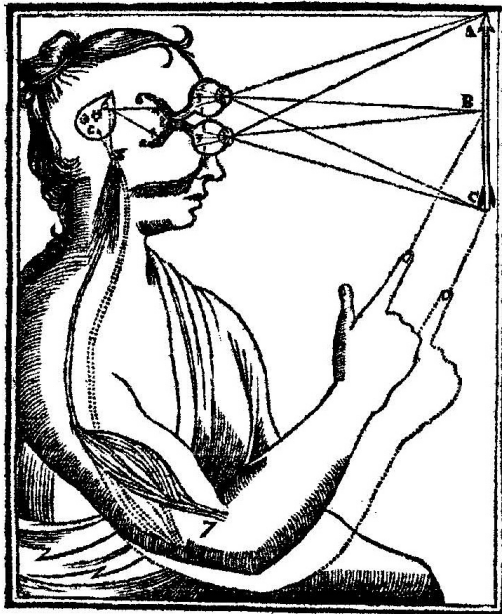


UNIVERSITY OF MINNESOTA

**GRADUATE PROGRAM IN THE
HISTORY OF SCIENCE, TECHNOLOGY, AND
MEDICINE**



STUDENT HANDBOOK

2013-2014

This ***Graduate Student Handbook*** is designed to provide information that will help you in your graduate career. It should be considered supplementary to the more authoritative ***Graduate School Policies & Governance***, which are now available on line at www.grad.umn.edu. We have not included all of the Graduate School rules but have instead focused on the major requirements of our Program in the History of Science, Technology, and Medicine. In the event of any conflict, the Graduate School requirements take precedence. If you find any errors or misleading statements in this Handbook, please call them to the attention of the Director of Graduate Studies (DGS).

This ***Handbook*** is not a substitute for detailed discussions with the DGS and your faculty advisors. You will also find that our web site provides useful information (www.hstm.umn.edu).

The information in this Handbook and other University publications or announcements is subject to change without notice. Important changes will typically be indicated to current students in a variety of ways, but it is important to check occasionally on the Graduate School website to see the university requirements and forms (www.grad.umn.edu).

SPECIAL NOTE: The Graduate School requires that all students be allowed to meet the requirements of the program on record for the year they are admitted. Students already in the program may also elect to meet the complete requirements of a new program put in place after they arrive. Thus, this handbook is designed for students admitted for or after Fall Semester 2007 when the merger between the graduate programs in History of Science and Technology (HST) and History of Medicine (HMed) was fully in place creating the new Program in the History of Science, Technology, and Medicine (HSTM) and also anyone admitted earlier who elects to meet these new requirements. Students may not, however, mix the requirements.

September 2013

GRADUATE STUDIES HANDBOOK
HISTORY OF SCIENCE, TECHNOLOGY, AND MEDICINE

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INTRODUCTION

This handbook is intended to welcome new students to the Program in the History of Science, Technology, and Medicine (HSTM) and to provide a reference for students as they progress through it year-by-year. Graduate study in these historical areas are distinctive from many other academic disciplines in that they are still relatively young fields, are highly interdisciplinary, and prepare students for several career options. Most students entering the HSTM graduate program have had just a few courses, if any, in our field during their undergraduate or graduate studies. For such students there is the exciting prospect of entering a field that possesses a wide variety of approaches and spans many areas of knowledge. Others may come with advanced degrees in other areas or even in one of the subfields, and for those students our programs offer many opportunities to broaden and deepen their knowledge.

In your first year, you will acquire basic knowledge through two core courses (historiography and research methods) that will introduce you to the nature of this interdisciplinary field, its varied methods, and its fundamental questions. Your goal should be to acquire an overview even as you identify those areas of inquiry of most interest to you. Acquiring this perspective is important preparation for the preliminary exams that should come just before or during your third year. Most incoming students have identified a broad area of specialization—the history of biological or natural sciences, the history of technology, the history of medicine, the history of physical sciences, or the study of science in American culture—prior to entering the program. During the first year, too, you should begin to think about a more specific area for your dissertation. In your second year your research interests will become more focused and gain depth from supporting courses within and beyond the program. Subsequent years will be devoted principally to specialized research for your dissertation.

Overview of the Program

The Program in the History of Science, Technology, and Medicine is an all-university program that integrates faculty and students from many departments and programs. Each faculty member has a joint appointment in a department in the College of Science and Engineering, the Medical School, or the College of Biological Sciences, and many have graduate appointments in other departments as well, ensuring close association with other related fields. We have particularly strong ties with the Minnesota Center for Philosophy of Science, the Department of History, and the science and engineering departments within which faculty hold tenure. These university and departmental connections are a major source of intellectual stimulation and support for both faculty and graduate students.

Our program is physically dispersed because graduate students in the history of science and technology have offices in the Shepherd Laboratories on the East Bank and the faculty have offices in several departments on the East Bank, West Bank, and in St. Paul, and both the history of medicine faculty and students are located in the Medical School. We therefore make a significant effort to maintain our strong sense of community. You will get to know your fellow students and faculty through courses, by working together, attending the Friday colloquia, forming special reading groups, working as teaching assistants, and at various social occasions. With only a little effort, it is easy to get to know all the faculty and students in our program.

The faculty has an open door policy and members will always be glad to talk to you when they are free.

It is particularly important that you attend and participate in the numerous scholarly presentations offered by visiting scholars, especially the joint colloquium every Friday afternoon of the HSTM program and the Minnesota Center for Philosophy of Science held in the Tate Laboratory of Physics and in Nicholson Hall as well as the Monday lunchtime lectures, three or four times a semester, in the history of medicine held in Diehl Hall. These lectures provide an essential opportunity to become and remain familiar with contemporary research and with many of the field's leading practitioners. They also bring members of the program together for cookies, coffee, and tea before each event and provide an opportunity to socialize after them. All HSTM students are expected to attend all Friday colloquia. In addition, history of medicine students are expected and HST students are encouraged to attend Monday lunchtime lectures in the history of medicine. The history of science, technology, and medicine speakers in the Friday colloquium will have a brown bag lunch with the graduate students before their talk, which graduate students in the speaker's area are expected and others are encouraged to attend (see p. 19 below for more information). The schedule of lectures each semester is posted at the HSTM (www.hstm.umn.edu) and HMed (www.med.umn.edu/history) websites and

Brief History of the HSTM Graduate Program

The Program in the History of Medicine (HMed) was inaugurated in 1967 when Leonard G. Wilson joined the faculty of the Medical School as the first Professor of the History of Medicine. His appointment was made possible by a grant from the Hill Family Foundation and an endowment raised by Owen H. Wangensteen, Professor and Chairman of the Department of Surgery. Dr. Wangensteen also raised the initial endowment to found the historical library of biology and medicine that bears his name. In 1969, aided by a grant from the Josiah Macy Jr. Foundation, a second faculty position was added, which has been held in turn by Guenter B. Risse (1969-71), Toby Gelfand (1971-74), John Eyler (1974-98), Jennifer Gunn (1999-2010), and Jole Shackelford (2010 to present). In 1968 the Program began its series of public lectures, which have been held annually ever since. The Program received its first lectureship endowment in 1984 from the Charles E. Culpeper Foundation. Subsequent endowments from other donors have made possible the Dorothy M. Bernstein Lecture in the History of Psychiatry (1999) and the Sally and Bruce Kantar Lecture in the History of Medicine (2000). The Graduate School authorized the Program to grant the Ph.D. in the History of Medicine and Biological Sciences in 1971, and the first Ph.D. was granted to Dale C. Smith in 1979. In 1986 a M.A. degree was added to the Program's offerings. In 1998 John M. Eyler succeeded Leonard Wilson to the endowed professorship and became Director of the Program and was in turn succeeded by Jennifer Gunn in 2010. A third faculty position was made possible in 2009 by funds provided and allocated by Vice President of the Academic Health Center Frank Cerra, and Dominique Tobbell joined the faculty.

