# Institute for Data Science & Informatics

University of Missouri

# DOCTORAL STUDENT HANDBOOK

2025-2026

*Approved September 2016, Rev. Dec. 2018, Rev. Dec 2022, Rev. Dec 2023, Rev. February 2025*

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## Overview

This document is provided to help you better understand the Ph.D. degree program procedures and requirements of the University of Missouri Institute for Data Science and Informatics (IDSI), as well as general information that should be useful to you as a graduate student. Included within is important information pertaining to University and program policies, financial and support services, and other vital information. **It is your responsibility to read and familiarize yourself with the material contained in this manual.**

Although every effort has been made to ensure up-to-date accuracy of the information contained within, many policies outside of this doctoral program are subject to change without notice. Information contained in this manual should be considered supplementary to existing University policies and is subject to supersession at any time by any and all applicable rules, regulations, and policies outlined by the University System, MU Office of Graduate Studies, and the sponsoring academic units, where and/or when applicable.

If you believe this document contains any errors or inaccuracies, please notify IDSI staff.

# Model Timeline

| | | **Qualifying Phase** | | | | | **Comprehensive Phase** | | **Defense Phase** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Year 1* | | *Year 2* | | | *Year 3* | | *Year 4* | | *Year 5* | |
| | | *Fall* | *Spring* | *Summer* | *Fall* | *Spring* | *Fall* | *Spring* | *Fall* | *Spring* | *Fall* | *Spring* |
| Courses | Content | Introductory courses, required courses, Area Courses | Introductory courses, required courses, Area Courses | | Area courses | Area Courses | Coursework completion | | | | | |
| | T32 | | INFOINST 8002 *Mining Massive Data Sets for Biomedical Applications* *2 credits Big Data Training Modules* | 2 Credits Big Data Training Modules | 2 Credits Big Data Training Modules Research Ethics Course | | Coursework completion | | | | | |
| | Seminar | Enrolled | Enrolled | | 1st Presentation | 1st Presentation | 2nd Presentation | 2nd Presentation | 3rd Presentation | 3rd Presentation | 4th Presentation | 4th Presentation |
| Activity | Requiried MUII | Lab Rotation 1 | Lab Rotation 2 | | Appoint Committee | | Research Work | | Research Work | | | Submit dissertation to Office of Graduate Studies |
| | Required T32 | Tri-Lab 1 (2credits) | Tri-Lab 2 (2 credits) | | Tri-Lab 3 (2 Credits) | | Research Work | | Research Work | | | Submit dissertation to Office of Graduate Studies |
| | T32 Activities | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club | Ideas Lab Big Data Colloquium Journal Club |
| | MUII Recommended | | | | Internship (summer) | Literature review | 1st-author publication #1 | Conference presentation | 1st-author publication #2 | Conference presentation | 1st-author publication #3 | |
| Exams | Written Exam Material | | | | | 1 page project proposal | | 12 page NIH-format dissertation proposal | | | | Dissertation: Introduction, Research Results, Optional conclusion |
| | Oral Exam | | | | | Qualifying Exam | | Comprehensive Exam | | | | Dissertation Defense |
| Forms | | | | | | D-1 D-2 (Program of Study) | | D-3 | | | | D-4 |
| MUII Progress Reports | | | GSPS Due | | | GSPS Due | | GSPS Due | | GSPS Due | | GSPS Due |
| T32 Reports | | | Student Trainee Evaluations | | | Student Trainee Evaluations | | Student Trainee Evaluations | | Student Trainee Evaluations | | Student Trainee Evaluations |

# Course Requirements

| | Intro | Methods/Area | | | | Seminar | Lab Rotations | Emphasis Area Courses | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Emphasis Area*** | DATA_SCI 7600 *Introduction to Data Science and Analytics* | INFOINST 8810 *Research Methods in Informatics* | STAT 7510 *Applied Statistical Models I* *Methods* | Additional Methods Course | Area Courses | INFOINST 8087 *Seminar in Informatics* | INFOINST 8088 *Lab Rotations* | INFOINST 7010 *Computational Methods in Bioinformatics*** | INFOINST 8005 *Bioinformatics Tools for Biological Research* | HMI 7430 *Introduction to Health Informatics* | DATA_SCI 8130 *Data Science for Health Care* | DATA_SCI 8612 Spatial and Geostatistical Analysis |
| Bioinformatics | ✓ | ✓ | ✓ | ✓ | 15 hours | 1 hour/ sem | 2 hours/ 2 rotations | BI Students take ***either 7010 OR 8005*** | | | | |
| Health Informatics | ✓ | ✓ | ✓ | ✓ | 15 hours | 1 hour/ sem | 2 hours/ 2 rotations | | | HI Students take ***either HMI 7430 OR DATA_SCI 8130*** | | |
| Geoinformatics | ✓ | ✓ | ✓ | ✓ | 15 hours | 1 hour/ sem | 2 hours/ 2 rotations | | | | | ✓ |
| Future Informatics areas | ✓ | ✓ | ✓ | ✓ | 15 hours | 1 hour/ sem | 2 hours/ 2 rotations | | | | | |

