Johns Hopkins School of Medicine
Division of Health Sciences Informatics

HANDBOOK

DOCTORAL,

MASTERS, AND CERTIFICATE

TRAINING PROGRAMS

2016

An electronic copy of this handbook can be found at:

http://dhsi.med.jhmi.edu/content/handbook.html

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Additional information about Johns Hopkins Medical Institutions and the University in general can be found at: http://dhsi.med.jhmi.edu/content/student_resources.html

THE DHSI MISSION

The Division of Health Sciences Informatics is an interdisciplinary, academic division 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 Division 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. Current research areas in the Division include medical informatics, genome informatics, information management, consumer health informatics, computer-based documentation systems for point-of-care, informatics and evidence-based medicine, biomedical editing and communication, and electronic publishing.

The Division is home to five academic programs

- The PhD in Health Sciences Informatics
- The Master of Science in Health Sciences Informatics Research (a 24 month program)
- The Master of Science in Applied Health Sciences Informatics (a 12 month program)
- The Master of Science in Applied Health Sciences Informatics – Online (15-36 months)
- The Post Baccalaureate Certificate in Clinical Informatics (this program is fully online)

Though all of these programs have curriculum in common, there are important distinctions in requirements for both admission and completion. We strongly advise students to familiarize themselves with the detailed requirements of their program outlined later in this handbook and on the Division website prior to matriculating, paying particular attention to the sections on research ethics, health insurance and registration.

PROGRAM ADMINISTRATION & GOVERNANCE

ADMINISTRATION
- Harold P. Lehmann, MD, PhD, Interim Director & Director of Training and Research; Professor, Health Sciences Informatics, Pediatrics and Health Policy and Management
- Kersti Winny, Academic Programs Administrator
- LaShawn Johnson Thomas, Administrative Assistant

THE DOCTORAL STUDIES COMMITTEE
The Doctoral Studies Committee develops the Division's curriculum and promotes the 2-year MS and PhD programs. It also functions as the admissions committee for the two year Master's and PhD programs, monitors student progress and addresses disciplinary issues as they arise. The

Executive Committee, described on page 5, reports to the Doctoral Studies Committee on administrative and financial matters of University policy as needed.

THE EXECUTIVE COMMITTEE

Routine decisions concerning student affairs and the daily operations of the program are made by the Director of Training & Research and the Academic Programs Administrator in conjunction with the Executive Committee. The Director reports to the Doctoral Studies Committee on important financial and administrative matters as they arise. The Executive Committee also serves the function of Admissions Committee for the Post Baccalaureate Certificate in Clinical Informatics and the 12 month Master of Science degree program. The Committee also serves as an inter-professional liaison committee with the School of Public Health and the School of Nursing. Weekly meetings of the Division staff ensure that revised policies and procedures are quickly adopted or updated, and student concerns are promptly addressed.

THE ADVISORY BOARDS

There are two Advisory Boards: Research Advisory Board for the PhD and Research Masters, and Workforce Board for the Applied Masters and the Certificate. The Advisory Boards are made up of experts in the field of informatics, health IT, and related fields in the academic, private and government sectors. The Boards meet on an ad hoc basis to discuss long term program planning in this rapidly evolving field.

RESEARCH ADVISORY BOARD

Greg Hager, PhD – Chairman, Department of Computer Science, Whiting School of Engineering
Elliot McVeigh, PhD – Massey Professor and Director, Department of Biomedical Engineering
Laura Morlock, PhD – Director DrPH Program, Health Policy & Management, Bloomberg School of Public Health
Daniel Naiman – Professor and Chair, Dept. of Applied Mathematics and Statistics, JHU & Whiting School of Engineering
Peter Pronovost, MD, PhD, FCCM – Professor, Depts. of Anesthesiology/Critical Care Medicine and Surgery, JHUSOM, Professor, Dept. of Health Policy & Management, JHSPH, Professor, SON, Medical Dir., Center for Innovation in Quality Patient Care, and Dir., Quality and Safety Research Group
Jonathan Weiner, DrPH - Professor of Health Policy & Management and Health Informatics; Director Center for Population Health Information Technology, Director PhD Program in Health Services Research & Policy, Director Public Health Informatics Certificate Program Program
Sara Wheelan, MD, PhD - Assistant Professor, Oncology Biostatistics & Bioinformatics, and Joint Appointment in the Johns Hopkins Bloomberg School of Public Health
Rai Winslow, PhD - Raj and Neera Singh Professor, Department of Biomedical Engineering

WORKFORCE PROGRAMS ADVISORY BOARD

Advisory Board
The Workforce Programs Advisory Board is currently being reconfigured.

