### Mathematics

**Chairperson:** Dr. Edward Letzter  
**Faculty Advisor:** Dr. Boris Datskovsky

- Introduction to Academics in Computer Sci (1001)  
- Introduction to IS&T (CIS 1048)  
- Program Design & Abstraction (CIS 1068)  
- Database & File Management Systems (CIS 2109)  
- Selected one elective from:  
  - Object-Oriented Programming (CIS 2168)  
  - Operating Systems and Networking (CIS 2229)  
- Select a 3000-level course related to IT from a Temple department. Needs IS&T advisor approval.

* If Math 2196 is taken, students will need to complete three mathematics courses 3000 or above.

### Biology

**Chairperson:** Dr. Shohreh Amini  
**Advisor:** Dr. Joel Sheffield & Ms. Evelyn Vleck

- Introduction to Biology (Bio 1111)  
- Introduction to Biology (Bio 2112)  
- Biology Elective (2200 or above)*  
- Biology Elective (2200 or above)*  
- Biology Elective (2200 or above)*

*At least one of these electives must be a course with a laboratory. See course descriptions for exceptions to Biology electives. Note that Chemistry 1031 and 1032 (with labs) are the co- or pre-requisites for Biology 1111 and 2112. (Minimum of 18 credits)

### Computer Science

**Chairman:** Dr. Jie Wu  
**Faculty Advisor:** Prof. Sally Kyvernitis

- Program Design and Abstraction (CIS 1068)  
- Mathematical Concepts in Computing I (CIS 1166)  
- Computer Systems and Low-Level Programming (CIS 2107)  
- Data Structures (CIS 2168)  
- CIS Independent Study (CIS 4282) or an approved 2000 or 3000 level CIS course

### Physics

**Chairperson:** Dr. Rongjia Tao  
**Faculty Advisor:** Dr. Zbigniew Dziembowski

- Elem. Classical Physics I (Physics 1061)  
- Elem. Classical Physics II (Physics 1062)  
- Introduction to Modern Physics with Lab (Physics 2796)  
- Electricity & Magnetism with Lab (Physics 3301) or Intro. to Electromagnetic Fields & Waves (EE 3712)  
- Physics Elective (2000 or above)*  
- Physics Elective (2000 or above)*

*Electives must be approved by the Undergraduate Physics Adviser

Revised 06/01/11
ENVIRONMENTAL STUDIES MINOR 2011-2012

330 Gladfelter Hall (215) 204-5918
Director: Dr. Laura Toran
Faculty Advisor: Dr. Allison Tumarkin-Deratzian

- Environment and Society (Env St./GUS 1051)
- Principles of Ecology (Bio 2227; Pre-req. Bio 1111 and 2112); OR Intro. to Hydrology (Geology 3021; Pre-req. Geo 2001); OR Fundamentals of Geographic Information Systems (GUS 3062); OR Energy, Ecology, and Economy (Econ 3596) (Prereq. Econ 1101 & 1102)
- Policy Elective*
- Topics Elective*
- Topics Elective*
- Topics Elective*

* Check the Course Description Guide for the prerequisite structure in science departments. Updates to the electives lists can be found on the ES website: (www.temple.edu/env-stud)

If an environmental studies course is cross-listed with another department course, you will only receive credit for one of these courses.

Environmental Studies Minor Elective Choices:

Policy
- ES/Anthro 3175
- Econ 3512, 3513
- EET 4761
- ES 3025
- ES/GUS 3051, 3152, 3265
- ES/Philos 2157, 2596
- ES/Pol Sci 3152, 3265
- Community & Regional Planning 2014

Topics
- ES/Anthro 3170, 3189, 4117, 4796, 4896
- Bio 2233, 2227, 2238, 2241, 3196, 3245, 3316, 3254, 3307, 3311, 3321, 3336, 4327
- Botany 1112
- Community & Regional Planning 1027, 2114, 2213, 2524, 3256
- ES 3000, 4082, 4085
- Earth & ES 2021, 2061, 2096, 3042, 4197/4997
- ES/GUS 2051, 3052, 3054, 3062, 3097, 4015, 4051, 4056, 4071, 4096
- Hort 2114, 2334, 2353, 3514
- Land Arch2144, 2758
- ES/ Hist 3214, 4297
- JPRA 3253
- ES/Religion 3001
- Public Health 2102
- Soc/ES 3511

GEOLOGY MINOR 2011-2012

303 Beury Hall (215) 204-5918
Chairperson: Dr. David Grandstaff
Faculty Advisor: Dr. George Myer

- Geology 2001 with lab
- Chemistry 1021/1023 or Chemistry 1031/1033
- Math 1022 or Math 1041 or higher
- Geology elective (numbered above 2001)
- Geology elective (numbered above 2001)
- Geology elective (numbered above 2001)
- Geology elective (numbered above 2001)

To obtain a minor in Geology, students must complete 20 hours of courses in Geology. Geology 1001 or Geology 2001 with lab is required. The remaining courses above the 2001 are chosen with the approval of the Undergraduate Geology Adviser.

DIGITAL MEDIA TECHNOLOGIES MINOR 2011-2012

Computer & Information Sciences
304 Wachman Hall (215) 204-6437
Chairperson: Dr. Jie Wu
Faculty Advisor: Dr. Justin Shi

Broadcasting, Telecommunications & Mass Media
205 Annenberg Hall (205) 204-3876
Chairperson: Dr. Patrick Murphy
Faculty Advisor:

- Intro to Media Technologies (BTMM 1701)
- Intro to Web Tech & Programming (CIS 1052)
- Programming for the WWW (CIS 1056)
- Intro to Cybermedia (BTMM 2741)
- Elective *
- Elective *

Digital Media Technologies Minor Electives:

Cybermedia Workshop (BTMM 4741)
Regulation & Public Policy (BTMM 4252)
Advanced Topics in Media Telecom. (BTMM 4890)
Creating a Media Business (BTMM 4614)
Entrepreneurship in Sci & Tech (CST 4321)
Computer & Information Sciences courses
(numbered above 2000)

*Please note: BTMM students must complete (1) CIS elective; CIS students must complete (1) BTMM elective; all other students must complete (1) BTMM and (1) CIS elective. Please refer to the online bulletin for additional rules applying to electives used for this minor: www.temple.edu/bulletin