**IGME 382 - Introduction to Geospatial Technologies**

# Spring 2024

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**Office Hours:**

**Class Time**:

**Class Location**:

## General Course Information

## Course Description

This course provides a survey of technologies used to represent the earth, collectively referred to as Geospatial Technologies (GTs). Students will gain hands-on experience with GTs, including Global Positioning Systems (GPS), Geographic Information Systems (GIS), Virtual Globes (Google Earth), Imaging, and web 2.0 “mapping mashups.” Students should be comfortable working in Windows-based computing environments.

## Course Objective

Broader developments with information technology have increased the use and application of GTs. For example, GTs have become common place in numerous industries such as telecommunications, civil engineering, and crisis management. Furthermore, 80% of all data contains a spatial component, thus making GTs relevant and applicable to very wide range of information management tasks. The objective of this course is to expose students to foundational concepts and technologies of GTs. Students taking the course will be able to continue with additional GT courses on remote sensing, Geographic Information Systems (GISs), spatial databases, mobile GIS, spatial analysis, geographic visualization, and applications of GTs to environmental, societal, and other problem domains.

## Course Assumptions

Students enrolling in this class are assumed to have the following computer skills. If you do not have these, do not worry, by the end of this class you will. The list is as follows:

* Windows operating system use
* file management
* how to use the internet (safely)
* an ability to get up and walk away for a while.

Throughout the semester, you will be required to complete several lab assignments and readings. Students should expect to spend 4-8 hours outside of class to complete readings and assignments. Students are encouraged to talk to me about their own interests in geospatial technologies.

## Course Materials

## Textbook, Readings, Software, and ArcGIS Online Accounts

The GIS 20 – ISBN-10: 1589485122 || ISBN-13: 978-1589485129 - Optional

Additional Readings will be made available through myCourses

Everyone will be using a copy of ArcGIS Pro. This is the software that we will be using in the class and it works only on Windows computers ([https://pro.arcgis.com/en/pro-app/get- started/arcgis-pro-system-requirements.htm](https://pro.arcgis.com/en/pro-app/get-%20started/arcgis-pro-system-requirements.htm)). The in-person time is available for you to use the RIT lab for the software and my support. A third option for the software is a Virtual Machine with ArcgGIS Pro installed. My recommendation though is to run everything local if you can.

Recently, students were able to complete assignments but found the VM to be slow, would lose work because the virtual is cleaned each time it is shut down, or would have issues when running large datasets because it would time out of inactivity.

I will also provide everyone access to ArcGIS Online. The login for this is tied to your RIT account and allows you to have access to a Web GIS environment, your ArcGIS Pro license, and a ton of usable data. This account will also be used for your web applications and story maps that you will make throughout the course.

## myCourses

The myCourses system will be used for facilitation of the course. Students are expected to know how to use the myCourses system and their RIT email accounts.

## Other Materials

You are required to maintain your own datasets, so a large capacity drive or cloud-based storage is recommended (at least 16gb). You will be required to use a GPS Data Collection and Navigation Application for your smart phone (ArcGIS Collector and Survery123 for ArcGIS).

Because you are responsible for your materials, should you have any technical issues at all, these are also your responsibility and will not be accepted as a reason for late or missing work.

I can help you (I can always help you) but it will need to be at least a few days before an assignment is due for me to do anything more than make an awkward face.

## Administrative Information

## Grades

Grades will be assigned according to points earned throughout the semester. These points are based on the following categories:

## Categories:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **#** | **Points per** | **Total points** | **% of Grade** |
| **Exercises** | 10 | 50 | 500 | 50% |
| **Test** | 1 | 200 | 200 | 20% |
| **Final Project** | 1 | 200 | 300 | 20% |
| **Quizzes** | 10 | 10 | 100 | 10% |
| **Total** |  | | 1000 | 100% |

## Letter grades:

|  |  |
| --- | --- |
| **Grade** | **Points** |
| A | 900-1000 |
| B | 800-899 |
| C | 700-799 |
| D | 600-699 |
| F | < 600 |

There is no curve or curving in this course as there are no calculations. In addition, no incompletes will be given. Should you not like your grade on any given assignment, simply correct the assignment, turn it back in, and let me know you have done so.

