SECTION OF
BIOMEDICAL INFORMATICS
&
DATA SCIENCE

HEALTH SCIENCES INFORMATICS

DOCTORAL
HANDBOOK

2022

❖ The Biomedical Informatics and Data Science (BIDS) Mission

The Biomedical Informatics and Data Science (BIDS) section is an interdisciplinary, academic section in the School of Medicine uniting a wide range of resources and expertise in health sciences information management, communication, and technology. Through education, research and service activities, the BIDS section seeks to advance the development and use of information technology for decision-making, research, health care delivery and individual academic growth, and to increase the awareness of these resources among the Johns Hopkins health sciences community. Examples of the current research areas in the BIDS section include medical informatics, information management, consumer health informatics, computer-based documentation systems for point-of-care, informatics and evidence-based medicine, biomedical editing and communication, and public health informatics.

The BIDS section is home to several academic programs and opportunities:

- The Postdoctoral Fellowship in Biomedical Informatics & Data Science
- The PhD in Health Sciences Informatics (HSI)
- The Master of Science in Health Sciences Informatics Research
- The on-campus Master of Science in Applied Health Sciences Informatics
- The on-line Master of Science in Applied Health Sciences Informatics
- The Post Baccalaureate Certificate in Clinical Informatics
- "Special Student" course enrollment for Staff, Faculty, Fellows, and Residents at Hopkins

Although these programs have overlapping curriculum, important distinctions exist in requirements for both admission and completion of the PhD degree. We strongly advise students to familiarize themselves with the detailed requirements of the PhD program outlined in this handbook and on BIDS' website prior to matriculation.

❖ HSI PhD Program Governance

Administration

The core administration team manages the day-to-day operation of the Health Sciences Informatics (HSI) PhD program. The Program Director will be key in several decision-making processes as discussed throughout this document. The Program Director may delegate course-related decisions to the Associate Director for Admissions & Advising. The Academic Program Administrator will assist the PhD students with all academic matters and serve as a point of contact for any inquires to the program (e.g., listed as the contact person for the PhD program on the website). The Administrative Coordinator will help students in coordinating logistical issues and scheduling meetings with the Program Director or other faculty members as needed.

The core administration of the HSI PhD program includes the following faculty/staff members:

- Hadi Kharrazi *MD, PhD, FAMIA, FACMI*, Program Director (kharrazi@jhu.edu)
- Edward Bunker *MPH, MSc,* Associate Director for Advising (ebunker@jhu.edu)
- Susan Kerfoot *PhD, MPA,* Academic Programs Manager (smroz@jhmi.edu)

- Stacey Counts, *BS*, Senior Administrative Coordinator (sszczyp1@jhmi.edu)

The Executive Committee

Routine decisions concerning student affairs and the daily operations of the program are made by the Program Director, Academic Programs Manager, and the Associate Director of Advising in conjunction with the Executive Committee, and in alignment with the policies set forth by the School of Medicine Graduate Programs, Office of Graduate Biomedical Education. The Program Director reports to the Chair of the BIDS section on important financial and administrative matters. The Executive Committee also serves the function of Admissions Committee for the PhD program. Regular meetings of the BIDS staff ensure that revised policies and procedures are quickly adopted or updated, and student concerns are promptly addressed.

The Advisory Board

The BIDS advisory board members are made up of experts in the field of informatics, health IT, and related fields in the academic, private and government sectors. The advisory board meets on an ad hoc basis to discuss long term program planning in this rapidly evolving field.

❖ HSI PhD Program Overview and Structure

Overview

The HSI PhD program offers the opportunity to participate in groundbreaking research projects in clinical, population, and public health informatics at the Johns Hopkins School of Medicine. The program seeks excellence and commitment in its students to further the prevention and management of disease through the continued exploration and development of health information technology. Section resources include a highly collaborative clinical and research faculty committed to research at the patient, provider, and system levels. The admission process is highly selective and finely calibrated to complement the expertise of faculty mentors.

Areas of Research

Areas of faculty research in the HSI PhD program include, but are not limited to, the following:

- Clinical decision support
- Clinical vocabularies
- Computer models for disease prevention & management
- Diagnostic excellence and error
- Health information exchange
- Health IT for care transition
- Human–computer interaction
- Patient quality & safety
- Population health informatics
- Public health informatics
- Precision medicine
- Radiation oncology informatics
- Real-time biosurveillance
- Research Informatics

- Simulation
- Social services informatics
- Translational bioinformatics

Overall Program Structure/Timeline

At the time of admission, PhD applicants will be matched with at least three faculty members, who will mentor separate research rotations with the PhD student in the first year of the program. These faculty members are assigned at the time of admission based on mutual interests and interviews. Before joining the program, accepted applicants may take preparatory online courses and discuss interests with matched faculty members. Predoctoral students will go through a 4-year training program (*Figure 1*).

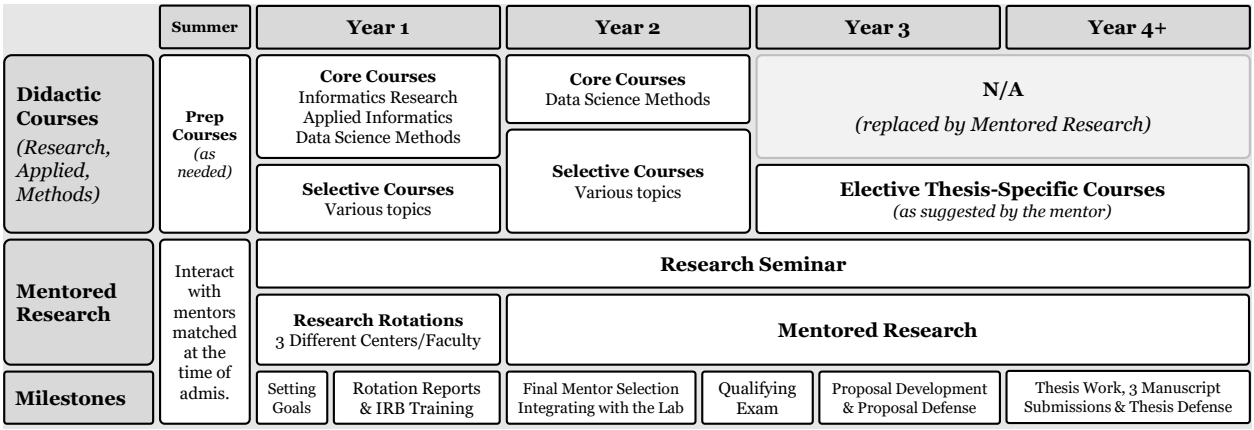

Figure 1. Overall timeline of the HSI PhD training program

Year 1: In year 1, predoctoral students take the core courses, which are grouped as informatics research, applied informatics, and data science methods courses. Predoctoral students also take selective and elective courses based on their area of research and often recommended by their mentors. The selective courses provide the opportunity for students to familiarize themselves with topics specific to their thesis research or exposes themselves to other research topics if interested. Predoctoral students are enrolled in a research seminar course throughout the first year, which continues until the end of their training. The students also conduct a research rotation with each of the matched mentors in year 1 giving the opportunity to learn more about their research interests and develop potential ideas for a thesis topic. All students should receive IRB, HIPAA, conflict of interest (CoI), and ethics training in year 1. [NOTE: As of 2022, all SOM PhD students are required to take a Methods in Bioethics Course.]

Year 2: In year 2, students take a lighter load of core courses focusing on data science methods. Trainees take additional research/thesis-specific courses that match their research interest. Students continue attending the research seminar in year 2. Trainees are matched and placed in a mentor's lab/center to start their mentored research. Predoctoral students work toward narrowing down ideas for their proposal in addition to preparing for the PhD qualifying exam (end of year 2).

