

# **GTECH 10100 Digital Earth**

## **Spring 2019**

### **Wednesday 9:10 AM to 12:00 PM**

### **Hunter North 1090B-2 (large lab)**

**Instructor:** Mishka Vance

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Please include “GTECH 10100” in the subject line and sign your full name as it appears in CUNYfirst. It is preferred that you use your Hunter email.

**Office:** HN 1032

**Office hours:** Wednesdays, by appointment only

### **Course Description**

We are living in a digital and data-intensive era where looking up directions using web maps such as Google or Bing maps, or using GPS devices to search for the nearest Starbucks location, or requesting a ride share location-based service such as Uber from one’s smart phone has become routine. Geospatial technologies enable us to capture, store, process and display a vast amount of geographic information about the Earth and the environment, including where we are in relation to the people and places we care about. A “Digital Earth” is a “multi-resolution, three-dimensional representation of the planet, into which we can embed vast quantities of geo-referenced data” (from Vice President Al Gore speech given at the California Science Center, Los Angeles, California, on January 31, 1998). The Digital Earth is a visionary concept for creating a digital representation of the Earth, a digital mirror world, storing and managing access to everything that is known about the planet (Grossner et al. 2008). This course will serve as an introduction to geospatial technologies and geospatial datasets used to create a Digital Earth.

### **Expected Learning Outcomes**

1. Describe the concept of Digital Earth and explain how and why geographic information is vital to knowing our planet.
2. Explain the underlying geospatial technologies of a Digital Earth and appreciate the broad implications of geospatial research.
3. Apply the relevant computer knowledge and gain needed skills to use geospatial technologies of GIS and remote sensing.
4. This course is intended to equip you with skills needed to locate, gather, manipulate, present, and use geospatial data.

### **Software Used in Class**

- Windows Operating System
- ESRI ArcGIS, QGIS, MultiSpec, Google Earth, NYPL Map Warper

### **Course Readings**

**Required Textbook:** Bradley A. Shellito (2016). *Introductions to Geospatial Technologies*, 3<sup>rd</sup> Edition. ISBN-10: 1-4641-8872-6. This textbook is also offered as an eTextbook at a higher price point than the softcover version. Check out online retailers for more options.

**Recommended but not required:** Campbell, J., Shin, M., (2011), *Essentials of Geographic Information Systems*, Saylor Foundation. (Free access at <https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=67>). David DiBiase, (2013).

*The Nature of Geographic Information*. An e-book that is openly available to the public as part of Penn State University's Open Educational Resources Initiative (<https://www.e-education.psu.edu/natureofgeoinfo/node/1672>).

## **Student Evaluation**

### **Lab assignments and in-class activities (50%)**

A series of lab assignments and in-class activities will constitute 50% of the grade required for this course. In-class activities and lab assignments will be handed out and explained during class. Assignments are due at the beginning of class on the due date. Activities are due at the end of class session.

### **Final map project (15%)**

During the semester students will work on a final map project on a theme of their choice. Students will then present their map in the last session of the semester. Detailed instructions for the final map project will be given in class (See date on course schedule).

### **Individual and cooperative exams (30%)**

Two exams are given as a midterm and second exam (mid-semester exam at 15% and second exam at 15% points). The exams include a combination of multiple-choice, long and short answer questions. Each exam is given twice during one class period: In Part A (80% of total exam grade), students take the exam individually for the first part of the class. Then, when all students have turned in the exam, in Part B (20% of total exam grade) they retake the exam working in groups and in an open-book, open-notes format. During Part B, students are able to talk with anyone in class as they take the exam but not to the instructor. Students must participate in both parts of the exam (A and B) to earn a passing grade. This exam style is called a “Pyramid Exam” or “two-stages” exam (See dates on course schedule).

### **Participation (5%)**

Students are expected to attend all lectures and lab sessions, and participate in all discussions and activities both in the classroom and on Blackboard.

### **Late Submission and Exam Policies**

- 50% of the grade is deducted for late assignments submitted after the regular due date and time. No points can be earned for late or missing in-class activities.
- No points can be earned for assignments submitted later than one week after the regular due date and time.
- Do not miss an exam. Make-up exams will NOT be given except under the most extraordinary circumstances such as documented illness, documented death in the family, etc. Make-up exams will be given at a mutually convenient time and while they will cover the same information as the original exam, the questions and/or practical materials will be different.

Based on your final score, you will be assigned a letter grade based on the numerical standards that can be found in the Hunter College Undergraduate Catalogue at <http://catalog.hunter.cuny.edu/>.

### **Incomplete and/or Credit/No Credit as a Final Grade**

A final grade of IN (incomplete) will not be given in this course (with the exception of death, serious illness, or other documented emergency circumstances). Incompletes must be requested in writing prior to the last class session (unless of an unforeseen emergency as outlined above) and will be given only if student’s grade is at “C” or above at the time the IN is filed, and with evidence of a satisfactory reason. At the time you request an IN, you must also complete a Contract to Resolve an Incomplete Grade (form available at the college) and get my signature. Otherwise, I will average your existing grades based on the course grading rubric and record the grade you have earned.