THE PhD IN HEALTH SCIENCES INFORMATICS
Co-directed by Hadi Kharrazi, MD, PhD and Harold Lehmann, MD, PhD, the program offers the opportunity to participate in ground breaking research projects in clinical informatics at one of the world's finest medical schools. In keeping with the tradition of the Johns Hopkins University and the Johns Hopkins Hospital, 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 (IT). Division resources include a highly collaborative clinical and research faculty committed to research at the patient, provider and system levels. The admissions process is highly selective and finely calibrated to complement the expertise of faculty mentors.

AREAS OF RESEARCH:

Areas of faculty research include, but are not limited to, the following:

- Consumer informatics
- Telemedicine
- Ehealth
- Computer models for disease prevention & management
- Health Information Exchange
- Interactive Patient Education & Counseling
- Health IT for Care Transition
- Human–Computer Interaction
- Geriatric Health Information
- Patient Quality & Safety
- Population Health
- Research Informatics
- Social Services Informatics

UNIVERSITY REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY:

- Minimum of two consecutive semesters of registration as a full-time, resident graduate student. *HSI students must be full-time for the duration of their program.*
- Preliminary and/or Final Oral Examination. *HSI has a Preliminary Oral Exam after Year 1 or 2.*
- Dissertation approved by at least two readers and certified by them to be a significant contribution to knowledge and worthy of publication.
- Certification by a program that all requirements have been fulfilled.
- Submission of a dissertation to the library that adheres to the Doctor of Philosophy Board Dissertation Guidelines.

PhD PROGRAM DESCRIPTION

Students wishing to prepare themselves for careers as independent researchers in health sciences informatics, with applications experience in informatics across the entire health/healthcare life cycle, should apply for admission to the doctoral program. The following are specific requirements:

1. A student should plan and successfully complete a coherent program of study including the core curriculum, oral examination, and additional requirements of the Research Master's program. Doctoral candidates are also expected to take at least two more advanced courses. In the first year, two or three research rotations are strongly encouraged. The Master's requirements, as well as the oral examination, should be completed by the end of the second year in the program. Doctoral students routinely will not be receiving a master's degree on their way to the PhD; particular exceptions will be decided on a case-by-case basis. Doctoral students are generally advanced to PhD candidacy after passing the Oral Examination. A student's academic advisor has primary responsibility for the adequacy of the program, which is regularly reviewed by the Doctoral Studies Committee (DSC) of the Health Sciences Informatics (HSI) program.

2. To remain in the PhD program, each student must receive no less than a B in core courses, must attain a grade point average (GPA) of 3.0. Students must pass a comprehensive exam covering introductory level graduate material in any curriculum category in which he or she fails to attain a GPA of 3.0. The student must fulfill these requirements and apply for admission to candidacy for the PhD by the end of six quarters of study (excluding summers). In addition, reasonable progress in the student's research activities is expected of all doctoral candidates.

3. During the third year of training, generally in the second or third quarter, each doctoral student is required to present a pre-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 nine quarters (excluding summers), each student must orally present a thesis proposal to a dissertation committee that generally includes at least one member of the Graduate Study Committee of the Health Sciences Informatics program. The 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.

4. As part of the training for the PhD, each student is required to be a teaching assistant for two courses approved by the DHSI Executive Committee; one should be completed in the first two years of study.

5. The PhD dissertation. Prior to the oral dissertation proposal and defense, each student must secure the agreement of a member of the program faculty to act as dissertation advisor. The University Preliminary Oral Exam (UPO) committee must consist of five faculty members, at least two of whom are from outside the program. The chair of the UPO committee will also come from outside of the program. The Thesis Committee comprises the principal advisor, who must be an active member of the DHSI program faculty, and other, approved non HSI faculty members. Thesis committees must meet formally at least annually. Upon completion of the thesis research, each student must then prepare a formal written thesis, based on guidelines provide by the Doctor of Philosophy Board of the University.

6. No oral examination is required upon completion of the dissertation. The oral defense of the dissertation proposal satisfies the University oral examination requirement.

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

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

9. The Doctoral Studies Committee documents that all Divisional or committee requirements have been met.

THE PHD PROGRAM OF STUDY

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.
*   Student-oriented curriculum design: By 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.
*   Excellence in teaching and research: By 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 Health Sciences Informatics doctoral curriculum integrates knowledge and skills from:

1. **Foundations of biomedical informatics**: Includes the lifecycle of information systems, decision support.
2. **Information and computer science**: E.g. computer organization, computability, complexity, operating systems, networks, compilers and formal languages, data bases, software engineering, programming languages, design and analysis of algorithms, data structures.
3. **Research methodology**: Includes research design, epidemiology, and systems evaluation; mathematics for computer science (discrete mathematics, probability theory), mathematical statistics, applied statistics, mathematics for statistics (linear algebra, sampling theory, statistical inference theory, probability).
4. **Implementation sciences**: Methods from the social sciences (e.g., organizational behavior and management, evaluation, ethics, health policy, communication, cognitive learning sciences, psychology, and sociological knowledge and methods, health economics; evidence-based practice, safety, quality.)
5. **Specific informatics domains**: Clinical informatics, public health informatics
6. **Practical experience**: Experience in informatics research, experience with health information technology.