Years 3 & 4: In years 3 and 4, predoctoral students take additional courses as recommended by their mentors. These courses are often advanced data science courses or domain-specific courses needed for a thesis topic. Students continue participating in the research seminar. Predoctoral trainees are

required to sign up for mentored research, expend most of their research effort in the mentor's lab/center while having the opportunity to participate in research conducted in other labs/center, and work on their proposal and, eventually, their thesis. Predoctoral students should defend their proposal in year 3 and the final thesis dissertation by the end of year 4. All thesis-derived manuscripts should be submitted for peer-review by the end of the 4th year. If additional years are needed to finish the thesis project, funding should be provided by the primary mentor or a combination of the dissertation committee members.

Predoctoral applicants often have different expertise or prior trainings, thus the overall timeline and curriculum will be customized and adjusted based on their needs/background. Most courses are "selective", and students/mentors can choose from a list of available options. Core courses can be customized or waived after the student/mentor's request is reviewed and confirmed by the Program Director. Waived courses are often replaced with independent studies and additional research rotations as needed. Waived courses cannot be used to shorten the overall length of the PhD program, unless approved by the Program Director.

General Johns Hopkins University-wide PhD Program Requirements

- Minimum of two consecutive semesters of registration as a full-time graduate student.
    - *BIDS HSI PhD students must be full-time for the duration of their program.*
- Preliminary and/or Final Oral Examination.
    - *BIDS HSI PhD will need to pass both a preliminary oral exam (i.e., proposal defense in year 3) and a final oral exam (i.e., thesis defense exam in year 4)*
- Dissertation approved by at least two readers; dissertation should be certified by readers to be a significant contribution to knowledge and worthy of publication.
- Graduation can proceed only after the program certifies that all requirements of the PhD degree have been fulfilled.
- Submission of a dissertation to the library that adheres to the Doctor of Philosophy Board Dissertation Guidelines.

BIDS HSI PhD Program Requirements

Students wishing to prepare themselves for careers as independent researchers in HSI, with applications' experience in informatics across the healthcare life cycle, should follow the BIDS section's PhD program requirements:

- A student should plan and successfully complete a coherent program of study including the core curriculum, oral examination, and additional requirements of the PhD program. Doctoral candidates in BIDS are also expected to take advanced elective courses as suggested by the mentors and approved by the Program Director. In the first year, three research rotations are strongly encouraged to complement the required and elective / selective courses. The PhD requirements, as well as the qualifying exam should be completed by the end of the second year. Doctoral students are generally advanced to PhD candidacy after passing the oral qualifying examination. A student's academic advisor has primary responsibility for the adequacy of the program, which is regularly reviewed by the Executive Committee of the PhD program.

- To remain in the PhD program, each student must receive no less than a B in core courses and must attain a grade point average (GPA) of 3.0. The student must fulfill these requirements and apply for admission to candidacy for the PhD by the end of the second year. In addition, reasonable progress in the student's research activities is expected of all doctoral candidates.

- During the third year of training, each doctoral student is required to present a proposal seminar that describes evolving research plans and allows program faculty to assure that the student is making good progress toward the definition of a doctoral dissertation topic. By the end of the third year, each student must orally present a thesis proposal to a dissertation committee that generally includes at least one BIDS faculty (preferably a member of the Executive Committee of the HSI program). The dissertation committee determines whether the student's general knowledge of the field, and the details of the planned thesis, are sufficient to justify proceeding with the dissertation.

- As part of the training for the PhD, each student is required to be a teaching assistant for two BIDS courses approved by the Executive Committee; one should be completed in the first two years. This requirement excludes assisting with teaching courses outside of BIDS (e.g., TA a course in JHSPH); however, such commitments should be coordinated with the research mentor of the PhD student and written permission should be acquired from the Program Director.

- Prior to the oral defenses, either the proposal or the final thesis defense, each student must secure the agreement of a member of the program faculty to act as dissertation advisor. The oral defense committee must consist of five faculty members, at least two of whom are from outside the program. The thesis committee comprises the principal advisor, who must be either an active member of the BIDS program or an approved non-BIDS faculty member. Thesis committees must meet formally at least annually. Upon completion of the thesis research, each student must then prepare a formal written dissertation, based on guidelines provide by the Doctor of Philosophy Board of the University.

- Oral examination is required upon completion of the dissertation. The oral defense of the final dissertation will follow a procedure similar to the proposal defense.

- The student is expected to demonstrate the ability to present scholarly material orally and present the dissertation research in a lecture at a formal seminar, lecture, or scientific conference.

- The dissertation must be accepted by a reading committee composed of the principal dissertation advisor, a member of the PhD program faculty, and a third member of the thesis committee. All University guidelines for thesis preparation and final graduation must be met.

- The Executive Committee should document that all PhD requirements have been met before permission is granted for graduation.

- Doctoral students will not be receiving a master's degree as part of the PhD program.

- PhD students should not purse a separate master's degree during the HSI PhD. Rare exceptions may be granted by the Executive Committee on a case-by-case basis.

❖ HSI PhD Curriculum & Courses

Curriculum Principles

The curriculum is founded on four high-level principles:

- Balance between theory and research, and between breadth and depth of knowledge, through a mix of research and practical experiences and a mix of curricular requirements.
- Creating the curriculum around student needs, background, and goals, and aiming at long-term competence using a combination of broadly applicable methodological knowledge, and a strong emphasis on self-learning skills.
- Placing emphasis on student and teaching quality rather than quantity, by concentrating on targeted areas of biomedical informatics, and by close student guidance and supervision.
- Developing leadership by modeling professional behavior locally and nationally.

The HSI doctoral curriculum integrates knowledge and skills from:

- Foundations of biomedical informatics
- Information and computer science
- Research methodology
- Quantitative methods (e.g., biostatistics)
- Specific informatics domains (e.g., clinical informatics, public health informatics)
- Practical experience such as experience with health information technology.

Course Requirements

Predoctoral students are required to take 16 core courses in years 1 and 2 of the program. The students also need to take at least 12 selective courses in years 1 and 2 of the program. Most courses are offered on a quarterly basis. The students will go through mentored research rotations in year 1 of their studies. Enrollment in doctoral research credits (or equivalent) continues and increases over years 2, 3 & 4. The curriculum of the PhD program remains customizable for PhD students depending on their background, educational needs, suggestions by their mentors, and technical skills. Additionally, some courses have prerequisites, especially data science courses that are offered as series (e.g., Methods of Biostatistics 1 to 4), thus requiring the customization of the curriculum for each trainee. Note that the credit hours calculated at JHSPH are based on quarters while JHSOM credits are calculated using semester-long courses. Due to complexities of calculating credit hours, students should work closely with the Associate Director of Admissions and Advising and their mentors to assure that all required courses/credits are taken for the fulfillment of the PhD degree.

The core curriculum includes informatics research, data science methods, and applied informatics courses (*Table 1*). The curriculum also includes a list of selective courses from a range of biomedical informatics domains. The first group of the selective courses provide a list of courses that introduce the trainees to more specialized BIDS domains. The second group of the selective courses provide a list of courses focusing on clinical research informatics. And the third group of the selective courses provide a list of courses focusing on public and population health informatics topics. Note that

selective courses can be replaced by other courses as seen fit by the student's mentor and approved by the Program Director.

