



LEAD, CHANGE, TRANSFORM HEALTH

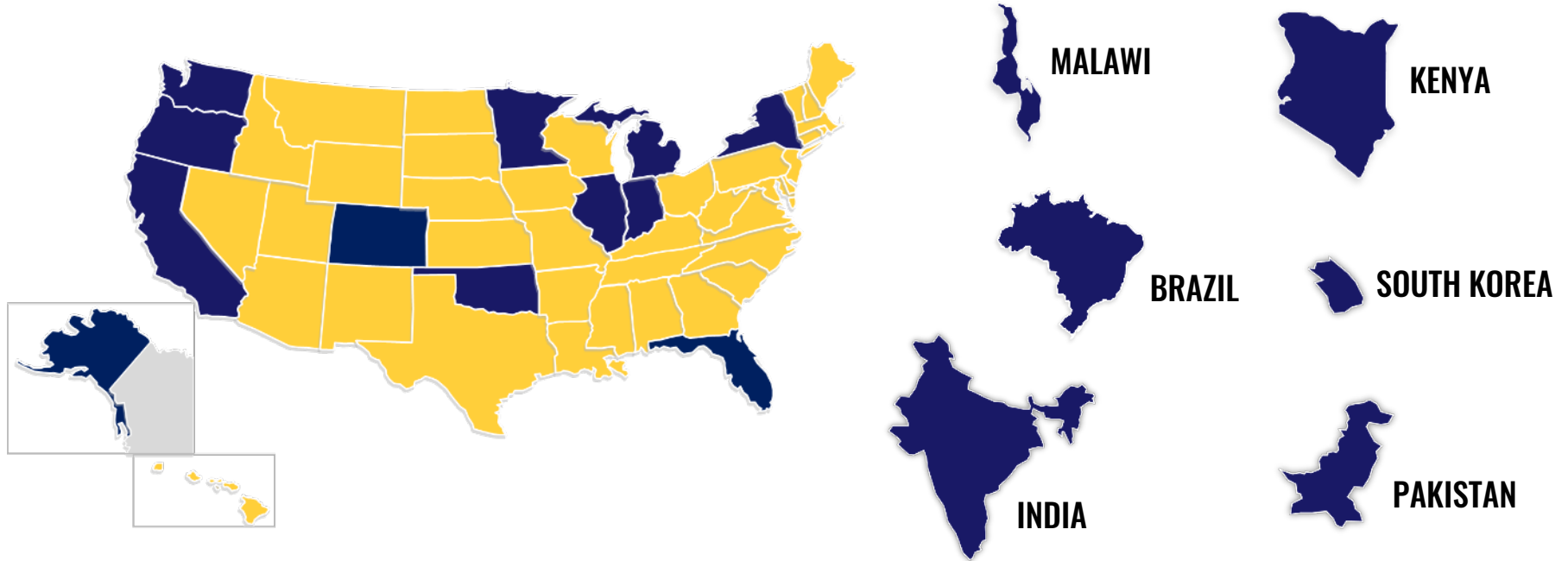
Health Infrastructures and Learning Systems (HILS)
Online MS Information Session



UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
MICHIGAN MEDICINE

LEARNING HEALTH SCIENCES
HEALTH INFRASTRUCTURE AND LEARNING SYSTEMS **GRADUATE PROGRAMS**

HILS STUDENTS HAIL FROM...