The Program in History of Science and Technology (HST) was inaugurated in 1972, when the university administration committed funds to establish a new program in history of science and technology. Roger H. Stuewer, a historian of modern physics, received an appointment in the Department of Physics as the coordinator of this effort, and subsequently became the founding

director of the program. At that time he was given one additional appointment, which went to Alan E. Shapiro, a historian of the physical sciences with a special focus on Newton. In 1974 the Hill Family Foundation (later the Northwest Area Foundation) awarded the program a grant that allowed it to add positions in history of biology and history of technology, teaching assistants, and a secretary. Malcolm Kottler and Edwin T. Layton were appointed to those faculty positions in 1975. In 1979 the Regents granted the program the authority to award graduate degrees, and in 1982 Eda Kranakis received its first Ph.D. In 1981, after a national competition, the Charles Babbage Foundation chose the University of Minnesota as the location for the Charles Babbage Institute (CBI) for the History of Information Processing, which added a major research center to the program. The director of CBI is a tenured member of the HST faculty. Arthur L. Norberg, a historian of technology, became the founding director of CBI. Robert W. Seidel, a historian of modern science and technology who joined the program in 1994, held a five-year term as director of CBI. In 1985 John Beatty succeeded Malcolm Kottler as historian of biology in the program. In 1989, Alan Shapiro succeeded Roger Stuewer as Director of the program. That same year Sally Gregory Kohlstedt, a historian of American science, joined the faculty. In 1991, after a national competition, the National Science Foundation awarded the program, together with the Minnesota Center for Philosophy of Science, a five-year Research Training Grant (RTG) that provided significant resources to the program and enhanced its visibility and stature nationally and internationally. In 1999, 2000, and 2004, three new faculty members—Jennifer K. Alexander, Michel Janssen, and Mark E. Borrello—were hired to replace Ed Layton, Roger Stuewer, and John Beatty as historians of technology, physics, and biology, respectively. In 2005 Susan D. Jones, a historian of the biomedical sciences, joined the faculty. In 2006 Thomas Misa became the new director of CBI and joined the faculty. In 2008 Sally Gregory Kohlstedt succeeded Alan Shapiro as Director of the program. In 2011 the program got permission to hire a replacement for Alan Shapiro and in 2012 Victor Boantza, a historian of the physical sciences focusing mainly on the 18th century, was appointed. In 2013, Susan Jones succeeded Sally Gregory Kohlstedt as Director of the program.

In 2006 the University of Minnesota Regents approved a merger of the graduate programs in HST and HMed to create a new graduate Program in the History of the Science, Technology, and Medicine (HSTM) which was fully implemented in the fall of 2007. The program would not be able to function without its dedicated program administrators, Barbara Eastwold (HST) and Mary M. Thomas (HMed). More detailed information about people in the program (including visiting and adjunct faculty members, current graduate students, and alumni) is available on the HSTM website (www.hstm.umn.edu).

ADVISING

In a relatively small program such as ours, where students bring diverse undergraduate training and interests, each student's course of study can be individually planned within the framework of University and Program requirements. Each semester, students should consult with faculty about the requirements for upcoming classes, since the demands vary significantly. Thus, one combination of four courses might be quite feasible in a given semester while another combination of three courses might not. In particular, students should keep in mind the difficulty of undertaking too many major research projects at one time. It is important to work closely with your advisor and the Director of Graduate Studies (DGS) on these matters.

Critical to your success in the HSTM program will be the advising that you receive from faculty members within and beyond our program. Some of these relationships are quite formal and concentrate on exams and similar matters, while others may involve informal mentoring that may prove very important to your progress toward the degree. While each advisor will assist his or her advisee, all students are encouraged to take personal initiative to develop an imaginative and sound program to fit their interests and future plans. You will want to become familiar with the Graduate School website (www.grad.umn.edu) where you will find among other things a useful checklist toward degree progress, required forms, and workshop information regarding teaching, writing and other professional matters.

Informal Advising

The DGS is responsible both to the Graduate School and to the Program faculty in overseeing all aspects of the graduate program. The DGS will help guide first-year students through one or two semesters of course selection. In addition, each incoming student will be assigned an HSTM faculty member in the area in which the student expressed interest in his or her application. This faculty member will serve as your first-year advisor, and, with the DGS, help you plan courses and other elements of your program. You should feel free to discuss course opportunities with any member of the faculty. When you have completed your first year and developed a better sense of what field you want to work in and with which faculty member(s), you officially choose your own advisor (or co-advisors). You are completely free to make arrangements for formal advising with a person or persons other than the first-year advisor initially assigned to you. The advisor(s) of your choice, having agreed to serve in that capacity, will guide you through the process of the preliminary examinations and then through the process of writing your dissertation.

Formal Advising

The selection of a dissertation advisor (or co-advisors) is a very important step, one that is typically for a long-term relationship, although it may be changed by either party, without prejudice, if you determine that another faculty member would be a more appropriate advisor. The selection of advisor(s) may occur at any point after your first year and is formalized at the time your entire program is reviewed and your official *Graduate Degree Plan* (policy.umn.edu/forms/otr/otr198.pdf) is filed (usually in your second year). Students should expect that their advisor will assist them in selecting appropriate courses for their major and minor fields (described below), assist in the selection of a preliminary examining committee, and serve as chair of the Preliminary Oral Examining Committee. The advisor will also work very closely with the student in constructing reading lists and generally preparing for the preliminary examinations.

The advisor(s) will also work with you in planning for the dissertation. It is important to select advisors who are knowledgeable about your proposed field of study. Dissertation advisers assist students in selecting a Final Oral Examining Committee, which may or may not be the same as the Preliminary Oral Examining Committee, because it is selected with attention to the

dissertation topic. The advisors also respond to drafts of the dissertation prospectus and to parts of that project as it takes shape. Advisors serve as required Final Oral Reviewers.

At the start of each spring semester, students will meet with their advisors about their progress during the year. They should discuss their goals, research interests, and time lines for completing the degree. Students are encouraged to meet regularly with their advisor at other times as well. During the spring semester the entire faculty meets to review each student's course work and other academic activities. Subsequently each student will receive a letter from the DGS with the faculty's assessment his or her progress. To remain in good standing students must be making appropriate progress (described elsewhere), be in regular contact with their advisor, and have no more than two incomplete courses.

Peer Advising

Because we are a relatively small program, we do not appoint official peer advisors. However, some of the best advice that you can find with regard to courses, professional activities, and suggestions for living a balanced life will come from your fellow students. The HST TA office has a number of materials that are also of help, including a series of Ph.D. dissertations, copies of reading lists and papers for the preliminary exam, copies of successful proposals to the National Science Foundation and other grant-giving organizations important for the history of science. These can all help you develop your own skills in writing successful exams and proposals.