Table 1. Curriculum for HSI Predoctoral Trainees

Course Type	Course No. (Dept.)	Course Title
Core	250.861 (GIM-BIDS)	Health Informatics Research Methods I to IV
Informatics Research	700.604 (SPH-HPM)	Methods in Bioethics
	250.860 (GIM-BIDS)	Informatics Seminar and Grand Rounds
4 in year 1	340.606 (SPH-EPI)	Methods for Conducting Systematic Reviews and Meta-Analyses
Core	250.953 (GIM-BIDS)	Introduction to Public Health & Biomedical Informatics
Applied Informatics	250.771 (GIM-BIDS)	Introduction to Precision Medicine Data Analytics
	250.782 (GIM-BIDS)	Observational Research with Observational Medical Outcomes Partnership
	250.952 (GIM-BIDS)	Leading Change Through Health Informatics
	250.777 (GIM-BIDS)	Clinical Data Analysis
4 in year 1	250.955 (GIM-BIDS)	Applied Clinical Informatics
Core	140.651-4 (SPH-BIOS)	Methods in Biostatistics 1 to 4
Data Science	340.751-4 (SPH-EPI)	Epidemiologic Methods 1 to 4
Methods	140.611-2 (SPH-BIOS)	Statistical Reasoning in Public Health I & II
	140.621-4 (SPH-BIOS)	Statistical Methods in Public Health I to IV
	140.646-9 (SPH-BIOS)	Essentials of Probability and Statistical Inference I to IV
	340.600 (SPH-BIOS)	Stata Programming
	140.620 (SPH-BIOS)	Advanced Data Analysis Workshop
	553.636 (WSE)	Data Mining
	601.675 (WSE)	Machine Learning
	601.676 (WSE)	Machine Learning: Data to Models
	601.682 (WSE)	Machine Learning: Deep Learning
	601.775 (WSE)	Statistical Machine Learning
	600.692 (WSE)	Unsupervised Learning: From Big Data to Low Dim. Representations
	340.728 (SPH-EPI)	Advanced Methods for Design and Analysis of Cohort Studies
	340.776 (SPH-BIOS)	Design and Analysis for Causal Inference with Time-Varying Expos.
	250.770 (GIM-BIDS)	Clinical Data Analysis with Python
	250.957 (GIM-BIDS)	Database Querying in Health
	140.751-4 (SPH-BIOS)	Advanced Methods in Biostatistics I to IV
	140.664-5 (SPH-BIOS)	Causal Inference in Medicine and Public Health I & II
4 in year 1	340.725 (SPH-EPI)	Introduction to Health Survey Research Methods
4 in year 2	410.615 (SPH-HPM)	Methods for Clinical and Translational Research
Selective	410.736 (KSAS-BIOT)	Genomic and Personalized Medicine (TBI)
Group #1	800.707 (SOM)	Bioinformatics
(Other BIDS domains)	800.707 (SOM)	Computational Biology and Bioinformatics
	580.429 (WSE)	Build a Genome
	140.636 (SPH)	Scalable Computational Bioinformatics
	600.34 (WSE)	Introduction to Genomic Research
	020.355 (KSAS)	Fundamentals of Genome Informatics
	390.750 (SPH-EPI)	Introduction to Clinical Research
	250.784 (GIM-BIDS)	Clinical Decision Support (CDS) Application Interoperability
	340.727 (SPH-EPI)	Research Design in the Social and Behavioral Sciences
	390.750 (SPH-EPI)	Introduction to Clinical Research
	250.756 (GIM-BIDS)	Informatics and the Clinical Research Lifecycle
	250.755 (GIM-BIDS)	Natural Language Processing in the Health Sciences
	340.727 (SPH-EPI)	Research Design in the Social and Behavioral Sciences
	250.901 (GIM-BIDS)	HSI: Knowledge Engineering & Decision Support
	250.750 (GIM-BIDS)	Health Information Systems: Design to Deployment
	250.783 (GIM-BIDS)	Imaging Informatics and Deep Learning
	250.778 (GIM-BIDS)	Implementing Fast Healthcare Interoperability Resources
	250.782 (GIM-BIDS)	Observational Research with Observational Medical Outcomes Partnership
4 in year 2		*Other courses as see fit by the mentor and approved by the Program Director*

Selective	340.728	(SPH-EPI)	Advanced Methods for Design and Analysis of Cohort Studies
Group #2	340.776	(SPH-BIOS)	Design and Analysis for Causal Inference with Time-Varying Expos.
(Clinical informatics	250.755	(GIM-BIDS)	Natural Language Processing in the Health Sciences
methods)	250.957	(GIM-BIDS)	Database Querying in Health
	140.751-4	(SPH-BIOS)	Advanced Methods in Biostatistics I to IV
	140.664-5	(SPH-BIOS)	Causal Inference in Medicine and Public Health I & II
	340.725	(SPH-EPI)	Introduction to Health Survey Research Methods
	410.615	(SPH-HPM)	Methods for Clinical and Translational Research
	250.770	(GIM-BIDS)	Clinical Data Analysis with Python
	250.783	(GIM-BIDS)	Imaging Informatics and Deep Learning
	600.692	(WSE-CS)	Advanced Topics in Machine Learning
	580.421	(WSE-CS)	Biomedical Data Science
	553.738	(WSE-CS)	Health Information Visualization
	250.784	(GIM-BIDS)	Clinical Decision Support (CDS) Application Interoperability
	340.725	(SPH-EPI)	Methods for Clinical and Translational Research
	140.751-4	(SPH-BIOS)	Advanced Methods in Biostatistics I to IV
4 in year 2			*Other courses as see fit by the mentor and approved by the Program Director*

Selective	309.631	(SPH-HPM)	Population Health Informatics (PHI)
Group #3	340.620	(SPH-EPI)	Principles of Clinical Epidemiology
(Public health	311.615	(SPH-HPM)	Quality of Medical Care
informatics)	301.615	(SPH-HPM)	Seminar in Health Disparities
	306.655	(SPH-HPM)	Ethical Issues in Public Health
	306.670	(SPH-HPM)	Issues in LGBTQ Health Policy
	313.643	(SPH-HPM)	Health Economics
	318.623	(SPH-HPM)	Social Policy for Vulnerable Populations in the U.S.
	300.650	(SPH-HPM)	Crisis and Response in Public Health Policy and Practice
	309.620	(SPH-HPM)	Managed Care and Health Insurance
	312.633	(SPH-HPM)	Health Management Information Systems
	340.770	(SPH-EPI)	Public Health Surveillance
	250.782	(GIM-BIDS)	Observational Research with Observational Medical Outcomes Partnership
	309.635	(SPH-HPM)	Population Health: Analytic Methods
	340.728	(SPH-EPI)	Advanced Methods for Design and Analysis of Cohort Studies
	300.715	(SPH-HPM)	Advanced Research and Evaluation Methods in Health Policy
	309.716	(SPH-HPM)	Advanced Methods in Health Services Research: Analysis
	309.712	(SPH-HPM)	Assessing Health Status and Patient Outcomes
	305.684	(SPH-HPM)	Health Impact Assessment
	317.605	(SPH-HPM)	Methods in Quantitative Risk Assessment
	221.645	(SPH-IH)	Large-Scale Effectiveness Evaluations of Health Programs
	309.616	(SPH-HPM)	Methods for Health Services Research and Evaluation
	340.70	(SPH-EPI)	Epidemiologic Applications of GIS
	601.731	(SPH-EPI)	Spatial Analysis for Public Health
4 in year 2			*Other courses as see fit by the mentor and approved by the Program Director*

BIDS: Biomedical Informatics and Data Science; BIOS: Department of Biostatistics; BIOT: Biotechnology; EPI: Department of Epidemiology; GIM: General Internal Medicine; HPM: Health Policy and Management; KSAS: Krieger School of Arts & Sciences; SPH: School of Public Health; and WSE: Whiting School of Engineering

Selective courses that are suggested by the student mentor must be at the graduate level. Mentors may decide to add additional course work in years 3 and 4 (i.e., elective courses). Students should coordinate with the Program Director before enrolling in additional courses beyond the curriculum requirements. For students who have already completed some graduate work, we will compare that work with our requirements. If requirements are waived due to prior course work, we encourage students to take advanced work in that area. Research carried out during a previously earned master's degree cannot be applied to the PhD dissertation.

