

## My Instructional Strategy Plan

Course Name: HYDROLOGY/GIS 400

Instructor Name: Faculty in the GIS Department

Course Description: This course will be about the National Water Information System Web Data in the USA provided by the US Geological Survey (USGS). The data produced by USGS is in the public domain.

Target Audience: It is designed for the Community College, Graduate / Professional, Adult Education.

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## Learning Outcome and Instructional Strategy

For each learning outcome, identify at least one instructional strategy you can use to achieve the learning outcome. Be sure to estimate the amount of time involved and materials (resources) needed.

| Learning Outcome                                                                                                                                                                                                                                                             | Instructional Strategy                                                                                                                                                                                                                   | Learning Style(s) Addressed | Time Involved                                                                                            | Materials/Resources Needed (i.e. technology, cost, etc.)                                                                                                                                                     |
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| 1. Identify and summarize real-time and historical data retrievable by geographic area for surface water, groundwater, and water quality conditions such as temperature, specific conductance, pH, nutrients, pesticides, and volatile organic compounds from the USCG site. | This learning outcome is based on the Demonstration/Tutorial instructional strategy, which is an instructor-led strategy. This will be a guided instruction, and students can learn, understand and practice before their final project. | Auditory, Visual            | 5 hrs 2x week class<br>2.5 hrs per week<br><br>2 hrs demonstration/tutorial<br><br>1 hr student practice | Youtube and Powtoon video tutorials.<br><br>Class Reading<br>1.The ArcGIS Imagery Book: Clint Brown and Christian Harder(2016)<br>2. ESRI Map Book.VOL31(2016)<br>3. The ARC GIS Book: Chritian Harder(2015) |
| 2. <b>Locate</b> any address and identify FEMA Floodplain limits near that particular address.                                                                                                                                                                               | Discussion: Students will be discussing among themselves using snap chat about locating the address.                                                                                                                                     | Visual, Kinesthetic         | 2 hrs<br><br>Locate-1hr<br><br>and<br><br>Identify floodplan- 1 hr                                       | FEMA Floodplain website<br><br>Discussion forum within LMS<br><br>Snapchat                                                                                                                                   |

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| 3. <b>Analyze</b> data and create a graph with statistics of one or more state's water resources system in the USA.                                   | Co-operative Learning and Service Learning                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Visual, Kinesthetic           | 6 hrs<br><br>Small group: 3 hrs analyze<br><br>3 hrs creating graphs                          | Reading:<br><a href="http://waterdata.usgs.gov/nwis/uv/?site_no=351022111061801&amp;PARAMeter_cd=72019,72020,62611">http://waterdata.usgs.gov/nwis/uv/?site_no=351022111061801&amp;PARAMeter_cd=72019,72020,62611</a><br><br><a href="http://waterdata.usgs.gov/nwis/uv?cb_72019=on&amp;format=gif_stats&amp;site_no=351022111061801&amp;period=&amp;begin_date=2016-10-21&amp;end_date=2016-10-28">http://waterdata.usgs.gov/nwis/uv?cb_72019=on&amp;format=gif_stats&amp;site_no=351022111061801&amp;period=&amp;begin_date=2016-10-21&amp;end_date=2016-10-28</a> |
| 4. <b>Design and construct</b> a map using QGIS software about each of the available water resources in the USA.                                      | Service Learning, Discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Auditory, Visual, Kinesthetic | 15 hrs<br><br>Independent work by creating maps along with discussion in the discussion forum | QGIS software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. <b>Apply</b> the knowledge of GIS mapping and spatial analysis to <b>create</b> a buffer zone around certain data points/lines using QGIS software | This learning outcome is based on the Service Learning or community-based instruction instructional strategy, which is a student-led strategy. Students will gain an understanding of the content by creating their maps, and that will increase and enhance their critical thinking and expertise in the area. This strategy emphasizes on differentiated instruction, multimodal instruction and an emphasis on the "service" factor of the learning experience.<br><br>Co-operative Learning | Visual, Kinesthetic           | 3hrs<br><br>Small group work<br>Creating bufferzone                                           | QGIS Software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Challenges:** Some students might take extra time understanding and implementing the QGIS software.

**Feedback:** Feedback is provided throughout the course via synchronous and asynchronous method using various advance technologies.