

# GEOGRAPHY (GEOGRAPHIC INFORMATION SCIENCE & TECH) - BACHELOR OF SCIENCE

The Geographic Information Science and Technology (GIS&T) Concentration offers a solid foundation in geographic thought and human and physical geography, and provides students with advanced knowledge and skills in spatial analysis and modeling through the use of geographic information systems and remote sensing tools and concepts. Preparation for advanced studies is also provided.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

| Prefix   | Title   | Credits |
|--|---|---------|
| <b>General Education</b>   |   |         |
| <i>Area I: Communications</i>  |   |         |
| <i>English Composition - Level 1</i>   |   |         |
| ENGL 1110G   | Composition I   | 4       |
| <i>English Composition - Level 2</i>   |   |         |
| ENGL 2210G   | Professional and Technical Communication Honors       | 3       |
| <i>Oral Communication</i>  |   |         |
| Choose one from the following:   |   | 3       |
| ACOM 1130G   | Effective Leadership and Communication in Agriculture |         |
| COMM 1115G   | Introduction to Communication                         |         |
| COMM 1130G   | Public Speaking                                       |         |
| <i>Area II: Mathematics</i>  |   |         |
| MATH 1430G   | Applications of Calculus I <sup>1</sup>               | 3-4     |
| or MATH 1250G  | Trigonometry & Pre-Calculus                           |         |
| <i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i>   |   | 10-11   |
| GEOG 1110G   | Physical Geography (Departmental Requirement)         |         |
| GEOG 1120G   | World Regional Geography (Departmental Requirement)   |         |
| or GEOG 1130G  | Human Geography                                       |         |
| Either an Area III/IV: Laboratory Sciences Course or Social/Behavioral Sciences Course (4 or 3 credits) <sup>2</sup> |   |         |
| <i>Area V: Humanities</i> <sup>2</sup>   |   | 3       |
| <i>Area VI: Creative and Fine Arts</i> <sup>2</sup>  |   | 3       |
| <i>General Education Elective</i>  |   |         |
| MATH 1350G   | Introduction to Statistics                            | 3       |
| <b>Viewing a Wider World</b> <sup>4</sup>  |   | 6       |
| <b>Departmental/College Requirements</b>   |   |         |
| GEOG 2130  | Map Use and Analysis                                  | 3       |
| GEOG 373   | Introduction to Remote Sensing                        | 4       |
| GEOG 381   | Cartography and GIS                                   | 4       |
| GEOG 481   | Fundamentals of GIS                                   | 4       |
| GEOG 482   | Geodatabase Design                                    | 3       |

## GIS & T Area Courses

|  |  |              |
|--|--|--------------|
| GEOG 441   | GIS Design                               | 3            |
| GEOG 473   | Advanced Remote Sensing                  | 4            |
| <i>Human Geography and Physical Geography Courses</i> <sup>5</sup> |  | 9            |
| <i>Physical Geography (PG)</i>                                     |  |              |
| GEOG 351   | Biogeography                             |              |
| GEOG 353   | Geomorphology                            |              |
| GEOG 357   | Climatology                              |              |
| GEOG 452   | Landscape Ecology                        |              |
| <i>Human Geography (HG)</i> <sup>6</sup>                           |  |              |
| GEOG 361V  | Challenges of Globalization              |              |
| GEOG 363V  | Cultural Geography                       |              |
| GEOG 365V  | The City                                 |              |
| <i>Human Environment Geography (HEG)</i> <sup>6</sup>              |  | 3            |
| GEOG 325V  | New Mexico and the American West         |              |
| GEOG 326   | U.S. National Parks                      |              |
| GEOG 328V  | Environment and Society of Latin America |              |
| GEOG 331V  | Europe                                   |              |
| GEOG 483   | Field Explorations in Geography          |              |
| <b>Second Language Requirement: (required - see below)</b>         |  | <b>6-8</b>   |
| <b>Electives, to bring the total credits to 120</b> <sup>7</sup>   |  | <b>35-39</b> |
| 9 credits must be upper-division                                   |  |              |
| <b>Total Credits</b>   |  | <b>120</b>   |

<sup>1</sup> MATH 1430G Applications of Calculus I or MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1430G or MATH 1511G first.

<sup>2</sup> See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

<sup>3</sup> A ST 311 Statistical Applications is also an acceptable course to meet the departments Statistics course requirement, however it will not satisfy the General Education (GE) Elective requirement. If a student takes A ST 311 Statistical Applications, they will need to take an additional General Education course to complete the GE Elective requirement.

<sup>4</sup> See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.

