Technological Systems Management (TSM)

Major and Minor in
Technological Systems Management
Department of Technology and Society, College of Engineering and Applied Sciences

CHAIRPERSON: David L. Ferguson
UNDERGRADUATE PROGRAM DIRECTOR: Tian-Lih Teng
ADVISOR: Rita Reagan-Redko
OFFICE: 347A Harriman Hall
PHONE: (631) 632-8770
E-MAIL: Ted.Teng@stonybrook.edu and Rita.Reagan-Redko@stonybrook.edu
WEB ADDRESS: http://www.stonybrook.edu/est

Faculty

David L. Ferguson, Distinguished Service Professor, Ph.D., University of California, Berkeley: Quantitative methods; computer applications (especially intelligent tutoring systems and decision support systems); mathematics, science, and engineering education. Recipient of the State University Chancellor’s Award for Excellence in Teaching, 1992, President’s Award for Excellence in Teaching, 1992.

Joseph S. Hogan, Associate Professor Emeritus, Ph.D., New York University: Planetary atmospheres; environmental satellites; climate change.

Thomas T. Liao, Distinguished Teaching Professor, Ed.D, Columbia University: Computers in education; science and technology education. Recipient of the State University Chancellor’s Award for Excellence in Teaching, 1993, President’s Award for Excellence in Teaching, 1993

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

Emil J. Piel, Professor Emeritus Ed.D, Rutgers University: Decision making; technology-society issues; human-machine systems.

Sheldon J. Reaven, Associate Professor, Ph.D., University of California, Berkeley: Science and technology policy; energy and environmental issues; environmental and waste management, risk analysis and life-cycle analysis; nuclear, chemical, and biological threats; technology assessment.

Lori Scarlatos, Associate Professor, Ph.D., Stony Brook University: Computer-human interaction; multimedia and education; computer graphics.

Guodong Sun, Assistant Professor, Ph.D., Carnegie Mellon University: Energy-technology innovation; global climate change; energy, environmental policy, environmental management, and regulatory reform in China.

Tian-Lih Teng, Visiting Professor, Ph.D., University Of Pittsburgh: Electrical engineering; computer science; management of information systems; electronic commerce.David J. Tonjes, Assistant Professor, Ph.D., Stony Brook University: Technology and environmental impact assessments; solid waste and impacts of alternative energy.

John G. Truax, Distinguished Teaching Professor Emeritus, Sc.D., Massachusetts Institute of Technology: Control systems; technology-society issues.

Marian Visich, Jr., Professor Emeritus, Ph.D., Polytechnic Institute of Brooklyn: Aerospace engineering; technology-society issues.

Affiliated Faculty

William F. Collins, Neurobiology and Behavior
Gary Halada, Materials Science and Engineering
Gary Mar, Philosophy
Miriam Rafailovich, Materials Science and Engineering
Henry White, Materials Science and Engineering

Adjunct Faculty

Estimated number: 23

Teaching Assistants

Estimated number: 10

The Department of Technology and Society offers the major in Technological Systems Management leading to the Bachelor of Science degree. The program integrates a foundation in the natural sciences, engineering, applied sciences, or environmental studies with applications in technology systems, assessment, and management. The Department also offers a minor in Technological Systems Management.

The major prepares students for careers in government, industry, or education in positions such as manager of computer network systems, manager of information systems, quality control specialist, systems or environmental analyst, technical sales representative, or technology trainer/educator—in short, all professions and business ventures that are dependent on technological applications and implementation and in which project management is key to success. Students are also prepared for advanced study in areas such as business, law, education, policy analysis, and industrial or environmental management.

Courses Offered in Technology and Society

See the Course Descriptions listing in this Bulletin for complete information.