The core courses of the Health Informatics Research Methods (HIRM I to IV) are primarily designed for first year HSI PhD students. Students will learn research design and methods in health informatics (HIRM-I), learn key methods to analyze data and generate relevant findings (HIRM-II), write a scientific paper (HIRM-III) and a develop an NIH-style grant proposal (HIRM-IV).

Other Course Requirements

HSI PhD students should follow the same pre-matriculation guidelines as other graduate students including IRB submission, HIPAA training, and Research Ethics 1 and 2. PhD students must register for and complete the training program in Research Ethics. These face-to-face sessions are offered once each academic year – Part 1 in the fall and Part 2 in the spring. Dates are generally set in mid-September for the November session, and in March for the May session. It is important that students register as soon as they receive the notice from the program. Students who fail to take both sessions will not graduate until Research Ethics 1 and 2 are successfully completed.

❖ HSI PhD Research Training

Research Training Requirements

The HSI PhD program requires several training tasks to be completed throughout the 4 years. The training requirements tied with a course registration include the lab rotations in year 1, the optional research practicum (ME 600.805) in year 2, and the mentored research (ME 250.854) in years 2 to 4. Additionally, predoctoral students should pass a qualifying exam (end of year 2), a proposal defense (early in year 3) and a thesis defense (end of year 4) to become eligible for graduation. The dissertation should include 3 research manuscripts that focus on a given HSI research problem. The dissertation will also include additional sections such as an overall introduction to the topic and a conclusion at the end (in addition to the 3 manuscripts). The thesis topic should be considered within scope and qualify as an HSI research. Students should work closely with BIDS faculty serving on their research committee or the Program Director to ensure alignment of their thesis research topic with the HSI field to avoid conducting research on a topic that is not considered HSI.

Lab Rotations

At least three JHU faculty members are matched with each incoming predoctoral student. These faculty members review the applications, interview PhD applicants with similar research interests, and commit to potentially mentor/sponsor the top candidates. The predoctoral trainees should communicate with these faculty members during the summer months before matriculation to familiarize themselves with the faculty members' research. After starting the program in Aug/Sep, PhD students will conduct a lab/research rotation with all three faculty members, who are considered potential mentors. The first rotation begins up to four weeks after the beginning of the fall semester. This delay allows the student time to acclimate to JHU and to meet faculty individually and in a group during orientation and following seminar sessions. Rotations must be performed in the laboratories of HSI faculty members or others with permission from the Program Director.

Before the start of the academic year, HSI faculty are polled to ascertain at what point(s) during the year their labs can accommodate students. This information is disseminated to the students through the Associate Director for Advising. PhD students must secure the next rotation laboratory before the end of each rotation. Rotations typically span 3 to 4 months with summer rotations often being shorter than others as PhD students have a lower load of course work, thus can spend more time for the research rotation on a weekly basis. The last rotation should finish at least one month before the end of the first year. At the end of each rotation, both the mentor and the student will be asked to produce a short, written report/record of the activities undertaken and of any relevant

impressions. These reports will be considered when making a final match for a dissertation advisor at the end of Year 1.

In the last month of the first year, the PhD Program Director will discuss potential mentorship (and sponsorship) for years 2 to 4 of the PhD students with the three faculty members. Often, one faculty member volunteers to continue the research with the PhD student as a thesis mentor. If more than one faculty member is interested to mentor/sponsor a PhD student after year 1, the PhD student will have the choice to chose whom to work with in years 2 to 4. If none of these faculty members want to mentor/sponsor the PhD student, the Executive Committee will discuss various options available for the PhD student including locating a new faculty member with interest to mentor/sponsor the student in years 2 to 4, terminating the PhD program, or transferring to another program.

At the end of the first and second rotation periods, the trainees present at the PhD Seminar an oral presentation of their rotation or a poster presentation, depending on their preference. The students are advised regarding verbal and electronic presentations, how to compose effective slides and how to prepare a poster.

Mentored Research

After lab rotations are finished in year 1, students will continue working with one of their three potential mentors. Students will enroll in the mentored research course so that the work spend on research can be counted toward the program. The content and structure of the mentored research will be defined by the mentor and often does not need approval by the PhD program unless preferred by the mentor and/or the PhD student. Mentored research activities often start in year 2 and increases considerably in years 3 and 4 as the regular didactic course work tapers down by the end of year 2.

Oral Qualifying Exam

The aim of the qualifying exam is to ensure that the PhD student have gained sufficient knowledge from the course work and are ready to focus on their proposal/thesis. HSI PhD students will be eligible to participate in the oral qualifying exam at the end of year 2 after core courses are passed successfully. The qualifying exam does not focus on the student's thesis research. However, it is not uncommon for the committee to ask the student to discuss their research initially, before the examination begins. The examination covers the general principles of informatics as covered in the required coursework. The oral qualifying exam usually lasts 90 minutes and is attended by the student's mentor and at least two BIDS faculty members. The faculty members will ask 8 to 12 questions that will evaluate the integrative knowledge of the PhD student in approaching a research question. Faculty will evaluate the PhD student responses based on the overall approach proposed to address a given research problem. The outcome of the qualifying exam is either pass or fail. If the student fails the exam, they should reschedule another oral exam within 3 months but not earlier than 2 weeks from the date of the first oral exam. Student can take the qualifying exam up to three times. If a student fails all three exams, the Executive Committee will decide about next steps, which may include termination of the PhD studies for the student.

Oral Proposal and Thesis Defense Exams

HSI PhD students should pass a proposal defense in year 3 and a final thesis defense in year 4. The format of both exams will be somehow similar except for the final thesis defense providing an opportunity for the public to attend the student presentation during the oral exam. The purpose of the proposal defense is to ensure that the PhD student has a viable research topic to focus for the thesis work. Additionally, the proposal defense will enable the thesis committee to assess the readiness of the student to conduct the research (e.g., understanding the project's scope and timeline; knowing the methodology needed to conduct the research; being aware of the potential study limitations). The purpose of the final defense is to assess the PhD candidate's proficiency in the discipline, giving the student the benefit of a critical examination of his or her work by scholars outside the department or program, and to provide a means for extra-departmental monitoring of the academic quality of departments and programs sponsoring candidates. The oral exams often last two and half hours, and sometimes longer, with the first 45 minutes being allocated for introductions, reviewing student's performance, opening by the mentor, and the student's presentation. The rest of the session will include up to three rounds of questions by the committee members. The session ends with committee members making a final decision and reflecting the decision to the student with concreate suggestions for next steps.

Oral exam committees often consist of 5 members and 2 alternate members. Of the 5 committee members, 3 committee members and 1 alternate should be selected from a pool of HSI BIDS faculty. The advisor/mentor should notify the HSI Program with the names of the committee members. The Program Director will review and approve or ask for a change of committee members as seen fit. The Executive Committee selects the committee chairperson for the oral exam based on seniority of the committee members.

The Hopkins Dissertation Board allows one of three possible outcomes of the oral exam: unconditional pass, conditional pass, or fail. The HSI PhD Committee has developed the following guidelines. (1) Unconditional Pass: It is expected that most students will receive an unconditional passing grade on the oral exams. The student will then proceed to the next step with minor modifications to the proposal or dissertation. (2) Conditional Pass: The committee Chair or entire original committee should reconvene with the student to approve the fulfillment of conditions. The committee's final decision must be a pass or fail. Meeting with the committee members should take place within 3 months of the original exam. If extraordinary circumstances make it impossible to meet these two requirements, the Program Director should be consulted before the final result is reported to the student. Conditions may include a variety of tasks. For example, the committee can ask the student to read and understand material, or successfully complete a course covering areas in which s/he is unsatisfactory. The re-examination committee can have an additional member representing an area identified as weak. The student can be asked to write a paper addressing questions on a problem area. The paper would be distributed to the committee prior to the re-examination. (3) Fail: A failure at the students' first examination does not mean automatic dismissal. As stated in the Dissertation Board rules, there are three potential outcomes: (a) No further examination. (b) Re-examination by the same committee at a later date. A second failure will lead to dismissal. (c) Re-examination by a different committee at a later date. Reasons must be provided for the change in committee membership and the new committee must have representation from the old committee. A second failure will lead to dismissal.