<sup>5</sup> Select either one Physical Geography (PG) class and two Human Geography (HG) classes, OR two Physical Geography (PG) classes and one Human Geography (HG) class.

<sup>6</sup> Courses that have the "V" distinction and are a Human Geography or Human-Environment Geography course will not count towards both the Viewing a Wider World and Human Geography or Human-Environment Geography requirements.

<sup>7</sup> Elective credit may vary based on General Education course selection, second language requirements, prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.

## Second Language Requirement

For the Bachelor of Science in Geography with a Concentration in GIS&T there is a one year second language requirement, the options to complete

this requirement are listed below. The number of credits that a student needs to take may vary depending on what level they come in with. Please speak with an advisor for more information as to which courses you will need to take to fulfill the second language requirement for this degree.

**Option 1:**

| Prefix  | Title   | Credits |
|---|---|---------|
| <b>Complete one of the following sequences:</b> |   |         |
| FREN 1110<br>& FREN 1120                        | French I<br>and French II   | 8       |
| GRMN 1110<br>& GRMN 1120                        | German I<br>and German II   | 8       |
| JAPN 1110<br>& JAPN 1120                        | Japanese I<br>and Japanese II   | 8       |
| SPAN 1110<br>& SPAN 1120                        | Spanish I<br>and Spanish II   | 8       |
| PORT 1110<br>& PORT 1120                        | Portuguese I<br>and Portuguese II   | 6       |
| <i>For Heritage Speakers:</i>                   |   |         |
| SPAN 1210<br>& SPAN 1220<br>or SPAN 2210        | Elementary Spanish for Heritage Learners I<br>and Spanish for Heritage Learners II<br>Spanish for Heritage Learners III | 3-6     |

**Option 2:**

| Prefix  | Title | Credits  |
|---|-------|----------|
| <b>Complete 6 additional upper-division Geography courses (beyond major requirements)</b> |       | <b>6</b> |

**Option 3:**

| Prefix   | Title                     | Credits |
|--|---------------------------|---------|
| <b>Complete the following sequence for American Sign Language (with a C- or better):</b> |                           |         |
| SIGN 1110  | American Sign Language I  | 3       |
| SIGN 1120  | American Sign Language II | 3       |

**Option 4:**

| Prefix   | Title  | Credits |
|--|--|---------|
| <b>Challenge the 1120 level for the following courses:</b>           |  |         |
| FREN 1120<br>or GRMN 1120<br>or JAPN 1120<br>or SPAN 1120            | French II<br>German II<br>Japanese II<br>Spanish II                                    | 4       |
| <i>OR</i>  |  |         |
| <b>Challenge the 1120/1220/2210 level for the following courses:</b> |  |         |
| PORT 1120<br>or SPAN 1220<br>or SPAN 2210                            | Portuguese II<br>Spanish for Heritage Learners II<br>Spanish for Heritage Learners III | 3       |

**Option 5:**

Pass a three-credit, upper-division course (numbered 300 or above) taught in a second language by the department of Languages and Linguistics.

**Option 6:**

Obtain college certification of completion of three years of a second language at the high school level with a grade of C- or higher in the second-year level.

**Option 7:**

By obtaining certification of a working knowledge of a Native American language from the American Indian program director.

**Option 8:**

By obtaining, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at NMSU.

**Option 9:**

In the case of a foreign student who is required to take the TOEFL exam admission, the dean will automatically waive the second language requirement.

## A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1430G Applications of Calculus I or MATH 1511G Calculus and Analytic Geometry I and ENGL 1110G Composition I. The contents and order of this roadmap may vary depending on initial student placement in mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change.