*The current list of allowed area and methods courses is online at https://muidsi.missouri.edu/resources/#program

Students are required to take 1 additional methods course beyond INFOINST 8810 and STAT 7510 OR DATA_SCI 8130, as well as 15 hours of area courses. Courses approved as area courses in the semester of a student's enrollment will be valid for fulfilling this requirement regardless of subsequent changes to the area course list. Courses added to the area course list after enrollment will also be deemed acceptable. In addition, students completing a master's degree from MU must take an additional two area courses during their PhD program, even if during their master's coursework they took 15 credits listed in the area course list. Below is the list of area courses approved for the 2022-23 academic year:

| | |
|---|---|
| AN SCI 7001: Topics in Animal Science (Molecular Evolution) | GEOG 7940: Geographical Information Systems II |
| CS 7380: Database Management Systems I | GEOG 8840: Seminar in Applied Remote Sensing |
| CS 7740: Natural Language Processing | GEOG 8902: Topics in Geography - Biological/Physical/Mathematical |
| CS 8370: Data Mining and Knowledge Discovery | HMI 7410: Design of Health and Human Services Systems |
| CS 8630: Data Visualization | HMI 8435: Information Security, Evaluation and Policy |
| DATA_SCI 7040: Big Data Visualization | HMI 8437: Data Warehousing and Data/Text Mining for HealthCare |
| DATA_SCI 8010: Genomic Analytics | HMI 8441: Controlled Terminology Theory and Application |
| DATA_SCI 8130: Data Science for Health Care | HMI 8443: Enterprise Information Architecture |
| DATA_SCI 8140: Advanced Methods in Health Data Science | HMI 8460: Administration of Health Care Organizations |

| | |
|---|---|
| DATA_SCI 8230: Streaming Social Media Data Management & Analytics | HMI 8461: Human Resources Management |
| DATA_SCI 8530: Remote Sensing Data Analytics | HMI 8478: Knowledge Management in Health Care |
| DATA_SCI 8410: Data Mining and Information Retrieval | HMI 8524: Health Economics |
| DATA_SCI 8310: Advanced Visualization I | HMI 8565: Health Care Ethics |
| DATA_SCI 8320: Advanced Visualization II | HMI 8571: Decision Support Systems for Healthcare |
| ECE 7270: Computer Organization | HMI 8573: Decision Making for Health Care Organizations |
| ECE 7580: Computational Neuroscience | HMI 8610: Consumer Health Informatics |
| ECE 8320: Nonlinear Systems | IMSE 8810: Human Factors: Theories, Methods and Tools |
| ECE 8570: Theoretical Neuroscience I | INFOINST 8005: Introduction to Bioinformatics: Tools and Applications |
| ECE 8580: Theoretical Neuroscience II | INFOINST 8085: Problem Solving in Bioinformatics |
| GEOG 7620: Biogeography | INFOINST 8150: Integrative Methods in Bioinformatics |
| GEOG 7710: Spatial Analysis in Geography | INFOINST 8190: Computational Systems Biology |
| GEOG 7740: Location Analysis and Site Selection | INFOINST 8210: Structural Bioinformatics of Proteins, Complexes, and Systems |
| GEOG 7810: Landscape Ecology and GIS Analysis I | INFOINST 8310: Computational Genomics |
| GEOG 7815: Landscape Ecology and GIS Analysis II | INFOINST 8870: Knowledge Representation in Biology and Medicine |
| GEOG 7840: Geographic Information Systems I | ISLT 9410: Doctoral seminar |
| GEOG 7860: Advanced Remote Sensing | NURS 9460: Health Behavior Change Research |
| | PTH_AS 7450: Precision Medicine Informatics |

** INFOINST 8005 *Applications of Bioinformatics Tools for Biological Research* is strongly recommended prior to taking INFOINST 7010.