To qualify for a final grade of CR/NC (Credit/No Credit), you must have completed **all** course requirements (exams, quizzes, in-class and homework assignments, labs, and the final course project) and have satisfactory attendance and participation. If even one of these requirements are not met, you will be ineligible to receive CR/NC. You must request the CR/NC option prior to beginning the second exam on Wednesday, May 1<sup>st</sup>, and submit the CR/NC form no later than Wednesday, May 8<sup>th</sup>, the last regular class meeting of the semester. The policy and form is available online at <http://www.hunter.cuny.edu/advising/how-to/file-credit-no-credit-cr-nc>.

## Course Schedule

Week	Date	Topic	Notes
1	Jan 30	Course Introduction Overview of Digital Earth and Geospatial Technologies Lab: Intro to Google Earth	Chapter 1 (Shellito)
2	Feb 6	Scale, Datum and Map Projections Lab: Coordinates and Position Measurements using Google Earth	Chapter 2
3	Feb 13	Coordinate Systems and Transformations Lab: Georeferencing with NYPL Map Warper	Chapters 3 & 4
4	Feb 20	Geospatial Data, Geographic Information Systems, and GIS Data Types Lab: Intro to ArcGIS	Chapter 5
5	Feb 27	GIS for Spatial Analysis Lab: Intro to QGIS	Chapter 6
6	Mar 6	Making Maps @ New York Public Library Map Division	Chapter 7
7	Mar 13	Getting There with Geospatial Data Review for Midterm	Chapter 8
8	Mar 20	Midterm	
9	Mar 27	Remote Sensing Part 1 Lab: Google Earth Engine	Chapter 9
10	Apr 3	Remote Sensing Part 2 Lab: Remote Sensing Imagery and Color Composites	Chapter 10
11	Apr 10	Images from Space and Environmental Analysis Lab: Landsat Imagery	Chapter 11 & 12
12	Apr 17	Digital Landscapes Review for Exam	Chapter 13
<b>13</b>	<b>Apr 24</b>	<b>NO CLASS – SPRING BREAK</b>	
14	May 1	Second Exam	
15	May 8	3D Geovisualization and Web Maps	Chapter 14 & 15
<b>16</b>	<b>May 15</b>	<b>NO CLASS – READING DAY</b>	
17	May 22	Final Map Presentations 9:10 AM to 12:00 noon.	

## Course Policies

### Communication

All email messages about this course should include "GTECH 101" in the subject line and be signed with your full name as it appears in CUNYfirst. It is preferred that you use your Hunter email.

### Web-enhancement

Everything pertaining to this course will be communicated through BlackBoard. You are required to check the BlackBoard course site on a daily basis. All changes to the syllabus will be announced on the course home page. All lecture and lab materials are accessible through BlackBoard, and this is also the place where you upload your assignments to. Your exams and lab assignments will be graded based on what you have uploaded to BlackBoard and this is where you will find your grades and may access course statistics that help you to assess your standing at any given time.

### Lab Access

The lab(s) (room HN 1090B) are generally open 7 days a week, 24 hours a day, and students with appropriate access are entitled to work in these labs when the labs are not being used for teaching (On days when the entire college is closed, access to the labs is restricted to those students who have gained prior permission to use the labs). Additional information on labs and lab policies is available here: <http://www.geo.hunter.cuny.edu/techsupport/rules.html>. Please ensure you have a Geography account - login and password. You will still be responsible for handing in the labs on time if your account is suspended because of non-

compliance. If you do **not** have a Department of Geography computer account you must complete the application found at [http://www.geo.hunter.cuny.edu/techsupport/comp\\_account.html](http://www.geo.hunter.cuny.edu/techsupport/comp_account.html).

### **Class Climate**

Hunter has made a conscientious effort to increase diversity in the student, staff and faculty member populations. To ensure that all class members feel welcomed and equally able to contribute to class discussions, we will all endeavor to be respectful in our language, our examples, and the manner in which we conduct our discussions and group work. If you have any concerns about the climate of the class, please contact me.

### **Academic Standards**

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures. Plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished to the full extent allowed according to Hunter College regulations. Be sure and reference all material you use. If you have any questions, please contact me!

### **ADA Policy:**

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY to secure necessary academic accommodations.

### **Hunter College Policy on Sexual Misconduct**

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationship. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

- A. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
- B. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose ([jtrose@hunter.cuny.edu](mailto:jtrose@hunter.cuny.edu) or 212-650-3262), or Colleen Barry ([colleen.barry@hunter.cuny.edu](mailto:colleen.barry@hunter.cuny.edu) or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

The CUNY Policy on Sexual Misconduct can be found here:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

### **Syllabus Changes**

Changes to the syllabus are possible. Except for changes that substantially affect implementation of the evaluation (grading) statement, the current syllabus is a guide for the course and is subject to change with advance notice. All changes will/would be announced on BlackBoard, which you are expected to check daily.