Course Requirements

To achieve in-depth learning of the above knowledge and skills we adopt a student-oriented curriculum design, whereby we identify "teaching or learning processes," that is, structured activities geared towards learning (i.e., courses/projects/assignments, seminars, examinations, defenses, theses, teaching requirements, directed study, research, service, internships). These processes were selected, adapted, or created in order to meet a set of pre-specified learning objectives that were identified by the faculty as being important for graduates to master.

23	quarter credits Core Courses (5 courses + research seminar × 8 quarters) (Area 1)
60	quarter credits Electives. (may include optional practicum/research) (Areas 2-6)
6	quarter credits ME 600.805 practicum/ research rotation (Area 7)
36	quarter credits ME 600.804 Mentored Research
125	TOTAL quarter credits

Requirements are specified in quarter credits, since the core and Public Health School courses are offered on a quarterly basis. Students may take semester-long courses through Arts & Sciences, the Whiting School of Engineering, the Applied Physics Laboratory, or the Carey School of Business. One semester credit = 1.5 quarter credits, so a 3-credit semester course from these Schools is counted as 4.5 quarter credits.

PhD students should follow the same pre-matriculation guidelines as the MS students including IRB submission, HIPAA training, and Research Ethics 1 and 2.

Research Ethics Part 1 and 2

In addition to the curriculum, PhD 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 students register as soon as they 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.

The following are required (Area 1, 6) or suggested (Areas 2, 3, 4, 5) courses to fulfill the course requirements. Courses numbered "ME 600.xxx" are offered by DHSI. Electives must be at the graduate level. 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 dissertation, except, in some cases, as preliminary results for the dissertation research.

• **Area 1. Foundations of Biomedical Informatics**

The following are required.
> (a) ME 600.903 Introduction to Biomedical and Public Health Informatics
> (b) ME 600.902 Leading Change through Health IT
> (c) ME 600.901 Knowledge Engineering and Decision Support
> (d) ME 600.904 HIT Standards and Systems Interoperability
> (e) ME 600.900 Design to Deployment
> (f) ME 600.714 Analysis of the Electronic Health Record
> (g) ME 600.907 Database Querying in Health
> (h) ME 600.704 Informatics Research Seminar
> (i) ME 600.803 Informatics Grand Rounds

> The Seminar (ME 600.704) mixes Journal Club, Research in Progress, Research Methods, and guest talks.

• **Area 2. Information and computer science**

> (a) Computer science: e.g., PH 140.630 Data Management, WSE 540.644 Practical Machine Learning
> (b) Cognitive science (usability, human–computer interaction, interface design): e.g., PH 309.732.01 Organizational & Human Factors in Patient Safety

• **Area 3. Research Methodology**

> (a) Study design, conduct of research: e.g., PH 309.712 Assessing Health Status and Patient Outcomes
> (b) Qualitative methods and analysis
> (c) PH 140.651-654 Methods in Biostatistics I-IV
> (d) PH 400.733 Communication Networks Analysis in Public Health Programs
> (e) PH 410.710 Concepts in Qualitative Research

• **Area 4. Implementation Sciences**

> (a) Organizational structure, behavior, and change: e.g., PH 309.732 Organizational and Human Factors in Patient Safety
> (b) Project management: e.g., EN 595.460 Introduction to Project Management
> (c) Quality improvement

(d) Patient safety
(e) Economics e.g., PH 313.639 Introduction to Microeconomics, PH 313.641 Health Economics

• **Area 5a. Clinical Informatics Domain**

(a) ME 600.905 Clinical Informatics
(b) ME 600.711 Health IT for Disease Prevention and Management
(c) PH 309.730 Patient Safety and Medical Errors
(d) Translation of health informatics research to clinical practice (new course)

• **Area 5b. Public Health Informatics Domain**

(a) PH 221.649 E-Health and M-Health: Using Technology to Improve Health in Low and Middle-Income Countries
(b) PH 309.631 Population Health Informatics
(c) ME 600.710 Real-Time Disease Surveillance
(d) PH 144.662 (and 663) Spatial Analysis and Geographical Information Systems
(e) PH 221.637 Health Information Systems

• **Area 6. Practical Experience**

The following are required.

(a) ME 600.805 Practicum
(b) ME 600.804 Mentored Research
(c) Research Ethics 1 and 2

Lab Rotations

The first rotation begins up to four weeks after the beginning of the fall semester. This delay allows the student time to acclimate to Hopkins 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 of the Program Director). Before the start of the academic year, HSI faculty are polled to ascertain at what point(s) during the year their laboratory can accommodate students. This information is disseminated to the students through the Program Director.

