

GEOGRAPHIC INFORMATION SCIENCE AND TECHNOLOGY - BS

The BS degree in Geographic Information Science and Technology (GIST) provides students a rigorous and modern-day education and training in GIST with applications in physical and human geography. Employers require problem solvers not button pushers, to address problems in various application domains. The degree requires 53 hours of coursework, which is designed to:

- Provide modern-day exposure to the rapidly changing field of GIST.
- Balance education and training with a focus on competency.
- Provide application and problem-solving experiences.
- Support student activities and research.
- Provide students with professional experience.
- Produce high-quality geographers with strong GIST knowledge and skills.

Geospatial technology graduates are in extremely high demand and, according to the U.S. Department of Labor, are one of the highest growth areas in the federal government, particularly in homeland security activities, as well as in energy, software and engineering firms, biomedical and biohazard research, among many others. A 35% annual rate of growth in geospatial technology-related degrees are projected by the U.S. Department of Labor. Students have employment opportunities with the following corporate and government entities:

- Government agencies (federal, state, county, and city): management and planning of urban infrastructure, inventory and assessment of natural resources including agriculture, forestry, and water resources.
- Energy industry: assessing biofuel production and identifying locations suitable for renewable energy resources and mineral exploration.
- Health science industry: determine hotspots of health events and explore causes.
- Military and intelligence community: numerous opportunities exist in military branches and agencies such as the Central Intelligence Agency, National Security Agency, and other intelligence organizations.
- Commercial industries: business analytics and marketing, as spatial information can be used to target marketing campaigns, and suitable site assessment to locate companies.
- Geospatial industries: software development, geotechnical engineering, and technology development.

Program Requirements

First Year

| Fall | | Semester Credit Hours |
|---------------------|----------------------------------------------|-----------------------|
| GEOG 203 & GEOG 213 | Planet Earth and Planet Earth Lab | 4 |
| GEOG 215 | Geospatial Cornerstone | 1 |
| MATH 140 | Mathematics for Business and Social Sciences | 3 |

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| Life and physical sciences ¹ | | 4 |
| Select from the following: | | |
| ATMO 201 & ATMO 202 | Weather and Climate and Weather and Climate Laboratory | |
| BIOL 101 | Botany | |
| BIOL 111 | Introductory Biology I | |
| CHEM 119 | Fundamentals of Chemistry I | |
| GEOL 101 & GEOL 102 | Principles of Geology and Principles of Geology Laboratory | |
| PHYS 201 | College Physics | |
| Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) | | 3 |

Semester Credit Hours 15

Spring

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| GEOG 201 | Introduction to Human Geography | 3 |
| MATH 142 | Business Calculus | 3 |
| POLS 206 | American National Government | 3 |
| Life and physical sciences ¹ | | 4 |
| Select from the following: | | |
| BIOL 107 | Zoology | |
| BIOL 112 | Introductory Biology II | |
| CHEM 120 | Fundamentals of Chemistry II | |
| GEOL 106 | Historical Geology | |
| PHYS 202 | College Physics | |
| OCNG 251 & OCNG 252 | The Blue Planet - Our Oceans and The Blue Planet - Our Oceans Laboratory | |
| Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) | | 3 |

Semester Credit Hours 16

Second Year

Fall

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| GEOG 232 | Cartography and Visualization | 3 |
| CSCE 110 or CSCE 111 | Programming I or Introduction to Computer Science Concepts and Programming | 4 |
| POLS 207 | State and Local Government | 3 |
| American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) | | 3 |
| Social and behavioral sciences (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences) | | 3 |

Semester Credit Hours 16

Spring

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---|
| GEOG 352/ GEOL 352 | GNSS in the Geosciences | 3 |
| STAT 303 | Statistical Methods | 3 |
| American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) | | 3 |

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| Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) | | 3 |
| Human or physical geography elective ² | | 3 |
| Semester Credit Hours | | 15 |
| Third Year | | |
| Fall | | |
| GEOG 361 | Remote Sensing in Geosciences | 4 |
| GEOG 390 | Principles of Geographic Information Systems | 4 |
| Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) | | 3 |
| General elective ³ | | 3 |
| Semester Credit Hours | | 14 |
| Spring | | |
| GEOG 312 | Data Analysis in Geography | 3 |
| GIST techniques elective ⁴ | | 4 |
| General electives ³ | | 8 |
| Semester Credit Hours | | 15 |
| Fourth Year | | |
| Fall | | |
| GEOG 450 | Field Geography | 3 |
| GIST techniques elective ⁴ | | 4 |
| General electives ³ | | 7 |
| Semester Credit Hours | | 14 |
| Spring | | |
| GEOG 476 | GIS Practicum | 3 |
| Advanced GIST elective ⁵ | | 4 |
| General electives ³ | | 8 |
| Semester Credit Hours | | 15 |
| Total Semester Credit Hours | | 120 |

⁵ Select from GEOG 461, GEOG 475, GEOG 479. A course used to fulfill this requirement cannot also be counted as fulfilling a GIST techniques elective.

Two courses in the degree plan must be Writing Intensive courses designated by the department in the schedule of classes. Also, 3 hours of International and Cultural Diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) and 3 hours of Cultural Discourse (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) must be incorporated into the degree.

¹ 8 hours required. Department requires that you take two in the same discipline to meet this requirement.

² Select from GEOG 301, GEOG 304, GEOG 305, GEOG 306, GEOG 309, GEOG 311, GEOG 320, GEOG 323, GEOG 324, GEOG 325, GEOG 327, GEOG 330, GEOG 331, GEOG 335, GEOG 355, GEOG 360, GEOG 370/ MARS 370, GEOG 380, GEOG 400, GEOG 401, GEOG 404, GEOG 406, GEOG 420, GEOG 430, GEOG 434, GEOG 435, GEOG 440, GEOG 442/ GEOS 442, GEOG 467.

³ Select any courses from 100-499 not used elsewhere. (Except AERS 100-499 (<http://catalog.tamu.edu/undergraduate/course-descriptions/aers/>); ASCC 100-499 (<http://catalog.tamu.edu/undergraduate/course-descriptions/ascc/>); ENGL 103; KINE 198, KINE 199; MATH 102; MATH 142, MATH 150, MATH 151, MATH 168, MATH 171; MLSC 100-499 (<http://catalog.tamu.edu/undergraduate/course-descriptions/mlsc/>); NVSC 100-499 (<http://catalog.tamu.edu/undergraduate/course-descriptions/nvsc/>); SOMS 100-499 (<http://catalog.tamu.edu/undergraduate/course-descriptions/soms/>); STAT 211, STAT 302, STAT 303).

⁴ Select from GEOG 391, GEOG 392, GEOG 398, GEOG 461, GEOG 475, GEOG 477, GEOG 478, GEOG 479.