Technology and Society
www.stonybrook.edu/est

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Advanced Graduate Certificates Awarded
Advanced Graduate Certificate in Data and Computational Science; Advanced Graduate Certificate in Industrial Management

Degrees Awarded
M.S. in Technological Systems Management; Ph.D. in Technology, Policy, and Innovation

Technology and Society

Technology defines 21st century life and work. Understanding general and specific characteristics, capabilities, and limitations of modern technologies is essential for those who need to use, manage and create them. Leading teams and otherwise interacting in modern scientific, engineering, and educational settings requires skills specific to certain needs. The Department of Technology and Society, located within the College of Engineering and Applied Sciences, was created to help address these diverse needs.

The Master's Degree in Technological Systems Management offers three degree concentrations: Technology Management, Resilience and Sustainability, and Educational Technology. This degree is well-suited for recent baccalaureate graduates; however, those with some practical experience in the workplace who are seeking to gain pertinent management and necessary leadership skills to advance their careers will find our courses especially appropriate, and will appreciate that our face-to-face classes are offered in the evenings to accommodate work schedules. It is also possible to complete our degree programs entirely on-line, through a combination of evening synchronous classes and asynchronous classes for those who wish to set their own schedule. Course offerings are scheduled so that it is possible to complete the degree in three full-time (9 credit) semesters if an additional course is taken over the summer. It is also feasible to complete the degree on a part-time basis.

Each specialization requires 30 credits (10 courses) of classwork plus a Master’s project. The coursework includes four required courses shared across the concentrations. The Master’s project is completed under the supervision of a faculty member. It is typically addressed in three ways: 1) a literature search on a technical issue in the concentration area; 2) a project that combines some form of technical training from two or more classes in the program; or 3) by addressing a professional problem where there is not sufficient time or available effort to address in the working environment and which requires additional technical information.

Students completing the master’s degree program will find that they can:

• use multiple quantitative decision-making techniques and to analyze the role of bias in judgements.
• manage technical and social aspects to explain complicated phenomena and demonstrate mastery of socio-technological systems.
• evaluate and criticize the ethical decisions encountered in the engineering design process.
• identify, explain, and apply basic concepts of Science, Technology, Society research.
• demonstrate concepts, analytical tools and practical skills for the purpose of managing technologies.

The Technology, Policy, and Innovation (TPI) Ph.D. program has a four-part mission:

• To develop a cadre of scholars who will be engines of national leadership in charting and gauging the future course of technologies;
• To carry out policy and design/planning research in intersecting socio-technological areas: energy and environmental systems; and engineering and technology workforce policy;
• To establish a new model for doctoral education that promotes highly intensive collaborations and uses advanced educational technologies in a fertile, diverse, globally networked laboratory environment that transcends disciplinary boundaries; and,
• To serve as an exemplary resource for regional and national industry and government, as well as for schools, colleges/universities, and other educational institutions in both implementing technological innovation and carrying out policy studies.

Students in the Technology, Policy, and Innovation (TPI) Ph.D. program will work in one or more areas of faculty research strength. In addition to drawing on the expertise of faculty in the Department of Technology and Society, the Ph.D. program is supported by more than 10 affiliated faculty members from throughout the Stony Brook campus.

The Advanced Graduate Certificate in Computational Science teaches students how to evaluate data trends, make predictions and solve problems using mathematics, computer science and machine learning. Students must be enrolled in the master’s program before applying to the Advanced Graduate Certificate in Computational Science. Credits earned in the certificate can be counted both for the certificate and the master’s degree. The Advanced Graduate Certificate in Industrial Management helps managers develop their abilities to use advanced technologies in
their companies, understand their business processes, reduce waste and inefficiencies, and improve the bottom line of their companies. Students can earn an Advanced Graduate Certificate in Industrial Management without enrolling in the master’s program. However, up to 12 credits earned in the AGC can be applied towards the master’s degree.

Admission requirements for the Department of Technology and Society

Admission to the M.S. and Ph.D. programs is handled separately by the Departmental admissions committee. The requirements for admission to graduate study in this department include:

1. A bachelor’s degree in engineering, natural sciences, social sciences, mathematics, or a closely related area from an accredited college or university. For admission to the M.S., students will need to have completed prerequisite courses of one year of calculus (MAT 131 and 132 or equivalent).
2. A minimum undergraduate grade point average of 3.00.
3. Three letters of recommendation.
4. Acceptance by the Department of Technology and Society and the Graduate School.
5. If your native or primary language is not English, a test to measure your English proficiency is required. The department and Graduate School accept TOEFL and IELTS examination scores. English proficiency requirements for the master’s and the Ph.D. programs are different. For the master’s program, the minimum score for TOEFL is 85 and an overall score of 6.5 with no subsection below 6 for IELTS. For the Ph.D. program, the minimum score for TOEFL is 90 and the overall score of 7.5 with no subsection below 6.5 for IELTS.
6. A Statement of Purpose describing the applicant’s relevant past experience and immediate and long-term goals. For the master’s program, your statement of purpose must include your concentration: Technology Management, Resilience and Sustainability, or Educational Technology. For the Ph.D. program, the statement of purpose should describe how the type of research that students expect to conduct while in the program relates to one of the department’s research areas. All admission material should be entered into the graduate School on-line application system. In unusual cases, official transcripts, recommendation letters can be mailed to Office of Graduate and Health Sciences Admissions, Stony Brook University, Health Sciences Tower, Level 2, Room 271, Stony Brook, NY 11794-8276, Email: gradadmissions@stonybrook.edu, stonybrook.edu/graduate-admissions, Official E-Transcripts: email to gradadmissions@stonybrook.edu

7. In special cases, applicants who do not satisfy requirement A or B may be admitted on a conditional basis and may be subject to additional course requirements. Appropriate courses taken in non-matriculated status may be applied towards the M.S. degree in Technological Systems Management and the Ph.D. degree in Technology, Policy and Innovation; however, no more than 12 credits taken in non-matriculated status can be applied to the credit requirements for the M.S. and Ph.D. degrees.

For admission to the Advanced Graduate Certificate program, students must have a bachelor’s degree and an undergraduate GPA of at least 3.0. Students with lower averages may be admitted in non-matriculated status that may be changed upon earning six or more graduate credits applicable to the certificate with a GPA of 3.0 or higher.

Credits for certificate program courses may be applied to requirements for the M.S. degree in Technological Systems Management, subject to Graduate School rules and limitations; however, no more than 12 credits may be transferred.

Facilities of the Department of Technology and Society

DTS has an expanse of contiguous office space on the first floor of the Computer Science Building, where professors and staff maintain offices, PhD student offices are housed, and department conference spaces are found. There, the department has a computer lab with approximately 15 up-to-date desktop computers that are available to all current DTS students; and there is also a comfortable collaboration space for students and faculty. Scanners and printers are available in the lab, as well as through other department offices. Ph.D. students are provided with shared office space (desks, bookshelves, filing cabinets), mail boxes, and full access to DTS electronics (such as laptops). Individual department faculty and researchers maintain access to a variety of research environments to support their work, and students working with them can also have access to these facilities.

Requirements for the M.S. Degree in Technological Systems Management

Typically, students in the master’s program choose one of the three concentrations and take all 15 elective courses within the selected concentration. Students are required to complete five courses (EMP 501, EST 502, EST 581, EST 582, and EST 590) for 15 credits, 15 additional elective credits, and a master’s project. Suggested additional credits for each of the concentrations and information about how to address the master’s project are indicated below. Consult with the Graduate Program Director or Graduate Program Coordinator for more guidance.

Required Courses (15 credits): EMP 501, EST 502, EST 581, EST 582, and EST 590

Note: Entering students are presumed to have essential communications, computer, and mathematical skills. Otherwise, prerequisite study in these areas will be required.

Elective Courses (15 credits)

Educational Computing Concentration
Elective Courses: EST 524, EST 565, EST 570, EST 571, EST 573, EST 574, EST 579, EST 599, Masters Project.

Technology Management Concentration

Elective Courses: EMP 502, EMP 504, EMP 506, EMP 517, EMP 518, EMP 532, EST 519, EST 569, EST 599, EST 605, Masters Project

Resilience and Sustainability Concentration

Elective Courses: EST 535, EST 536, EST 558, EST 559, EST 569, EST 583, EST 592, EST 593, EST 597, EST 599, EST 603, EST 605, EST 694, Masters Project

Master’s Project

Students typically address the Master’s project in one of three ways:

1) a literature search on a technical issue in the concentration area.

2) a project that combines some form of technical training from two or more classes in the program.

3) by addressing a professional problem where there is not sufficient time or available effort to address in the working environment and which requires additional technical information.

Requirements for the Ph.D. Degree in Technology, Policy, and Innovation

Please refer to our web site for the application deadline: https://www.stonybrook.edu/commcms/est/phd/admission.php. Applications are only accepted for the fall semester.

A. Residence

The student must complete two consecutive semesters of full-time graduate study. For students who have earned less than 24 graduate credits (at Stony Brook University and/or another institution), full-time study is 12 credits per semester. For students who have earned 24 graduate credits or more, full-time status is nine credits per semester.

