Software Development Processes: 

**Agile**

Software Engineering
Millersville University
Agile Software Development

- “Agile Manifesto” 2001

“Scrum” project management
+ Extreme programming engineering practice

Build software incrementally, using short 1-4 week iterations
  Keep development aligned with changing needs
Structure of Agile Team

• Cross functional team
  • Developers, testers, product owner, scrum master

• Product Owner: Drive product from business perspective
  • Define and prioritize requirements
  • Determine release date and content
  • Lead iteration and release planning meetings
  • Accept/reject work of each iteration
Structure of Agile Team

• Cross functional team
  • Developers, testers, product owner, scrum master

• Scrum Master: Team leader who ensures team is fully productive
  • Enable close cooperation across roles
  • Remove blocks
  • Work with management to track progress
  • Lead the “inspect and adapt” processes
Iterations

• Team works in iterations to deliver user stories

• Set of unfinished user stories kept in “backlog”

• Iteration time fixed (say 2 weeks)
  • Stories planned into iterations based on priority/size/team capacity
  • Each user story is given a rough size estimate using a relative scale
Stories implemented by Tasks

• Story = Collection of tasks

• Wait to break stories into task until story is planned for current iteration

• Tasks estimated in hours

• Stories validated by acceptance tests
When is a Story done?

• “done” means:
  • All tasks completed (dev, test, doc, …)
  • All acceptance tests running
  • Zero open defects
  • Accepted by product owner
SCRUM

• “Process skeleton” which contains a set of practices and predefined roles
  • ScrumMaster (maintains processes)
  • Product Owner (represents the business)
  • Team (Designers/developers/testers)

• At each point:
  • User requirements go into prioritized backlog
  • Implementation done in iterations or sprints
Sprint Planning

• Decide which user stories from the backlog go into the sprint (usually Product Owner)

• Team determines how much of this they can commit to complete

• During a sprint, the sprint backlog is frozen
Meetings: Daily Scrum (or Standup)

• Daily Scrum: Each day during the sprint, a project status meeting occurs

• Specific guidelines:
  • Start meeting on time
  • All are welcome, only committed members speak
  • Meeting lasts 15 min

• Questions:
  • What have you done since yesterday?
  • What are you planning to do today?
  • Do you have any problems preventing you from finishing your goals?
Scrum of Scrums (We won’t do this)

- Meet with clusters of teams to discuss work, overlap and integration
- Designated person from each team attends

- 4 additional questions:
  - What has the team done since last meeting?
  - What will the team do before we meet again?
  - Is anything slowing your team down?
  - Are you about to put something in another team’s way?
Sprint-related Meetings

• Sprint Planning

• Sprint Review

• Sprint Retrospective
Recommended Approach in This Class

• “Agile + Classical”
• Classical:
  • Staged waterfall development
  • Generation of project documentation as you go
• Agile
  • XP planning game to move from customer requirements (user stories) to design specification
  • Test-driven development
  • Refactoring
  • Continuous system integration
  • Pair-programming (encouraged)
Recommended Approach in This Class

- Classical:
  - Generation of project documentation as you go

- Agile
  - XP planning game
  - Test-driven development
  - Scrum
  - Refactoring
  - Continuous system integration
  - Pair-programming