Dissertation

The Dissertation Thesis is the main research deliverable of the PhD candidate. Often, a thesis idea comes out of project performed under a mentor, generalizing the work done there, which may involve formulating a new framework (e.g., needs formulation, knowledge representation, algorithmic), creating a generalized software environment, deploying into practice, or evaluating its effects in situ. A qualitative or quantitative evaluation is expected in every case, appropriate to the type of work performed.

Mentorship and Advising

Johns Hopkins University is committed to a culture of quality mentoring for all students. The Policy on Mentoring Commitments for PhD Students and Faculty Advisors provides mechanisms to support a climate of excellence in mentoring for PhD students; and the JHU Mentorship Commitments of Faculty Advisors and PhD Students outline mentoring expectations that should be discussed by advisors and their students. Our program ensures that these mentorship commitments are discussed regularly during the student-advisor mentoring meetings. Please see Appendix A for the "JHU Mentorship Commitments of Faculty Advisors and PhD Students".

If students face a question or concern related to their thesis advisor/mentor, they should reach out to their Program Director, Associate Director for Admissions & Advising, thesis committee members, or the BIDS section chair to discuss concerns. Students may also reach out to the University Ombudsman for any conflict resolutions. Please see the Conflict Resolution Procedures in the Context of the Relationship Between Faculty Mentors/Advisors and Graduate Students for further information.

Johns Hopkins University requires every PhD program to have a policy in place whereby PhD students and their advisors discuss, at least annually, (a) the student's academic progress, future requirements, and next steps; (b) the student's professional development goals and any next steps; (c) how the advisor can be helpful regarding each. In accordance with this Policy on Annual Academic and Professional Development Discussions for PhD Students and Their Faculty Advisor, our program has developed the following plan:

Year 1 of the PhD program

In the first year of the PhD studies, the student advising will be conducted by the Program Director and the Associate Director for Admissions & Advising.

Years 2 to 4 of the PhD program

In years 2 to 4 of the PhD studies, the student advising will be mainly conducted by the research mentors/advisor; however, the Program Director and the Associate Director for Admissions & Advising will also continue to monitor/advise the student.

Schedule of PhD Advising

- **Annual Meeting with Thesis Mentors/Advisors**: In years 2 to 4, the students should have regular meetings (at least every 12 months) with their thesis mentors/advisors to discuss their overall aims and progress of their PhD studies. A modified version of the Annual Academic Progress and Professional Development Plan form is used to track the

progress of the PhD student (see Appendix B). The completed form will be shared with the BIDS staff to be stored in the student's records and shared with the Program Director. Mentors may require more frequent review meetings with the PhD trainees (e.g., every 3 months) as needed. Note that these meetings are specifically aimed at reviewing the overall progress of the PhD studies and ensure a successful professional development. Meetings to discuss day-to-day research activities/progress are not counted toward this requirement.

- **Thesis Committee Meetings**: PhD students should meet with all committee members at least once a year in years 2 to 4; however, a higher frequency may be recommended by the thesis mentor and/or other committee members.

- **Semi-annual Meetings with the Program Director**: Across all years of the PhD studies, the PhD Program Director will meet (in-person or online) the PhD students (and their mentors in years 2 to 4) once every 6 months. The meeting agenda includes reviewing the last Annual Academic Progress and Professional Development Plan (see Appendix B), reporting on current progress (e.g., courses, proposal, thesis), comparing the current progress with the planned items during the last meeting, and discussing next steps. Any immediate or long term needs of the students will also be discussed during this meeting. The PhD Program Director keeps a record of these meeting notes in a shared OneNote notebook (stored in OneDrive), which can be accessed by other BIDS PhD program staff members and the PhD student's mentor(s). The Program Director's notes do not follow a rigid structure; however, the notes contain current progress, next steps, and potential barriers in achieving the next steps.

- **Monthly Follow Ups by the Associate Director for Admission & Advising**: In addition to the quarterly meetings, the Associate Director for Admissions & Advising will follow up with all PhD students on a regular basis (at least once a month) to ensure a successful progression and transition between the course works and the research activities.

- **Annual Reviews by BIDS Executive Committee**: All PhD students are reviewed and discussed by the Executive Committee during the summer. The executive team includes the PhD Program Director, the chair of BIDS section, the director of BIDS' education, the Associate Director for Admissions & Advising, and the PhD program coordinator. If the executive team notices any lapse in progress, a meeting will be scheduled between the PhD student, his/her advisor/mentor, and the Academic Programs Administrator. Any notable laps in current progress will be discussed. The PhD student and his/her mentor shall provide a plan to actions before the meeting. A similar meeting will be scheduled once again in 6 months to follow up with the student and his/her mentor to track progress and assure compliance if needed.

Thesis Advisory Committee

Beginning in year 3, PhD students and their advisors must conduct yearly meetings with a thesis advisory committee. If this yearly meeting is not held, the thesis advisor's laboratory will be closed to future HSI students until the annual thesis committee convenes and the paperwork from the

meeting is filed in the HSI office. The Program Director will notify the thesis advisor of the laboratory's status in writing.

The thesis committee should include at least four members including the student's mentor (a.k.a., thesis supervisor, committee chairperson). Committee members are experts in fields related to the student's area of research and can contribute significantly to the direction of the research. At least one BIDS faculty (preferably a member of the Executive Committee of the HSI program) should be a member of the thesis committee. The thesis mentor will assure regular meetings, give student feedback on their progress, and, in general, act as the students' advocate if problems arise. After each meeting, the committee chair reports to the Program Director on the student's progress. Results become part of the student's file. The thesis committee meeting form can be found in the HSI academic office. The Associate Director of the PhD program will oversee compliance with this policy to assure timely completion of the degree requirements.

The initial research/thesis committee meeting should involve primarily a detailed discussion of the proposed thesis. The student should present to the committee, prior to the meeting, a written formal proposal for his/her thesis work. The format should be similar to that of a research proposal in an NIH grant application (individual National Research Service Award, 5-10 pages, doubled-spaced). A copy of each student's proposal is also kept on file by the Academic Programs Administrator. For students in subsequent years, the meeting should involve a discussion of both progress and plans for the future. The committee decides when the research is sufficient for completion of degree requirements.

It is expected that the thesis dissertation/research will be completed by the end of year 4. If the PhD studies go beyond the 4th year, the thesis committee meeting must be held every six months and a detailed plan of action to graduate the student must be written by the thesis committee and shared with the Executive Committee of the HSI PhD program.

Thesis Requirements

For a thesis to be acceptable, the student's thesis committee must agree that the student's research has reached a sufficient level of novelty and makes a significant contribution to the field to warrant a PhD degree. This usually occurs after three to four committee meetings. The student is now ready to write his/her thesis dissertation. The thesis must be read and approved by the thesis mentor and one other member of the thesis committee, preferably a faculty from the BIDS HSI program; these readers are known as the referees. Concurrently, the public thesis presentation is scheduled and must be given before the student is cleared for graduation. Along with other documentation required by the SOM Registrar's Office a formal letter of approval written by the referees must be submitted to the MA/PhD Committee.

❖ Other HSI PhD Policies

Financial Support of Students

Except where a PhD student receives complete financial support from outside of Johns Hopkins, the Section typically, provides a stipend, tuition and health and dental insurance for students through their first year of study. Near the beginning of the second year, the mentor assumes stipend support as well as individual medical and dental insurance for the student.

