CSS Core and Concentration Competencies

Part I: Core Competencies

Core competencies for the Computing and Software Systems (CSS) program are divided into two groups – general and technical competencies.

1. Core General Competencies include the following knowledge, skills and abilities:
   a) Analysis & Problem Solving Skills
      - Information Gathering
      - Efficiency
      - Systematic Thinking
      - Thoroughness
      - Creativity
      - Learning by Doing
      - Analysis of Alternatives (cost/benefit)
   b) Interpersonal Skills
      - Collaboration & Team Building
      - Leadership
      - Writing
      - Speaking
      - Listening
      - Managing Change & Uncertainty
   c) Management Skills
      - Project Management
      - Risk Management
      - User Orientation
      - Decision-Making

2. Core Technical Competencies include the following knowledge, skills and abilities:
   - Business Case Justification
   - Technology Evaluation & Selection
   - Process Reengineering Techniques
   - Technology Standards & Procedures
   - Discrete Mathematics
   - Data Analysis & Statistics
   - Quality Assurance
   - Hardware Architecture
   - Software Architecture
   - Social Implications of Technology
   - Technical Writing
   - CASE Methodologies
Part II: Advanced Competencies

The advanced areas require students to gain advanced knowledge, skills and experience in the following areas:

1. Competencies related to Applications Programming
   
   - Requirements Definition & Analysis
   - Object-oriented Programming & Design
   - Functional Design
   - Testing Methodologies
   - Network Design
   - System Performance Monitoring & Analysis
   - Event Programming Methodologies
   - Algorithm Design & Development
   - Managing Reusable Code
   - Distributed Computing
   - Contemporary Programming Tools

2. Competencies related to Information Handling
   
   - Internet Applications Development
   - Electronic Data Interchange
   - Knowledge-Based Systems
   - Multimedia information management
   - Data Compression Techniques
   - Logical Data Modeling
   - Data Layout and Access Techniques
   - Content Management
   - Graphical Design and Interpretation
   - Contemporary Information Engineering Tools

3. Competencies related to Systems Analysis
   
   - Business Case Justification
   - Cost/Benefit Analysis
   - Interface Design Principles
   - Cognitive Psychology
   - Finance
   - Systems Specification Techniques
   - Software Development Methodologies
   - Project Estimation Techniques
   - Database Design
   - Database Reporting
   - Rapid Prototyping
   - Usability Testing
   - System Administration
   - Contemporary Database & Interface Design Tools
   - Organizational Analysis