## Course Organization

For the first 12 weeks, we will be “sort of” following what is called a “Socratic” method of course wherein I’ll talk / lecture / drone on about the topic of that week and we’ll explore how a variety of map-based things function. After that, we will have ‘lab days’ on Tuesdays where I can help you with your final projects.

## Assignments

You are expected to turn in assignments on time and in whatever deliverable medium required (PDF, Word, or Online Application). Assignments turned in late will result in an automatic loss of one letter grade for everyday late. After five days late, the assignment will result in a grade of 0 for that assignment. With prior (>3-4 days) notice before a due date, an assignment may be handed in late.

## Midterm

There will be a midterm exam in week 10. This exam looks your understanding of the material up to that point in class.

## Final Project

The final project will provide you with an opportunity to demonstrate what you have learned in the class and provide an outlet for your own interests in geospatial technologies. You are to develop your own projects ideas using GIS to look at a world problem. You will be required to find your own data for this (I will be able to give suggestions and point you in the right direction).

For the final project, you will need to develop a project abstract and a written summary detailing your project. Your final project will be a Story Map, and we will cover how to create them in class. Your story map must be hosted on the RIT ArcGIS Online organization and at least shared within the organization. All the maps are to be created by you.

## Participation / Quizzes

One aspect of class that is often more beneficial than simply doing the work is participating in class discussions or thinking about how to apply what we’re doing in class. As such, this category has 2 functions:

1. To gently push you to talk so I don’t have to.
2. To give you a buffer that will boost your grade.

These will take 1 of 2 forms, a poll or form in class or an assignment to be done before class. I will not let you know which will be which beforehand.

## Policies and Procedures

## Acceptable and Unacceptable Use of Generative AI

The use of generative AI tools (e.g. ChatGPT, Dall-e, etc.) is permitted in this course for the following activities:

* Brainstorming and refining your ideas,
* Fine tuning your research questions,
* Finding information on your topic,
* Drafting an outline to organize your thoughts, and
* Checking grammar and style.

The use of generative AI tools is not permitted in this course for the following activities:

* Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts assigned to you or content that you put into a Zoom chat.
* Completing group work that your group has assigned to you, unless it is mutually agreed upon that you may use the tool.
* Writing a draft of a writing assignment.
* Writing entire sentences, paragraphs, or papers to complete class assignments.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content). Your use of AI tools must be properly documented and cited to stay within RIT policies on academic dishonesty (see below). For example, the use of APA citations.

**Consequences:** Any assignment that is found to have used generative AI tools in unauthorized ways will result in being given a new project to do within 3 days. When in doubt about permitted usage, please ask for clarification.

* 1. **Academic Dishonesty**

Students are expected to be familiar with and abide by the Academic Honesty Policy as stated in the RIT Student Rights and Responsibilities.

You may review the posted policy on the RIT Student Rights and Responsibilities web site (<http://www.rit.edu/studentaffairs/studentconduct/rr_academicdishonesty.php).>

This policy covers all courses at RIT unless otherwise noted by the instructor, the department, or the college in which the course is offered.

Plagiarism in any format is a mistake on the part of the instructor as well as the student. As such, any students caught plagiarizing will be required to redo a new assignment and we will talk about it along the way. If you are unsure of what constitutes plagiarism and how to avoid it, err on the side of caution and consult myself as well as this guide:

<https://library.rit.edu/instruction/dl/stud.html> or the instructor for assistance.

## ADA Statement

RIT is committed to fostering an environment where students with disabilities have the same access to academic programs, support services, social events, and physical facilities as every other student.

Please review the posted policy in the Students Rights & Responsibilities (<http://www.rit.edu/studentaffairs/studentconduct/rr_disabilitiesservices.php>) for further information and details on the application for accommodations.

The course will be accommodated for disabilities provided that they disclosed to the instructor the first week of classes. Do not wait until you are doing poorly in the course to request accommodation; poor grades will not be altered once earned. You must have current documentation from RIT's Office for Disability Services (ODS) that confirms your disability status and supports your request for academic adjustments, auxiliary aids, and services: http:// [www.rit.edu/studentaffairs/disabilityservices/index.php](http://www.rit.edu/studentaffairs/disabilityservices/index.php)

## Discrimination Statement

RIT is committed to providing a safe learning environment, free of harassment and discrimination as articulated in our university policies located on our governance website. RIT’s policies require faculty to share information about incidents of gender-based discrimination and harassment with RIT’s Title IX coordinator or deputy coordinators, regardless of whether the incidents are stated to them in person or shared by students as part of their coursework. If you have a concern related to gender-based discrimination and/or harassment and prefer to have a confidential discussion, assistance is available from one of RIT’s confidential resources on campus (listed below).