B. Qualifying Examination

The qualifying examination must be taken by all students, regardless of whether they enter the program holding a master’s degree or a bachelor’s degree only. Students are expected to complete the qualifying examination by the end of the fourth semester. The qualifying exam has two parts: the Part A examination and the Part B examination.

Part A Examination:

The student conducts an original research project, typically starting in the first semester in the program, and presents the results to the department, typically during the fourth semester. The purpose of this is to ascertain the student’s preparation to conduct independent original research in a TPI area.

The student is expected to conduct an independent research project under the guidance of a faculty advisor, and present the results. We expect that the quality of the methodology and results should be sufficient for a poster presentation at a leading academic conference.

The Part A exam may be presented at any time that is convenient for the student and the student’s Part A committee. For full-time students, this typically should occur sometime during the 4th semester; part-time students may take the exam up to one year later. The student’s advisor and the student consult to make a recommendation to the Chair of the Department regarding the composition of the Part A Committee. Typically, the student’s Part A Committee will be comprised of four faculty members, and include at least one faculty member from outside of the Department of Technology and Society. The student’s advisor does not serve on the student’s Part A committee.

The Part A committee will evaluate the exam in terms of its three components:

1. Written report – typically, 15-30 pages, and, typically, 50-100 citations. The report must a) identify a research question of interest to some research community; b) provide an overview of related background research; c) describe a reasonable approach to addressing the research question; and d) present the results of the research project.

2. Presentation - approximately 45 minutes. The presentation must a) provide a motivation for conducting this line of research; b) summarize the background material, emphasizing only the most important related work; c) give an overview of the methodology, emphasizing why this approach was taken; and d) give results.

3. Questions - posed by members of the committee following the presentation. Questions may be related to any aspect of the presentation or the written report.

The Part A examination will be graded on the following basis: Pass; Pass with Conditions; and Fail. A student who receives a Pass with Conditions must address the conditions by the end of the following semester or the Pass with Conditions will convert to Fail. A student who does not pass the Part A examination will be dismissed from the program.

Part B Examination:

The student achieves an average GPA of 3.7 or higher on three social sciences-related courses:

Research Methods I – from a social sciences department
Research Methods II – from a social sciences department
EST 610 (Advanced Statistics)—within Department of Technology and Society
A student who does not achieve the 3.7 GPA in the course work shall be required to take a statistics examination prepared by department faculty. If the student does not pass this written examination, one retake will be allowed. A student who does not pass the Part B examination will be dismissed from the program.

C. Course Requirements

1. For students who entered the Ph.D. Program prior to Fall, 2014, course requirements are as follows:
   - EST 600 (Technology and Policy);
   - EST 610 (Data Analysis, or equivalent approved course);
   - EST 620 (Decision Making);
   - Three courses from Social Sciences Departments (Research Method I, Research Methods II, and Advanced Statistics);
   - Fifteen (15) credits of technical electives (foundation for technical/technology dimension of planned research).

2. For students who entered the Ph.D. program in Fall, 2014 or later, course requirements are as follows:
   - EST 600 (Technology and Policy);
   - EST 610 Revised (Advanced Statistics);
   - EST 625 (Advanced Technology and Policy);
   - Two (2) courses from social sciences departments (Research Methods I, and Research Methods II);
   - Fifteen (15) credits of technical electives (foundation for technical/technology dimension of planned research).

The following courses have been designated as “highly recommended”, and advisors ensure that nearly all students take the courses: EST 605, EST 606, EST 692 (Research Seminar). For students in the energy area, EST 601 is highly recommended.

In addition to regular course requirements, University policy requires that all doctoral students participate in an appropriately structured teaching practicum. This can be accomplished with a Practicum in Teaching course (EST 698), in conjunction with T.A. responsibilities.

D. Thesis Proposal and Preliminary Examination

Students who pass the qualifying examination are expected to develop a thesis proposal within one semester for full-time students, and two semesters for part-time students. This thesis proposal must then be presented and defended in an oral preliminary examination. Failure to fulfill this requirement within 18 months of passing the qualifying examination, and without a formal extension, may be considered evidence of unsatisfactory progress toward the Ph.D. degree.

The major requirements of the thesis proposal are as follows: (1) the student must be thoroughly familiar with the background and current status of the intended research area; (2) the student must have clear and well-defined plans for pursuing the research objectives; and (3) the student must offer evidence of progress in achieving these objectives.

The student will present the thesis proposal to the thesis committee in a seminar presentation. It is limited to members of the committee. The committee for the student’s preliminary examination, dissertation and defense will include at least one faculty member who does not have a primary or joint appointment in Department of Technology and Society. Students will be strongly encouraged to have at least one faculty member from another university on their committee. As part of the preliminary examination, faculty members are free to question the student on any topics they feel are in any way relevant to the student’s objectives and career preparation. Most questions, however, will be directed toward verifying the student’s grasp of the intended specialty in depth. The student will be expected to show complete familiarity with the current and past literature of this area.