CURRENT COHORT, FALL 2023



- Medical Scribe - **Enhancing knowledge in healthcare** through an alternate lens.
- Patient Safety Specialist - **Passion for patient safety** and quality improvement.
- Translational Informatics Analyst - Optimization methods to create better, **more efficient experiences for patients**, providers, and staff in healthcare settings.
- Administrative Coordinator - Quality Improvement, **reducing racial disparities**, social determinants of health, exercise science, mindfulness, meditation, older adults.
- Nurse - quality improvement efforts to better the care for people with **cystic fibrosis**
- Technical Business Analyst - **understanding the impact data can have** on improving healthcare needs for all individuals
- Medical sales representative - implementation of **evidence-based algorithms, electronic health records interoperability**.
- Respiratory Therapist - Finding ways to **enhance healthcare accessibility and ultimately improving patients' outcomes** using evidence based research, specifically in Idiopathic Pulmonary Fibrosis
- Associate Director of Innovation - Utilizing Extended Reality technology to **enhance medical education simulation and training**.

EDUCATIONAL BACKGROUNDS OF HILS STUDENTS



HEALTH SCIENCES/
HEALTH PROFESSIONALS



INFORMATION



COMPUTING



ENGINEERING



BEHAVIORAL AND
SOCIAL SCIENCES



ORGANIZATIONAL
AND POLICY
SCIENCES

WHERE ARE OUR GRADUATES NOW?



- Leadership at a non-profit health information network company supporting community health system networks
- Laboratory medicine director
- Management consulting (entrepreneurs)
- Pharmaceutical partnerships
- Research associate/analyst, data management
- Continued education, PhD candidates, MD students

HILS-ONLINE MS DEGREE



MS Program

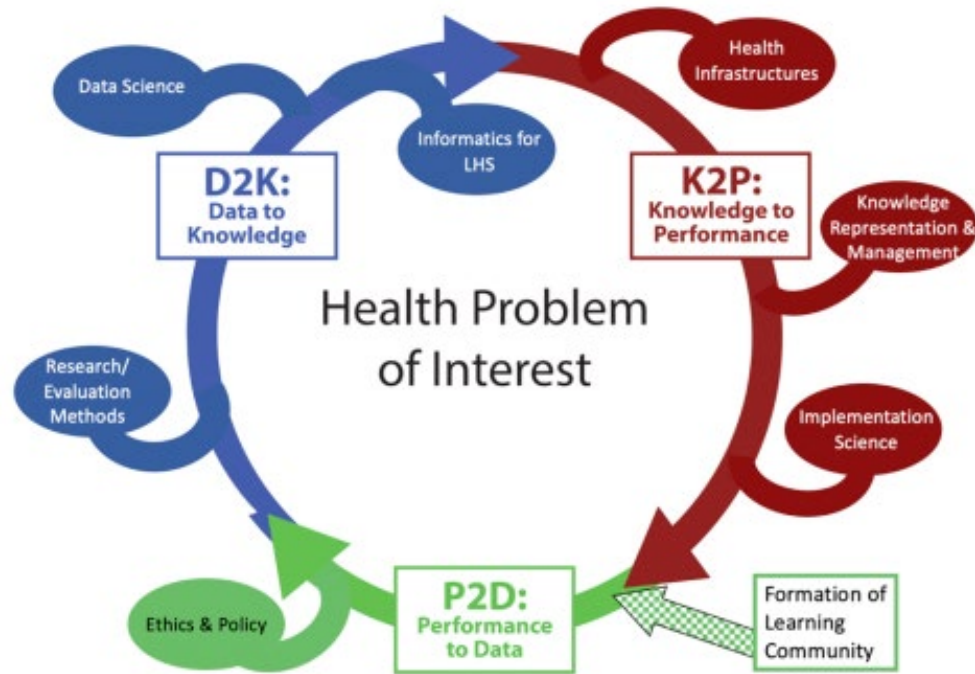
- Complete 27 credit hours
- Complete Learning Cycle Project
- Obtain a Master of Science Degree from the University of Michigan Medical School

HILS-ONLINE MS DEGREE

Specialized training to make lasting improvements

- Asynchronous learning opportunities with synchronous options for class projects, mentoring
- All content delivered through the Canvas learning management system
- Ability to review challenging lectures repeatedly
- Expect to spend **8-10 hours/week per course**
 - Note, some courses might be heavy on reading, or viewing of recorded lectures/other videos, therefore, will need to factor those into study time and preparation

