PhD in Informatics with Emphasis in Health Informatics

Degree Requirements

The following is a brief synopsis of the general degree requirements; please see the Informatics Institute web site: (https://muii.missouri.edu)

- Students must take required and area courses.
- Students must pass a qualifying examination.
- Students must present at least one institutional seminar annually.
- Students are required to complete a comprehensive exam, which includes written and oral elements, within a specified time frame.
- Students must pass a comprehensive examination at least 7 months before their scheduled defense.
- Students must submit and defend a dissertation describing the results of successful and original research in one of the branches of informatics.
- To show research progress, students are expected to be working toward presenting at conferences and publishing in peer-reviewed journals based on their informatics research.

Coursework Requirements

All students must have at least 72 credit hours at the graduate level, of which 15 credits must be at the 8000-level not including research, problems, lab rotations, or seminar. Transferring credits will be at the recommendation of the student's doctoral committee and the approval of the MUII Curriculum Committee.

REQUIRED COURSES - HEALTH INFORMATICS EMPHASIS AREA		
DATA_SCI 7010	Introduction to Data Science and Analytics	3
INFOINST 7430	Introduction to Health Informatics	3
REQUIRED METHODS COURSES (9 Credit Minimum)		
INFOINST 8810	Research Methods in Informatics	3
STAT 7510	Applied Statistical Models I	3
Students must choose one additional 3-credit methods course with doctoral committee approval.		
LAB ROTATIONS AND SEMINAR		
INFOINST 8087	Seminar in Informatics (Must be enrolled each semester)	0.5-1
INFOINST 8088	Lab Rotations in Informatics	2
RESEARCH		
INFOINST 8090	Dissertation (pre-candidacy) Research in Informatics	1-99
INFOINST 9090	Dissertation (post-candidacy) Research in Informatics	1-99
AREA COURSE ELECTIVES (15 credits)		
AN_SCI 7001	Topics in Animal Science	1-4
CMP_SC 7380	Database Management Systems I	3
CMP_SC 7740	Interdisciplinary Introduction to Natural Language Processing	3
CMP_SC 8370	Data Mining and Knowledge Discovery	3
CMP_SC 8630	Data Visualization	3
ECE 7270	Computer Architecture	4
ECE 7590	Computational Neuroscience	4
ECE 8320	Nonlinear Systems	3
ECE 8570	Neural Dynamics and Communication	3
ECE 8580	Machine Learning in Neuroscience	3
GEOG 7620	Biogeography: Global Patterns of Life	3
GEOG 7710	Spatial Analysis in Geography	3
GEOG 7810	Landscape Ecology and GIS Analysis I	3
GEOG 7840	Geographic Information Systems I	3
GEOG 7860	Advanced Remote Sensing	3
GEOG 7940	Advanced Geographic Information Systems (GIS II)	3
GEOG 8840	Seminar: Applied Remote Sensing	
GEOG 8902	Topics in Geography-Biological/Physical/ Mathematical	1-3
HMI 7410	Introduction to the US Health Care System	3
HMI 8435	Information Security, Evaluation and Policy	3
HMI 8437	Data Warehousing and Data/Text Mining for Health Care	3
HMI 8441	Biomedical and Health Vocabularies and Ontologies	3
HMI 8443	Enterprise Information and Solutions Architecture for Strategic Healthcare Operations	3
HMI 8460	Administration of Health Care Organizations	3
HMI 8461	Managing Human Resources in Health Care Organizations	3
HMI 8478	Knowledge Management in Health Care	3
HMI 8524	Health Economics	3
HMI 8565	Health Care Ethics	3
HMI 8571	Decision Support in Health Care Systems	3
HMI 8573	Decision Making for Health Care Organizations	3
HMI 8610	Consumer Health Informatics	3
IMSE 8810	Human Factors	3
INFOINST 8005	Applications of Bioinformatics Tools in Biological Research	3
INFOINST 8085	Problems in Informatics	1-6
INFOINST 8150	Integrative Methods in Bioinformatics	3
INFOINST 8190	Computational Systems Biology	3
INFOINST 8310	Computational Genomics	3
INFOINST 8870	Knowledge Representation in Biology and Medicine	3
IS_LT 9410	Seminar in Information Science and Learning Technology	1-3
NURSE 9460	Theories and Interventions in Health Behavior Science	3
PTH_AS 7450	Precision Medicine Informatics	3

Qualifying Exam Process

Students are expected to take the qualifying exam by the end of their third semester in the program. The exam will be based on their previous coursework, lab rotation experience, and one-page research statement. For more information on

qualifying exam procedures, please see the MUII student handbook. (https://muii.missouri.edu/wp-content/uploads/2019/01/Informatics_Institute_GraduateStudent_Handbook_Approved_Dec2018-1.pdf)

Comprehensive Exam Process

The comprehensive exam consists of two parts - the written portion, comprised of an R01 research proposal, and the oral exam. For more information on the comprehensive exam process, please see the MUII student handbook (https://muii.missouri.edu/wp-content/uploads/2019/01/Informatics_Institute_GraduateStudent_Handbook_Approved_Dec2018-1.pdf).

