CSC 477 - Scientific and Information Visualization

1. CSC 477 – Scientific and Information Visualization

2. **credit units** 4  **contact hours** 6

3. **Course Coordinator:** Zoë Wood

4. **Textbook (or other required material):** None

5. a. **Course Description:**
Basic data processing (magnitude, grouping and segmentation), visualization design, cognition and perception, spatial data visualizations (2D and 3D, e.g. GIS data, medical data) information data visualization, spatial encoding, color encoding, and interaction. 3 lectures, 1 laboratory.

   b. **Prerequisite:** CSC 349.

   c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**

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6. a. **Course Learning Objectives**
The student will be able to:
- Explain visualization design and its effective use.
- Evaluate existing visualizations and visualization software in terms of visualization design (spatial, shape, color encoding and interaction design).
- Justify sensible visualization design choices, such as appropriate primitives, encodings, and interaction design.
- Translate a written description of a visualization design or algorithm, such as one that might appear in a research paper, into a correct software implementation.
- Evaluate the appropriateness, understand the interfaces, and use modern visualization software libraries in building visualization systems.
- Create novel visualizations and visualization software using appropriate software libraries.
- Recognize the perceptual consequences of visualizations (i.e., how visualizations can ‘lie’) and the potential consequences.

b. **Level at which Student Outcomes are addressed**
(“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

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7. **Major Topics Covered: (number of lecture hours per)**

- Encoding and data models (3 hours)
- Spatial encoding (6 hours)
- Color encoding (3 hours)
- Conveying shape (3 hours)
- Interaction: Focus and Process (3 hours)
- Navigating and Zooming (3 hours)
- Abstraction and Aggregation (3 hours)
- Evaluation (3 hours)