GEOGRAPHY 726, Fall 2019 (09/03 – 12/12)

Geographic Information Science
[Lectures Sec 401] T 2:00-4:40PM @ Bol B64
[Lab Sec 801] 1:00-2:50PM W/ [Sec 802] 2:00-3:50PM R, Both @ Bol 289

Instructor: Zengwang Xu
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Office Hours: by appoint.
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E-Mail: xuz@uwm.edu

Teaching Assistant: Amir Forati
Office: Bol 435
Office Hours: TBD
E-Mail: aforati@uwm.edu

COURSE DESCRIPTION

This is a face-to-face course consisting of lecture and lab sections. This course is an introductory graduate class on geographic information science (GIS). It covers the fundamental concepts, theories, and the state-of-the-art techniques of GIS. It introduces the map projections and coordinate systems, vector and raster data models, geodatabase management and query, and generic spatial data analyses. The GIS technique will be practiced in computer laboratory using ArcGIS™ software. Students will be expected to attend and participate the lectures and labs in person, and assessed by weekly lab assignments, in-class and online quizzes, class project and examinations.

Prerequisite: graduate standing

LEARNING OUTCOMES

1. Understanding fundamental concepts in GIS
2. Conducting basic operations on data manipulation and management using ArcGIS
3. Understanding basic operations in spatial analysis using ArcGIS
4. Completing and presenting a GIS project.

REQUIRED TEXTS (RESERVED IN LIBRARY)


Lab/Exercise book:

Combo packages are available in ecampus virtual book store.

Both books are reserved in library.

COURSE REQUIREMENTS

TIME APPROXIMATION, for this semester, an average student is expected to spend the following amount of time (hrs) in this class:
time in classroom (40), time spent online reading lecture and other materials (13), time in discussions online or in persons (8), time in laboratories (22), time taking exams (4), time in tutorials (44), time for completing assignments (22), and time for preparation and study (39).
Total: 192 hrs

GRADING AND EVALUATION

1. Examinations (35% of class grade) There will be a mid-term and a final examination for this course (15% for midterm, 20% for final).
2. Laboratory exercises (30% of class grade)
There are 10 or 11 labs to practice ArcGIS software in spatial data management and analysis. Weekly lab assignments will be collected at the end of the following lab. Late submission will result in a 20% reduction per day. No submission will be accepted after seven days from the submission deadline.

3. **Class project (15% of class grade)**
   A class project that practices GIS application in spatial database management and spatial analysis will be required. Detailed requirements will be announced in class and through Canvas.

4. **Class & Online participation (5% & 5%)**
   Attendance to lectures and labs is required. Quizzes and other assignments may be given in classes as a way to check class attendance and participation. Participation to the online Q&A forum will be counted as online participation.

5. **Online quizzes (10%)** through Canvas will be given during the semester.

**Grading Scale:**
- A = 90-100%
- A- = 87-89.99%
- B+ = 83-86.99%
- B = 80-82.99%
- B- = 77-79.99%
- C+ = 73-76.99%
- C = 70-72.99%
- C- = 67-69.99%
- D+ = 63-66.99%
- D = 60-62.99%
- D- = 57-59.99%
- F = 0-56.99%

**Canvas**
Announcements, lecture slides, lab instructions, and grades will be distributed through Canvas online system (www.uwm.edu/canvas). It is students' responsibility to check your Canvas account regularly. Especially, you should regularly check due date in the Canvas course site.

**Software**
The exercise book is based on ArcGIS 10.5 or higher. The book comes with DVD disks for ArcGIS software with activation code and the tutorial data. If you purchase a new book, the software and code should be usable. If you purchase a used book, there is great chance that the software has been activated and code is no longer usable.

The campus computers that have ArcGIS installed has updated to ArcGIS 10.5. Refer to the following link (http://www4.uwm.edu/technology/authenticated/computer_labs/campus/index.cfm) to see where the computers on campus have ArcGIS installed. You can work on your exercises and homework using campus computers. You might need a thumb drive (flash drive) to copy what you have completed, so that you don’t have to start over next time. There might be some minor inconsistency between your exercise book and the ArcGIS 10.5.1. These inconsistencies should be very easy to figure out. ArcGIS is rapidly changing software, and dealing with these inconsistency is a part of ArcGIS experience.