During the course of the year, fellow students give practice talks before presenting a professional paper. It is supportive and instructive to attend these presentations because you will be doing the same soon enough. Some years there are informal reading groups established by students who share some common interest or those who want to keep up-to-date with journal literature. Some years there has been a Dissertation Writing Group (DaWGS) whose members meet to encourage each other and to discuss their chapters as they are drafted and finalized. You are encouraged to take the initiative to form groups, participate in blogs, and do other things that connect you with your fellow graduate students.

PROGRAM OF STUDY IN TWO TRACKS

The Program offers the M.A. and Ph.D. degrees in two tracks: History of Science and Technology (HST) and History of Medicine (HMed). Each of these tracks defines a distinctive set of requirements and, while the degree requirements in the two tracks are similar, there are some differences in the distribution requirements. There are also university requirements (mentioned below). Required forms are available at www.grad.umn.edu.

Students in either track for the Ph.D. may elect to use courses in the other track as part of a *supporting program*, which typically includes two or more classes outside the program. However, it is important to note that courses with dual numbers in HMed or HSci may not be so used. You may also do a minor or develop a supporting program entirely outside the Program. The options are wide-ranging, with some students selecting a minor in history, philosophy of science, American studies, social studies of science and technology, or a specific science or engineering field; the list of potential minors is long and available on the Graduate School

website. The other option is a supporting program that may help you build expertise and background from a range of departments and programs.

Some classes are exclusively within a particular track and a few classes count toward the requirements in both tracks. The classes that cross the track boundary and are cross-disciplinary are indicated by an asterisk on the list in Appendix A; these classes may meet the core requirements in the other track. For example, Germ Theory and Modern Medicine, HMed 5035, may count in either track. As the class is typically taught by a member of the faculty in the History of Medicine, it clearly meets the HMed requirement, but in addition, may be used by someone in the HST track to meet that track's requirement. The cross-track classes (HSci/HMed) may not be used for a supporting program because they have significant content in the main track selected by a student. These cross-track classes thus build on both the logic of a merged program and the need for distinctive tracks. However, all other classes not designated as a common class, may be selected by a student from the other track as part of a supporting program.

Distribution Requirements for Graduate Degrees

The Program's distribution requirements are designed to match several goals: (1) chronological and geographic breadth in your understanding of the history of science; (2) capacity to conduct research within the historiographical context of our field; and (3) preparation for pursuing a career in academe, museums, or writing in the history of science, technology, and medicine. For that reason it is important to work closely with the DGS and your advisor as you formulate and then modify your course work plan and participate in all aspects of the program.

Preparation for the field is provided through *core courses*. Only one course (HSci 8112 or HMed 8112) is required of all Ph.D. and M.A. students in both tracks. This course will introduce you to the theories and some representative schools of interpretation in the history of science, technology and medicine. All Ph.D. students are required to complete this course plus HSci 8113 or HMed 8113, a directed research seminar. Students are expected to take these two courses during their first year of study.

In addition, for the Ph.D. degree, but not for the M.A., there is a *period distribution* requirement. Ph.D students, both in the HST and in the HMed track, are required to take at least one course (3 credits) in both the pre-1800 and post-1800 periods in their chosen track.

In the HST track, but not in the HMed track, there is an *area distribution* requirement. Students in the HST track must complete a minimum of two courses in each of two fields. There are four fields in the HST track:

- History of the Physical Sciences
- History of the Biological Sciences
- History of Technology
- History of Science and Technology in American Culture

Some courses deal with subjects that cross these area boundaries. Students may not use the same course to satisfy more than one area distribution requirement, but a particular course might be

used by different students to satisfy different area distribution requirements. Decisions as to whether a course satisfies a particular area requirement will be based in part on the content emphasized in assigned and elected projects and will be made in consultation with your advisor and finalized by the DGS.

Research Seminar Requirement

Ph.D. students are required to complete a minimum of two research/writing seminars in which they write a substantial research paper, and MA students must complete one research/writing seminar. HSci/HMed 8113 may be one of these courses. Each year other a small number of other graduate seminars are offered that are designed and designated to meet this requirement. Talk to the instructor if you would like to use a graduate seminar not explicitly designed and designated as such as a research/writing seminar. The instructor may be willing to supervise a writing project in conjunction with the seminar that would make it qualify as one of your research/writing seminars. Directed studies can also be used to satisfy this requirement.

Note: A single course may satisfy a period, an area, and/or a research seminar requirement simultaneously

M.A. Degree Requirements

The Program offers an M.A. degree with a thesis (Plan A) and an M.A. degree based primarily on course work plus an examination on one to three papers (Plan B). In either case, the Graduate School requires a minimum of 30 credit hours for the M.A. All M.A. students must complete a research seminar, which may be Research Methods, Hsci 8113 or HMed 8113.

Plan A

- HSci 8112 or HMed 8112 (Research Methods, Hsci 8113 or HMed 8113, is strongly recommended in preparation for writing the M.A. thesis).
- 12 additional credits from courses within the selected track. In the HST track this requirement must be met by a minimum of two courses in one of the four areas listed above.
- A minor or supporting program of 6 credits from another discipline or in the other track.
- Demonstration of a reading knowledge of a foreign language, ordinarily French or German.
- 10 M.A. thesis credits.
- Oral defense of the M.A. thesis. The examining committee will consist of two program faculty members and one faculty member from outside the track or program.

Plan B

- HSci 8112 or HMed 8112.
- 22 additional credit hours in the major track. In the HST track the actual courses must satisfy the area distribution requirement by including a minimum of two courses in each of two of the four areas listed above. In the HMed track this number must include four courses (12 credits) from within the history of medicine track.

- A minor or supporting program of 6 credits from another discipline or in the other track.
- Demonstration of a reading knowledge of a foreign language, ordinarily French or German.
- Oral defense of one to three Plan B papers representing a total of 120 hours of work. The examining committee will consist of two program faculty and one faculty from the supporting program or minor.

Ph.D. Degree Requirements

The Graduate School requires that candidates have 24 thesis credits and meet the specific requirements of their degree program. For HSTM these specific requirements include:

- HSci 8112 or HMed 8112, and HSci 8113 or HMed 8113 (6 credits).
- Five additional courses (15 credits) within the selected track. These courses must be chosen to satisfy the following:
 - *Period distribution.* One course (3 credits) in the pre-1800 and one course (3 credits) in the post-1800 period.
 - *Area distribution.* In the HST track only, two courses (6 credits) in each of two of the four areas specified above. There is no area distribution requirement in the HMed track.
 - Two *research seminars* (6 credits) in which a substantial research paper is the focus of the semester's work. HSci 8113 or HMed 8113 may be one of these.
- Demonstration of a basic understanding of the content offered in the two-semester undergraduate *survey* in the student's area of concentration (HSci 1714/1715, HSci 1814/1815, or HMed 3001/3002). This requirement will generally be satisfied by either auditing or serving as a TA for the relevant undergraduate class or having taken an equivalent class as an undergraduate. The determination that a student has satisfied this requirement will be made by the DGS and by the instructor of the undergraduate survey course.
- Six (6) credits from either the track alternative to the one in which you are enrolled or in an outside discipline. You may also elect to take a minor as defined by the department or program that offers it. Thus that program may require that you include particular classes or sequences of classes, so it is essential to meet early with the Director of Graduate Studies in a program that might interest you. These outside classes, selected with your advisor and the (HSTM) DGS, may consist of related technical courses in science or engineering, or of courses in cognate fields such as philosophy of science or history, or in a combination of these. The option you choose will depend on your prior training and future plans. Because you will need outside readers for your dissertation, you will want to use these classes as an opportunity to find faculty who will be interested in your program.
- Twenty-four (24) *dissertation credit hours*, namely HSci 8888 or HMed 8888. Once these are completed, students must register for Grad 999 (or HSci 8444/HMed 8444) to remain in good standing until the final semester. The semester in which you defend your dissertation you must register for one credit.