HILS Curriculum and a Learning Cycle



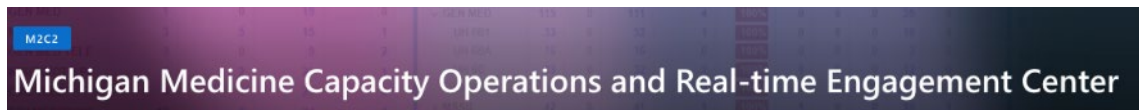
- Health Care Data for decision making
- Policy and Ethics for data use
- Shared knowledge for improvement
- Implementation science
- Technology promoted change

LEARNING HEALTH SYSTEMS AND THE UNIVERSITY OF MICHIGAN

QUERI Roadmap Supports Learning Health Systems



Health System Data Warehouse



HEALTH INFRASTRUCTURES AND LEARNING SYSTEMS

GRADUATE PROGRAMS



LEARNING HEALTH SCIENCES

LEARNING HEALTH SYSTEMS COURSES



- ***Health Infrastructures and Policy***

- LHS 650 – Health Infrastructures Pro Seminar (3cr)
- LHS 671 – Ethics and Policy Issues for Learning Health Systems (3cr)

- ***Implementation Science***

- LHS 621- Implementation Science in Health (3cr)
- LHS 622 – Learning Cycle Capstone (3cr)

LEARNING HEALTH SYSTEMS COURSES



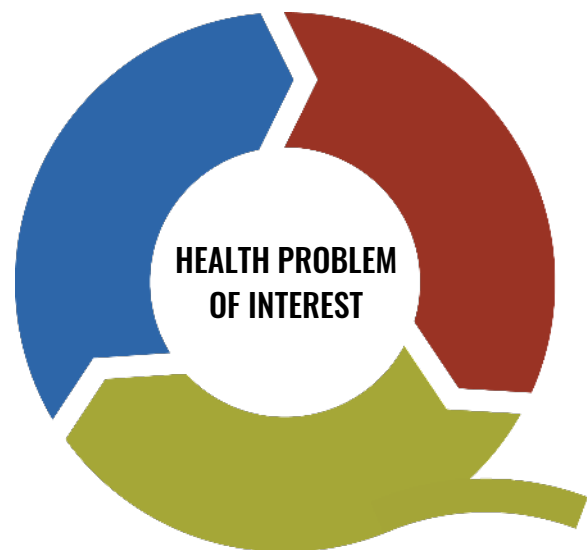
- **Data Science**

- LHS 610 – Exploratory Data Analysis for Health (3cr)
- LHS 611 – Knowledge Representation and Management in Health (3cr)
- LHS 678 – Learning Cycle Informatics (3cr)

- **Research Methods**

- LHS 660 – Evaluation and Research Methods for Health Informatics and Learning Systems (3cr)

LEARNING CYCLE PROJECT CAPSTONE



P2D

Performance to Data

D2K

Data to Knowledge

K2P

Knowledge to Performance

- **Fall Term** — Ongoing meetings with your advisor
- **Winter Term** — Refine project proposal and prepare for summer project
- **Spring/Summer** —
 - MS students enroll in LHS 622 Learning Cycle Capstone
 - Students execute projects and reflect on experiences

LEARNING CYCLE PROJECT

Implementation of Pharmacogenomics Alerts at Michigan Medicine

Grace Hohn, PharmD

Project Lead & Advisor: Amy Pasternak, PharmD

Epic Alerts for Pharmacogenomics

- HLA-B
- CYP2C9
- G6PD
- UGT1A1
- TPMT

Inline & Pop-up Alerts



Alert Success

- Yes (176/218)
- No (21/218)
- N/A (21/218)

