|  | **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 1411  Introduction 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 | OR  GISC 2380 Cooperative Education-Cartography | OR  GISC 1491 Special Topics in GIS |
| 1. Create and/or acquire GIS data | KA1.1  Define 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 |  |  |  |  |  |  |  |
| KA1.5  Collect field attribute and location data via GPS (Tablet PC/PDA). |  |  |  |  |  |  |  |  |  |  | X | X | X |
| KA1.6  Geocode data. |  |  |  |  |  | X |  |  |  |  |  |  |  |
| KA1.7  Perform quality control (QC) and quality assurance (QA) of GIS databases. |  |  |  |  |  |  |  |  |  |  | X | X | X |
| 2. Create image data | KA2.1  Scan hard copy images into digital format. |  |  |  |  | X |  |  |  |  |  |  |  |  |
| KA2.2  Geo-reference digital imagery. |  |  | X |  |  |  |  |  |  |  |  |  |  |
| KA2.3  Rectify images to meet data standards. |  |  | X |  |  |  |  |  |  |  |  |  |  |
| KA2.4  Perform image analysis (classification) |  |  | X |  |  |  |  |  |  |  |  |  |  |
| 3. Maintain GIS data | KA3.1  Develop procedures and schedules for data maintenance. |  |  |  |  |  | X |  |  |  |  |  |  |  |
| KA3.2  Maintain data QA/QC through update operations: (add/delete/change) |  |  |  |  | X | X |  |  |  |  |  |  |  |
| KA3.3  Perform data layer updates and update metadata (imagery/themes). |  |  |  |  |  | X |  |  |  |  |  |  |  |
| KA3.4  Convert data between formats. |  |  |  |  |  | X |  |  |  |  |  |  |  |
| KA3.5  Perform database performance tuning through compression, indexing, etc. |  |  |  |  |  |  |  |  | X |  |  |  |  |
| 4. Conduct spatial/non-spatial analysis | KA4.1  Create analysis models through flowcharts and processes |  |  |  |  |  | X |  |  |  |  | X | X | X |
| KA4.2  Create scripts |  |  |  |  |  |  |  |  | X |  |  |  |  |
| KA4.3  Preprocess geographic data (generalize, subset). |  |  |  |  |  |  | X |  |  |  | X | X | X |
| KA4.4  Perform 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 |