- Reading proficiency in two foreign languages. Since much of the primary and secondary literature in the history of science and technology is in French and German, most students have demonstrated proficiency in these two languages. It is possible to request a substitution of another foreign language; however, the request must be motivated in terms of your scholarly plans. The Program faculty collectively decides on each exception. As you may need languages for some courses, you are urged to arrive with a reading knowledge of one language and to complete the second one by the beginning of the second year. Typically, you should have completed both languages by the beginning of your third year. You will not be permitted to take the preliminary examinations until you have satisfied the language requirements.

There are four ways to satisfy your language requirements:

- A language certification gained at another college or university may be presented.
- Specific language courses for graduate students offered through the College of Continuing Education (CCE) will satisfy the requirement. French 100: Reading French and German 222: Reading German are offered. Check class schedules for times.
- Students may also take French 1001 and 1002 or German 1001 and 1002, passing each with a B or better grade; students who have some background and elect to take intermediate French or German simply need to have a passing grade (C or better) in 1003 or above. You should contact each language department to determine their prerequisites. The department may have funds to help pay for summer language courses.
- Several language departments offer proficiency examinations in lieu of courses. These are rumored to be difficult and very few of our students have taken this option. Program faculty may give a reading test, but that is up to each individual member.

EXAMINATIONS AND REVIEWS

The preliminary examination is the final step in the series of requirements admitting students to candidacy for the doctoral degree. The goal of our program is to educate students in the nature of the field of history of science, technology, and medicine, its methods, and its fundamental questions in preparation for a career in scholarship and teaching. To this end, we want to assure that our students acquire both breadth and depth of knowledge in more than one area.

Successful completion of course work is one way to demonstrate that a student has acquired both a body of knowledge in one or more major areas and a minor/supporting program area and further experience with the methods of the field. The requirement that each student master the level of knowledge of the material covered in the two-semester survey course for their chosen area of concentration (science, technology, or medicine) is another means of demonstrating breadth in preparation for teaching. Successful completion of two research seminars should prepare students for writing a dissertation.

Preliminary Examination

Once you have completed all the course work required for the Ph.D. or are in the final semester of course work, you may begin to prepare for your preliminary examination. By this point, you must have a official *Graduate Degree Plan* (policy.umn.edu/forms/otr/otr198.pdf) signed and on file with the Graduate School. The members of the examination committee are chosen by the student and the adviser in consultation with the DGS. In general, the committee will consist of the adviser and two other members of the HSTM faculty (inside or major faculty), plus two faculty members from the area of the supporting program or minor (outside or minor program faculty). The preliminary examining committee may have many or all of the same members as the eventual dissertation committee, but this is not required.

The preliminary examination consists of written and oral components. The written requirement (essays) is fulfilled first. The essays are normally submitted at the end of the summer of the second year and no later than the end of the third year.

Written Exam

The student selects two fields in which he or she wants to write his/her essays and two faculty members within HSTM, one for each of the two fields. For each of the two fields, the student, in consultation with the faculty member for that field, compiles a *reading list* of the most essential and influential works in that field. The two faculty members must approve the reading list compiled for the essays in their field (as well as any changes the student may want to make to it in the course of writing the essays). *The student must consult faculty well in advance as to the scope of each list.* Lists approved for past students, on file in the HST graduate student office, may be useful guides.

For the *written component* of the preliminary examination, the student prepares two essays, one based on each of the reading lists. The essays should demonstrate a mastery of the basic content of the field, a sense of how the scholarship in this area has developed, and a critical understanding of the significant issues that have driven the development of that scholarship. The essay in the major area of interest will be 25 pages in length, not including the bibliography, and the second essay will be 15 pages in length. The student is entitled to one round of feedback on a draft of the essay by the faculty member with whom the student has compiled the reading list for that essay. The final versions of both essays should be submitted to the two faculty members that the student selected for the two fields in which he or she wrote these essays. These two faculty members will read the essays within ten to fourteen days. If they agree that one of the essays needs revision before an oral examination can be held, the student has one month to revise and resubmit the essay. If they find both essays unsatisfactory, the student fails the preliminary examination.

Oral Exam

If the two faculty members to whom the student submitted his or her essays agree that they are satisfactory, the oral examination is scheduled. Scheduling requires a special form from the Graduate School. The oral examination normally will take place within three weeks of passing the written requirement, thus allowing time for the Graduate School to process the appropriate paperwork. At the oral examination with all five

members of the Preliminary Examination Committee, students will be examined primarily on their essays, but also, where this is relevant to the topics of the essays, on their reading lists and on course work done with faculty members on the committee.

The oral exam may be scheduled at any time, but students should note that they must take it within the first two weeks of the semester in order to register for dissertation credits that semester. Students taking their exam after the start of the semester must first register for Hsci/HMed 8666 “Doctoral Pre-Thesis Credits” *before* the first day of class in order to avoid a late registration fee. Then after passing the oral exam contact the appropriate office administrator to get a permission number for Hsci/HMed 8888 “Thesis Credit: Doctoral.” Then drop Hsci/HMed 8666 and add Hsci/HMed 8888.

You also need to file with the Graduate School a thesis title form and a 250-word statement of your research and methods no later than a semester after passing the preliminary oral examination. The Graduate School may put a hold on your registration if this form is not filed in a timely manner (see “Review of the Dissertation Prospectus” below).

Review of the Dissertation Prospectus

Within three months of passing the preliminary examinations, students must submit a dissertation prospectus for discussion by their Dissertation Examining Committee. This committee may be the same as the Preliminary Examining Committee or it may have some change to reflect the particular topics and expertise required for the dissertation; both committees require three faculty members from the track and two outside faculty members.

The presentation and discussion of the prospectus should take place within three weeks of submission of the document. The oral presentation of the prospectus is an opportunity for the student and the committee collectively to identify strategies for research and writing of the dissertation and to help students prepare successful funding proposals. This discussion is not an exam and will normally be about an hour. It is important to file the thesis title form and abstract with the Graduate School in a timely manner (see “Oral Exam” above).

Defense of the Dissertation

The defense of the dissertation comes after your advisor has had sufficient time to read it thoroughly and agree it is ready for defense. A penultimate (fully complete) version is submitted to three dissertation readers, who will need to sign a graduate school form (available in Johnston Hall) agreeing that the dissertation is ready for defense. They should be given at least three weeks for their reading, after which either that version or a revised version is submitted to the entire examining committee. This process may take some time or may happen expeditiously depending on the quality of the dissertation draft.