Transfer Students

HSI does not encourage the transfer of students. Students can only transfer into HSI from another institution through the normal admission process. These students must satisfy all the requirements of the program, including rotations. Under very special circumstances, students at JHU may transfer research training to a mentor within the HSI program and can be considered for admission to the program. If the student has completed all HSI required coursework, under certain conditions, they may be admitted as a second year or more advanced student after discussion with the PhD Director.

Evaluation of PhD Students

First year students are closely monitored by the Program Director, who is also the instructor of the Health Informatics Research Methods (HIRM) course. Students meet in person for a 3-hour class at least twice per week for the HIRM course. The Program Director will routinely follow up with the progress of all PhD students on a weekly basis (i.e., after each class). Grades on all examinations in the core courses are reported to the PhD Program Director. If a student has difficulty, the Program Director and/or the Associate Director will speak directly to the student.

Students must pass all core courses with a grade of B or better in all required classes. A student who receives a C in one core course must retake the course the following academic year. If a student receives two C grades they are generally dismissed from the program. The Executive Committee makes decisions regarding dismissal on a case-by-case basis.

At the end of the second year, the PhD students should pass the qualifying exam. The PhD students should also pass the proposal oral exam by the third year, and defend their final thesis by the end of the fourth year. The Program Director is kept informed of the student's performance on this exam.

Students are evaluated by their thesis advisors and their thesis committees. The thesis committee meets at least once a year to discuss the student's progress and plans for the future. After each meeting, the thesis chair completes and submits a form reporting on the progress of the student and the project. Thesis committee advisors, address any problematic issues. Any substantial change in the student's educational program (e.g., a plan to spend an extended period working in a laboratory at another university) must be approved by the Program Director. If thesis research continues past 4 years, the student and advisor will prepare a plan that includes a timetable for completion of the thesis. This plan must be approved by the thesis committee in the beginning of the fifth year. This plan is presented to the PhD Program Director by the student's advisor.

Students whose Faculty Advisors leave the University

Students whose thesis advisors have left the institution may continue their project at Johns Hopkins. It is the responsibility of the thesis advisor to find an on-site co-mentor for their student(s). Further, the thesis advisor must continue their financial obligations (stipend, insurances, and lab supplies) while the student remains at Johns Hopkins. Students who have chosen a mentor but have not completed their orals are expected to transfer to the new institution if they intend to follow their mentor. In some instances, students who have chosen a mentor, completed their orals and two full years at JHU may remain in the HSI program while carrying out research with their mentor at another institution. They are expected to return for yearly thesis committee meetings as well as to return to present the formal thesis seminar. Please check the School of Medicine Graduate School

website for the most recent information on policy and procedures as they are modified from time to time.

Leave of Absence

Students may apply for a leave of absence when medical conditions, compulsory military service, or personal or family hardships prevent them from continuing their graduate studies. A leave of absence will be granted for a specific period, not to exceed a total of two years. When placed on leave of absence, the student will be notified by the School of Medicine Registrar's Office.

During the leave period, a student may not be enrolled at another university, nor may they receive a stipend. Johns Hopkins cannot guarantee that financial support will be available when the student resumes his/her studies. Students on leave of absence must reapply for tuition assistance. Students on leave of absence need not register; no fees are charged during a leave of absence. The period of leave is simply regarded as an approved interruption of the degree program.

Any student on leave is required to have health insurance coverage. This is the student's responsibility and not an obligation of the graduate program or university.

The PhD Program Director will approve all requests for leaves of absence. Graduate students may request up to twenty-four months of leave of absence, when medical conditions, compulsory military service, or personal or family hardship prevents them from continuing their graduate studies. Financial difficulty alone does not warrant a leave. To be approved for a leave of absence, graduate students must provide the proper documentation for their given situation: (1) Medical Condition: a letter from a physician (this may be a letter from a clinician at the University Health Services or the University Mental Health Services), the Student Assistance Program, or the Office of Student Disability Services. (2) Military Duty: a letter or verification from the Armed Forces. (3) Personal or Family Hardship: a letter from the applicant describing the hardship.

During the leave period, a student may not be enrolled at another university. School of Medicine policy requires that health insurance be continued during the period of leave. Prior to requesting the leave of absence, it is recommended that the student contact the Health Insurance Coordinator in the Registrar's Office for information on how the leave will affect their health insurance coverage and premium responsibility. When on an approved leave of absence, there is no tuition charge; the period of leave is regarded as an interruption of the degree program.

A student on LOA may not make use of any School of Medicine services except University Health Services, University Mental Health Services, and the Student Assistance Program, provided insurance and health fees are being maintained. For students on medical leave of absence, School of Medicine policy allows the program/department to pay Health and Dental Insurance premiums and University Health Service fees for a period of up to one year if requested by the student. A student on a leave of absence who wishes to continue working at the School of Medicine must be hired through the Human Resources division of the department employing them. No exceptions can be made.

When the PhD Program Director has granted a leave of absence, a Time Status Change form must be completed and submitted to both the Associate Dean for Graduate Education and the Associate Dean/Registrar, who will modify the student's enrollment record.

When returning from a leave of absence, graduate students must submit documentation from one of the sources below explaining what progress has taken place during the student's absence that would enable him/her to be successful in completing the program upon their return: (1) Medical Condition: A Fitness to Return evaluation must be conducted by the Student Assistance Program prior to resumption of studies. (2) Military Duty: a letter or verification from the Armed Forces.

The program may determine the allowable time to complete degree requirements but in no case may that time exceed 6 years. Any approved leave of absence would not count toward the 6 years.

Please check the School of Medicine website for the most recent information on policy and procedures.

Diversity and Inclusion

The mission of Johns Hopkins Medicine is to improve the health of the community and the world by setting the standard of excellence in medical education, research, and clinical care.

Diverse and inclusive, Johns Hopkins Medicine educates medical students, scientists, health care professionals and the public; conducts biomedical research; and provides patient-centered medicine to prevent, diagnose and treat human illness.

Johns Hopkins Medicine provides a diverse and inclusive environment that fosters intellectual discovery, creates and transmits innovative knowledge, improves human health, and provides medical leadership to the world.

Policy on Abuse and Misconduct

The following is a set of recommendations for students should they experience any form of abuse, whether physical or psychological, or be victimized by misconduct from a person empowered with leadership responsibilities towards them (e.g., a JHU faculty member or project leader), a colleague, or a university staff person.

The course of action to be taken should be as follows: (1) Immediately discuss the problem with your thesis advisor, or alternatively, with the Chair of your thesis committee. For students who have not yet chosen a thesis advisor or committee, contact the PhD Program Director. (2) If option 1 is not acceptable or possible, or does not provide satisfaction, discuss the problem with any other member of the Executive Committee or the Academic Programs Administrator. (3) Students may also report the problem to the Associate Dean for Graduate Students Affairs or Johns Hopkins University Office of Equal Opportunity and Affirmative Action program to inquire about or make a complaint of sexual harassment or discrimination. University policy states: "The University is committed to maintaining learning and working environments that are free from all forms of harassment and discrimination; harassment based on an individual's gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sexual orientation, veteran status or other legally protected characteristic is prohibited".

- Professional confidential help services are offered by the University including mediation, counseling, support service, and medical care if needed, as listed here.

- JHU Emergency Resources: 410-516-7777 - can dispatch security and/or put you in touch immediately with professional medical and/or counseling care 24/7.

- JHU Student Health and Well-Being Office offers free, confidential counseling and support information regarding resources /referrals.

Whatever the path chosen to secure assistance, the student's problem will be given immediate consideration and will be treated in complete confidence. The BIDS section will make every effort to immediately rectify any problems of abuse or misconduct.

Registration requirements for PhD students

BIDS PhD students must register each semester from matriculation through graduation. A student's departure from the School of Medicine without an approved leave of absence will be deemed a permanent withdrawal from the student's program. If on leave, students are expected to provide the Registrar's Office and their program with an updated current address, and are expected to respond to all communications and mailings within the deadlines specified. Students who withdraw from their programs must be formally readmitted, at the discretion of the Chair of the program, before they may return to the School of Medicine. If readmitted, they need not pay a second application fee but must pay all outstanding fees. Failure to register by the published deadlines of the School of Medicine may be interpreted as a withdrawal from the program.