UWM students are able to purchase ArcGIS from UWM SoftwareShop for $0. After the purchase, it will take at least 48 hours for campus software team to activate your software.

**Computing Help**
If you have a computer or computing problem, you can always consider the UWM Help Desk (https://www4.uwm.edu/uits/help/help_desk/index.cfm) a potential help.

*Telephone: (414) 229-4040
Email: GetTechHelp@uwm.edu
Location: Bolton 225*

This may include (but not limited to) the unusual problems in Canvas, managing folders and files using Windows Explorer, transferring files using an FTP server, or installing software on your own personal computer.

**Policies**
Please be advised that Geography 726 abides by all the University of Wisconsin – Milwaukee’s official policies on disabilities, religious observances, active military duty, incompletes, discriminatory conduct, academic misconduct,
complaint procedures, and grade appeal procedures. For more information, please see the following link, http://www.uwm.edu/Dept/SecU/SyllabusLinks.pdf.

Some of them are specified as follows:

**Students with disabilities.** If you need special accommodations due to disability reason, please submit your VISA from the Student Accessibility Center within the **first two weeks** of the semester, and inform me your specific accommodation requirement with the VISA. I’ll be happy to make due arrangements. For more information, see the following link, http://www4.uwm.edu/sac/SACLtr.pdf

**Religious observances.** If you require accommodations for absences due to religious observance, I’ll be happy to make due arrangements. Please note you’re required to notify me within the **first three weeks** of the beginning of classes (within the first week of summer session and short courses), of the specific days or dates on which you will request relief from an examination or other academic requirements. I will try my best to schedule accommodations before or after the regular schedule. For more information, please see the following, http://www4.uwm.edu/secu/docs/other/S1.5.htm

**Students called to active military duty.** I will try my best to accommodate the absences due to call-up of reserves to active military duty. Please see the following links for details, Students: http://www4.uwm.edu/current_students/military_call_up.cfm Employees: http://www4.uwm.edu/secu/docs/other/S40.htm

**Incompletes.** Incompletes may be given according to the University policy (http://www4.uwm.edu/secu/docs/other/S_31_INCOMPLETE_GRADES.pdf)
Tentative Schedule and Topics (GEOG 726), Fall 2019 (09/03-12/12)
This schedule is subject to change as the class proceeds.

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<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>Sept.3</td>
<td>Introduction</td>
<td>1</td>
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<td>2</td>
<td>Sept.10</td>
<td>Map projections and coordinate systems</td>
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<td>3</td>
<td>Sept.17</td>
<td>Map projections and coordinate systems, Cont.</td>
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<td>4</td>
<td>Sept.24</td>
<td>Vector data model</td>
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<td>5</td>
<td>Oct.1</td>
<td>Raster data model</td>
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<td>6</td>
<td>Oct.8</td>
<td>Raster data model and GIS data acquisition</td>
<td>5 &amp; 16</td>
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<td>7</td>
<td>Oct.15</td>
<td>GIS data acquisition</td>
<td>6</td>
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<td>8</td>
<td>Oct.22</td>
<td>Geometric transformation, and Midterm exam</td>
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<td>9</td>
<td>Oct.29</td>
<td>Spatial data editing</td>
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<td>10</td>
<td>Nov.5</td>
<td>Attribute data management</td>
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<td>11</td>
<td>Nov.12</td>
<td>Data exploration</td>
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<td>12</td>
<td>Nov.19</td>
<td>Vector data analysis</td>
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<td>Nov.26</td>
<td>Raster data analysis</td>
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<td>14</td>
<td>Dec.3</td>
<td>Project presentations</td>
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<td>15</td>
<td>Dec.10</td>
<td>Project presentations</td>
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<td>Final Exam</td>
<td>Dec. 20</td>
<td>10:00am-12:00pm, in the same classroom (final project due will be announced in later this semester)</td>
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