The rules for determining your dissertation readers (three readers, two from inside the track or program), the final examination committee (at least five members, two from outside the track or program), and the final examination itself are somewhat complicated, so you should read the Graduate School Catalog carefully and talk with the DGS. The committee will typically be similar to your preliminary examination committee but it need not be the same. While you may select committee members from outside the University, the Program does not pay for their

expenses. You must make arrangements with the DGS at least two months before the examination itself. The oral examination (also known as the defense), is scheduled online with the Graduate School *at least one week in advance of your examination date (and it is wise to start sooner)*. You must do the scheduling.

Click on the Final Oral Examination Scheduling link listed on the Graduate School's doctoral forms web page (www.grad.umn.edu/students/forms/doctoral/index.html). From the Final Oral Examination Scheduling page (www.grad.umn.edu/students/finalschedule/index.html), click on the link to schedule the exam, and then log in using your X500 ID and password. You will enter the final oral examination date and click "submit," and the Graduate School and the HSTM program DGS will automatically be notified. The Graduate School will notify you by email regarding any outstanding final oral exam requirements, and how to fulfill those requirements, and give you the final authorization for your defense date.

Finalizing the Requirements

After the defense, you are required to provide one digital copy of the final version of your dissertation to the Graduate School, which complies with their guidelines; there are strict penalties for going beyond six months including a requirement that you apply for readmission. You are also required to provide one unbound copy to the appropriate office, either in the History of Science and Technology or in the History of Medicine, to become part of the permanent collection of dissertations completed in the Program. It will be bound by the department, or you may arrange to have it bound. You are required to give a bound copy of the final version of your dissertation to your dissertation advisor(s). It is also customary to offer a copy to other readers, especially those who provided significant assistance.

PROFESSIONAL DEVELOPMENT

Responsibilities of a Teaching Assistant in the Program

Most full-time doctoral students in the Program at some point participate in teaching undergraduate classes. Generally, this involves leading several recitation sections (typically 12 to 25 students) in conjunction with larger lecture classes. Sometimes a TA is assigned to grade papers or otherwise assist faculty who have large classes but do not use sections.

Teaching assistants are expected to attend lectures, prepare for sections, conduct them, grade students' work in a timely manner, and to assist the instructor in the lecture classes. In addition, they are expected to participate in all TA meetings, turn in all paperwork in a timely fashion, proctor exams, notify the faculty member of any problems, and participate fully in the course to which they are assigned. Every TA must act responsibly as a professional instructor, which includes scheduling regular office hours and encouraging students in their work. If any responsibility, including meeting with classes, cannot be met, the faculty supervisor or the department chair must be notified in advance. It is important to remember that you represent the entire Program while you are instructing and advising undergraduates.

A 50% teaching assistantship requires 20 hours of work each a week, on average. If you find that your work load varies significantly from that (too little or too many hours), please speak to your supervisor or to the DGS.

The Program requires that students attend orientation sessions for new TAs offered by the university and any special meetings called for TAs by the Program. TAs are required to maintain good progress (as outlined by the Graduate School) with regard to degree forms and as indicated in their annual review.

For students who anticipate a future in academe, we encourage participation in the Preparing Future Faculty Program and in other opportunities to learn more about effective teaching. The PFF program is particularly effective in helping students develop teaching portfolios and introduces them to current trends in higher education.

Center for Teaching and Learning Services (<http://www1.umn.edu/ohr/teachlearn>)

Many of you will hone your teaching skills as teaching assistants within the Program. Occasionally summer courses are offered by ABD (all but dissertation) students. The Center for Teaching and Learning Services offers a series of Teaching Enrichment workshops on instructional design, stimulating discussion, grading, teaching writing, and other topics for teaching assistants and faculty each August. The Center offers consultations, online resources, workshops, and other pedagogical guidance throughout the year.

Preparing Future Faculty Program (<http://www1.umn.edu/ohr/teachlearn/graduate/pff>)

Through the Center for Teaching and Learning Services, the Graduate School and the University Office of Human Resources sponsors the Preparing Future Faculty program for students interested in a more formal, comprehensive approach to teaching preparation. Students take one or two core courses, have mentors, and receive letters of recognition and certificates for participation.

PROGRESS TOWARD THE DEGREE AND PLANNING AHEAD

Standard Progress

You are encouraged to complete your course work and your foreign language requirements during your first two years in the Program. You should ordinarily complete your preliminary examination no later than the end of your third year. You must maintain a cumulative grade point average (GPA) of 3.3 or above, ideally without incomplete courses. It may occasionally be advantageous to work on a paper beyond the end of the term, but, unless there are extenuating circumstances such as health or family problems, you should strive to complete the work in a few weeks and before the start of the following semester. It is disadvantageous to take longer-term incompletes since they absorb time in your second or third year when you should be moving on to independent research and your dissertation topic. You are not allowed to have more than two incompletes at any time.

Students must register every semester under federal and university guidelines. Once course work is complete (or if the student is taking one course and needs a minimum registration of six credits for a TA or RA position) and before taking the preliminary oral exam, students may register for HSci 8666 or HMed 8666 (for 1-6 credits). Students may take these credits in two semesters or summers for up to 12 credits. Departmental consent is required for a third or fourth registration for up to an additional 12 credits. The Graduate School maximum number of credits for 8666 courses is four repetitions or 24 credits. After passing preliminary orals, students must register

for 24 thesis credits and then register each semester for 1 credit of either GRAD 999 (no cost, but does not fulfill FTE requirement for visas or student loans, or registration requirements for RA or TA positions) or HSci/HMed 8444 FTE: Doctoral or HSci/HMed 8333 FTE: Master's.

Professional Expectations

The graduate student community has traditionally been a cohesive and supportive group. Policy decisions are made by consensus and activities arranged informally. Graduate students individually and collectively assume responsibilities that assist the Program and each other.

Graduate students share office space. Each student who is a teaching assistant or who plans to spend considerable time on campus has a desk in the offices on the first floor of Shepherd Laboratories or in Diehl Hall. These desks are distributed, by convention, on the basis of seniority.

There are a number of opportunities on campus to become involved with graduate students from other departments and colleges, to participate in programs, and to participate in governance activities. These include the Council of Graduate Students (COGS) and the Graduate and Professional Student Assembly (GAPSA), both of which have useful web pages.

Professional Organizations

It is strongly recommended that students join one or more of the organizations important to their discipline, namely the *History of Science Society* (HSS), the *American Association for the History of Medicine* (AAHM), and the *Society for the History of Technology* (SHOT). These professional organizations offer discounted student membership rates, and membership includes a subscription to the group's journal and newsletter. These publications indicate what is happening broadly in the field and offer an opportunity to learn about topical meetings and financial support of various kinds. There are also regional organizations and specialized groups that hold annual or semi-annual meetings that are a wonderful place to meet scholars in the field and to present your own ideas even in the early stages of your graduate study. The major organizations have useful websites that allow you to look for fellowships and grants:

- HSS: www.hssonline.org/profession
- AAHM: www.histmed.org
- SHOT: www.historyoftechnology.org

The *American Historical Association* (www.historians.org) has a comprehensive list of sources, while specialized groups like the *Eighteenth-Century Studies Society* or the *British Society for the History of Science* will have news of much more targeted opportunities.

