



The Full Spectrum Biomedical and Health Informatics Education at Oregon Health & Science University

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The full spectrum

- Informaticians
 - Academic \leftrightarrow Professional
- Informatics domains
 - Bio \leftrightarrow Clinical
- Educational experience
 - Primary \leftrightarrow Continuing
- Beyond informaticians
 - Informaticians \leftrightarrow Clinicians, researchers, etc.

Full spectrum of OHSU informatics education programs

- Graduate
 - PhD, MS – with/without thesis
 - Online – MS, Graduate Certificate
- Fellowships
 - NLM – T15 training grant
 - Clinical – ACGME-accredited
- Continuing education
 - Clinical informaticians of all stripes
 - CME and MOC-II for clinical informatics physicians
- 10x10 – partnership with AMIA
- Health and other professionals
 - Medical students, nursing graduate students

OHSU Biomedical Informatics Graduate Program

- Aims to train future professionals, researchers, and leaders
 - <http://www.ohsu.edu/informatics-education>
- Two Majors
 - Health & Clinical Informatics (HCIN)
 - Bioinformatics & Computational Biomedicine (BCB)

Degree/Certificate	PhD	MS thesis	MS non-thesis	Graduate Certificate
Major				
HCIN	On-campus	On-campus	On-campus On-line	On-campus On-line
BCB	On-campus	On-campus	On-campus	

Curriculum building block approach

	<u>PhD</u> <ul style="list-style-type: none"> - Courses in domains: <ul style="list-style-type: none"> - HCIN - BCB - Knowledge Base - Advanced Research Methods - Biostatistics - Cognate - Doctoral Symposium - Mentored Teaching - Dissertation
<u>Masters</u> <ul style="list-style-type: none"> - Courses in domains: <ul style="list-style-type: none"> - HCIN - BCB - Thesis or Capstone/Internship 	
<u>Graduate Certificate</u> <ul style="list-style-type: none"> - Courses in domains: <ul style="list-style-type: none"> - HCIN 	
<u>10x10</u> <ul style="list-style-type: none"> - Or introductory course 	

Students and alumni



International students from (among others):
Singapore, Thailand, Argentina, Egypt, Israel,
Saudi Arabia, Zimbabwe, China, and more

Degree	Total	BCB	HCIN
Graduate Certificate	455	0	455
Master's (any)	348	46	302
PHD	28	9	19
Total	831	55	776



Fellowships

- Primary source of financial aid for students
- NLM T15 Training Grant
 - Since 1992
 - Renewed in 2017 for another 5 years (with additional funding from NIEHS)
 - <https://www.ohsu.edu/school-of-medicine/medical-informatics-and-clinical-epidemiology/fellowships>
- ACGME-accredited Clinical Informatics Fellowship
 - 4th program (of ~40 now) to receive accreditation
 - Launched in 2015
 - Three cohorts graduated
 - 6th cohort will start in 2020
 - Funded by OHSU, Portland VA Medical Center, and OCHIN
 - Six other programs use OHSU online courses
 - <https://www.ohsu.edu/school-of-medicine/medical-informatics-and-clinical-epidemiology/clinical-informatics-subspecialty>

Alumni accomplishments

- Faculty leaders at many universities
 - OHSU
 - Regenstrief Institute
 - Vanderbilt University
 - Harvard Medical School
 - Children's Hospital of Philadelphia
 - University of Virginia
 - University of Utah
 - University of Washington
- 11% (15 of 130) of first class of Fellows of AMIA (FAMIA)
- Some employers of our graduates
 - OHSU
 - OHSU Knight Cancer Institute
 - Providence Health System
 - Kaiser-Permanente
 - OCHIN
 - Intelligent Medical Objects
 - Intersystems
 - Deloitte
 - Epic
 - Cerner
 - National Library of Medicine
 - WebMD
 - Institute for Systems Biology

How have OHSU students and graduates done?

