

# DevOps

CSC 354, Software Engineering II

# DevOps

- DevOps
  - Combines software development (Dev) and IT operations (Ops)
  - Goals:
    - Shorten the system development life cycle
    - Provide continuous delivery of high quality software

# System Development Life Cycle

- Analysis
- Design
- Environments
- Testing
- Training and transition
- Operations and maintenance

# Toolchains

- Different sets of tools are referred to as toolchains
- Toolchains fit into the following categories
  - 1 Coding
  - 2 Building
  - 3 Testing
  - 4 Packaging
  - 5 Releasing
  - 6 Configuring
  - 7 Monitoring

# Coding Tools

- Code development and review
- Source code management tools
- Code merging

# Building Tools

- Continuous integration (CI)
  - Practice of merging all developers' working copies to a shared mainline several times a day
  - Tools to: compile code, run tests, and deploy artifacts from CI
- Build status

# Testing Tools

- Continuous testing
  - Process of executing automated tests as part of the software delivery pipeline
  - Provide immediate feedback on the business risks associated with a software release

# Packaging Tools

- Artifact repository
  - CI is typically use to continuously build binary artifacts
- Application pre-deployment staging



# Releasing Tools

- Change management
- Release approvals
- Release automation

# Configuring Tools

- Infrastructure configuration and management
- Infrastructure as code
  - Process of managing and provisioning data centers via machine readable definition files

# Monitoring Tools

- Applications performance monitoring
  - Application performance metrics
    - Load: volume of transactions processed by the application, for example requests per second.
    - Response time: time required to respond to user actions under load.
  - End-user experience