Many of us also subscribe to *H-Net*, the online humanities network, as a source of information. H-Net's homepage is www.h-net.org and participation in any of its online listserves is free (although making a contribution to cover local costs is encouraged). H-Sci-Med-Tech regularly circulates information about conferences, archives, travel grants, fellowships, and jobs in these fields.

SUMMARY OF PROGRAM REQUIREMENTS*

Requirements	M.A.	Ph.D.
Time Limit	Not more than 7 yrs. total	Not more than 5 yrs. past candidacy
File Degree Program**	After 12 credits; not later than 3rd semester	During 2nd yr.
Distribution Requirements	2 “area” courses	HST: 2 period and 4 area courses HMed: 2 period courses
Core Requirement	HSCI/HMED 8112	HSCI/HMED 8112 and 8113
Research Requirement	HSCI/HMED 8113 or another Writing Seminar	Writing seminar in addition to HSCI/HMED 8113 and Dissertation
Minor Courses Required	None	6 credits in supporting program
Languages	1: French or German	2: French and German (others by petition)
Preliminary Exam Committee	Not Applicable	5 members: 3 from “major”, 2 from “outside” track
Preliminary Written Exam**	None	Two reading lists and two essays
Preliminary Oral Exam**	None	Not less than 1 week after passing written
Register Thesis Title**	No time requirement for Plan A No thesis requirement for Plan B	Within 1 semester of passing oral exam
Thesis Credits Required	10 for Plan A (HSCI/HMED 8777); 0 for Plan B (total 30 credits)	24 (HSCI/HMed 8888)
GPA	Minimum GPA of 3.3	Minimum GPA of 3.3
Final Oral Committee**	3 members (2 from major)	5 members: 3 readers; 2 from outside major

*See also the *Graduate School Policies & Governance* (www.grad.umn.edu/deans-office/policies_governance).

**Obtain necessary forms from Graduate School Office, 3rd Floor, Johnston Hall or by going on line at www.grad.umn.edu/students/forms.

GRADUATE MINOR IN THE HISTORY OF SCIENCE, TECHNOLOGY, AND MEDICINE

Students who wish to take the graduate minor in the History of Science, Technology, and Medicine are required to take four three-credit courses. The Historiography class (HSci or HMed 8112) is strongly recommended, along with other courses that are selected to define a course of study that should have some identifiable focus but also a certain breadth. Students should not plan to take all courses in the minor from the same faculty member.

FINANCIAL AID

University of Minnesota Opportunities

The opportunities vary between the two tracks because they are in different colleges. Some incoming students with outstanding records are eligible for *College of Science and Engineering Graduate Student Fellowships*, which consist of stipends to cover living expenses, full tuition waivers, and health care for the academic year. The Program faculty nominates a designated number of incoming students for these awards each year shortly after admission decisions have been made. There are also a number of University sponsored Diversity (DOVE) fellowships to which the Program may also make nominations.

For Ph.D. candidates who have passed their preliminary exams and completed all but the dissertation (ABD), the Graduate School offers *Doctoral Dissertation Fellowships* (DDFs) (www.grad.umn.edu/fellowships/ddf) and *Interdisciplinary Doctoral Fellowships* (IDFs) (www.grad.umn.edu/fellowships/idf) that provide support for an academic year. Nominations for an IDF are typically made by one of the interdisciplinary centers at the university (e.g., the Minnesota Center for Philosophy of Science). Nomination for a DDF is done through individual graduate programs. Early in the spring semester, the faculty from each graduate program at the university nominates a specified number of students for these fellowships. The allocation for our program is typically one or two. If the number of qualified candidates for a DDF exceeds our allocation, there will be a competition within the program for these nominations. The recipients are decided in a university-wide competition. Among the Graduate School requirements are that the year of student admission is no more than four years prior to the year of application, or two years prior if the student entered with an M.A. degree; i.e., a Ph.D. student nominated for a dissertation fellowship in 2013–2014 could not have entered the program before 2009–2010.

History of Science, Technology, and Medicine Program Fellowships and Assistantships

There are several *Endowed Fellowships* available through HSTM, some with designated fields of study. These broadly defined fellowships are allocated by decision of the faculty and include the Roger Stuewer Fellowship (history of science) and the Alan Shapiro Fellowship (history of science), the Tomash Fellowship (history of computing), and the Wangenstein Fellowship (history of medicine).

The HSTM program has several *teaching assistantships* that are allocated through the two tracks. These are assigned based on the terms of the offer at the time of acceptance into the Program and, in no particular order, scholarly accomplishments (published papers, archival and museum contributions), academic achievement (quality of exams and research papers), timely progress toward completion of degree, previous record as a TA, professional activities, and the number of years of previous support. The program works to help PhD students find support for five years, anticipating that three of those five years may be within the Program. Thus, students are also encouraged to apply for teaching appointments in other departments; in past years these have included the writing program, physics and biology departments, and education. As these become available, they are posted at <https://employment.umn.edu>. Appointment percentages, skill requirements, and wages will vary from department to department.

Teaching opportunities occasionally are available for ABD (those who have finished all requirements but the dissertation) to teach summer or evening classes.

Research assistantships are occasionally available through faculty in the program based on internal research grants or support from agencies like the National Science Foundation. HSTM students have also had success in finding research assistantships outside the program, most recently in the school of public health.

Travel funds in small amounts are available for graduate student travel. Priorities for distributing the funds are: (1) delivery of a paper at a professional meeting, particularly for students on the job market; (2) attendance at a professional meeting; and (3) dissertation research of a preliminary nature (awarded by competition in the spring). Previous awards will also be taken into consideration. To apply for meeting related travel funds, send a brief statement to the Director of the Program of your track outlining the purpose, dates and estimated expenses of the travel. Because the funds are limited, the full amount of travel will generally not be awarded. As of spring 2013, the HSTM program has another travel fellowship, the Kohlstedt Graduate Student Travel Fellowship.

Other Grants and Fellowships

There are only limited external resources available for first and second year graduate students. Two of the most competitive are the National Science Foundation Fellowship and the Javits Fellowships, which must be applied for in the first year and require very high undergraduate GPAs and GRE scores.

Especially as students begin to do research and writing for their dissertations, there are various sources of funding external to the University. Sometimes these are quite specific in terms of the topics, so students should consider what kinds of private and public foundations and institutions might be interested in their project and search imaginatively. Some but not all of these are advertised through professional organizations (listed above), most professional associations provide open access. Your advisor should be able to assist you in locating and applying for these funds, and it is important for you to work well ahead of deadlines with him or her on drafts of your proposals and that you allow at least two or three weeks for writing required recommendations.

RESOURCES FOR STUDY AND RESEARCH

Our location in a major metropolitan area and a larger research university opens a wide array of possibilities for expanding the classroom experience. Some of these are institutions and opportunities closely connected to our program, but others may require you to be adventuresome.