1. The Center for Women & Gender: Campus Center Room 1760;
   1. 585-475-7464;
   2. CARES **(available 24 hours/7 days a week)** Call or text 585-295-3533.
2. RIT Student Health Center – August Health Center/1st floor;
   1. 585-475-2255.
3. RIT Counseling Center - August Health Center /2nd floor - 2100;
   1. 585-475-2261.
4. The Ombuds Office – SAU/Room 1114;
   1. 585-475-7200 or 585- 475-2876.
5. The Center for Religious Life – Schmitt Interfaith Center/Rm1400;
   1. 585-475-2137.
6. NTID Counseling & Academic Advising Services – 2nd Floor Lynden B. Johnson;
   1. 585-475-6468 (v),
   2. 585-286-4070 (vp).

## Title IX Statement

RIT is committed to providing a safe learning environment, free of harassment and discrimination as articulated in our university policies located on our governance website. RIT’s policies require faculty to share information about incidents of gender based discrimination and harassment with RIT’s Title IX coordinator or deputy coordinators when incidents are stated to them directly. The information you provide to a non-confidential resource which includes faculty will be relayed only as necessary for the Title IX Coordinator to investigate and/or seek resolution. Even RIT Offices and employees who cannot guarantee confidentiality will maintain your privacy to the greatest extent possible.

If an individual discloses information during a public awareness event, a protest, during a class project, or advocacy event, RIT is not obligated to investigate based on this public disclosure. RIT may however use this information to further educate faculty, staff and students about prevention efforts and available resources.

If you would like to report an incident of gender based discrimination or harassment directly you may do so by using the online Sexual Harassment, Discrimination and Sexual Misconduct Reporting or anonymously by using the Compliance and Ethics Hotline.

If you have a concern related to gender-based discrimination and/or harassment and prefer to have a confidential discussion, assistance is available from any of RIT’s confidential resources (listed below).

* RIT Counseling and Psychological Services
  + 585-475-2261 (V)
  + 585-475-6897 (TTY) www.rit.edu/counseling
* RIT Student Health Center
  + 585-475-2255 (V)
  + www.rit.edu/studentaffairs/studenthealth
* RIT Ombuds Office
  + 585-475-7357
  + 585-475-6424 585-286-4677 (VP)
  + www.rit.edu/ombuds/contact-us
* NTID Counseling and Academic Advising
  + 585-475-6400
  + www.ntid.rit.edu/counselingdept
* Center for Religious Life
  + 585-475-2137
  + www.rit.edu/studentaffairs/religion

**Course Schedule and Outline**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Dates (Sunday)** | **Quiz?** | **Assignment** | **Week** | **General Idea of What We Will Be Discussing** |
| 01/14 | No | No | 1 | What is Space and Why Do We Need a Map? |
| 01/21 | Q | Yes | 2 | How do maps work? |
| 01/28 | Q | Yes | 3 | Telling Stories with Geospatial Data |
| 02/04 | Q | Yes | 4 | Applied Topics: Game Maps |
| 02/11 | Q | Yes | 5 | Different Map Software |
| 02/18 | Q | Yes | 6 | Let’s Bring in Data (Geospatial Analysis) |
| 02/25 | Q | Yes | 7 | From where do data come? |
| 03/03 | Q | Yes | 8 | Applied Topics: Disaster and Maps |
| 03/10 |  | No | 9 | **Spring Break – No Class!** |
| 03/17 | Q | Yes | 10 | Paper Maps, Cartography, and Map Design |
| 03/24 | Q | Yes | 11 | What is the future of map design? |
| 03/31 | Q | Yes | 12 | Ethics of Maps and Application to Design |
| 04/07 |  | No | 13 | Test Week |
| 04/14 to 05/08 |  | No | 14 - 16 | Final Project Working Time |