Students will file the D-2 form outlining their planned courses at the time of the qualifying exam: https://muidsi.missouri.edu/wp-content/uploads/2017/05/d2.pdf

# Pre-Qualifying Exam – Phase 1

# Advisor

## Selecting an Advisor

Students may select an advisor prior to joining the program. If they do not do so, the advisor must be selected after the last of the two required lab rotations. At that time, the student should communicate with the rotation advisors with whom he or she is interested in performing his or her dissertation research, and if the faculty member is mutually interested, appoint that individual as advisor. The final selection shall be communicated to the Director of Graduate Studies by the end of the final rotation, so that the decision can be communicated to the appropriate fiscal officer.

If the graduate student should fail to find an advisor after three rotations, the IDSI Education Committee may place the student on probation depending on the rotation evaluations and allow the student to perform additional rotations to facilitate the student finding an advisor. If the student fails to find an advisor after additional lab rotations, the IDSI Education Committee may either allow the student to withdraw from the program or dismiss the student from the program following the procedures set forth by the Office of Graduate Studies.

## Responsibilities of the Advisor

- Impartially and constructively evaluate student performance.
- Acknowledge any student contributions to research and/or creative activity, as appropriate, when the results of such activities are presented at conferences, in professional publications, or in applications for copyrights and patents.
- Have a clear understanding with graduate students about their specific responsibilities regarding academic, creative activity, and/or research activities responsibilities, including timelines for completion of comprehensive examinations, research, and the thesis or dissertation, as applicable.
- Discuss the laboratory's authorship policy with graduate students in advance of entering into collaborative projects.
- Perform all the responsibilities above without regard to religion, race, gender, sexual orientation, nationality, or other criteria that are not germane to the execution of those responsibilities.

(Guidelines for Good Practice in Graduate Education)

## Change of Advisor

If a student decides that he or she no longer wishes to work with an advisor, he or she may request of the DGS to find another advisor in the program. Upon this request, the DGS will meet with the advisee and advisor separately and solicit input from the student's doctoral committee when possible. If the student is making satisfactory progress, the IDSI Education

Committee will aid the student's search for a new advisor in the program who can financially support the student. If the search for a new advisor fails, the student will either be dismissed from the program or be allowed to withdraw from the program. Alternatively, if the student is not making satisfactory progress, the IDSI Education Committee may dismiss the student from the program.

If an advisor chooses no longer to advise a student, the Director of Graduate Studies will meet with both the advisor and advisee separately, as well as solicit input from the student's doctoral committee. If the student is making satisfactory progress, the DGS will help the student find another advisor within the program who can financially support the student. If the search for a new advisor fails, the student will either be dismissed from the program following the procedures in the Graduate Student catalog or be allowed to withdraw from the program. Alternatively, if the student is not making satisfactory progress, the IDSI Education Committee may dismiss the student from the program, following the procedures in the Graduate Student catalog.

### Advisor Retires or Leaves MU

In the event that an advisor retires or leaves MU, he/she may continue to serve as a student's advisor. If an advisor is unable to continue to serve, the Director of Graduate Studies will assist the student in finding another advisor in the program who can financially support the student, providing the student is making satisfactory progress. If an advisor who is either retiring or leaving the University is unwilling to continue to serve, see second paragraph of Advisor-Advisee Dissolution.

## Committee

### Formation of the Doctoral Committee

The Doctoral committee has primary responsibility for (1) approval of the student's course of study, (2) administration of the individual student comprehensive exam and (3) critical review and approval of the student dissertation project.

### Responsibilities of the Doctoral Committee

The Doctoral committee will meet regularly (see timetable below) with the student to evaluate progress toward the graduate education requirements and will produce a formal annual report to program describing this progress.

Students are strongly encouraged to meet with their dissertation committees at least annually– and preferably more frequently. For more details regarding forming a doctoral dissertation committee, please refer to the Office of Graduate Studies website.

## Forming a Doctoral Committee

Each student, with advice from his/her mentor and the Director of Graduate Studies, will assemble a Doctoral committee (dissertation committee) composed of at least four members. Prior to taking the QE, the student should select an advisor and form a dissertation committee. The Committee will consist of the IDSI student's advisor as committee chair, and at least three (3) other faculty members. The advisor and two (2) other committee members must be in the IDSI Core Faculty body (see IDSI Core Faculty listing). The fourth committee member may also be an MUIDSI core faculty whose academic home is different from that of the advisor. They may also be from a department outside of MUIDSI. Ideally, this member should be faculty from an experiential area closely related to the student's research project, such as a plant researcher for bioinformatics students working on plant genomics, or a radiologist for health informatics students working on imaging informatics. The Chairperson of this committee need not be the student's advisor. Membership requirements for the dissertation committee are listed on the Office of Graduate Studies website.