Dissertation Defense Process

The doctoral dissertation defense must be scheduled no sooner than seven months after successful completion of the comprehensive exam. The dissertation must be written on an informatics subject approved by the candidate's doctoral program committee, must embody the results of original and significant investigation, and must be the candidate's own work. Please refer to the MUII student handbook (https://muii.missouri.edu/wp-content/uploads/2019/01/Informatics_Institute_GraduateStudent_Handbook_Approved_Dec2018-1.pdf) for additional information.

Admission Contact Information

MUII Staff (mailto: muiiadmissions@missouri.edu)
241 Naka Hall
Columbia, MO 65211-2060
Phone: 573-882-9007
FAX: 573-884-8709
Informatics Institute (MUII) website: https://muidsi.missouri.edu/

Admission Criteria

Fall deadline: The deadline for Fall admission is March 1. However, to be considered for departmental and Graduate School fellowships and assistantships, applications should be submitted by January 15.

- Preferred GPA: 3.3 out of 4.0
- Preferred GRE scores*:

When did you take the GRE?	Verbal + Quantitative	Analytical
Prior to August 1, 2011	1200	3.5-4.0
On or After August 1, 2011	309	3.5-4.0

* or a preferred GMAT score of 570

- Preferred TOEFL or IELTS scores

Internet-based test (iBT)	Paper-based test (PBT)
90	577

Item	Score
Minimum IELTS Score	6.0

All Required Documents

Students are required to send ALL required application materials through the Office of Graduate Schools on-line application system. To begin your application, please see the ApplyYourself website (https://gradschool.missouri.edu/admissions/apply/).

1. Curriculum Vitae
2. Statement of Purpose, which should include a summary of why the applicant is interested in pursuing an advanced informatics degree, a brief description of your previous research experiences, the specific area of informatics you are interested in pursuing, and your future career goals and plans in the informatics field.
3. GRE/GMAT scores. Use institution code 6875. The departmental code is not required.
4. TOEFL/ELTS scores for international applicants, if required.
5. Three letters of recommendation from faculty or supervisors who can evaluate the applicant's credentials and potential to become successful in the area of informatics.
6. Scanned copies of transcripts from each college and university attended. If accepted, applicants will be required to have official copies of their transcripts sent directly from the institution to the Graduate School.

Optional Documents

Applicants are encouraged to submit representative publications in informatics, if available.

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Exceptional Funding Opportunities - Biomedical Big Data Science Pre-doctoral Training

Funded by NIH T32 (2016-2021)

MU Informatics Institute (MUII) is recruiting SIX top-notch trainees to pursue PhD degree in Informatics through an interdisciplinary training team. Students from basic sciences, life sciences, medicine, and computing disciplines are welcome to apply. Our unique training includes: (1) personalized training modules from core courses of the MS degree in Data Science and Analytics program, Big Data courses from Computer Science, and biomedical informatics courses from MUII, which will expose trainees to the basic concepts, ethics, and working knowledge in Big Data Science; (2) a problem-based learning curriculum in pre-doctoral-level Big Data-related courses, such as Mining Massive Data Sets for Biomedical Applications, designed to foster a team science approach to problem-solving; (3) a student-driven journal club/seminar series, in which students are offered opportunities to present research,

pose questions, and receive feedback from peers and mentors. Our interdisciplinary components include (1) required tri-lab rotations to introduce students to animal/veterinary medical research, human medical research, computing/statistical methodologies, and health communications; (2) development of rigorous and reproducible open-source Big Data analytics tools, which will be assessed by the One Health research community after arduous testing; and (3) creation of an Individual Development Plan based on each trainee's background and career goal prior to joining the program. These positions are open to permanent residents and US citizens only. Women and minority students are encouraged to apply.

Please contact the project director Dr. Chi-Ren Shyu (ShyuC@missouri.edu) for inquiries.