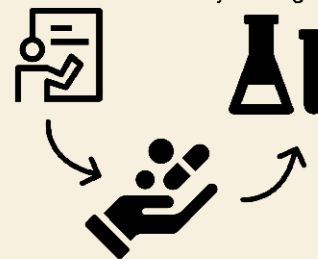
Top Flagged Drugs

- Oxcarbazepine (65/218)
- Azathioprine (37/218)
- Carbamazepine (34/218)



Trends for Improvement

- Alert Appropriateness
- Inline Alerts
- Education related to alerts
- Unnecessary testing



Pasternak, A., (2019). University of Michigan Health System Department of Pharmacy Guideline for Pharmacogenomic Testing, Michigan Medicine.

M | MICHIGAN MEDICINE

MS COURSE SEQUENCE — 1 YEAR PLAN

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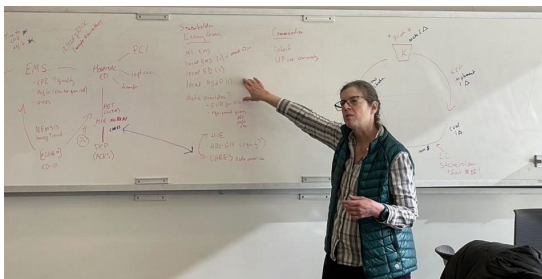
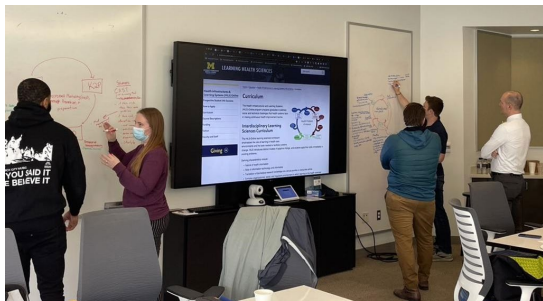
Full Time 12-Month Plan	27 Total Credit Hours		
	FALL	WINTER	SPRING/SUMMER
COURSES	LHS 641 - Quality Improvement (3 credits) LHS 650 - Health Infrastructures (3 credits) LHS 660 - Evaluation and Research Methods (3 credits) LHS 678 - Learning Cycle Informatics (3 credits)	LHS 610 - Exploratory Data Analysis for Health (3 credits) or LHS 611 - Knowledge Representation and Management in Health (3 credits)* LHS 671 - Ethics and Policy Issues for Learning Health Systems (3 credits) LHS 621 - Implementation Sci 1 (3 credits) Elective (3 credits) *You must take 610 or 611 - if you take both, one can be used as elective Also available as elective: LHS 680 - Teamwork for Healthcare (3 credits)	LHS 622 - Learning Cycle Capstone (3 credits)
ON-CAMPUS TIME - HILS Online Students	HILS Orientation/Class Institute 1 (3 days on campus)	Class Institute 2 (February) (2 days on campus)	Class Institute 3 (June) (2 days on campus)
GOALS	1. Begin to develop ideas for Learning Cycle Project	1. Finalize plans for learning cycle project 2. Obtain IRB approval for learning cycle project	1. Engage in Learning Cycle Project 2. Engage in weekly discussions with fellow students and faculty about your project
MILESTONES			Learning Cycle Project Graduation
Schedule and maintain ongoing meetings with advisor(s)			