## Changing Doctoral Committee Members

In the event of a change of committee member during a student's degree program, the Director of Graduate Studies and the IDSI Education Committee must approve the changes. A Change of Committee form is then submitted to the Office of Graduate Studies for approval.

# Lab Rotations

## Purpose

The purpose of the experiential learning and lab rotation activities is to acquaint students with on-going informatics research by having them spend time working with an existing researcher or research group. Experiential learning activities and lab rotations will expose students to various research data collection procedures, analysis and need for medical and biological research, particularly involving communication and dialogue skills with non-informatics collaborators. IDSI affiliate faculty will solicit potential projects and forward the information to the IDSI office at least two weeks before semester starts.

All IDSI students are required to rotate through two different experiential learning or lab rotations in the first three semesters of enrollment in the PhD program. The student and the Director of Graduate Studies shall meet prior to each rotation to determine the appropriate laboratory and rotation advisor. The rotation advisor selected must concur in this decision. Students may elect to have two additional rotations if desired during the second year. The DGS will consult with student's advisor, if any, for the assignment of the project. The principal investigator (PI) of the experiential learning site or the lab will collaborate on the expectations and rotation duties using the IDSI Rotation Form prior to the actual rotation. If safety or other necessary training is needed, it must be addressed in the

form. Experiential learning and/or lab rotations, INFO INST 8088, are graded on an S/U (pass/fail) basis.

# Seminar

## Purpose

The purpose of INFOINST 8087 *Seminar in Informatics* is to expose students to each other's research and allow them to engage in constructive critiques of individual presentations. All students must enroll in INFOINST 8087 each semester and receive an 'S' grade. If students have a conflict with the seminar time, they may discuss the matter with the DGS. Students who receive a 'U' in seminar will be considered 'not in good standing' with the department.

# Yearly Progress Reports

During the first year of study, satisfactory progress involves receiving passing grades in coursework and satisfactory rotation evaluations, culminating in the student finding an advisor for his or her doctoral research. In subsequent years, satisfactory progress involves successful completion of academic coursework, research/teaching responsibilities, publication activity as well as reasonable progression through the qualifying and comprehensive examinations, as judged by the student's advisor and doctoral committee, as well as the Director of Graduate Studies.

Each summer, students are required to submit an updated CV, an Individual Development Plan (IDP), a description of progress through myVita, and meet with the Director of Graduate Studies to discuss their progression through the program. The Director of Graduate Studies will then summarize the student's progress and provide written feedback to both the student as well as their advisor of record.

# Qualifying Exam

Per the University Registrar's doctoral requirements, 'Prior to official admission into a doctoral program, the student must pass a qualifying examination or process' (http://catalog.missouri.edu/academicdegreerequirements/doctoralrequirements/).

The qualifying examination (QE) is committee-based. The student is expected to take the QE by the end of the third academic semester. The student must provide the completed request form (see Appendix 3) to the IDSI office at MUIIGraduateProgram@missouri.edu to schedule the QE at least two weeks prior to the planned examination date. The advisor will work with committee members and IDSI office to schedule the examination date. **The request form must have the following parts: (1) summary of course work and a draft of D-2 form (Doctoral Plan of Study), and (2) a 1-page research statement.** The IDSI office will forward

the approved application to the advisor, the DGS, and committee members within three business days after submission.

While the structure of the qualifying exam may vary somewhat given the advisor's preferences, IDSI exams typically involve the following components:

Coursework Evaluation: The committee will obtain comments from course instructors and evaluate the quality of coursework based on grades received and instructor's comments.

Presentation of Research Statement: Unless advised otherwise by their committee chair, the student will prepare a short presentation about the research articulated in their research statement. This presentation normally shouldn't exceed 30 minutes so that the committee has time to conduct the other elements of their examination.

Oral Examination: The committee will prepare QE questions based on the 1-page research statement submitted by the student. The scope of the questions may be directly or indirectly related to the topics listed in the statement. This examination is intended to evaluate breadth and depth of the understanding the student has of fundamental informatics problems and potential solutions. The length of the exam shall not exceed two hours and is closed to the public.

Outcomes: The student will receive one of the following three possible results for the QE immediately following completion of the examination: pass, conditional pass, or fail. If the student fails the exam twice, the student will be dismissed from the program.