EST 100 Computer Literacy in a Digital Era
EST 102-E Weather and Climate
EST 104 Projects in Technology and Society
EST 192 Introduction to Modern Engineering
EST 194-C Patterns of Problem Solving
EST 201-H Technological Trends in Society
EST 202 Introduction to Science, Technology, and Society Studies
EST 210 Learning to Learn New Technologies
EST 213 Studies in Nanotechnology
EST 291-H Energy, Environment, and People
EST 300 Computer Modeling and Experiments in Mathematics and Science Education

www.stonybrook.edu/ugbulletin 325
EST 302  Assessment of Computer-Based Technologies
EST 303  Crisis Communications
EST 304  Communication for Engineers and Scientists
EST 305  Applications Software for Information Management
EST 310  Design of Computer Games
EST 320-H  Communication Technology Systems
EST 323  Human Computer Interaction
EST 325-H  Technology in the Workplace
EST 326  Management for Engineers
EST 327  Marketing for Engineers
EST 330-H  Natural Disasters: Societal Impacts and Technological Solutions
EST 331  Professional Ethics and Intellectual Property
EST 391-H  Technology Assessment
EST 392-F  Engineering and Managerial Economics
EST 393  Project Management
EST 411-H  Science, Technology, and Arms Control
EST 412  Intelligence Organizations, Technology, and Democracy
EST 420  Seminar on Information-Age Society
EST 421  Starting the High-Technology Venture
EST 440  Interdisciplinary Research Methods
EST 441  Interdisciplinary Senior Project

Acceptance into the Major in Technological Systems Management

Freshman and transfer applicants who have specified their interest in Technological Systems Management may be accepted directly into the major upon admission to the University. Applicants admitted to the University but not immediately accepted into the Technological Systems Management major may apply for acceptance at any time during the academic year by contacting the director of the undergraduate program. Students in good academic standing may apply in any semester but priority for admission to the major is given to those students who have: 1) completed AMS 161 and the second course in a natural science sequence, or their equivalents; 2) earned a cumulative grade point average of 2.50; 3) received completed course evaluations for all transferred courses that are to be used to meet requirements of the major.

Requirements for the Major in Technological Systems Management (TSM)

Students must complete a specialization in one of the following: natural science, engineering and applied science, or environmental studies. (For those students who have a major in one of those areas and who pursue Technological Systems Management as a second major, the first major will serve as the specialization.) Completion of the major requires approximately 79 credits.

A. Mathematics
AMS 151, 161 Applied Calculus I, II

Note: The following alternate calculus course sequences may be substituted for AMS 151, 161:
MAT 125, 126, 127
or MAT 131, 132
or MAT 141, 142
or MAT 171

B. Natural Sciences

One of the following sequences:
1. PHY 131/133 and PHY 132/134
Classical Physics I, II and Laboratories

Sample Course Sequence for the Major in Technological Systems Management

<table>
<thead>
<tr>
<th>Freshman Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Seminar 101 1</td>
<td>First Year Seminar 102 1</td>
</tr>
<tr>
<td>EST 192 3</td>
<td>BUS 110* 3</td>
</tr>
<tr>
<td>AMS 151 3</td>
<td>EST 194 3</td>
</tr>
<tr>
<td>Natural Science 1 4</td>
<td>AMS 161 3</td>
</tr>
<tr>
<td>D.E.C. A 3</td>
<td>Natural Science 2 4</td>
</tr>
<tr>
<td>Total 14</td>
<td>D.E.C. 3</td>
</tr>
<tr>
<td></td>
<td>Total 17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EST Elective 3</td>
<td>EST 305 3</td>
</tr>
<tr>
<td>AMS 102 * 3</td>
<td>CSE 110 * 3</td>
</tr>
<tr>
<td>EST 202 3</td>
<td>Specialization course 3</td>
</tr>
<tr>
<td>PHI 108 *(D.E.C. B) 3</td>
<td>Elective 3</td>
</tr>
<tr>
<td>Specialization course 3</td>
<td>Elective 3</td>
</tr>
<tr>
<td>Total 15</td>
<td>Total 15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EST 326 3</td>
<td>EST 392 (D.E.C. F) 3</td>
</tr>
<tr>
<td>EST 391 (D.E.C. H) 3</td>
<td>EST 393 3</td>
</tr>
<tr>
<td>Specialization course 3</td>
<td>Specialization course 3</td>
</tr>
<tr>
<td>EST elective 3</td>
<td>EST 327 3</td>
</tr>
<tr>
<td>D.E.C. 3</td>
<td>EST Elective 3</td>
</tr>
<tr>
<td>Total 15</td>
<td>Total 15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EST 440 3</td>
<td>EST 441 3</td>
</tr>
<tr>
<td>Specialization course 300/400 level 3</td>
<td>Specialization course 300/400 level 3</td>
</tr>
<tr>
<td>D.E.C. 3</td>
<td>Specialization course 300/400 level 3</td>
</tr>
<tr>
<td>Elective 3</td>
<td>Elective 3</td>
</tr>
<tr>
<td>Elective 3</td>
<td>Elective 3</td>
</tr>
<tr>
<td>Total 15</td>
<td>Total 15</td>
</tr>
</tbody>
</table>

