Some academic units may have additional prerequisites for their internship course. All SCOM majors with a minor in PCOM are required to take SCOM 495 for their PCOM internship requirement (and to have met the prerequisites for this course). POSC, INTA and PPA majors minoriing in PCOM must complete POSC 493 to fulfill the internship requirement. All other majors may take either POSC 493 or SCOM 318 as a means of satisfying their internship. Before pursuing any internship, students must consult with the PCOM coordinator to ensure that the internship is suitable for the minor.

For majors in SCOM who minor in PCOM, a maximum of six credits of course work from the minor can be counted toward the requirements for their major. For SMAD majors, only three credits from the minor may be counted toward the requirements for their major.

There is no limit on double counting between the POSC major and the PCOM minor. All students must complete 25-26 credit hours for the minor.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>SCOM 352. Communication and Social Movements</td>
<td>3</td>
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</tbody>
</table>

Choose one of the following:

- POSC, PPA and INTA majors:
  - POSC 493. Internship (4 credits)
  - SCOM 495. Internship (4 credits)
- SCOM majors:
  - SCOM 495. Internship (3 credits)
- Non-POSC and Non-SCOM majors:
  - POSC 493. Internship (4 credits)
  - SCOM 318. Practicum in Communication Studies (4 credits)

Choose one of the following:

- POSC 365. American Political Campaigning
- POSC 369. Parties and Elections
- SCOM 352. Communication and Social Movements
- SCOM 453. Political Campaign Communication

Choose two of the following:

- POSC 300. Film and Politics
- POSC 362. Political Behavior
- POSC 368. Interest Groups and Public Policy
- POSC 382. The Role of Religion in American Politics
- POSC 383. Women and Politics
- POSC 384. Minority Group Politics
- POSC 385. The U.S. Congress
- SCOM 342. Argument and Advocacy
- SCOM 346. Free Speech in America
- SCOM 354. Communication, Environment and Environmentalism
- SCOM/WRTC/WMST 420. Feminist Rhetoric
- SCOM 431. Legal Communication

**Educational Goals**

- Students will have a basic understanding of robot control systems, sensors, motion, circuits and the overall design of robots.
- Students will be able to design and develop autonomous robots and robot control software.
- Students will develop an understanding of how advances in robotics technology can be used in diverse real-life applications.
- Students will learn to work on an interdisciplinary team developing a technical product.

### Required Courses

#### Basic Preparation

- Choose one of the following:
  - 3-4 credits
  - CS 139. Programming Fundamentals
  - CS 149. Programming Fundamentals (Accelerated)
  - ISAT 252. Programming and Problem Solving

Choose one of the following:

- 4 credits
- MATH 231 or 239. Calculus I
- ISAT 151. Topics in Applied Calculus in ISAT

Choose one of the following:

- 4 credits
- GSCI 101 and 104. Physics, Chemistry and the Human Experience
- PHYS 240 + Lab. University Physics I (with any Physics Lab)
- ISAT 152. Topics in Applied Physics in ISAT

#### Core Course

Choose one of the following:

- 3 credits
- CS 354. Introduction to Autonomous Robotics
- PHYS 386. Robots: Structure and Theory

#### Electives

Choose at least six credits from the following:

- 6-8 credits
- CS/ISAT 344. Intelligent Systems
- CS 441. Artificial Intelligence
- MATH 238. Differential Equations
- MATH 249. Numerical Methods
- MATH 341. Nonlinear Dynamics and Chaos
- PHYS 371. Introduction to Digital Electronics
- PHYS 372. Microcontrollers and Their Applications

#### Supervised Robotics Project Course

Choose one of the following:

- 3-4 credits
- CS 497. Independent Study
- ENGR 431/432. Engineering Design V and VI
- ISAT 493. Senior Capstone Project III
- PHYS 497. Topics in Physics