MS COURSE SEQUENCE — 2 YEAR PLAN

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Part Time 24-Month Plan	27 Total Credit Hours				
	FALL	WINTER	FALL	WINTER	SPRING/SUMMER
COURSES	LHS 641 - Quality Improvement (3 Credits) LHS 650 - Health Infrastructures (3 credits)	LHS 621 - Implementation Sci 1 (3 credits) LHS 610 - Exploratory Data Analysis for Health <u>or</u> LHS 611 - Knowledge Representation and Management in Health (3 credits)* *You must take 610 or 611 - if you take both, one can be used as elective Also available as elective: LHS 680 - Teamwork for Healthcare (3 credits)	LHS 660 - Evaluation and Research Methods (3 credits) LHS 678 - Learning Cycle Informatics (3 credits)	LHS 671 -Ethics and Policy (3 credits) LHS 610 or LHS 611 (3 credits)* Elective for 3 credits *You must take 610 or 611 - if you take both, one can be used as elective Also available as elective: LHS 680 - Teamwork for Healthcare (3 credits)	LHS 622 - Learning Cycle Capstone (3 credits)
ON-CAMPUS TIME - HILS Online Students	HILS Orientation/Class Institute 1 (3 days on campus)	Class Institute 2 (February) (2 days on campus)			Class Institute 3 (June) (2 days on campus)
GOALS	1. Begin to develop ideas for Learning Cycle Project	1. Finalize plans for learning cycle project 2. Obtain IRB approval for learning cycle project			1. Engage in Learning Cycle Project capstone 2. Engage in weekly discussions with fellow students and faculty about your project
MILESTONES					Learning Cycle Project Graduation
Schedule and maintain ongoing meetings with advisor(s)					

ON CAMPUS INSTITUTES



- **Attendance at Institutes are required** and occur at the beginning of each term
- Institutes will **reinforce current course work** as well as provide networking and mentoring opportunities
- Students should expect to spend **2-3 days on campus** for each session
 - Active learning sessions
 - Skill development
 - Dedicated one-on-one mentoring
 - Socialization opportunities with peers, program faculty and residential students

LEAD, CHANGE, TRANSFORM HEALTH



- Move into leadership positions focused on **quality, safety, and the management** of health system initiatives
- Experts in **informatics and health care data analysis**
- **MS = Improvement & Implementation Leaders**

ADVISING



- Students are paired with a faculty advisor and have access to faculty through live office hours and email
- Can easily connect with the program manager through email, Zoom video conferencing, Slack and other online channels of communication

ABUNDANT STUDENT SUPPORT AVAILABLE



- Rackham Graduate School
- Medical School
- University Resources:
 - Association of Multicultural Scientists
 - Biomedical Graduate Student Council
 - Campus Diversity Resources
 - Services for Students with Disabilities
 - Medical School Office for Health Equity and Inclusion
 - Office of Graduate Postdoctoral Studies
 - The Students of Color of Rackham
 - Counseling and Psychological Services
 - Taubman Health Sciences Library

TUITION

Online Master's in Health Infrastructures and Learning Systems Tuition

Credits	Michigan Resident	Michigan Non-Resident
1	\$1,650	\$3,183
2	\$3,115	\$6,181
3	\$4,580	\$9,179
4	\$6,045	\$12,177
5	\$7,510	\$15,175
6	\$8,975	\$18,173
7	\$10,440	\$21,171
8	\$11,905	\$24,169
9+ (Full-Time)	\$13,370	\$27,167

Estimated tuition in the accompanying chart, based on 2023-2024 Academic Year

Subject to change and not guaranteed

Mandatory Fees (Full Term, 2023-2024)

Registration Fee	\$80.00
Central Student Government (CSG)	\$11.19
Student Legal Services	\$8.50
School & College Government	\$1.50
University Unions & Recreational Sports	\$65.00
Total	\$166.19

MS COURSE SEQUENCE – 1 YEAR PLAN

Full-time 12-Month Plan			
	FALL	WINTER	SPRING/SUMMER
COURSES	LHS 641 (3 credits) LHS 650 (3 credits) LHS 660 (3 credits) LHS 678 (3 credits)	LHS 610 (3 credits) LHS 611 (3 credits) LHS 671 (3 credits) Elective (3 credits)	LHS 622 (3 credits)
ON-CAMPUS TIME	HLS Orientation/Class Institute 1 (3 days on campus)	Class Institute 2 (February) (2 days on campus)	Class Institute 3 (June) (2 days on campus)
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MILESTONES			Learning Cycle Project Graduation
Schedule and maintain ongoing meetings with advisor(s)			