Change in Registration Status: Students may request a leave of absence. Students must obtain the signature of their program Chair, and the signature of the Director of International Student and Scholar Services if s/he is an international student before submitting their application for the change in status.

Mandatory University Health Services fee and Health Insurance

Students must be familiar with the School of Medicine's mandatory student Health Services fee as well as procedures for adopting or waiving the student health plan and with course registration procedures: http://www.hopkinsmedicine.org/som/StudentInsurance/Index.html

Course Registration Procedures for PhD students.

Please note that the BIDS Section is part of Johns Hopkins School of Medicine, and students' official academic records are kept by the School of Medicine Registrar. To keep records accurate and complete, all registration, including cross registration to other Johns Hopkins Schools must originate in the School of Medicine Registrar's Office.

Registration for fall classes takes place in mid-July each year. Because registration is paper based, BIDS will register all students for core courses for quarter 1 and 2. On arriving on campus or following a telephone advising session with the Associate Director for Admission and Advising, students will complete remaining course registration aided by Section staff.

Registration for year-long or semester long-courses takes place in July and December

Cross registration to other JHU schools will require an email giving permission from the course Instructor or Teaching Assistant. This is a requirement of the SOM Registrar, and the permission should be obtained regardless of whether the course instructor requires his/her permission for you to join the course. Submit the registration form to the School of Medicine's registrar's office along with the instructor's permission.

Please note that summer registration is required, and students should register for their Practicum (optional) during this time. Any add/drop of courses should be done at the midpoint of the School of Medicine quarter – which is 2 weeks after the first day of classes.

Please note all PhD students must register for the Summer Term.

Research Ethics Parts 1 and 2

In addition to the curriculum, students must register for and complete a two-part training program in Research Ethics. These face-to-face sessions are offered once each academic year – Part 1 in the fall and Part 2 in the spring. Dates are generally set in mid-September for the November session, and in March for the May session. It is important that you register as soon as you receive the notice from our office that each session is scheduled. Students who fail to take both sessions will not graduate until Research Ethics 1 and 2 are complete.

Grades and Transcripts

Please note that School of Medicine student grades do not appear in SIS. To obtain a copy of your transcript please request one from the Registrar's office, or contact your course instructor or TA for course grades

Grading Policy

At most, two courses with grades less than B- may be counted towards the coursework requirements. No course with grades less than C- may be counted. The overall grade point average of the courses counted towards the coursework requirements must be a 3.00 or higher (B average). At most, two independent study courses can be counted towards the course requirements.

Other than independent study courses, no courses with grades of S or Pass/Fail can be counted towards the coursework requirement. Courses with grades of S or Pass/Fail will not be included in the grade point average calculation.

Johns Hopkins School of Medicine does not allow credits to be transferred from other institutions.

A grade of D or F will result in probation; a second D or F would be cause for being dismissed from the program.

Please note that Summer and Winter Institute courses offered by the Bloomberg School of Public Health are not covered by your program tuition and will be an additional expense should you decide to register.

Further Questions

Please contact the PhD Program Director for any questions not covered in this handbook.

❖ Appendix

Appendix A: JHU Mentorship Commitments of Faculty Advisors and PhD Students

Appendix B: BIDS Annual Academic Progress and Professional Development Plan Form

JHU Mentorship Commitments of Faculty Advisors and PhD Students

This document outlines mentoring expectations of faculty advisors and of PhD students at Johns Hopkins University. These expectations should be discussed together.

❖ Faculty advisors should commit to the following responsibilities:

Training:

- The PhD advisor has the responsibility to mentor the PhD student. This responsibility includes committing to the training of their PhD student, building on the PhD student's individual professional background and in support of their individual professional aspirations.
- The PhD advisor has the responsibility to participate in ongoing and regular meetings with their advisees to discuss academic and research progress. The advisor and student should agree on expected frequency of and preparation for meetings and use meetings to brainstorm ideas, troubleshoot challenges, and outline next steps. The advisor should identify a co-advisor/mentor should the primary advisor be unavailable for an extended period (sabbatical, leave, etc.).
- The PhD advisor has the responsibility to participate in a formal annual meeting with the student to discuss academic progress and next steps in the academic program. This responsibility includes helping to ensure that the document summarizing this annual discussion is completed and submitted in accordance with program requirements.
- The PhD advisor has the responsibility to encourage their advisees to reach out, as relevant, to additional co-advisors or informal mentors.
- The PhD advisor has the responsibility clarify the student's funding package and to clarify any work and/or teaching expectations associate with the package.
- The PhD advisor has the responsibility to contribute to a training environment that fosters independent, scholarly research, and professional growth.

Research

- The PhD advisor has the responsibility to provide guidance in scholarly research. This responsibility includes helping to identify a workable research project and helping to set reasonable goals and timelines for research completion. The advisor should encourage the student to expand their skill sets and share ideas with others at Johns Hopkins and externally.
- The PhD advisor has the responsibility to monitor research progress. The advisor should encourage effective use of time. The advisor should meet regularly with the PhD student to hear updates on progress, results, and challenges in activities and research.

Professional development:

- The PhD advisor has the responsibility to discuss career development with the PhD

student, including in any number of sectors of interest to the student. PhD advisors should assist in identifying resources to further the student's professional goals.

- The PhD advisor has the responsibility to participate in a formal annual meeting with the PhD student to discuss professional development goals. The advisor should help to ensure that the document summarizing this discussion is completed and submitted in accordance with program requirements.
- The PhD advisor has the responsibility to nominate the student for relevant professional opportunities and try to connect their advisees to relevant professional contacts and networks.
- The PhD advisor has the responsibility to allow time outside of research for student engagement in professional development activities including, for example, skill building workshops, professional conferences, additional research collaborations, or other informational sessions.

Respectful engagement and well-being:

- The PhD advisor has the responsibility to treat their advisees, other students, and colleagues with respect at all times.
- The PhD advisor has the responsibility to commit to being available to meet with the PhD student. The advisor and the student should agree on expected frequency of and preparation for meetings, and expected timeframe for responding to emails and for providing feedback on work products. The PhD advisor should give their full attention during meetings and should reach out to PhD students who are not making contact.
- The PhD advisor has the responsibility to be supportive during both successful and discouraging periods of training.
- The PhD advisor has the responsibility to communicate in a respectful and constructive manner, including if the advisor has concerns that the PhD student is not meeting the expectations outlined in this document. This responsibility includes using concrete and specific language when providing suggestions or critiquing work.
- The PhD advisor has the responsibility to take an interest in the student's well-being, to listen to any concerns, and to connect the student, as appropriate, with additional resources.

Policies:

- The PhD advisor has the responsibility to become familiar with and respect University, school, and program policies for PhD students. The advisor will acknowledge all PhD student benefits and entitlements, including, as relevant, paid and unpaid leave.
- The PhD advisor has the responsibility to discuss with the student relevant policies, commitments, and expectations related to funding, work, research assistantships, teaching assistantships, sick leave, or vacation.

Responsible conduct:

- The PhD advisor has the responsibility to become familiar with university and professional codes of responsible conduct for PhD students. This responsibility includes reporting any possible violations as required to relevant parties, including to the relevant Dean's office and to the Office of Institutional Equity.