Colloquium in the History of Science, Technology, and Medicine

During each semester there is a regular Colloquium on Friday at 3:35, featuring historians of science, technology, and medicine, and including speakers from philosophy and social studies of science, thus hosting a variety of speakers with a broad range of specialties. Coffee and refreshments are served beforehand, at 3:15 pm (first-year graduate students in HSTM are expected to help prepare coffee and cookies for the history colloquia). The schedule is found each semester at www.hstm.umn.edu. It offers members of the Program in the History of Science, Technology, and Medicine a chance to interact with each other, and they also meet a variety of scholars with whom they will likely interact in the future. Often there is a social hour at a local pub or at a faculty home following the colloquia. There is also brown bag lunch with visiting historians on the Friday of their visit. Graduate students working in the same field (history of science, history of technology, history of medicine) are expected and all other graduate students are strongly encourage to attend these lunches, as they are key to professionalization and to building our community. These lunches vary in format, sometimes involving a discussion of a particular reading by the speaker, sometimes a conversation about method or theory, and often a conversation about professional issues.

Lectures in the History of Medicine

The History of Medicine Program sponsors a series of endowed lectures every year. These presentations offer an opportunity for students to hear and to interact with prominent scholars from other academic centers. Lectures are usually on Monday at noon. Coffee and refreshments are provided in Diehl Hall. Brown bag lunches are welcome. The schedule is available on the History of Medicine website www.med.umn.edu/history/events/home.html. In addition the Wangenstein Historical Library sponsors lectures on the history of medicine in spring semester of some years.

Campus Libraries (www.lib.umn.edu)

- *Walter Library*, <http://walter.lib.umn.edu>, on the East Bank of campus is devoted to the physical sciences and engineering. There are also two specialized libraries with holdings related to Walter Library's in the School of Design (especially Architecture) and the Department of Mathematics.
- The *Bio-Medical Library*, www.biomed.lib.umn.edu, in Diehl Hall on the East Bank has an extensive collection of journals and books under its topical purview.
- *Magrath Library*, <http://magrath.lib.umn.edu>, on the St. Paul Campus, contains materials in the life sciences and agriculture, including USDA documents.

- *Wilson Library*, <http://wilson.lib.umn.edu>, on the West Bank, has holdings in the humanities and social sciences. Specialized libraries within Wilson include the Ames Library of South Asia, the East Asia Library, the Map Library, the James Ford Bell Library which is a collection of more than 20,000 rare books, 2,500 maps, and 2,500 manuscripts from the period 1400 to 1800, documenting the expansion of Europe. Wilson Library is also a US Government Document Repository.
- The *Elmer L. Anderson Library*, <http://andersen.lib.umn.edu>, on the West Bank houses seven archival collections, including the Charles Babbage Institute (see below), the University Archives and Special Collection and Rare Books, and the Social Welfare History Archives. For a complete list of the University's special collections see <http://special.lib.umn.edu>.
- The *Bell Museum of Natural History*, www.bellmuseum.org, maintains an outstanding art collection including world-renowned wildlife dioramas, prints, paintings, sculpture and wildlife films designed to bring nature to life for museum visitors. Many of the museum's dioramas were painted by Minnesota native Francis Lee Jaques.
- The *Charles Babbage Institute: Center for the History of Information Technology*, www.cbi.umn.edu, holds archival materials (including company, personal, and institutional records), rare publications and oral histories that document the history and development of information technology. Information technology is defined broadly to include such topics as computing, information processing, hardware and software design developments, software applications, development of standards, networking, the Internet, security and surveillance, and the social and cultural implications of computing. A searchable index of manuscripts and collections is available on-line. CBI also offers the Tomash Fellowship in the History of Information Processing. CBI is known internationally as a must stop for many topics in computing history but its records can also support numerous other historical topics, especially in the post-1930 period.
- The *Frederick R. Weisman Art Museum*, www.weisman.umn.edu, is located on campus next to the Coffman Student Union and houses an extensive collection of American painting and sculpture as well as large print and photograph collections. The holdings are particularly strong in works from the first three decades of the 20th century. Among these, the University Art Museum boasts the largest collection of Marsden Hartley works in the world. The Alfred Steiglitz circle and WPA work are also well represented. The Museum also holds many works by Minnesota artists and artists connected to the University of Minnesota. Exhibition catalogues from museum showings across the United States are housed in the Museum's library.

University Centers

The University of Minnesota, as the large and only major research university in the state, has significant resources in its academic and professional colleges and schools. You will want to explore the often highly respected programs and centers within and beyond the ones that host our faculty members. A few of them with whom our faculty members have close affiliation are mentioned below, but you will want to look for others that have resources and activities that may contribute to your experience here. Examples include the Minnesota Population Center, the Institute for Global Studies, as well as workshop groups in the Department of History and reading groups in American Studies.

- The *Minnesota Center for the Philosophy of Science*, www.mcps.umn.edu, is housed with the Department of Philosophy in Heller Hall and serves as one of the key programs in the Social Studies of Science and Technology Studies Graduate Minor. The Center has various reading and discussion groups of interest to HSTM graduate students
 - Biology Interest Group (BIG) (www.mcps.umn.edu/groups/biological.html). Contact Mark Borrello for further information.
 - Physics Interest Group (PIG) (www.mcps.umn.edu/groups/physics.html). Contact Michel Janssen for further information.
 - Early Modern Interest Group (EMIG) (www.mcps.umn.edu/groups/earlyModern.html). Contact Victor Boantza for further information.
- The *Center for Bioethics*, www.ahc.umn.edu/bioethics, works to advance and disseminate knowledge concerning ethical issues in health care and the life sciences. The Center carries out this mission by conducting original interdisciplinary research, offering educational programs and courses, and fostering public discussion and debate often on topics of current interest.
- The *Center for German and European Studies*, <http://cges.umn.edu>, is one of the nation's top centers for innovative interdisciplinary teaching and research on Germany and Europe. It is a consortium of the University of Minnesota (Twin Cities) and the University of Wisconsin (Madison) that promotes knowledge about Germany and Europe among established and emerging scholars and sponsors a series of summer institutes.
- The *Center for Austrian Studies*, www.cas.umn.edu, serves as a focal point for the study of Austria and Central European lands with a common Habsburg heritage across disciplines in the humanities, the social sciences, the applied sciences, and the fine arts.
- The *Institute for Advanced Study*, <http://ias.umn.edu>, brings together new work across the humanities. The Institute offices and public spaces in the Nolte Center provide a place where faculty and students can meet informally for discussions with one another and for more structured presentations, concerts and conversations. The IAS also houses the activities of the *Humanities Institute*, the *Center for Medieval Studies*, and the *Center for Jewish Studies*.

Off-Campus Museums and Collections

- The *Bakken Library and Museum of Electricity in Life*, www.thebakken.org, has an extensive collection of instruments relating to electricity and magnetism, many of them

displayed in a family-friendly museum. The library houses technical journals dating from 1665 through 1940, manuscripts and rare books, and ephemera. A number of HSTM students and graduates have been employed by the Bakken.