Michigan Resident

Semester 1 = \$13,370*
Semester 2 = \$13,370*
Semester 3 = \$4,580*
+ fees

ESTIMATED \$31,320*

*Based on 2023-2024 data and subject to change

Non-Michigan Resident

Semester 1 = \$27,167*
Semester 2 = \$27,167*
Semester 3 = \$9,179*
+ fees

ESTIMATED \$63,513*

*Based on 2023-2024 data and subject to change

ADDITIONAL EXPENSES/TECHNOLOGY NEEDS



- Study materials
- High-speed internet service
- Computer equipment and software (recommended to support proper functioning of platform used for courses)
 - Webcam: 1080p (preferred) or 720p
 - RAM 4GB
 - Microphone (some webcams have this built in)
 - Headphones
 - Compatible browser: Google Chrome (preferred), Mozilla, Foxfire or Safari
- Travel expenses – students will be required to attend three in-person Institute sessions

APPLICATION REQUIREMENTS



- Bachelor's degree w/ 1 Statistics class
- Personal & Academic Statement of Purpose
- Resume/CV
- Transcripts
- Letters of Recommendation (3)
- GRE - not required

APPLICATION TIPS (ACADEMIC STATEMENT)



HURON RIVER KAYAKING

Carefully read the instructions of what you should specifically address in your statement. Then ask yourself these questions:

- Does my statement demonstrate an understanding of learning health systems?
- Do I clearly explain how my research question(s) relate to learning health systems and/or fit into the learning health cycle?
- Did I contact any potential faculty advisors, who are they, and what did we discuss? Is this information described in my statement?
- Do I address my prior research experience as well as what I wish to study as a student?

APPLICATION TIPS (PERSONAL STATEMENT)



UNIVERSITY OF MICHIGAN MUSEUM OF ART

Carefully read the instructions of what you should specifically address in your statement.

- Discuss how your background/ life experiences (cultural, geographical, financial, educational, citizenship status, or other opportunities or challenges) motivated your decision to pursue a graduate degree
- Examples:
 - educational, cultural, or other opportunities were either especially plentiful or especially lacking
 - you are undocumented or have Deferred Action for Childhood Arrival (DACA) status
- Do not repeat your Academic Statement of Purpose.

APPLICATION TIPS



MAIN STREET — ANN ARBOR

Resources on learning health systems:

- “Development of the learning health system research core competencies” — journal article
- “Weaving together a healthcare improvement tapestry. Learning health system brings together health data stakeholders to share knowledge and improve health” — journal article
- Learning Health Systems open access journal
- Agency for Healthcare Research and Quality Learning Health Systems website

APPLICATION TIPS



NICHOLS ARBORETUM — ANN ARBOR

- Proofread your statement carefully
- Ask a friend, colleague or mentor to also review it with attention to typographical errors, grammar, punctuation, and overall clarity
- Submit all materials in a timely manner to prevent delay in the application review

HOW TO APPLY



- [Rackham Graduate School application](#)
- **Deadline**
 - **June 1 - Final Deadline**
- **Application Fee**
 - Current Rackham: \$10
 - Non-Rackham: \$75
 - *fee waivers available*

APPLICATION TIMELINE



UNIVERSITY OF MICHIGAN HOSPITAL

We aim to notify applicants 6–8 weeks after the receipt of application.

TRANSFER CREDIT



ARGUS FARM STOP

At this time, we are not allowing credits to be transferred. However, if you have taken a course that is equivalent to a required course for the program, we may be able to review options for substitute electives or other course options.

CONTACT HILS-ONLINE!



medicine.umich.edu/dlhs-hils-online

Dr. Caren Stalburg, carens@med.umich.edu

Crinn Fairbanks, cmquick@umich.edu

[Video Link](#)