Outcome 1 – Pass: The student and IDSI office (MUIIGraduateProgram@missouri.edu) will receive a written report by the committee, addressing the committee's concerns, if any, and an explanation of identified strengths and/or weaknesses of the answers expressed within one week of completion of the QE. Upon successfully passing the QE, the advisor must submit the Qualifying Examination Results and Doctoral Committee Approval Form (D-1 Form) to IDSI within one week of the examination date. The student and advisor will receive a confirmation e-mail from IDSI when the form has been submitted to the Office of Graduate Studies.

Outcome 2 – Conditional Pass: The committee has concerns but believes the student can overcome the reasons for the concerns through one or more of the following activities: by reading additional papers/books, taking additional courses, and/or other actions identified by the committee for further improvement. A written report with clear action and assessment plans for the student will be sent to the student and IDSI office (MUIIGraduateProgram@missouri.edu) within one week following the QE. The student must fulfill the requirements according to the action plan provided by the committee within the timeframe specified in the action plan to remain in good standing.

Outcome 3 – Failed: The student did not meet the committee's minimal standard regarding qualifications to undertake studies at the Ph.D. level. A written report with clear action and assessment plans for the student will be sent to the student and IDSI office (MUIIGraduateProgram@missouri.edu) within one week following the QE. The student will

have one opportunity to retake the examination, and this retake must be within six months of the original examination date.

If the student cannot meet the timelines for Outcomes 2 or 3, the student will need to seek an exception in writing. Exceptions will only be made for catastrophic personal circumstances. The MUIDSI Education Committee will be the final arbiter of the exception. Although the student's advisor will be consulted in making this decision, the advisor will not be allowed to submit a letter on behalf of the student. This places the burden for managing the exception on the student.

Plan of Study (D-2) should be reviewed during the QE process and submitted no later than one (1) month after the QE passing date. The student must substantially complete the course work outlined in the Plan of Study to the satisfaction of the doctoral program committee and the Office of Graduate Studies before being declared ready for the comprehensive examination.

## Pre-comprehensive exam phase – Phase 2

# Comprehensive Exam

A doctoral student must successfully complete the comprehensive examination within a period of five years, beginning with the first semester of enrollment as a Ph.D. student. The IDSI Comprehensive Examination (CE) is a two-stage process, which includes a research proposal submission (written portion in R01 format) and an oral CE.

### Request

To begin the CE process, students must submit a Comprehensive Exam Request form, along with the written proposal and required publications (see below). The advisor will work with the committee and IDSI office to finalize the examination date. The Institute will forward the proposal to the dissertation committee within two business days and schedule an examination date no sooner than 4 weeks and no later than 6 weeks. The student, advisor, and committee members will receive a confirmation e-mail from IDSI office upon finalization of the examination date.

### Publication requirement

To schedule the comprehensive exam, the student must provide with the Comprehensive Exam Request Form either a) a PDF copy of a published, first or joint-first authored, manuscript in a peer-reviewed journal or conference or b) PDF copies of two or more co-authored published peer-reviewed journal or conference publications or c) A first or joint-first authored manuscript draft along with an email from a journal editorial office indicating that the manuscript is accepted. For publications in conference proceedings, the manuscript must be

a full paper (6 or more pages). Written requests (including a clear publication plan) for exceptions to this policy will be considered on a case-by-case basis by the IDSI Education Committee.

## Research Proposal

The student should follow the guidelines of an R01 proposal (http://grants.nih.gov/grants/funding/r01.htm) for the organization and content of the comprehensive exam proposal (i.e., summary, narratives, research plan, and references). It is also acceptable for the student, with the approval of their advisor and committee members, to prepare a full-length research proposal (minimum page length of 12 pages) following guidelines of agencies such as USDA, NSF, and others.

The committee will review the proposal and decide if its quality is satisfactory. If the proposal is deemed satisfactory with no more than one dissenting vote, the student will receive written feedback from the committee within two weeks after receiving the CE confirmation e-mail from IDSI. If the proposal is deemed unsatisfactory, the student and IDSI office will receive written notification of the concerns of the committee from the advisor. If unsatisfactory, the student must submit a revised proposal no sooner than 12 weeks after receiving the written notification. A student may only resubmit one time. Failing a second time will result in dismissal from the program.

## Oral CE

The first part of the oral CE is open to the public and will be advertised by IDSI. The student will provide an oral presentation on the research proposal. The student's advisor will determine the precise format of the presentation. The Dissertation Committee will ask questions related to the research proposal in general. The questions will not be limited to the feedback provided by the committee prior to the oral examination. Potential questions include, but are not limited to, the student's preliminary research results, research design, technical approach, and the next phase of the student's research. The second part of the exam is closed to the public, with only the dissertation committee and the candidate in attendance. Immediately following the public portion of the defense, the committee and student will continue the defense in private. The full committee will then meet in closed session to vote on whether the student has passed. The entire oral CE is expected to take 2-3 hours.

