**GEOG 241 - Introduction to GIS,**

**Spring 2020**

**1:50 pm - 3:20 pm Mondays & Wednesdays Online**

**3 credit hours**

**This is an amended syllabus to cope with the need for self-isolation. The class will now be entirely online. As we are adjusting to this unexpected scenario, I am open to your comments and suggestions for us to have a great semester.**

**Instructor:** Mamadou Y. S. Coulibaly

**Office:** 4473 Sage Hall

**Office Hours: Monday & Wednesday 12:30 -1:30**, or by appointment. **You may call my office (920 424 3123) or use the default Collaborate Ultra session on Canvas. It is named "Introduction to GIS - Course room".**

**Office Phone: 920-424-3123 (please use it during office Hours. The call will be forwarded to me)**

**Email:** [coulibalym@uwosh.edu](mailto:coulibalym@uwosh.edu) **Please use “Geog 241:” as a prefix for each email subject.**

**Prerequisites:** none

**Textbook:** Introduction to Geographic Information Systems, 9th Edition by Kang-tsung Chang

Getting to know ArcGIS PRO" by Amy Collins and Michael Law

**Online:** Canvas (annoncements, exercices, lecture notes, reading assignments, grades, **Exam, discussion forum** etc.)

**OneDrive will be used to acquire lab data and to submit lab exercises.**

Check [www.facebook.com/UWOgeography](http://www.facebook.com/UWOgeography%20) for updates about the Geography department

**Description:** This course introduces students to the basic concepts and components of a geographic information system (GIS) and provides students with the technical skills to use two GIS software packages (ArcMap and ArcGIS Pro). GIS involves the collection, management, analysis and display (mapping) of spatial data. It has a wide range of applications such as natural resource management, environmental analysis, social sciences, business, urban planning, geology, crime mapping, emergency management, disease spread, and more.

**Student Learning Outcomes:** Upon completion of this course students will be able to:

* Define and explain the basic concepts and theories of GIS
* Identify the different parameters of map projection and manipulate the projection of map layers.
* Distinguish the major data structures/model for storing spatial data (raster and vector data)
* Create new spatial data and acquire existing data
* Manipulate and analyze spatial data from a variety of sources
* Create a basic map using appropriate cartographic techniques

**Geography Department Student Learning Outcomes:** The Geography Department strives to provide you with the knowledge and skills you need to succeed upon graduation. To help accomplish this1 the department has established eight departmental student learning outcomes. This course addresses three of those learning outcomes at the initial level. Upon completion of this course students will be able to:

* + analyze and interpret spatial data and produce quality maps by utilizing effective cartographic techniques and Geographic Information Science technologies
  + identify1 understand, and synthesize the components and processes that create the physical and biotic landscapes found on the earth
  + identify1 understand, and synthesize themes and patterns of human activities that create the cultural1 economic, and political landscapes found on the earth

You will accomplish these goals by attending and participating in course lectures and conducting a variety of exercises throughout the semester. Course and departmental learning outcomes are complementary.

**Class Format: All class meetings will be virtual. For that, we will use the Collaborate Ultra media application for lecture and lab sessions.**

Class will meet for 1.5 hours every Monday and Wednesday. On Monday, class meetings will primarily consist of lectures and discussions. On Wednesday we will complete a series of exercises.

**Grading scale:** Mid-term exam (50 points); Final exam (50 points); Quizzes (50 points); Lab exercises (50 points); 200 points total. They will be participation bonus points to take advantage of.

The following scale will be used in determining the final grade:

**Grade** Points Percentage

A 190 =< x 95=< x

A- 183 =< x < 190 91.5 =< x < 95

B+ 176 =< x < 183 88 =< x < 91.5

B 169 =< x < 176 84.5 =< x < 88

B- 162 =< x < 169 81 =< x < 84.5

C+ 155 =< x < 162 77.5 =< x < 81

C 148 =< x < 155 74 =< x < 77.5

C- 141 =< x < 148 70.5 =< x < 74

D+ 134 =< x < 141 67 =< x < 70.5

D 127 =< x < 134 63.5 =< x < 67

D- 120 =< x < 127 60 =< x < 63.5

**Exercises:** We will conduct a variety of exercises on Wednesdays in which we apply concepts introduced in lecture to acquire a variety of GIS software skills. You must be present in class for the entire period on Wednesdays to receive credit for that exercise. Not all exercises will be completed during the class period and will require you to work outside of the scheduled class time. Exercises are due at the beginning of class one week from the day it was started; if you turn it in at any time after the start of class on Wednesdays it is considered late. Late work will be deducted 1 point, incomplete lab exercises will cost 2 points each and student will lose 3 points for lab exercise that were never started. **You must always complete every step of every exercise, even if you work with a partner or in a group.** You can discuss results, but all work must be your original work. Failure to do so is considered cheating and you will receive a zero for the exercise (getting and giving answers is cheating); repeated cheating will result in a failing grade and reporting of academic misconduct to the Dean of Students. We will complete 12 exercises throughout the semester. Your lab work can be kept in folder assigned to you on the class server.

**Each student will be given a free copy of ArcMap a ArcGIS Pro to install on personal computer.**

**We will now use OneDrive for Lab submission and data. I will show you a way you can package your lab task and post/submit them. ArcGIS does not work on MacOS. Thus, mac users need to install a Windows parallel program such as Bootcamp to run ArcGIS and ArcGIS Pro.**

**Attendance:** **Attendance is no longer required. However, I plan to take attendance for each class session and reward those who attend lectures. Lecture notes will be posted, and you are responsible for making up missed work promptly and having assignments prepared for the following class**.

