TEACHING ASSIGNMENTS

• Teaching load for fall and spring (negotiable)
  • Chair: 1-1
  • Junior faculty : 1-2
  • Others: 2-2
• Summer assignments come with additional pay
• Course requests
  • Typically satisfied
  • Spread across graduate and undergraduate courses
CURRICULUM DEVELOPMENT

• Software Engineering capstone courses
  • Collaboration with Dr. Steve Roach

• Master’s of Science in Software Engineering Program
  • Effort led by Dr. Salamah
  • Based on SWEBOK, the IEEE CSDP, GSwE2009
  • Coordinated with Lockheed Martin Aeronautics and Missiles and Fire Control (Directors, Managers, and LM Fellows)
    • Focus: Safety critical and real-time embedded systems

• Secure Cyber Systems concentrations
  • Undergraduate track
  • Graduate track
CURRICULUM DEVELOPMENT LESSONS LEARNED

• Seek guidance from ACM/IEEE-CS Curriculum guides
• Seek feedback from stakeholders and constituencies
• Define learning outcomes and align with the goals of your department, college, and university
• Assess course to determine if you are able to meet your objectives.
SOFTWARE ENGINEERING CAPSTONE COURSE

• Course Description
  • Required two-semester course
  • Semester 1: Requirements engineering (must pass with C or better)
  • Semester 2: Design and implementation
  • Team based; complex project defined by an actual customer
  • Learn-Practice-Apply-Improve cycle

• Audience: Seniors
CURRICULUM

• Learning outcomes
  • Documented and included in syllabus
    • Knowledge and comprehension
    • Application and analysis
    • Synthesis and evaluation
  • Every other year: attainment of student outcomes and learning outcome examined; recommendations are made to instructors and curriculum committee
  • Every 4 years: major review

• Course Repository
  • Resources
  • Templates for documents using IEEE standards
PREPARING FUTURE WORKFORCE: TEAM-ORIENTED SE

• Achieve functioning teams
  • Enforce individual accountability
  • Integrate SE principles, approaches, and techniques.

• Cultivate cooperative team practices and an improvement process model
  • Provide constructive critique
  • Enable learning from past experiences

• Facilitate development of communities of practice
  • Learners become increasingly more knowledgeable team members
  • Students embody the skills needed to work effectively in a team- and project-based environment.
TOSE STRATEGY:
cooperative learning +
community of practice

BECOMING
skills development
constructive critique

BELONGING
positive interdependence
promotive interaction
shared expertise

EXPERIENCING
project teams
customer interaction
group processing

DOING
SE approaches,
tools
individual accountability
BALANCE OF RESEARCH AND TEACHING

- High-Assurance Transformation System (HATS) GUI
  - Client: Sandia National Laboratories
- Scene and Countermeasures Integration for Munition Interaction with Targets (SCIMITAR)
  - Client: ARL
- Saturn Rings project
  - Client: NASA
- Gravity Data Repository and Processing System (GDRP)
  - Client: U.S. Geological Survey; Pan American Center for Earth and Environmental Studies (PACES)
- Sensor Data Property Specification tool
  - Client: Environmental scientist with Cyber-ShARE Center
PROFESSIONAL DEVELOPMENT CONNECTED WITH TEACHING

• Cooperative learning methodologies for team building
  • Professional and team skills taught
  • Individual accountability practiced
  • Student-professor reflections included

• Communities of practice (Lave & Wenger, 1991)
  • Learners develop the skills, knowledge, and expertise of the group through supported immersion

• Attendance, publication and presentation at educational conferences and workshops
TEACHING TIPS

• Engage the students in the classroom
• Help students ask good questions
• Challenge their knowledge
• Provide timely, constructive critique
• Scope your expectations
• Improve through documentation and assessment

It’s better for students to learn essential concepts deeply rather than many concepts superficially
RESOURCES


• Radio documentary on serving the “new majority” college student