There are two possible outcomes from the CE.

(1) If the committee determines that the examination is satisfactory, with no more than one dissenting vote, the advisor (dissertation committee chair) will submit the D3 Form to the DGS, who will then submit it to the IDSI office in advance of the one month Office of Graduate Studies deadline.

(2) If the examination is unsatisfactory, the committee, in consultation with the DGS, will provide a written report to the student indicating key issues identified, provide advice for addressing the issues, and set a timeframe for retaking the oral examination. The student must wait at least 12 weeks before retaking the oral exam. Failing the CE a second time will result in dismissal from the program.

Students who pass the CE will enter into their doctoral candidacy, and should register for INFO INST 9090 for all future research hours.

## Dissertation Defense – Phase 3

# Scheduling

To schedule the dissertation defense, the student must submit the Dissertation Defense Request Form along with the required publication information (see below). The doctoral dissertation defense must be scheduled no sooner than seven months after successful completion of the CE (http://gradschool.missouri.edu/policies/doctoral/requirements/dissertation.php). The dissertation itself must be written on an informatic 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.

# Publication requirement

In addition to the Dissertation Defense Request Form, the student must provide the following: a) a PDF copy of an accepted or published manuscript in a peer-reviewed journal or conference proceeding that they first authored (or joint-first authored), and b) a PDF copy of an additional manuscript published, accepted, or submitted to a peer-reviewed journal or peer-reviewed conference that they first authored (or joint-first authored). In the event the manuscript be in the accepted or submitted stage, proper documentation of its status must be provided (i.e., submission receipt, editorial correspondence). Written requests (including a clear publication plan) for exceptions to this policy will be considered on a case-by-case basis by the IDSI Education Committee. [approved Dec. 10, 2018]

# Dissertation

Students are encouraged to actively communicate with the dissertation committee while they are working on their dissertations. The dissertation defense process begins when the candidate submits a draft of the dissertation with the consent of the advisor and an official e-mail request to the Institute MUIIGraduateProgram@missouri.edu. The advisor will work with committee members and the IDSI office to schedule the examination date. The Institute will electronically forward the dissertation draft to the committee within two business days and advertise a defense date, that is at least two weeks from the date the committee receives the electronic dissertation draft. The student will supply a paper copy to those committee members who request a copy. The candidate must be enrolled to defend the dissertation, which can only be defended when MU is officially in session.

## Dissertation Defense

The examination consists of two parts - one part open to the public and one part closed. The entire defense is expected to be 2-3 hours.

(1) The open section of the defense will be an oral presentation to the public audience by the candidate with a question-and-answer period following. The student advisor will determine the precise format of the presentation.

(2) The second part of the exam is closed to the public, with only the dissertation committee and the candidate in attendance. Immediately following the public portion of the defense, the committee and student will continue the defense in private. The full committee will then meet in closed session to vote on whether the student has passed.

For the dissertation to be successfully defended, the student's doctoral committee must vote to pass the student on the defense with no more than one dissenting or abstaining vote. Failure of the dissertation defense will result in dismissal from the program.

Once the defense is completed satisfactorily, the committee chair will submit results (the D-4 form) to the IDSI office. The IDSI office will then submit the D-4 form to the Office of Graduate Studies. The candidate will revise the dissertation draft based on the committee's feedback before submission to the Office of Graduate Studies.

# IDSI Policies

## Obtaining an M.S. or Graduate Certificate in Data Science and Analytics

MUIDSI encourages PhD students to utilize core data science courses to obtain a Graduate Certificate. Courses required for the certificate may also be counted towards the doctorate. Certificate requirements can be found on the MUIDSI website. Students interested in the Graduate Certificate should inform the informatics academic advisor.

Students may also, with the consent of their advisor, add the M.S. in Data Science and Analytics to their current PhD plan of study. Adequate progress in research must be met before completing the master's degree. Progress is defined as publishing one first-author paper and completing the Comprehensive Exam. Students who wish to obtain their M.S. will enroll in the Case Study/Capstone as the culmination of their master's work. This will have a data science focus that is outside their PhD research.

