|  | **Key Activities to WECM Courses Matrix** |
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|  | **Key Activity #/Statement** | **WECM Course Rubric, Number and Title** |
|  | GISC 1401 Cartography & Geography in GIS/GPS  | GISC 1411Introduction to GIS | GISC 1421 Introduction to Raster-Based GIS | GISC 2250 Scripting for GIS | GISC 2401 Data Acquisition and Analysis in GIS | GISC 2411 GIS Applications | GISC 2359 Web-Served GIS | COSC 1436 Programming Fundamentals I using Python | ITSE 1345 Introduction to Oracle SQ | DFGT 1309 Basic Computer-Aided Drafting | GISC 2364 Practicum (or Field Experience) in Cartography | ORGISC 2380 Cooperative Education-Cartography | ORGISC 1491 Special Topics in GIS |
| 1. Create and/or acquire GIS data  | KA1.1Define the data requirements, research sources of available data, and purchase data from reputable source |  |  |   | X |   |   |   |   |   |   |   |   |   |
| KA1.2 Develop (and document with metadata) database(s) including: defining geometry, attributes, relationships, topology rules, feature behaviors such as types and domains, incorporating data schema models.  |  |  |  |  |  | X |   |   |   |   |   |   |   |
| KA1.3 Determine data compatibility (projection), perform data conversion, and populate feature attributes.  |  |  |   |   | X |   |   |   |   |   |   |   |   |
| KA1.4 Perform both tablet, COGO, and on-screen digitization with attribution  |  |  |   |   |   | X |   |   |   |   |   |   |   |
| KA1.5Collect field attribute and location data via GPS (Tablet PC/PDA).  |  |  |   |   |  |   |   |   |   |   | X | X | X |
| KA1.6Geocode data.  |  |  |   |   |   | X |   |   |   |   |   |   |   |
| KA1.7 Perform quality control (QC) and quality assurance (QA) of GIS databases.  |  |  |   |   |  |   |   |   |   |   | X | X | X |
| 2. Create image data | KA2.1Scan hard copy images into digital format. |  |  |   |   | X |   |   |   |   |   |   |   |   |
| KA2.2Geo-reference digital imagery. |  |  | X |   |   |   |   |   |   |   |   |   |   |
| KA2.3Rectify images to meet data standards. |   |   | X |   |   |   |   |   |   |   |   |   |   |
| KA2.4Perform image analysis (classification) |   |   | X |   |   |   |   |   |   |   |   |   |   |
| 3. Maintain GIS data | KA3.1Develop procedures and schedules for data maintenance. |   |   |   |   |  | X |  |   |  |   |   |   |   |
| KA3.2Maintain data QA/QC through update operations: (add/delete/change) |  |  |  |   | X | X |  |   |   |   |   |   |   |
| KA3.3Perform data layer updates and update metadata (imagery/themes).  |   |  |  |   |  | X |   |   |   |   |   |   |   |
| KA3.4Convert data between formats. |  |  |  |   |   | X |   |   |   |   |   |   |   |
| KA3.5Perform database performance tuning through compression, indexing, etc. |   |   |   |   |  |   |   |   | X |   |   |   |   |
| 4. Conduct spatial/non-spatial analysis | KA4.1Create analysis models through flowcharts and processes |   |   |  |   |  | X |   |   |   |   | X | X | X |
| KA4.2Create scripts |   |   |   |  |   |   |  |  | X |   |   |   |   |
| KA4.3 Preprocess geographic data (generalize, subset). |  |  |   |   |   |   | X |   |   |   |  X | X | X |
| KA4.4Perform geo-processing through clipping, buffering, overlay, etc. |   |  |  |   |   | X |   |   |   |   |   |   |   |
| KA4.5 Generate descriptive and spatial statistics. |   |   |  |   |  |  |   |   |   |   | X | X | X |
| KA4.6 Perform quality control and assurance. |   |  |   |   | X |  |   |   |   |   |   |   |   |
| KA4.7 Interpret data results. |   |   |  |   |  |  | X |   |   |   |   |   |   |
| 5. Generate GIS products | KA5.1 Create maps. |  |  |   |   |   |   |   |   |   |   | X | X | X |
| KA5.2 Create analysis report. |   |   |   |   |  | X |   |   |  |   |   |   |   |
| KA5.3 Create tables |   |   |   |   |   |  |   |   | X |   |   |   |   |
| KA5.4 Create charts.  | X | X |   |   |   |   |   |   |   |   |   |   |   |
| KA5.5 Generate mailing labels, logos, posters, etc. |   | X |   |   |   |   |   |   | X |   |   |   |   |
| KA5.6 Distribute digital and hard copy products. |  |  |  |   |   | X |   |   |   |   |   |   |   |
| 6. Develop software applications | KA6.1 Define user software needs and determine application design format (hardware platform and programming language). |   |   |   |  | X |   |   |   |   |   |   |   |   |
| KA6.2 Create customized software application solution. |   |   |   |   |   |   |  | X |   |   |   |   |   |
| KA6.3 Create map templates. |   | X |   |   |   |   |  |  |  |   |   |   |   |
| KA6.4 Perform quality control and assurance for applications, such as beta testing. |   |   |   |   |   | X |   |   |   |   |   |   |   |
| KA6.5 Create help files and support documentation. |   |  |   |   |   | X |   |   |  |   |   |   |   |
| 7. Manage GIS data | KA7.1 Establish data custodianship and distribute and assign database permissions according to organizational policies. |   |   |   |   | X |   |   |   |  |   |   |   |   |
| KA7.2 Organize file structure (e.g. create directories, perform data and directory housekeeping) |   |   |   |   | X |   |   |   |   |   |   |   |   |
| KA7.3 Perform data maintenance through archival functions. |   |   |   |   | X |   |   |   |   | X |   |   |   |
| 8. Provide technical support | KA8.1 Resolve user technical problems |   |   |   |   |  |   | X |   |   |   |   |   |   |
| KA8.2 Install and maintain software including service packs. |   |   |   |   |  | X |   |   |   | X |   |   |   |
| KA8.3 Assist in writing technical guides for GIS applications. |   |   |   |   |   |   |   |   |   |   | X | X | X |
| KA8.4 Provide technical training for end-users. |   |   |   |   |   |   |   |   |   |   | X  | X | X |
| 9. Perform administrative tasks | KA9.1 Create formal and informal communications using email, phone, listservs and written reports.  |   |   |   |   |   |   |   |   |   |   | X | X | X |
| KA9.2 Coordinate GIS projects including cost estimates, timelines, and budgets. |   |   |   |   | X |   |   |   |   |   |   |   |   |
| KA9.3 Prepare and maintain contracts. Maintain equipment and office supplies. |   |   |   |   |   |   |   |   |   |   | X | X | X |
| KA9.4 Provide internship supervision for students and new workers. |   |   |   |   |   |   |   |   |   |   |  X | X | X |
| KA9.5 Participate in GIS awareness events such as presentations, conferences and user groups. |  |  |  |   |   | X |   |   |   |   |   |   |   |
| 10. Pursue professional development | KA10.1 Participate in professional conferences using both oral and written communications. |  |  |  |   |   | X |   |   |   |   |   |   |   |
| KA10.2 Continue professional education through credit and/or noncredit courses, technical training and informal education, such as online courses. |   |   |   |   |   |   |   |   |   |   | X | X | X |