The findings of the committee will be communicated to the student as soon as possible and to the Graduate School within one week of the presentation of the proposal. A student who does not pass the preliminary examination on the first attempt will be given a second chance. If the preliminary is failed on the second attempt, the student will be dismissed from the program.

Having passed the preliminary examination, the student is advanced to candidacy. This status, called G5, is conferred by the Dean of the Graduate School upon recommendation of the Department. Note that unlike the change from G3 to G4, the change from G4 to G5 is not automatic—the student must request to be advanced to candidacy by notifying the Technology and Society Graduate Program Coordinator. Students must advance to candidacy at least one year before defending their dissertations. The Graduate School requires G5 students to register for nine credits, which can be research or other graduate courses relevant to their dissertation with permission from the Graduate Program Director and the Graduate School. Courses outside of the major require the approval of the dissertation advisor and Graduate Program Director. Failure to complete the preliminary examination within the specified timeframe and obtain the G5 status is considered evidence of unsatisfactory progress.

E. Dissertation

An important requirement of the Ph.D. program is the completion of a dissertation which must be an original scholarly investigation. The dissertation shall represent a significant contribution to the scientific literature, and its quality shall be compatible with the publication standards of appropriate reputable scholarly journals.
F. Approval and Defense of Dissertation
The dissertation must be orally defended before a dissertation examination committee, and the candidate must obtain approval of the dissertation from this committee. The oral defense of the dissertation is open to all interested faculty members and graduate students. The final draft of the dissertation must be submitted to the committee no later than three weeks prior to the date of the defense.

G. Satisfactory Progress and Time Limit
Students are expected to finish all the requirements, including thesis research and defense, in four to five full-time-equivalent years. A student who does not meet the target dates for the Qualifying Examination, Thesis Proposal, and Preliminary Examination, or who does not make satisfactory progress toward completing thesis research, may lose financial support and/or be placed on academic probation. The candidate must satisfy all requirements for the Ph.D. degree within seven years after completing 24 credit hours of graduate courses in the Department of Technology and Society at Stony Brook. In rare instances, the Dean of the Graduate School will entertain a petition to extend this time limit, provided it bears the endorsement of the Department’s Graduate Program Director. A petition for extension must be submitted before the time limit has been exceeded. The Dean or the Department may require evidence that the student is still properly prepared for the completion of work.

H. Part-Time Students
Students admitted into the Ph.D. program for part-time study are bound by all the rules set out henceforth. In particular, part-time students should adhere to the schedule for the Qualifying Examination, Thesis Proposal, and Preliminary Examination unless a different schedule has been approved in writing by the Graduate Program Director. Students failing to make sufficient progress towards completing their degree may be placed on academic probation.

Faculty of the Department of Technology and Society

Distinguished Service Professor
Paldy, Lester G., M.S., 1966, Hofstra University: Nuclear arms control; science policy.

Distinguished Teaching Professor

Professors
Mueller, Klaus; Professor, Ph.D., 1998, The Ohio State University: Visual analytics, explainable machine learning and AI, algorithmic fairness and transparency, data science and computational and medical imaging.
Pittinsky, Todd L; Professor, Ph.D., 2001, Harvard University. Models intergroup relations in their ecosystems of society, technology, and policy.

Associate Professors
Scarlatos, Lori L., Associate Professor, Ph.D. 1993, Stony Brook University: Educational technology; tangible, physical, multi-modal, and collaborative human-computer interfaces; serious games; computer graphics; multimedia.
Tonjes, David J., Research Associate Professor, Ph.D., 1998, Stony Brook University: Environmental management (waste management, alternative energy sources), contamination (groundwater, pesticides), and monitoring (groundwater, surface water, estuaries); public policy and communication (risk assessment, environmental impact analyses, environmental justice).
Woodson, Thomas, Associate Professor, Ph.D., 2014, Georgia Institute of Technology, Innovation Systems, bibliometrics, science and technology policy, international development

Assistant Professors
He, Gang, Ph.D. 2015, University of California, Berkeley, Energy modeling, energy economics, energy and climate policy, energy and environment, domestic coal and power sectors and their key role in both the global energy supply and in international climate policy framework.
Hewitt, Elizabeth, L, Ph.D., 2015, Rutgers University, Building occupant behavior; social science and behavioral energy research; organizational energy issues; green building design and technology; environmental economics

Number of teaching, graduate, and research assistants, Fall 2022: 13

NOTE: The course descriptions for this program can be found in the corresponding program PDF or at COURSE SEARCH.