# Academic Probation & Dismissal

At the end of each semester, graduate students with a cumulative GPA below 3.0 are placed on probation. If at the end of the following semester the cumulative GPA is 3.0 or better, the probationary status is removed. A student on probation failing to raise the cumulative GPA to 3.0 may be allowed a second probationary semester. A student is subject to dismissal upon failure to raise the cumulative GPA to 3.0 by the end of the second probationary semester, or at any time a semester/term or cumulative GPA falls below 2.0. In addition, an advisor may recommend, with the agreement of the Director of Graduate Studies, to place a student on probation for failure to make adequate degree progress.
Note: Summer session is not counted as a semester.

https://gradstudies.missouri.edu/policy/probation-termination-and-appeals/)

# Extensions

When there has been unsatisfactory progress with respect to meeting university-wide Office of Graduate Studies time to degree limits, the student may file a written request for an extension with the Associate Vice Chancellor for Graduate Studies, explaining why they were unable to meet the milestone in the allotted time and providing a timeline for completion of the program. The Director of Graduate Studies and the student's major advisor must endorse the extension request. If an extension is granted, the student will be given a specified period of time to correct the deficiency. Denial of an extension request is final and binding. Please contact the Office of Graduate Studies for more information.

# Appealing a Dismissal

If the student decides to appeal the program dismissal, the appeal process will take effect through the same committees as the original decision; a letter from the student to the Director of Graduate Studies for the program will initiate the process. As long as a student is in an appeal process, the student should maintain enrollment and continue working on degree program requirements. Students must complete the program appeal process prior to considering an appeal to the Graduate Faculty Senate. If the student does not appeal the program's dismissal, the Office of Graduate Studies will send the student an official notice of dismissal from the program. (Graduate Catalog, http://gradstudies.missouri.edu/academics/progress/probation-termination.php)

# Leave of Absence

It will be the responsibility of the student to resolve all issues pertaining to their support (e.g., GRA, GTA, Fellowship or Scholarship) with their advisor or other relevant authority prior to taking an approved leave of absence. These issues include the date when support will be terminated and whether or under what conditions the student will be reinstated for support

upon their return. Prior to the completion of the Leave of Absence, the student must notify the program's Director of Graduate Studies (DGS) and the Office of Graduate Studies so that the reentry process can be initiated.

A graduate assistant unable to fulfill the duties of his or her appointment because of illness or injury shall notify the administrator of his or her major unit as soon as circumstances permit. Similarly, a graduate assistant unable to fulfill the duties of her or his appointment because of birth or adoption of a child shall notify the administrator of her or his major unit as soon as circumstances permit. The appointing unit may adjust the graduate assistant's workload duties as the assistant's physical circumstances reasonably dictate. If total absence from duties becomes necessary, the major unit shall hold the appointment, provided the graduate assistant is still enrolled, for a period of two months, or to the end of the appointment period or of the semester, whichever should occur first. The graduate assistant shall have the right to return to the assistantship, within the original terms of the appointment, at such time as he or she is able to reassume the duties of the position. (Graduate Catalog, http://gradstudies.missouri.edu/financials/assistantships-fellowships/leaves-of-absence.php ).

# Academic Integrity

The Office of Academic Integrity[1] states:

Academic integrity is the core set of values and principles that underwrites the very mission of the University itself: integrity, honesty, hard work, and the determination to translate personal and professional principles into behavior. It is a reflection of the students' experience here at Mizzou and is a measure of the very worth of their degree.

- For students, this ethic lies at the heart of the value of their degree. If they, or others around them, are not living up to a high standard of academic integrity, the worth of the education they are receiving (and the degree they will receive) is compromised.
- For faculty, a high standard of academic integrity will ultimately lead to greater heights of academic rigor and freedom among students, a better reputation for MU, and more positive patterns of interaction with the student population. We can generate a long-lasting academic focus among the faculty population that migrates to MU and the student population that passes through Mizzou.

**Article VI of the Faculty handbook**[2] states:

Academic dishonesty refers to any act that is intended to produce an academic assessment that is not commensurate with an individual's performance, or any act that is intended to unfairly assist or hinder an individual's academic efforts. Such acts include, but are not limited to, the following:

- Allowing the work of one person to be academically assessed as the work of another.
- Allowing academic credit to be assigned to work that was not performed.

[1] https://oai.missouri.edu/about/academic-integrity/
[2] http://facultycouncil.missouri.edu/handbook/article-6.html

- Unauthorized possession of resources (e.g., reserved library material, laboratory material, artwork, computer software, or medical excuses).
- Misrepresentation of an academic record (e.g., changing grades, failure to report work done at other institutions).
- Denial of access to resources (e.g., reserved library material, laboratory material, artwork, computer software) intended to be available to others.