- The PhD advisor has the responsibility to discuss and help clarify authorship or intellectual property issues and appropriately recognize the student's contributions to any collaborative work.
- The PhD advisor has the responsibility to model professional behavior in both interpersonal interactions and in scholarly integrity.
- The PhD advisor has the responsibility to complete Title IX Training regarding sexual misconduct and sexual harassment as required by the University.

http://oie.jhu.edu/training/

Continuous quality improvement as an advisor:

- The PhD advisor has the responsibility to participate in mentor training and best practices discussions. This responsibility includes striving to be a better mentor and to learn tips and practices that improve their work and skills as an advisor.
- The PhD advisor has the responsibility to ask advisees for constructive feedback on mentoring. This responsibility includes doing their best to respond professionally to these suggestions and consider whether or how best to incorporate them into their mentoring interactions.

❖ PhD students should commit to the following responsibilities:

Training:

- The PhD student has the primary responsibility for the successful completion of their degree.
- The PhD student has the responsibility to familiarize themselves with academic milestones and to strive to meet all milestones within the expected timeframe.
- The PhD student has the responsibility to meet regularly with the PhD advisor. This responsibility includes providing the advisor with updates on the progress, outcomes, and challenges in coursework, research, and academic or professional activities. The advisor and the student should agree on expected frequency of and preparation for meetings, and will use meetings to brainstorm ideas, troubleshoot challenges, and outline expectations for work and timelines.
- The PhD student has the responsibility to participate in a formal annual meeting with the advisor to discuss academic progress and next steps in the academic program. The student should ensure that the document summarizing this discussion is completed and submitted in accordance with program requirements.
- The PhD student has the responsibility to seek additional mentors to expand their training experience, as appropriate.
- The PhD student has the responsibility to understand their funding package and to clarify any work and/or teaching expectations in line with this funding.

Research:

- The PhD student has the responsibility to work with the advisor to develop a thesis/dissertation project. This responsibility includes establishing a timeline for each phase of work and striving to meet established deadlines.

- The PhD student has the responsibility to seek guidance from their advisor, while also aspiring increasingly for independence.
- The PhD student has the responsibility to engage in activities beyond their primary research responsibilities. The student should attend and participate in any research-related meetings and seminars relevant to their training area.

Professional development:

- The PhD student has the primary responsibility to identify their professional goals and to develop their career plan following completion of the PhD degree. This responsibility includes familiarizing themselves with professional development opportunities within Johns Hopkins and externally. Students should identify specific activities to pursue that will advance their professional development and networking.
- The PhD student has the responsibility to prepare a Professional Development Plan annually that outlines their research and career objectives. This responsibility includes discussing this plan annually with the advisor. The student should ensure that the document summarizing this discussion is completed and submitted in accordance with program requirements.

Respectful engagement and well-being:

- The PhD student has the responsibility to treat the advisor, other mentors, and colleagues with respect at all times.
- The PhD student has the responsibility to make themselves available, within reason, to meet with the advisor upon request.
- The PhD student has the responsibility to communicate in a respectful and constructive manner if they have concerns that the advisor is not meeting the expectations outlined in this document.
- The PhD student has the responsibility to be open to constructive criticism by the advisor, other mentors, and colleagues.
- The PhD student has the responsibility, as possible, for their well-being, should consider discussing any concerns with the advisor or other mentor(s), and should connect with available resources when needed.

Policies:

- The PhD student has the responsibility to familiarize themselves and comply with University, school, and program-specific policies and requirements for PhD students.
- The PhD student has the responsibility to discuss with the advisor relevant policies, commitments, and expectations related to funding, work, research assistantships, teaching assistantships, sick leave, or vacation. As needed, the student will provide any documentation relevant to stated policies on leave and other requirements to the student's program, school, or the University.

Responsible conduct:

- The PhD student has the responsibility to conduct themselves in a responsible and ethical manner at all times.
- The PhD student has the responsibility to familiarize themselves with

University codes of responsible conduct for PhD students.

- The PhD student has the responsibility to engage in responsible research conduct. This responsibility includes completing the responsible conduct of research training requirements of their specific school and program, and any specific discipline training requirements (e.g., animal and human subject work). The student will maintain accurate and contemporaneous records of research activities in accordance with the norms of best practices in their own discipline. The student should discuss authorship and intellectual property issues with the advisor.
- The PhD student has the responsibility to complete Title IX Training regarding sexual misconduct and sexual harassment as required by the University.

http://oie.jhu.edu/training/

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BIDS Annual Academic Progress and Professional Development Plan Form

This Annual Academic Progress and Professional Development Plan document is meant to help you, a Johns Hopkins PhD student, reflect on and discuss with your advisor both (a) your academic and research progress and annual goals and (b) your professional goals, including your strengths, areas to explore, areas to improve, values, and plans. This form (or its equivalent) should be completed annually throughout your doctoral studies and discussed during an annual meeting with your advisor. This form is intended to be a springboard for conversation between you and your academic advisor or advisors. After the conversation has occurred, the student and advisor should sign this form, and each should then receive an electronic copy, as should your program if that is consistent with your program's policy.

Name: _____

Date: _____

Year of Matriculation: _____

Department/PhD program: _____

Advisor: _____

Advisor email address: _____

Co-Advisor (if applicable): _____

Co-Advisor Email address: _____

Academic goals and objectives

1. Share your academic and/or research progress, key milestones, and accomplishments from the past year.

2. What were any challenges related to your academic progress you faced in the past year?

3. What are the main academic and/or research goals you would like to accomplish in the upcoming year? Please be specific (e.g., complete specific coursework (named); complete literature review; complete specific areas of your research project)

4. What are specific actions you will take in the next year to meet these goals?

5. Do you anticipate any challenges in the next year in making academic or research progress or meeting your academic program or research project goals? What can be done to help reduce barriers in the coming year?

6. When do you expect to graduate? And what are key steps you plan to take to meet that goal? What are any challenges you anticipate in meeting that goal?

7. How can your advisor help you?

Career and Professional Goals

1. What are your long-term professional goals? e.g., What positions or responsibilities and in which sectors (academic, non-profit, policy, government, industry, other) appeal to you for 5-10 years after graduation? Which career options, tracks, or sectors do you want to learn more about? In answering this question, you may want to think about experiences you have had that have excited you or that you have particularly enjoyed. What about those makes you want to pursue or learn more about certain areas?

2. What shorter-term objectives may help you achieve those goals? E.g., are there specific skills you would like to acquire or improve? Are there courses, workshops, and experiences. that might be helpful in getting additional exposure, furthering, or better articulating, these professional goals?

3. What specific steps will you take in the next year to further these professional development goals?

4. Do you anticipate any challenges in meeting these professional development goals? Are there factors that could negatively affect your ability to pursue your short- or long-term professional goals?

5. How can your advisor help you?

Please make sure to consider the following competency areas while discussing the annual progress:

- Research/Scholarship
    - Broad knowledge of discipline
    - Key methods of discipline
    - Critical thinking of literature of field
    - Analytic skills
    - Creativity and innovation in thinking
- Writing
    - For a scholarly publication
    - For a lay audience, the media, or practitioners
    - Grammar/structure
- Oral communications
    - To a specialized or technical audience
    - To a lay audience, the media, or practitioners
- Leadership/Management
    - Providing constructive feedback
    - Leading and motivating others
    - Advocating for change
- Professionalism/interpersonal
    - Networking, seeking advice
    - Approaching difficult conversations
    - Professional ethics

    - Professional and respectful interactions
- Project management
    - Planning projects, breaking into parts, setting
    - timelines
    - Developing/managing budgets
    - Time management
    - Managing data, finances, and other resources
- Teaching
    - Course planning
    - Lecture delivery
    - Leading seminars/discussions
- Career Advancement
    - Developing/maintaining a professional network
    - Writing a job letter
    - Interviewing skills
    - Preparing a job talk
    - Negotiating salary and other job elements

Student: Please provide any additional comments you would like to share regarding your academic progress, professional goals, career plans, special concerns, or goals for the coming year.

Advisor: Please write comments about student progress, special concerns, goals, or other thoughts.

Date of meeting where conversation occurred about above:

Student signature _____ Date _____

Advisor signature _____ Date _____