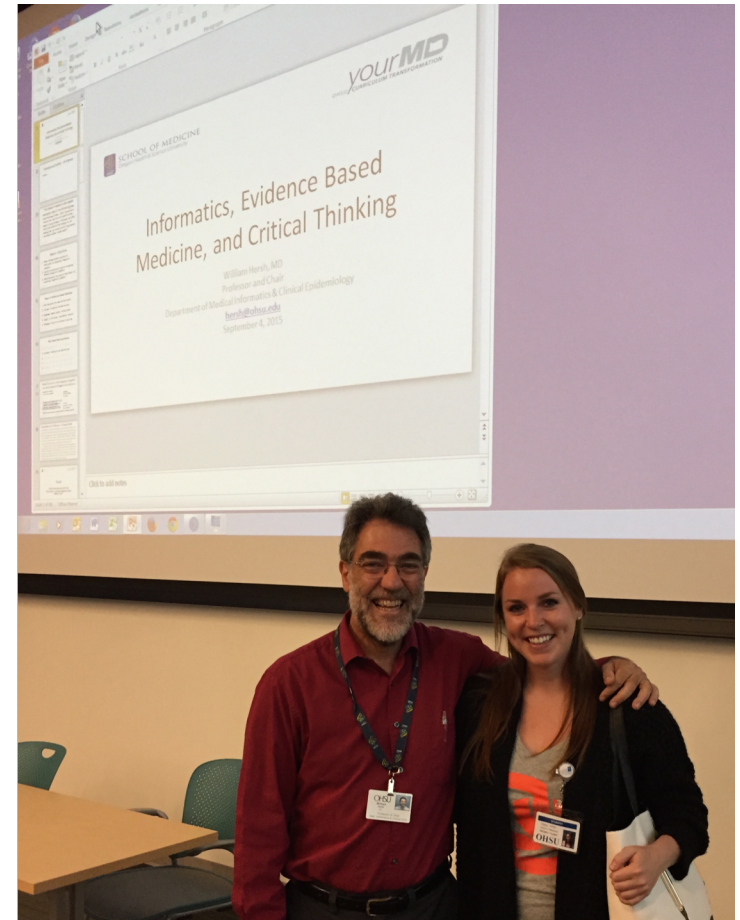
- Over 20 years of experience...
- General observation: What people do when they graduate is partially dependent on what they did when they entered, e.g.,
 - Physicians, nurses, public health, etc. draw on their clinical/professional background
 - Information technology professionals draw on their unique background and experience
- Graduates have obtained jobs in a variety of settings, e.g., clinical, academic, and industry
- Growing number of opportunities in data science/analytics

Continuing education

- 10x10 (“ten by ten”)
 - In partnership with AMIA, original and still largest 10x10 offering
 - Currently 2600 by 2019
 - Standalone version of introductory course
 - Allows entry into OHSU Graduate Program
 - <https://dmice.ohsu.edu/hersh//10x10.html>
- Update in Clinical Informatics
 - Update on key topics
 - CME and MOC-II credit for clinical informatics subspecialists
 - <https://www.ohsu.edu/school-of-medicine/medical-informatics-and-clinical-epidemiology/2019-ohsu-annual-update-clinical>