* recommended course
Note: The following alternate physics course sequences may be substituted for PHY 131/133 and 132/134:

PHY 121/123 and 122/124
or PHY 125, 126, 127
or PHY 141, 142

2. BIO 150 The Living World and BIO 201 Fundamentals of Biology: Organisms to Ecosystems

3. CHE 131, 132/133 General Chemistry I, II and lab
or CHE 141, 142/143 Honors Chemistry I, II and Laboratories

4. GEO 102, 112 The Earth/Physical Geology Lab and GEO 309 Structural Geology

5. BIO 201 Principles of Biology: Organisms to Ecosystems and one of the following:
   GEO 101 Environmental Geology
   MAR 104 Oceanography
   ATM 102 Weather and Climate
   ENS 101 Prospects for Planet Earth

C. Study in Related Areas: Specialization
A cluster of seven related courses, totaling at least 21 credits, in one area of natural science, engineering, applied science, or environmental studies from a single department or program. At least three courses, totaling at least nine credits, must be at the 300 or 400 level, or equivalent as approved by the undergraduate program director.

D. Technological Systems Management

1. Required courses (10)
   EST 192 Introduction to Modern Engineering
   EST 194 Patterns of Problem Solving
   EST 202 Introduction to Science, Technology, and Society Studies
   EST 305 Applications Software for Information Management
   EST 326 Management for Engineers
   EST 327 Marketing for Engineers
   EST 391 Technology Assessment
   EST 392 Engineering and Managerial Economics
   EST 393 Project Management
   EST 440 Interdisciplinary Research Methods

   2. Electives
      Three from the following list:
      EST 303 Crisis Communication
      EST 304 Communication for Engineers and Scientists
      EST 320 Communication Technology Systems
      EST 325 Technology in the Workplace
      EST 330 Natural Disasters; Societal Impacts and Technological Solutions
      EST 331 Ethics and Intellectual Property
      EST 421 Starting the High-Technology Venture

E. Upper-Division Writing Requirement
All degree candidates must demonstrate skill in written English at a level acceptable for Technological Systems Management majors. To satisfy this requirement, a TSM major must submit a paper written for an upper-division EST course for review. Students whose writing does not meet the required standard are referred for remedial help. The requirement may also be met by earning a letter grade of C or higher in a writing-intensive course approved by the Department or, if the student has a double major, by satisfying the upper-division writing requirement in the other major.

Grading
All courses taken to satisfy requirements A through D above must be taken for a letter grade. A grade of C or higher is required in all.

Requirements for the Minor in Technological Systems Management (TSM)
All students must complete four required EST courses and two or more EST electives (minimum 18 credits) with a g.p.a. of 2.50 or higher. No grade less than C may be used to meet the requirements for the minor.

EST courses counted toward the requirements for a student's major may not be counted towards the requirements for the TSM minor.

1. Choose four of these required courses:
   EST 192 Introduction to Modern Engineering
   EST 194 Patterns of Problem Solving
   EST 326 Management for Engineers
   EST 327 Marketing for Engineers
   EST 391 Technology Assessment
   EST 393 Project Management