**ePortfolio:** As you move through your courses at UW Oshkosh, you will archive your learning in an ePortfolio. The ePortfolio, which can be found on D2L, will help you keep track of major assignments in all your courses so that you can see your progress and connect ideas across different classes. Most majors, including the Geography major, require you to archive your learning in your major courses and turn in a final ePortfolio as a requirement for graduation - so it is essential that you utilize the ePortfolio with the final lab exercise serving as the work to be included.

**Academic Integrity:** The University of Wisconsin Oshkosh is committed to a standard of academic integrity of all students. The system guidelines state: "Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors." Students are subject to disciplinary action of academic misconduct which is defined in Chapter 14 of the UWS 14 Wisconsin Administrative code. Students are encouraged to review the code, located on the Dean of Students Academic Misconduct website in order to understand your rights, responsibilities, and consequences of academic misconduct. In this course, you must complete every step of every assignment to the best of your ability without falsifying, plagiarizing, or copying from a classmate - even if you are working as partners or in groups. Failure to comply will result in a zero grade for that assignment and may result in a failing grade for the course.

**Accommodation for students with disabilities:** I would like to hear from anyone who has a disability that requires some modification of seating, testing, or other class requirements so that appropriate arrangements may be made for him/her. Please see me after class or during my office hours if you have such need.

**Disclosure statement**: Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990: [https://uwosh.edu/financialaid/consumer-information/."](https://uwosh.edu/financialaid/consumer-information/)

***Tentative Course Schedule***

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| **Week** | **Date** | **Topic** |
| 1 | Feb.  3 - 7 | Lecture1: Introduction, Definitions, History of GIS and key Concepts (Chang, Chapter 1)  Exercise: Introducing GIS lab/software/accounts ArcCatalog and ArcMap  Intro to ArcGIS Pro *(2a (GTK ArcGIS Pro)* |
| 2 | Feb .  10 – 14 | Lecture 2. Map Projection and Coordinate Systems ( Chang Chapter. 2)  Exercise: Projecting and reprojecting (Chang) |
| 3 | Feb .  17 - 21 | Lecture 3. Vector data model (Chang, Chapter 3)  Data file structure of shapefile coverage and geodatabase  Exercise: Creating Geodatabase, Feature Dataset and feature class  Converting Shapefile to Personal Geodatabase  Displaying a TIN *(Chang, ch3 task 2, 3 & 6)*  Building a Geogdatabase in ArcGIS Pro *(GTK Ex. 4a)*  **Academic Open House, Thursday Feb. 20, 2 – 5 pm** |
| 4 | Feb .  24 – 28 | Lecture 4. Raster Data Model (Chang, Chapter 4)  Exercise: Displaying DEM, Land Cover, and Data Conversion (Vector to Raster)  *(Chg Ch.3 Tasks 1, 3, 4)*  Vectorization of Raster Lines *(Chg, Ch.4 Task 2)*  Georeferencing |
| 5 | Mar.  02 - 06 | Lecture 5. Data Acquisition (Chang, Chapter 5)  Exercise: Data download and *(Chang, ch5 tasks 1, 3 and 4).*  Onscreen digitizing *(GTK ArcGIS Pro, 4b)* |
| 6 | Mar.  09 - 13 | Lecture 6. Spatial/vector Data Editing (Chang, Chapter 7)  Exercise: Editing in ArcMap *(Chang, ch.7 tasks 1,2, 3)*  Editing in ArcGIS Pro *(GTK 4c)* |
| 7 | Mar .  16 - 20 | **~~Mid-term exam and~~** ~~Exam correction~~  ~~Lecture 7: Attribute Data Input and Management (Chang, Chapter 8)~~ |
|  | Mar .  22 - 29 | **Spring Break** |
| 8 | Apr.  30 - 03 | **First Mid-term exam**  Lecture 7: Attribute Data Input and Management (Chang, Chapter 8)  Exercise: Manipulating attribute table  Linking and joining attribute table *(GTK ArcGIS Pro, 3a, 3b, 3c, (3d))* |
| 9 | Apr.  06 - 10 | Lecture 8: Data Exploration (Chang, Chapter 10)  Exercise: Vector data Query & Raster data Query  *(Chang, ch.10 Tasks 1,2,3,4,5,6, 7)* |
| 10 | Apr.  013 - 17 | Lecture 9. Data display and Cartography (Map Production) (Chang, Chapter 9)  Exercise: Layout in ArcGIS and in *(Chang, ch.9 tasks 1)*  ArcGIS Pro *(GTK ArcGIS Pro, 10a, 10b, 10c, (10d))* |
| 11 | Apr.  20 - 24 | Lecture 10: Geocoding (Chang, Chapter 16)  Exercise: Geocode street address*(Chang, ch.16 tasks 1)*  ArcGIS Pro *(GTK ArcGIS Pro, 7a, 7b)* |
| 12 | Apr.  27 - 01 | Lecture 11: Vector Data Analysis (Chang, Chapter 11) & Lecture 12: Raster Data Analysis  Exercise: Buffering and Overlay analysis*(Chang, ch.11 tasks 1,2, 5 & 6)* |
| 13 | May.  04 – 08 | Lecture 12: Raster Data Analysis & Lecture 13. Interactive and Online GIS (Web GIS)  Exercise: *ch.12 task 1, (2), 3, 5 & 6 &* Exploring ArcGIS Online *(GTK ArcGIS Pro,1a)* |
| 14 | May  11 – 15 | Interactive and Online GIS (Web GIS)  Review and exercise make-up  **Final exam & correction** |