**Russian Studies**

**Dr. Maria Galmarini, Co-coordinator**

Phone: (540) 568-3447 Email: galmarmx@jmu.edu

**Dr. Stephanie Plecker, Co-coordinator**

Phone: (540) 568-3578 Email: pleckessg@jmu.edu

This minor offers students a broad, cross disciplinary perspective on Russian culture, history, political institutions, economy and geography. This program deepens the students' understanding and knowledge of the Russian and non-Russian peoples of the former Soviet Union, and prepares them for careers in teaching, government and international business.

http://www.jmu.edu/catalog/14
Science, Technology and Society

Dr. Kevin Borg, Coordinator

Phone: (540) 568-5761 Email: borgkl@jmu.edu
Website: http://www.jmu.edu/sts

Science, technology and society (STS) is an internationally recognized field of cross disciplinary study that integrates philosophical, social scientific and humanistic studies to better understand the natural and human-built world. The minor offers students the opportunity to critically examine science, technology and medicine as methods for reasoning about and acting upon the natural world and as expressions of human cultures, past and present.

Students learn to scrutinize the ideas, reasoning, values, practices and artifacts embedded in the world they inhabit today. They explore how choices made within various historical, social, economic and political contexts sometimes influence the development of science, technology and medicine. They also see how the adoption and diffusion of ideas, artifacts and techniques can then influence individuals, society, politics and culture. Courses in this minor draw students together from diverse majors across the campus and encourage open inquiry into the role of science and technology in society.

The minor in STS is open to all undergraduate students at JMU. Courses taken to complete the STS minor can also be used to satisfy the student’s major, as well as General Education requirements. The STS minor requires 18 credit hours with at least one course each from the history, sociology and ISAT courses listed.

Required Courses

Choose one:
- ISAT 131. Technology, Science, and Society
- HIST 327. Technology in America
- SOCI 315. Science, Technology, and Society

Elective courses

Choose five from at least four different programs/majors
- ANTH 340. The Invention of Race
- ANTH 360. Medical Anthropology
- ANTH 373. Anthropological Perspectives on Environment and Development
- ARTH 303. History of Design
- ARTH 476. Modern Architecture
- CS 330. Societal and Ethical Issues in Computing
- GEOG 322. Agricultural Systems
- GEOG 325. Environmental Ethics
- GEOG 344. Economic Geography and Development Issues
- GEOG/ISAT 429. Sustainability: An Ecological Perspective
- HIST 305. History of Science and Christianity
- HIST 308. A History of the Body in the West
- HIST 326. The Automobile in 20th Century America
- HIST 327. Technology in America
- HIST 404. Science and Society in Early Modern Europe
- HIST 405. Travel and Exploration
- HIST 427. U.S. Environmental History
- HIST 442. Modern American Technology and Culture
- ISAT 231. Political Economy of Technology and Science
- ISAT 311. Role of Energy in Modern Society
- ISAT 411. Energy Economics and Policy
- ISAT 421. Environmental Policy and Regulation
- ISAT 456. Ethical, Legal and Social Implications of Biotechnology
- ISAT 464. Telecommunications in the Public Interest
- ISAT 471. Transportation: Energy, Environment and Society
- ISAT 477. Complex Systems and How They Fail
- PHIL 396. Philosophy of Physics
- PHIL 397. Philosophy of Space and Time
- PHIL 398. Philosophy of Quantum Theory
- PHIL 410. Philosophy of Science
- SOCI 311. Sociology of the Environment
- SOCI 316. Space, Time and the Human Social Environment
- SOCI 366. Sociology of Knowledge
- SOCI 375. Medical Sociology
- WMST/ISAT 485. Gender Studies in Science
- WRTC 358. Writing About Science and Technology
- WRTC 416/SCOM 465. Rhetoric of Environmental Science and Technology
- WRTC 458. Scientific and Medical Communication

Special topics courses not listed can be applied to the minor with prior approval of the program coordinator.