Prior to the selection of their first rotation, students must meet with the Program Director to discuss their interests and to identify a list of DHSI faculty members with whom to meet. It is strongly advised that frequent meetings be held between Program Director and students. Frequent meetings will insure the students' experience the breadth of possibilities and gain valuable insight into how to get the most out of a research rotation.

PROCEDURES FOR CHOOSING ROTATIONS AND A THESIS ENVIRONMENT
The Program Director has the responsibilities of assuring that:
　　1) the students have diversity of experience in their first two rotations

2) students work in laboratories in which they will be able to develop maximum potential; and

3) the students are distributed among the HSI faculty. No laboratory can be assigned more than one HSI student at a time unless extenuating circumstances occur and the without approval by the Program Director.

The student must secure the next rotation laboratory before the end of each rotation. Rotations last between 3 and 6 months.

Once the thesis research laboratory has been selected by the student at the end of Year 1, it is the student's responsibility to advise both the HSI Academic Programs Administrator and the Program Director.

PRESENTATIONS OF ROTATION RESEARCH

At the end of the first and second rotation periods, the trainees present at Friday 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.

THE ORAL EXAM

The Doctor of Philosophy Board Oral Examination for candidates for the Ph.D. degree has three major objectives:

1. To assess a candidate's proficiency in the discipline.
2. To give a student the benefit of a critical examination of his or her work by scholars outside the department or program.
3. To provide a means for extra-departmental monitoring of the academic quality of departments and programs sponsoring candidates.

The HSI Program Office schedules the University mandated Dissertation Board Oral (DBO) exam for each student. The exams are typically held in October or November of the second or third year. Each committee consists of 5 members and 2 alternate members.

- Of the 5 committee members, 2 members must be faculty in the department of his/her thesis advisor (but not involved in a close collaboration)
- The remaining 3 committee members and 1 alternate are selected from a pool of HSI faculty. The Hopkins University Graduate Board selects the committee chairperson based on seniority of these three members.
- The students' advisor selects the 2 remaining committee members and 1 alternate from faculty within his/her department. The advisor must notify the HSI Program Office with the names of the committed faculty members he/she scheduled for each of their thesis students.
- The student's advisor is not a member of the exam committee but should be present for a few minutes at the beginning of the exam to briefly review the student's progress with the committee.

The examination does not focus on the subject of the student's thesis research. However, it is not uncommon for the committee to ask the student to talk about their research initially, before

the examination begins. The examination covers the general principles of informatics (as covered in the required coursework). The Program Director approves each student's committee selection. Exams are scheduled for after the student has successfully completed the curriculum.

POSSIBLE OUTCOMES OF THE ORAL QUALIFYING EXAM

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.

Unconditional Pass

It is expected that most students will receive an unconditional passing grade on the qualifying examination. The student will then proceed with the thesis research.

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. This second meeting should take place by the end of the same academic year as 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.

Recommended "Conditions"

1. The committee can ask the student to read and understand material, or successfully complete a course covering areas in which he/she is weak.
2. The re-examination committee can have an additional member representing an area identified as weak.
3. 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.

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. They are as follows:

1) No further examination. Or
2) Re-examination by the same committee at a later date. A second failure will lead to dismissal. Or
3) 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.

THESIS

The Dissertation Thesis is the heart of the program. Often, a thesis idea comes out of project performed under a mentor, generalizing the work done there, which may involve formulating a new framework (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.

INDIVIDUAL DEVELOPMENT PLAN (IDP)

Each student is required, at least annually, to utilize the resources at myIDP http://myidp.sciencecareers.org/. This is an online tool that enables trainees to examine their skills, interests, and values, and suggests possible career paths as well as how to set tractable goals. The expectation is that the information obtained be discussed in the annual mentoring meeting and form the basis for continued conversations with the mentor.

THESIS ADVISORY COMMITTEE

Beginning in Year 3, HSI 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 said meeting is filed in the HSI office. The Program Director will notify the thesis advisor of the laboratory's status in writing.

The committee members, at least three in number, are experts in fields related to the student's area of research and can contribute significantly to the direction of the research. They need not be members of the HSI Program. Students select a chairperson whose role is to assure regular meetings, give students feedback on their progress, and, in general, act as the students' advocate if problems arise. After each meeting, the thesis chair reports to the 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 Division Director will oversee compliance with this policy to assure timely completion of the degree requirements.

The initial 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 in the Program Office.

For students in subsequent years, the meeting should involve a discussion of both progress and plans for the future. It is this committee that decides when the research is sufficient for completion of degree requirements.

From Year 6 onward, a thesis committee meeting **must** be held every six months. At Year 8 and beyond, not only must meetings be held every six months but a detailed plan of action to graduate the student must be written on the thesis committee meeting paperwork.

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, is novel, is of sufficient quantity 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. The thesis must be read and approved by the advisor and one other member of the thesis committee; 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.