All University System rules and regulations, including more information about academic honesty, can be found at the UM System's web site.

# Academic Honesty at IDSI

IDSI is committed to the highest standards of academic and professional ethics, including academic honesty. IDSI students are expected to adhere to standards outlined by the University System. A charge of academic dishonesty is serious and can have serious consequences if guilt is established. Discipline ranges from a warning to expulsion from the University, and students may receive a failing grade for the course or assignment in question.

# Student Resources

# Travel funds

Students are encouraged to apply for travel funds through the Graduate School's programs and student travel grants/awards by professional conferences prior to asking for travel support from IDSI. Budget permitting, IDSI students in good standing are eligible to apply travel assistance. Students presenting podium presentations may receive up to $1,200 per academic year; students presenting poster presentations are eligible for up to $800 in travel funds per academic year. For additional funding, students should request assistance from their advisors. For further information regarding student funding, please visit the IDSI website.

Students awarded travel funds must:

1. Have a peer-reviewed presentation at informatics-related conferences.

2. Promote IDSI by referencing IDSI's affiliation on the publication. The official wording should be "University of Missouri Institute for Data Science and Informatics."

Students must submit the IDSI Student Travel Authorization Form (Appendix 5) at least three weeks before the deadline for early registration. To receive reimbursement for IDSI travel, all receipts to IDSI office must be submitted no later than two weeks after travel.

# Resources and Facilities

IDSI can be found in multiple locations on the MU campus – Heinkel Building, Naka Hall, the Clinical Support & Education Building, and the Christopher S. Bond Life Sciences Center, all of which have well-equipped laboratories containing state-of-the-art instrumentation and computing facilities for informatics research. Major instrument

tation includes a Dell EM64T cluster system with 512 processors, an SGI Altix BX2 SMP server with 64 Itanium2 processors, and a number of DELL servers with multiple quad-core processors for computational research.

All IDSI students are assigned Unix shell accounts on **lindberg.muii.missouri.edu** for their informatics course work and personal website hosting. Up-to-date forms listed in this handbook can be downloaded through the Institute's website at https://muii.missouri.edu/serverForm.php.

IDSI has a variety of computing equipment, laboratories, and clinical settings available for instruction and research. These facilities, enhanced in conjunction with computing laboratories maintained by the campus, offer IDSI students a wealth of opportunity to access and utilize a wide range of research settings best suited for their instructional and research needs. All of the computer equipment is connected to departmental, campus and global networks, which provides ready access to the exploding world of information and computational resources. Institute information can be obtained by accessing the IDSI website at https://muidsi.missouri.edu/.

Library resources are available through extensive collections of books and journals housed in Ellis Library, as well as collections in the Engineering and Mathematical Sciences and Health Sciences Libraries at MU. The entire library catalog at MU (all library branches), as well as the other campuses of the University of Missouri System, are available online, and can be searched from any computer access point at the university.

# Maintenance of Good Standing Status

To receive all benefits, including travel funding, assistantship stipends, and departmental rewards, students are required to maintain good standing status. To be in good standing, students must fulfill all requirements of INFOINST 8087 and receive a grade of 'S'; participate in the annual Missouri Data Science and Informatics Symposium; and attend or participate in the spring Hackathon. Failure to complete any of the above-mentioned items could result in no longer being eligible for travel funding or the cessation and non-renewal of a current assistantship that is fully or partially funded by MUIDSI.

### Administrative Office

The MU Institute for Data Science and Informatics director and administrative offices are in suite 22 Heinkel Building. The administrative office is open Monday through Friday from 8:00 a.m. – 5:00 p.m.

## Mail

Official University business mail will be delivered to students' assigned mailboxes in Heinkel Building, Naka Hall, Life Sciences Building, the Clinical Support and Education Building, or other campus locations where student's advisor's research group is located. Please do not arrange for personal mail to be sent to your campus address.

## Telephones

When dialing an MU phone number using a campus phone, dial the last five digits of the number you are trying to reach. For example, if you are trying to reach the IDSI office at 882-9007, dial "29007" to be connected. To reach university numbers that begin with 771, dial all seven numbers.

To make local, off-campus phone calls, first dial "9", followed by the seven-digit phone number you are trying to reach. Long distance phone calls must be placed by IDSI staff or faculty and calls must be for university business.

## Photocopies

Photocopy machines in 22 Heinkel Building and in Clinical Support and Education Building CE727 are provided for copying class-related materials only, and personal items may not be copied. The copiers require an access code for use; to obtain a code, see IDSI staff.