- The *Minneapolis Historical Society and State Archives*, www.mnhs.org, has been collecting and preserving items relating to the history of Minnesota and the old Northwest for 150 years. Collections are not limited to local memorabilia; MHS holds materials relating to the history of medicine and medical practice, the medical device industry, exploration and interaction between indigenous and non-native peoples, labor and commercial history of the region, political activities, and the official records of the state, counties, and many municipalities. There are online catalogues for its book, manuscript, and records collections, and its extensive photograph collection and visual resources database. The MHS also holds the state and federal censuses and offers classes on how to do genealogical and other specialized searching. Its website includes links to a number of historical organizations throughout the state.
- The *Minneapolis Institute of Arts*, <http://new.artsmia.org>, is a non-profit museum housing objects from diverse cultures ranging from 5,000 BCE to the present. The collection is especially strong in the fine and decorative arts, and an exhibit on design showcases many pieces of interest to historians of technology. A small library holds many hard-to-find publications bearing on the fine arts, decorative arts, and design.
- The *Walker Art Center*, www.walkerart.org, features exhibits in the visual and performing arts, primarily modern, avant-garde, and contemporary work. In addition, its film retrospectives frequently address historical topics and screen historic films.
- The *Hennepin History Museum*, www.hennepinhistory.org, has collections relating to the history of Hennepin County. It has extensive collections of textile handcrafts and historical photographs. It also holds personal papers, business and government documents, and maps, many in the category of “ephemera,” such as business advertisements and schoolwork.
- The *Minneapolis Public Library*, www.helib.org, has an extensive collection including materials unavailable at the University library. The Library has ten special collections, more than 10,000 digital images, and five special collections maintained by the Minneapolis Athenaeum including the Spencer Natural History Collection, the North American Indians Collection, and the History of Books and Printing Collection.
- The *Science Museum of Minnesota*, www.smm.org, in St. Paul has standing and traveling exhibits as well as an Omnimax theater. The main areas of focus of their Research and Collections Division include archaeology and ethnology; mammalogy, entomology, and ornithology; vertebrate and invertebrate paleontology; and river and stream ecology and watershed biology. A number of HSTM students and graduates have been employed by the Science Museum.
- The *St. Paul Public Library*, www.sppl.org, has an extensive collection of trade and historical publications, and may well hold something the University library does not.

APPENDIX A

Courses in the History of Science, Technology, and Medicine

The following list of classes includes those that currently exist (September 2010). Most courses belong exclusively in one track. However, given the interdisciplinarity of our faculty members and the overlap of interests as, for example, in biotechnology and medical science, we have some courses that meet the basic requirements in both tracks. Those courses indicated by an asterisk (*) may be counted as a basic course in both tracks but may not be used in a supporting program for students in either track.

History of Science and Technology Track

HSci 4050	Special Topics in the History of Science
HSci 4060	Special Topics in the History of Technology
HSci 4111	History of 19 th Century Physics
HSci 4121	History of 20 th Century Physics
HSci 4125	The Nuclear Age
HSci 4302	History of High Technology Weapons
HSci 4321	History of Computing
HSci 4455	Women, Gender, and Science
HSci 5211*	Biology and Society in the 19 th and 20 th Centuries
HSci 5242	Darwinian Revolution
HSci 5244	History of Ecology and Environmentalism
HSci 5331	Technology and American Culture
HSci 5332	Science and American Culture
HSci 5401	Ethics in Science and Technology
HSci 5411	Art and Science in Early Modern Europe
HSci 5421	Engineering Ethics
HSci 5993	Directed Studies
HSci 5994	Directed Research
HSci 8112	Historiography of Science, Technology, and Medicine
HSci 8113	Research Methods in History of Science, Technology and Medicine
HSci 8124	Foundations for Research in Ancient Science
HSci 8125	Foundations for Research in the Scientific Revolution
HSci 8131	Industrial Revolutions
HSci 8421	Social and Cultural Studies of Science
HSci 8441	Women in Science: Historical Perspectives
HSci 8830*	Topics in the History of Science, Technology and Medicine
HSci 8900	Seminar: History of Early Physical Sciences
HSci 8910	Seminar: History of Modern Physical Sciences
HSci 8920	Seminar: History of Biological Sciences
HSci 8930	Seminar: History of Technology
HSci 8940	Seminar: History of Science and Technology in the Americas
HSci 8950	Seminar: Science and Technology in Cultural Settings
HSci 8993	Directed Studies

HSci 8994	Directed Research
HMed 5035*	The Germ Theory and Modern Medicine
HMed 8001*	Early History of Medicine to 1700
HMed 8830*	Topics in the History of Science, Technology, and Medicine

History of Medicine Track

HMed 5002	Public Health Issues in Historical Perspective
HMed 5035*	The Germ Theory and Modern Medicine
HMed 5045	The Modern Medical Profession
HMed 5055	Women, Health, and History
HMed 5075	Technology and Medicine in Modern America
HMed 5600	Directed Study
HMed 5940	Topics in the History of Medicine
HMed 8001*	Early History of Medicine to 1700
HMed 8002	History of Medicine since 1700
HMed 8112	Historiography of Science, Technology, and Medicine
HMed 8113	Research Methods in History of Science, Technology, and Medicine
HMed 8220	Current Topics in the History of Medicine
HMed 8631	Directed Study
HMed 8632	Directed Study
HMed 8830*	Topics in the History of Science, Technology, and Medicine
HSci 5211*	Biology and Society in the 19 th and 20 th Centuries
HSci 8830*	Topics in the History of Science, Technology and Medicine

Both departments also offer pre-thesis credits (8666), M.A. thesis credits (8777), and Ph.D. thesis credits (8888)

APPENDIX B

Summary of Graduate School Policies & Governance

www.grad.umn.edu/deans-office/policies_goverance/index.html

1. *Master's Degree: Performance Standards and Progress*
 - a. Establishes a five-year time limit for completing master's degrees, but provides a process for requesting individual extensions and program-wide exceptions for distinctive student populations.
 - b. Requires annual progress reviews for all master's students, with written notification to students who are deemed to be not in good standing.
 - c. Continues the requirement of a minimum GPA of 2.8 for coursework included on master's degree programs for degree clearance (awarding of the degree).
 - d. Extends applicability of policy requirements to programs not formerly under the aegis of the Graduate School.
2. *Master's Degree: Completion*
 - a. Establishes the required conditions and suggested best practices for remote participation in graduate examinations.
 - b. Specifies the University as the digital archive of record for deposit of theses and dissertations and requires timely deposit of the thesis following the defense.
 - c. Extends applicability of policy requirements to programs not formerly under the aegis of the Graduate School.
3. *Doctoral Degree: Performance Standards and Progress*
 - a. Establishes the required conditions and suggested best practices for remote participation in graduate examinations.
 - b. Changes how the completion time limit is defined by establishing an eight-year limit from initial enrollment to degree clearance (awarding of the degree), but provides a process for requesting individual extensions and program-wide exceptions for distinctive student populations.
 - c. Establishes a minimum GPA of 3.0 for doctoral students to remain in good standing.
 - d. Extends applicability of policy requirements to programs not formerly under the aegis of the Graduate School.
4. *Doctoral Degree: Completion*
 - a. Establishes the required conditions and suggested best practices for remote participation in graduate examinations.
 - b. Specifies the University as the digital archive of record for deposit of theses and dissertations and requires timely deposit of the dissertation following the defense.
 - c. Facilitates reactivation for the purpose of degree clearance for those students who have completed all other degree requirements.
 - d. Extends applicability of policy requirements to programs not formerly under the aegis of the Graduate School