FINANCIAL SUPPORT OF STUDENTS

Except where a PhD student receives complete financial support from outside of Johns Hopkins, the Division 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 Director.

EVALUATION OF PHD STUDENTS

First year students are closely monitored by the Training Program Director. Grades on all examinations in the core courses are reported to the Director. If a student has difficulty, the Director and/or the Course Director will speak directly to the student. Whenever indicated, individual tutoring is offered.

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 Doctoral Studies Committee makes decisions regarding dismissal on a case-by-case basis.

In their third (or second year, if advanced placement), students take the oral examination mandated by the Dissertation Board of the University. The 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 Director. If thesis research continues past 5 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 sixth year. This plan is presented to the 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 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 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 website for the most recent information on policy and procedures as they are modified from time to time.
http://www.hopkinsmedicine.org/som/students/policies/

Leave of Absence (LOA)

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 of time, 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.

Program Directors must 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, as indicated below:

> **Medical Condition**: a letter from a physician (this may be a letter from a doctor at the University Health Services or the University Mental Health Services), the Student Assistance Program, or the Office of Student Disability Services.
> **Military Duty**: a letter or verification from the Armed Forces.
> **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 LOA, it is also recommended that the student contact the Health Insurance Coordinator in the Registrar's Office for information on how the LOA will affect their health insurance coverage and premium responsibility. When on an approved LOA 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 a 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.

Returning from Leave of Absence

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.

> **Medical Condition**: A *Fitness to Return* evaluation must be conducted by the Student Assistance Program prior to resumption of studies.

> **Military Duty**: a letter or verification from the Armed Forces.

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.

Vision 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.

PROGRAM 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 Program Director (Dr. Lehmann).

2. If option 1 is not acceptable or possible, or does not provide satisfaction, discuss the problem with any other member of the Division Executive Committee or the Academic Programs Administrator, Kersti Winny

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 (http://www.jhuaa.org/) 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".

> To this end, professional confidential help services are offered by the University including mediation, counseling, support service, and medical care if needed, Office phone is: 410-516-8075. Sexual abuse hotline number is: 410-516-4001. 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 Counseling and Student Development Center offers free, confidential counseling and support information regarding resources /referrals: 410-516-8278. Whatever the path chosen to secure assistance, the student's problem will be given immediate consideration, and will be treated in complete confidence. The Division of Health Sciences Informatics will make every effort to immediately rectify any problems of abuse or misconduct.

4. The program may determine the allowable time to complete degree requirements but in no case may that time exceed 12 years. Any approved leave of absence would not count toward the 12 years.

REGISTRATION REQUIREMENTS FOR PHD STUDENTS

DHSI 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 he or she is an international student before submitting their application for the change in status.

MASTER OF SCIENCE PROGRAMS

The two MS degrees offered through the Division are full time, campus based programs with no part-time or distance education options at this time.

Prior to matriculating, accepted students must complete the following. All forms can be found in the Library under the folder marked SOM required documentation http://distance.jhsph.edu/

- Complete and submit to LaShawn Johnson-Thomas the following forms:
  - HIPPA requirement HIPPA
  - Hopkins Policy
  - Criminal Background Check authorization
  - Disclosure to Academic program
  - Confidentiality
  - Academic Honor code
- Register for and complete the Introduction to Online Learning learning module– at this time you will be given an e-learning account name which should be sent to La Shawn Johnson Thomas so you may be granted access to the online learning platform (CTL)
- JHED ID - once issued by the registrar should be sent to La Shawn Johnson Thomas
- Schedule and complete a telephone advising session with the Training Program Director to discuss course sequence and electives.
- US Citizens and permanent residents may wish to Contact the Office of Financial Aid to discuss program funding.
- The Program Director may require some students to take 550.001 English for Academic Purposes course sequence. This will be determined following their initial advising session.

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. http://www.hopkinsmedicine.org/som/StudentInsurance/Index.html and with course registration procedures described below.

COURSE REGISTRATION PROCEDURES FOR MS AND PHD STUDENTS.

Please note that the Division of Health Sciences Informatics is part of Johns Hopkins School of Medicine, and students' official academic records are kept by the School of Medicine Registrar. In order 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. It is especially important that you not attempt to register online through the School of Public Health

- Registration for fall Q1 and Q2 classes takes place in **mid-July** each year. Because registration is **paper** based, the Division will register all MS students for core courses for quarter 1 and 2. On arriving on campus, or following a telephone advising session with the Training Program Director, students will complete remaining course registration aided by Division 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 for the student register for or audit the course. 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 Capstone or Practicum during this time. Students in the 2 year program can also register for Mentored Research over the summer term.
- 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 the all MS and PhD students must register for Summer Term

ACADEMIC CALENDAR AND ADD DROP DATES FOR 2016 - 2017

- Quarter 1 (Q1) **.................** September 1 – October 26, 2016   Add/Drop Deadline: Sept. 14, 2016
- Quarter 2 (Q2) ....October 27 – December 22, 2016   Add/Drop Deadline: November 10, 2016
- Quarter 3 (Q3) ....January 23 – March 17, 2017   Add/Drop Deadline: February 3, 2017
- Spring Break
- Quarter 4 (Q4) …………………. March 27 – May 19, 2017   Add/Drop Deadline: April 7, 2017
- Summer Term .... May 19 - August 11 2017

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 ISIS. To obtain a copy of your transcript please request one from Gayle Miller in the Registrar's office. gmiller@jhmi.edu, 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 and PH 380.681, 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 dropped 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.

