

## COMP240 (Applications) Course Competencies

1. (**Using Version Control**) Use a software version control system (VCS) to maintain a software project either individually or as part of a team.

<u>Knowledge Area</u>	<u>Skill Level</u>
1	Applying
2	Understanding
3a	Understanding
4a - Analytical and Critical Thinking	Applying
4b - Collaboration and Teamwork	Applying
4e Multi-Task Prioritization and Management	Applying
4g Problem Solving and Troubleshooting	Applying
4h Project and Task Organization and Planning	Applying
4i Quality Assurance / Control	Applying
4l Time Management	Applying
4m Written Communication	Applying

<u>Dispositions</u>			
Meticulous	Self-Directed	Collaborative	Adaptable
Professional	Responsive	Responsible	

2. **(Using Development Environments)** Be able to find, install, setup, and maintain an appropriate development environment for a software project.

<u>Knowledge Area</u>	<u>Skill Level</u>
3a	Applying
3b	Understanding
3c-d	Understanding
4a - Analytical and Critical Thinking	Applying
4d - Mathematics and Statistics	Understanding
4e Multi-Task Prioritization and Management	Applying
4g Problem Solving and Troubleshooting	Applying
4h Project and Task Organization and Planning	Applying
4i Quality Assurance / Control	Understanding
4l Time Management	Applying
4k Research and Self-Starter/Learner	Applying

<u>Dispositions</u>			
Meticulous	Self-Directed	Inventive	Adaptable
Professional	Responsible	Responsive	Collaborative

3. **(Using Development Resources)** Be able to find, evaluate, use, and manage appropriate resources, such as language references and documentation, for a given software development project.

<u>Knowledge Area</u>	<u>Skill Level</u>
3a	Understanding
3b	Analyzing
3c-d	Understanding
4a - Analytical and Critical Thinking	Applying
4d - Mathematics and Statistics	Understanding
4e Multi-Task Prioritization and Management	Applying
4g Problem Solving and Troubleshooting	Applying
4h Project and Task Organization and Planning	Applying
4i Quality Assurance / Control	Understanding
4l Time Management	Applying
4k Research and Self-Starter/Learner	Applying

<u>Dispositions</u>			
Meticulous	Self-Directed	Inventive	Adaptable
Proactive	Purpose-Driven		

4. **(Agile Development)** Given a set of user requirements, work with a development team and use agile methods to build a program that meets the user's requirements.

<u>Knowledge Area</u>	<u>Skill Level</u>
1	Applying
2	Evaluating
3	Applying
4a - Analytical and Critical Thinking	Applying
4b - Collaboration and Teamwork	Analyzing
4d - Mathematics and Statistics	Applying
4e Multi-Task Prioritization and Management	Analyzing
4g Problem Solving and Troubleshooting	Applying
4h Project and Task Organization and Planning	Analyzing
4i Quality Assurance / Control	Applying
4j Relationship Management	Understanding
4l Time Management	Analyzing

<u>Dispositions</u>			
Collaborative	Professional	Responsible	Adaptable
Self-directed	Proactive	Responsive	Inventive
Purpose-Driven			

5. **(Presenting a Project)** Work with your team to present the current status, with respect to user requirements, of your project to a technical user.

<u>Knowledge Area</u>	<u>Skill Level</u>
2	Understanding
3	Understanding
4b - Collaboration and Teamwork	Applying
4d - Mathematics and Statistics	Understanding
4h Project and Task Organization and Planning	Understanding
4i Quality Assurance / Control	Understanding
4j Relationship Management	Applying
4f Oral Communication and Presentation	Applying
4m Written Communication	Applying

<u>Dispositions</u>			
Collaborative	Professional	Responsible	Adaptable
Responsive	Inventive		

## Applications Knowledge Areas

1. Version Control Systems
  - a. Git, Github and Distributed VCS
  - b. Github Flow
2. Agile Software Engineering Methods
  - a. Shared and Collective Ownership
  - b. Sprints and Sprint Retrospectives
  - c. Program Features
3. Programming Program Development
  - a. IDEs and Tool-Suites (Editor, Compiler/Interpreter, Debugger, Etc.)
  - b. Technical Documentation
  - c. Programming Languages (project dependent)
    - i. Python
    - ii. Java
    - iii. HTML/CSS/JavaScript
    - iv. C/C++
  - d. Software and System Architectures (project dependent)
    - i. Object-Oriented Design and Patterns
    - ii. Web and Client-Server Architectures
    - iii. Event-Driven Programming
4. *Professional Knowledge (Table 4.2 from CC2020 (pg 50))*
  - a. Analytical and Critical Thinking
  - b. Collaboration and Teamwork
  - c. Ethical and Intercultural Perspectives
  - d. Mathematics and Statistics
  - e. Multi-Task Prioritization and Management
  - f. Oral Communication and Presentation
  - g. Problem Solving and Troubleshooting
  - h. Project and Task Organization and Planning
  - i. Quality Assurance / Control
  - j. Relationship Management
  - k. Research and Self-Starter/Learner
  - l. Time Management
  - m. Written Communication

## Skills Hierarchy (Bloom's Taxonomy, CC2020 pg 50)

1. *Remembering* - Recall facts, terms, concepts, answers, etc.
2. *Understanding* - Be able to organize, compare, translate, interpret, and give descriptions of facts and ideas
3. *Applying* - Use knowledge, ideas, facts in different ways to solve problems in new situations.
4. *Analyzing* - Make inferences and find evidence to support solutions
5. *Evaluating* - Make judgements about information, validity of ideas, or quality of material

6. *Creating* - Combine elements of information in a new pattern or propose alternative solutions.

### Dispositions (From CC2020, pg 51.)

1. Adaptable
2. Collaborative
3. Inventive
4. Meticulous
5. Passionate
6. Proactive
7. Professional
8. Purpose-Driven
9. Responsible
10. Responsive
11. Self-directed

### Applications Tasks

1. Use version control to maintain program source.
2. Identify, setup, and maintain an appropriate development environment for a project
3. Identify and utilize appropriate resources for languages and tools used on a given project.
4. Given system requirements, work with a team to develop a program using agile software engineering principles.
5. Present your code.