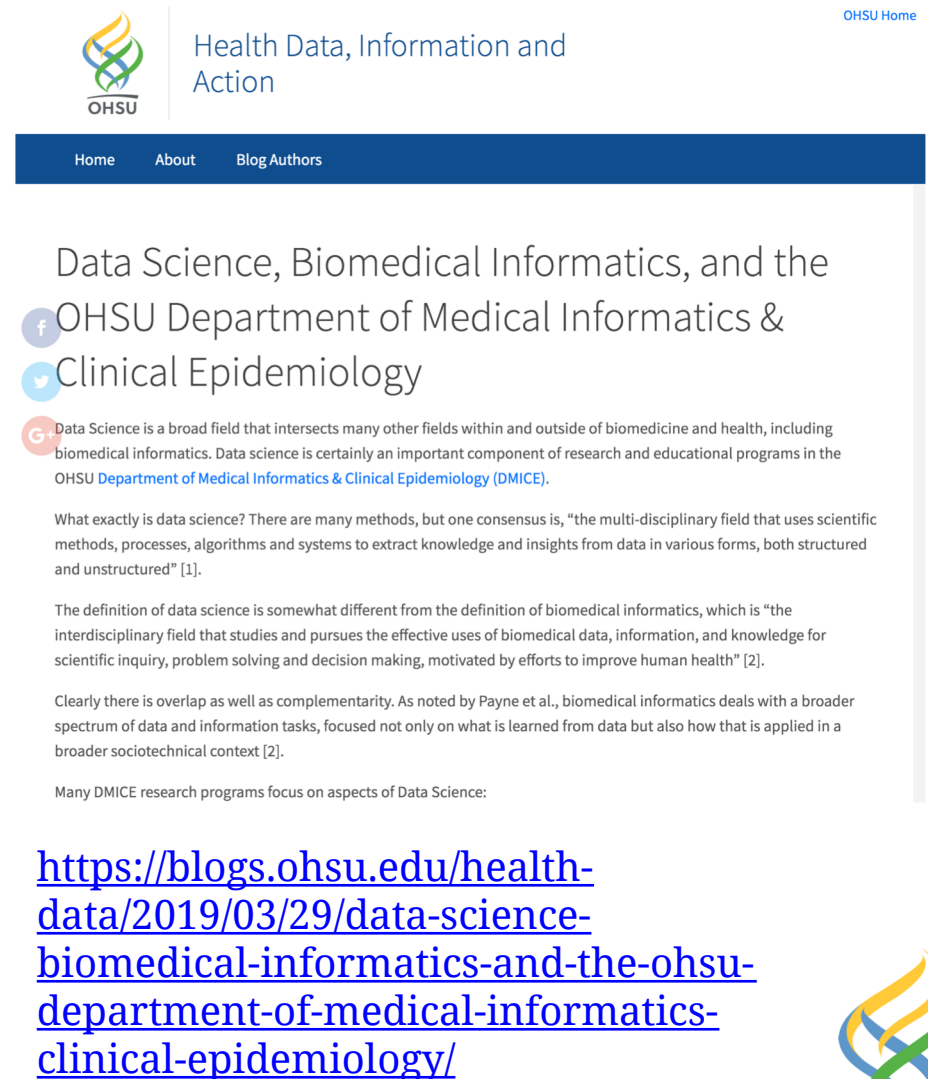
Other happenings at OHSU

- Dr. Frank Naeymi-Rad and Dr. Theresa Kepic Scholarship for Biomedical Informatics
- Teaching of informatics in other programs
 - MD curriculum
 - Basic science graduate programs
 - Undergraduate health informatics course at Portland State University



Data science at OHSU

- First data analytics course launched in 2015
- Funding from NIH BD2K, ONC, and NLM aiding in development of curricular content
 - <https://dmice.ohsu.edu/bd2k/>
 - Data science for basic science PhD students and postdocs
 - Internship for college undergraduates



OHSU Home

Health Data, Information and Action

Home About Blog Authors

Data Science, Biomedical Informatics, and the OHSU Department of Medical Informatics & Clinical Epidemiology

Data Science is a broad field that intersects many other fields within and outside of biomedicine and health, including biomedical informatics. Data science is certainly an important component of research and educational programs in the OHSU Department of Medical Informatics & Clinical Epidemiology (DMICE).

What exactly is data science? There are many methods, but one consensus is, "the multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured" [1].

The definition of data science is somewhat different from the definition of biomedical informatics, which is "the interdisciplinary field that studies and pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving and decision making, motivated by efforts to improve human health" [2].

Clearly there is overlap as well as complementarity. As noted by Payne et al., biomedical informatics deals with a broader spectrum of data and information tasks, focused not only on what is learned from data but also how that is applied in a broader sociotechnical context [2].

Many DMICE research programs focus on aspects of Data Science:

<https://blogs.ohsu.edu/health-data/2019/03/29/data-science-biomedical-informatics-and-the-ohsu-department-of-medical-informatics-clinical-epidemiology/>

For more information

- OHSU Department of Medical Informatics & Clinical Epidemiology (DMICE)
 - Department Web site – <http://www.ohsu.edu/informatics>
 - Department blog – <http://www.ohsu.edu/blogs/health-data/>
 - Video overview – <http://www.youtube.com/watch?v=T-74duDDvwU>
 - Research conference videos archive – <https://www.youtube.com/channel/UCCekPERb6i3xXEDQxwlCeIA>
 - Twitter – [@OHSUInformatics](https://twitter.com/OHSUInformatics)
- Bill Hersh
 - Web site – <http://www.billhersh.info>
 - What is Biomedical & Health Informatics? – <http://informatics.health>
 - Twitter – [@williamhersh](https://twitter.com/williamhersh)
 - Informatics Professor blog – <http://informaticsprofessor.blogspot.com>