MONITORING STUDENT PROGRESS

Student progress is monitored by Division staff on a quarterly basis, with a formal mid- year review by the Executive Committee each January. Prior to the formal review students must set up a meeting with the Academic Programs Administrator to discuss plans for completing outstanding requirements.

Regarding "semesters" and "quarters."

- An SPH 3-credit 2-quarter course "counts" as 6 credits for the HSI program
- A Homewood (or other semester-based programs) 3-credit semester course "counts" as 4.5 credits for the HSI program (or 2.25 per quarter)

MASTER OF SCIENCE DEGREES - PROGRAM CURRICULUM SUMMARY

Program	Master in Health Science Informatics-Research	Master in Applied Health Science Informatics
Completed in:	24 months	12 months (15 -36 part-time option)
Total Quarter Credits	100 quarter credits	64 quarter credits
Core Courses	15 quarter credits	15 quarter credits
Selectives + Electives	33 quarter credits	33 quarter credits
Fellows seminar	1 credit each quarter (total 8 credits)	1 credit each quarter (total 4 credits)
Grand Rounds	1 credit each quarter (total 8 credits)	1 credit each quarter (total 4 credits)
Practicum	Optional	Optional
Capstone	N/A	8 credits
Thesis project	36 quarter credits (12 credits year 1, 24 credits year 2)	N/A

The following abbreviations are used below:

ME = School of Medicine
PH = School of Public Health
B = Carey School of Business
W = Whiting School of Engineering
N = School of Nursing

All programs follow the School of Medicine's standard for minimum grade requirements*, and include core, selective and elective coursework, the seminar, and a capstone project. *All courses are 3 credits, unless otherwise stated. Semester-long courses are denoted Q1+Q2 or Q3+Q4.*

Please visit our ISIS and the Division website for the most recent details and availability of course offerings.

CORE COURSES

*Indicates Online

The following core courses (15 credits) are to be taken by all students.

- 600.903 *(ME) **Introduction to Public Health and Biomedical Informatics** Q1
- 600.900* (ME) **Health Information Systems: Design to Deployment** Q2
- 600.902* (ME) Leading Change through Health IT Q3
- 600.904* (ME) **HIT Standards and Systems Interoperability** Q3
- 600.901* (ME) **Health Sciences Informatics: Knowledge Engineering & Decision Support** Q4

At least 1 in each section, must be taken or placed out with the Training Program Director's approval.

- o Budgeting
    - o 300.610 (Multiple Locations) **Information Systems Financial Management** (Multiple Quarters) (2 credits)
    - o 551.601* (PH) **Managing Health Services Organization** Q1 or Q3 (4 credits)
    - o 551.603* (PH) **Fundamentals of Budgeting and Financial Management** Q2 or Q3 (no prerequisites)
    - o 312.623 (PH) **Financial Management in Health Care I** Q3 (check prerequisites)
- o Organizational/Strategic Issues
    - o 380.681 (PH) Strategic Leadership Principles and Tools for Health System Transformation in Developing Countries Q2 4 credits
    - o 312.615 (PH) **Organizational Behavior and Management** Q4 (550.601 is a pre-requisite)
    - o 312.621 (PH) **Strategic Planning** Q4
    - o 309.732.01 (PH) **Organizational and Human Factors in Patient Safety** Q4
    - o 551.610 (PH) **Foundation of Leadership** Q2 or Q3
- o Project management
    - o **300.620 (Multiple Locations) Project Management [+]** (Multiple Quarters; 2 credits)
    - o 605.708 (**APL**) **Tools and Techniques of Software Project Management** Q1+Q2 605.708.71 (**Montgomery County**) Q1+Q2
      Prerequisite: 3-5 years technical work experience is recommended.
- o Domain Informatics
    - o 600.905* (ME) Clinical Informatics Q2
    - o 600.809 (ME) Topics in Clinical Informatics (yearlong- next offered in 2015-16)
    - o 600.901 (ME) Database Querying in Health Q3
    - o 600.714 (ME) Analysis of the Electronic Health Record Q3

Check all courses via ISIS or SPH for current availability, timing, and location.

