not repeat subjects you had as an undergrad. Dr. Hembroff or Kay Oliver can help you to interpret the details of this policy.
- ***You must maintain 3.0 GPA, and 3.0 GPA is the minimum to graduate.***

MS Degree Requirements cont.

- Choose an Option (Plan A, B, or C)
- Present a Research/Project Proposal (A or B)
- Complete a Thesis or Project (A or B)
- File the MS Degree Schedule [Form M4]
- Complete an Oral Thesis or Project Defense (Plan A or B)
- File the Oral Examination [Forms M5 & M6] (Plan A or B) or Form M6 (Plan C)

Health Informatics Fall ‘22 Graduate Student Handbook



The Health Informatics Graduate Student Handbook can be accessed at:
https://www.mtu.edu/health-informatics/ms-degree/advising/

Some of the Research Focuses in HI

- Some of the underlying categories associated with broad topic of Population Health Informatics and Disparities are:
  - Medical Data and Device Security
  - AI Prediction Modeling
  - mHealth Wearable Sensors
  - Medical Virtual/Mixed Reality
  - Medical Image Analysis
  - Visualization and Geographic Information Systems (GIS)
  - Biomedical Natural Language Processing (NLP)
  - Disease Surveillance

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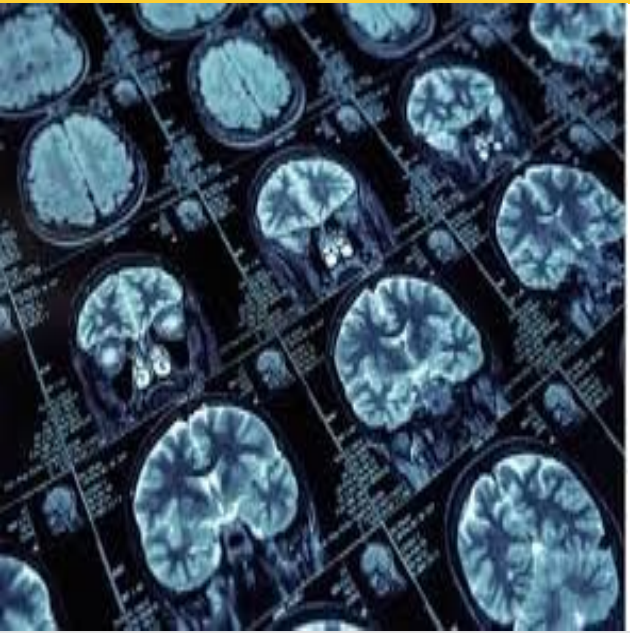
Getting Started in Research



Questions?

Contact Information

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