| First Year   |   | Credits      |
|--|---|--------------|
| ENGL 1110G   | Composition I (C- or better)  | 4            |
| Area VI: Creative and Fine Arts Course <sup>1</sup>  |   | 3            |
| Elective Course(s) ir FYEX 1112 <sup>2</sup>   |   | 7            |
| GEOG 1110G   | Physical Geography (C- or better)   | 4            |
| MATH 1430G<br>or MATH 1250G  | Applications of Calculus I <sup>3</sup><br>or Trigonometry & Pre-Calculus | 3-4          |
| Area V: Humanities Course <sup>1</sup>   |   | 3            |
| GEOG 1120G<br>or GEOG 1130G  | World Regional Geography (C- or better in either)<br>or Human Geography   | 3            |
| GEOG 2130  | Map Use and Analysis (C- or better)                                       | 3            |
| <b>Credits</b>   |   | <b>30-31</b> |
| Second Year  |   | Credits      |
| ENGL 2210G   | Professional and Technical Communication Honors (C- or better)            | 3            |
| Area III: Laboratory Science or Area IV: Social/Behavioral Science Course <sup>1</sup>       |   | 3-4          |
| Choose one from the following:   |   | 3            |
| MATH 1350G   | Introduction to Statistics (C- or better)                                 |              |
| A ST 311   | Statistical Applications (C- or better)                                   |              |
| Second Language: either 1110-level or Upper Division GEOG course (C- or better) <sup>4</sup> |   | 3-4          |
| GEOG 381   | Cartography and GIS (C- or better)  | 4            |
| Choose one from the following:   |   | 3            |
| ACOM 1130G   | Effective Leadership and Communication in Agriculture (C- or better)      |              |
| COMM 1115G   | Introduction to Communication (C- or better)                              |              |
| COMM 1130G   | Public Speaking   |              |
| HNRS 2175G   | Introduction to Communication Honors                                      |              |
| Second Language: either 1120-level or Upper Division GEOG course (C- or better) <sup>4</sup> |   | 3-4          |
| GEOG 481   | Fundamentals of GIS (C- or better)  | 4            |
| Elective Courses(s) <sup>2</sup>   |   | 6            |
| <b>Credits</b>   |   | <b>32-35</b> |
| Third Year   |   | Credits      |
| VWW- Viewing a Wider World Course <sup>5</sup>   |   | 6            |

|  |                |
|--|----------------|
| Select either a Human Geography or Physical Geography Course (C- or better) <sup>6,7</sup> | 3              |
| GEOG 373 Introduction to Remote Sensing (C- or better)                                     | 4              |
| Select either a Human Geography or Physical Geography Course (C- or better) <sup>6,7</sup> | 3-4            |
| Choose one from the following Human Environment Geography Courses: <sup>7</sup>            | 3              |
| GEOG 325V New Mexico and the American West (C- or better)                                  |                |
| GEOG 326 U.S. National Parks (C- or better)  |                |
| GEOG 328V Environment and Society of Latin America (C- or better)                          |                |
| GEOG 331V Europe (C- or better)  |                |
| GEOG 483 Field Explorations in Geography (C- or better)                                    |                |
| Choose one from the following GIS&T Area Courses:  | 3-4            |
| GEOG 441 GIS Design (C- or better)   |                |
| GEOG 473 Advanced Remote Sensing (C- or better)  |                |
| Elective Course(s) <sup>2</sup>  | 9              |
| <b>Credits</b>   | <b>31-33</b>   |
| <b>Fourth Year</b>   |                |
| Select either a Human Geography or Physical Geography Course (C- or better) <sup>6,7</sup> | 3-4            |
| Choose one from the following GIS&T Area Courses:  | 3-4            |
| GEOG 441 GIS Design (C- or better)   |                |
| GEOG 473 Advanced Remote Sensing (C- or better)  |                |
| Elective Course - Upper Division <sup>2</sup>  | 6              |
| GEOG 482 Geodatabase Design (C- or better)   | 3              |
| Elective Course(s) <sup>2</sup>  | 12             |
| GEOG 488 GIS and Water Resources (optional)  |                |
| <b>Credits</b>   | <b>27-29</b>   |
| <b>Total Credits</b>   | <b>120-128</b> |

**Human Geography Courses:** GEOG 361V Challenges of Globalization, GEOG 363V Cultural Geography, GEOG 365V The City  
**Physical Geography Courses:** GEOG 351 Biogeography, GEOG 353 Geomorphology, GEOG 357 Climatology, GEOG 452 Landscape Ecology  
<sup>7</sup> Courses that have the "V" distinction and are a Human Geography or Human-Environment Geography course will not count towards both the Viewing a Wider World and Human Geography or Human-Environment Geography requirements.

<sup>1</sup> See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses

<sup>2</sup> Elective credit may vary based on General Education course selection, second language requirements, prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.

<sup>3</sup> Math Placement: MATH 1220G College Algebra or MATH 1350G Introduction to Statistics or MATH 2350G Statistical Methods is the starting Math course for the degree, however, students may need to complete any prerequisites prior to enrolling into one of these courses.

<sup>4</sup> Students should take courses to either complete the two semester Second Language Requirements with either Option 1 or Option 2 (see the requirements tab (p. 1) for this degree, the Second Language section)

<sup>5</sup> See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.

<sup>6</sup> Students must have 9 credits total between Human Geography and Physical Geography courses. The requirement must be completed with either two Human Geography and one Physical Geography course(s) OR with one Human Geography and two Physical Geography course(s).  
 \*students cannot take all nine credits in one area.