ELECTIVE AND ENABLING COURSES

A wide variety of relevant courses are available. Course selections will be approved by the Training Program Director and should be consistent with the study plan as outlined in the

student's learning contract (see ME 600.903 Introduction to Public Health and Biomedical Informatics course description). Electives are divided into the following categories: Expertise, Methodology, Informatics, Computer science, Communication, Business, Evaluation, and Domain.

Search for classes throughout the university via ISIS (behind VPN firewall).

HEALTH SCIENCES INFORMATICS STUDENT SEMINAR ME 600.704
The Friday student seminar is a requirement for all MS and PhD students

Fridays, 10:00 am – 12:00 noon, DHSI Conference Room

HEALTH SCIENCES INFORMATICS GRAND ROUNDS ME 600.803
Following the weekly student seminar, Grand Rounds is generally held in the Chevy Chase Conference Center (Sheikh Zaiyed Tower, Johns Hopkins Hospital) for students, faculty, and invited guests to present ongoing research and work in informatics. The weekly schedule is listed here. Attendance at 90% or more of DHSI Grand Rounds presentations is required for all MS and PhD students. Please be certain to sign in on your arrival so that your attendance can be documented properly. (Fridays, 12:15-1:15)

HEALTH SCIENCES INFORMATICS – INDEPENDENT STUDY.
Under certain circumstances students may be permitted to take an Independent Study. Prior to discussing the project with the Training Program Director, the student should find a preceptor to advise and supervise the project and present the scope of work and deliverable in writing. On approval of the preceptor, the Training Program will review and decide on the suitability of the proposal.

HEALTH SCIENCES INFORMATICS CAPSTONE - ME 600.808
The Capstone is a requirement for candidates for the MS in Applied Health Sciences Informatics. Its purpose is to provide students an opportunity to:

- Demonstrate the ability to translate competencies established in classes and in prior experience into a real-world setting
- Enlarge their portfolio of completed documents or projects

The Capstone Project will generally last 2 quarters - 8 weeks full time, with the specific timing to be negotiated with the practicum preceptor. Students will join an active work group, supervised directly or indirectly by the practicum preceptor. Attendance may include participating in project and staff meetings, as well as front-line activity, such as working with clients.

The student is responsible for submitting a Capstone report to the Director within 2 weeks of completing the project. The final report shall document attendance, how (or whether) the learning objectives were met, and shall include the report generated for the preceptor. A

presentation will be made of the final report at a Capstone Presentation Seminar, with students, faculty, and capstone preceptors in attendance. Detailed guidelines and procedures for the Capstone can be found at the end of this Handbook.

GRADUATION CLEARANCE PROCEDURE FOR MASTER OF SCIENCE CANDIDATES

- Curriculum Vitae **(SUBMITTED BY STUDENT)**
- Abstract of essay, including title page **(SUBMITTED BY STUDENT)**
- Name of research mentor and contact information **(SUBMITTED BY STUDENT)**
- A signed letter from the mentor, addressed to the Graduate Board, with a statement recommending the essay's acceptance by the board. (The letter must contain the essay title and a brief description of the research and its outcome). (**To be completed by the Division**)
- Graduate Clearance form (**To be completed by student, the Division will supply the form**)
- Statement certifying the essay has been delivered to MSE Library at Homewood for binding (**It can be a receipt or letter**) http://www.library.jhu.edu/services/cbo/diss.html This is done electronically. Please click the link for more info **http://guides.library.jhu.edu/content.php?pid=450528** **Please note: You should also purchase a copy for the Division)(NOT REQUIRED FOR AHSI STUDENTS)**
- Certificate of Completion of Departmental or Committee Requirements for an Advanced Degree from DHSI (**To be completed by the Division**)
- Practicum Final Approval Form
- Student Evaluation of Preceptor/Organization Form
- Capstone Proposal
- Preceptor Evaluation of Student Form
- Preceptor/Advisor Commitment Form
- Capstone Participation Agreement Form
- Program Evaluation Form

LEAVE OF ABSENCE

Please check the School of Medicine website for the most recent information on policy and procedures as they are modified from time to time. **http://www.hopkinsmedicine.org/som/students/policies/** 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 of time, 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.

POST BACCALAUREATE CERTIFICATE IN CLINICAL INFORMATICS

The certificate program is a distance education program and may be completed online over a period of one to three years.

Prior to matriculating, accepted students must complete the following

- Ethics requirement – students will receive an email notifying them of when and where to register for the required ethics courses
- HIPPA requirement
- Introduction to online learning - register for and complete Introduction to Online Learning – at this time you will be given an e-learning account name which should be sent to La Shawn Johnson Thomas so you may be granted access to the online learning platform (CTLT)
- Criminal Background Check
- JHED ID once issued must be sent to La Shawn Johnson Thomas
- US Citizens & permanent residents may wish to contact the Office of Financial Aid to discuss Title IV student loan options
- Hopkins employees who wish to use Tuition Remission to pay for part of the program should advise the program of that and initiate the tuition remission process prior to registration.

Note: Registration for all certificate/distance students is processed by Division staff.

Course requirements and sequence

600.903 Introduction to Biomedical and Public Health Informatics .... Quarter 1
600.900 Health Information Systems: Design to Deployment .... Quarter 2
600.905 Clinical Informatics .... Quarter 2
600.902 Leading Change through Health IT .... Quarter 3
600.904 HIT Standards and Systems interoperability .... Quarter 3
600.901 Health Sciences Informatics: Knowledge Engineering & Decision Support ... Quarter 4
600.808 Health Sciences Informatics Practicum .... Quarter 4/Summer
Total 21 credits

Students who are taking more than 12 months to complete the program should schedule an advising session with the Training Program Director to discuss course sequence.

Please note that grades less than C cannot be counted toward the Certificate requirements, and that the overall GPA for the courses must be 3.0 or above. Student records are reviewed at the end of each quarter to ensure satisfactory progress is being made to successfully complete the program.

GRADUATION CLEARANCE PROCEDURE FOR POST BACCALAUREATE CERTIFICATE CANDIDATES

_____ Current Curriculum Vitae (personal information, publications, etc.) Be sure student name appears on CV.

_____ Updated transcript (Registrar's Office to supply)

_____ Summary of Practicum project

_____ Names of Practicum reviewers

_____ Certificate of Completion of Department or Committee Requirements for an Advanced Degree/Certificate form (Division will supply)

_____ Certificate Completion Form - for postgraduate plans, etc. (Division will supply)

_____ Ethics Requirements

_____ HIPPA Requirements

_____ Academic Integrity Form

_____ Program Evaluation Form

PRACTICUM /CAPSTONE GUIDELINES

The Goals Analysis Document (GAD) has been designed to aid students in identifying areas of interest and planning their program of study and capstone/practicum experience. Be sure to complete it early in the academic year.

The purpose of the Informatics Individualized Goals Analysis requirement is to:
- Plan your Master's education early in your program with the support and guidance of your faculty advisor.
- Describe the goals and competencies which you aim to achieve during your program.
- Serve as a springboard for discussion of career opportunities as the year progresses.

The GAD is intended to be a living document, one which you and your advisor review and update as you make changes in focus and direction.

To complete the Goals Analysis requirement, you must submit a document titled Individualized Goals Analysis. This document includes a curriculum checklist detailing your goals and objectives, an academic plan, and an assessment of how this plan will meet your stated goals. Complete the of the following steps in collaboration with your faculty advisor

Step 1: **Background, Experience and Strengths**: Briefly explain what knowledge, skills and experiences you bring to the program.

Step 2: **Educational Goals**: Identify the goals for your education by explaining what you hope to gain in terms of knowledge, skills, personal and professional contacts, and other experiences while a student in the DHSI program. Review the list of Informatics Objectives on the Syllabus (Capstone Syllabus, Practicum Syllabus) with your advisor. Identify additional competencies particularly relevant to your professional future.

Step 3: **Curriculum Planning**: Develop a tentative course plan for your entire Informatics program. Identify what required courses, electives and special studies you intend to take and when you plan to complete your courses. Course descriptions in the online catalogs ("Course Search": SOM, SPH, SON, WSE)) indicate when courses are generally offered. To ensure that you meet your goals and program requirements, complete the electronic Informatics Curriculum Planning and Tracking sheet (attached to the Goals Analysis document). Your tracking form should include a tentative list of the electives you plan to complete.

Step 4: **Practicum Option for 24 month-MS in Informatics Research**: Describe what opportunities, skills, and objectives you would like to complete during a hands-on practicum opportunity within an HIT organization.
 Start to network, reach out to contacts to find out where the practicum opportunities are. Recall the 3 strategies for Practicum (and capstone) choices: Content area, skills and connections.

Step 5: **Capstone Requirement: For 12 month** MS **students:** Describe one or more potential capstone project topics and identify possible faculty mentors. Capstone is similar but longer and much more in depth than a practicum and requires at least 2 months of full time commitment over the summer (June, July). Meet with your advisor, start to network to find out where practicum opportunities may be available. Recall the 3 strategies for Capstone choices: content area, skills and connections

Step 6: **Review**: Before you submit the electronic document, make sure that your advisor has approved your Goals Analysis plan. Carefully review your goals plan and a working copy of the Curriculum Planning & Tracking Sheet to ensure that the proposed curriculum is not only feasible, but that it also meets program requirements. Assess if your curriculum plan is aligned with the goals you identified in Step 2.

Step 7: **Submit**: In order to complete the Goals Analysis requirement, submit your Individualized Goals Analysis and tracking form with your advisor's email to La Shawn Johnson-Thomas.

Step 8: Start looking for a potential locations and preceptors and set up a time to speak with Dr Harold Lehmann.

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