01/25: Schedule and Teamwork

The Capstone Experience

Dr. Wayne Dyksen
James Mariani

Department of Computer Science and Engineering
Michigan State University
Spring 2024
Schedule and Teamwork

➢ Schedule

➢ Teamwork
Capstone Work Requirements

• Every team member should be working all the time.

• Work on all parts in parallel.
  ▪ Hardware / Software
  ▪ Front End / Back End
  ▪ Web / iOS / Android

• Work in advance.
  ▪ Mitigate risks.
  ▪ Get systems working.
    o Hardware
    o Software
Schedules

- **Schedules > Weekly Schedule**
- **Schedules > Major Milestones**
  - 01/23: *Status Report Presentations*
  - 01/30: *Project Plan Presentations*
  - 02/20: *Alpha Presentations*
  - 03/28: *Beta Presentations*
  - 04/16: *Project Videos*
  - 04/17: *All Deliverables*
  - 04/19: *Design Day*
  - 04/25: *Capstone Wrap Up*
    (5:45 p.m. – 7:45 p.m.)

Are there fixed milestones in the “real” world?
Project Parts

• Break Down Project
  ▪ Main Parts
  ▪ Sub-Parts
  ▪ Sub-Sub-Parts
  ▪ Etc...

• Categorize
  ▪ Risks
  ▪ Dependencies
    o Particularly Risk Dependencies
    o Determines Schedule Order
  ▪ Priorities

• Worry About
  ▪ Interfaces Between Parts
  ▪ Integration of Parts
Building A Project Schedule

• Start With Fixed Course Milestones
  ▪ See Schedules > Major Milestones
  ▪ Read About Each

• Estimate Times for Tasks for Parts
  ▪ Building
  ▪ Integrating
  ▪ Testing

• Assign Tasks to Team Members

• Must Keep Everyone Busy All the Time

• Use “Short” Deadlines (E.g., 2-3 Days) Why?

• Document and Track
  ▪ Microsoft Project?
  ▪ Collaboration Tool?
Estimating Time for Tasks

• Rough Estimate
  ▪ Intuition
  ▪ Experience

• Refined Estimate
  ▪ Prototype or Partial Build
  ▪ Extrapolation
  ▪ E.g., 2 Days to Build 1 → 6 Days to Build 3

• Keys
  ▪ Be Realistic
  ▪ Include Buffer Time if Unsure

• Adjust Schedule Accordingly
Typical Build Cycle

Until Project Done Do
1. Divide Next Big Task Into Little Tasks
2. Assign Little Tasks to Team Members
3. Complete Little Tasks
   a. Implement
   b. Test
4. Integrate Little Tasks Into Big Task
5. Test Big Task

High Priority Risks Get High Priority Scheduling

Very Important
Version Control

• Versioning
  ▪ Discrete “Internal” Versions (States)
  ▪ May Correspond to Builds
• Version Control Systems
  ▪ Check Code In and Out
  ▪ Mark Specific States as Versions
• Motivation
  ▪ Build Breaks System
  ▪ Revert to Earlier Build
  ▪ Avoid Bridge Burning
• Every team must use MSU’s GitLab.
  ▪ Manage All Project Code
  ▪ Instructors must have access.
  ▪ Project sponsors may be granted access.

Can Be Serious Problem
Living Schedule

• Schedule Is Dynamic
  ▪ Unforeseen Problems
  ▪ Added Features (Avoid Feature Creep)
  ▪ Etc..

• Track Your Progress
  ▪ Microsoft Project?
  ▪ Collaboration Tool?

• Revisit Schedule Often
  ▪ Weekly Team Meetings
  ▪ Weekly Triage Meetings with TMs
  ▪ Identify Slippage
  ▪ Hold Each Other Accountable (or Contact TMs)
  ▪ Set Corrective Action
  ▪ Adjust Schedule
Schedule and Teamwork

✓ Schedule

➢ Teamwork
Team Organization

• Up to Each Team
• Organize into Roles
  ▪ Sponsor/Client Contact
  ▪ Program Manager
  ▪ Developer Roles
    o Web
    o Mobile
    o Back End
    o Front End
    o Etc.
  ▪ Tester
  ▪ Systems Administrator
  ▪ Etc...
• Everyone must make significant technical contributions, including significant software contributions. ← Fair Warning
Team Dynamics

• Key to Success
• Significant Component of Course Grade
• Potential Teammate Problems
  ▪ Not Attending Team Meetings
  ▪ Not Being Involved
  ▪ Not Responding
  ▪ Not Completing Tasks On Time
  ▪ Submitting Poor Work
  ▪ Leaving Your Work for Others
  ▪ Lying to Teammates about Task Status
  ▪ Etc...
• Address Problems Immediately
  ▪ Within Team
  ▪ With Dr. D., James, Luke, Griffin, Sam
• Be Ready to Discuss During Interviews
Grading

• Team (70%)
  ▪ Project Plan Document & Presentation 10
  ▪ Alpha Presentation 10
  ▪ Beta Presentation 10
  ▪ Project Video 10
  ▪ Project Software & Documentation 30
  ▪ Total 70

• Individual (30%)
  ▪ Technical Contribution 10
  ▪ Team Contribution 10
  ▪ Team Evaluation 05
  ▪ Meeting Attendance, Preparation & Participation 05 ← Can Be Negative
  ▪ Total 30
Grading

• Final Grade Sum Of...
  ▪ Individual Total
  ▪ % of Team Total Based on Team Contribution

• Grand Total =
  (Individual Total)
  +
  (Team Total) * (Team Contribution) / 10.0

• *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.
## Grading

### Capstone Overview

<table>
<thead>
<tr>
<th>Technical Contribution</th>
<th>Team Contribution</th>
<th>Team Evaluation</th>
<th>Meeting Attendance</th>
<th>Team Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>92</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>84</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>76</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>68</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>52</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>44</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>70</td>
<td>20</td>
</tr>
</tbody>
</table>

*Nota Bene*: Assumes Perfect Score In Every Other Category
Grading

• Every student must earn the following required minimal grades in each grading category.
• Failure to earn the required minimal grades in any of the grading categories is grounds for receiving a final grade of 0.0 for the course.
• Minimal Team Grade Requirements
  ▪ Project Plan Document & Presentation 5.0 / 10.0
  ▪ Alpha Presentation 5.0 / 10.0
  ▪ Beta Presentation 5.0 / 10.0
  ▪ Project Video 5.0 / 10.0
  ▪ Project Software & Documentation 15.0 / 30.0
• Minimal Individual Grade Requirements
  ▪ Technical Contribution 5.0 / 10.0
  ▪ Team Contribution 5.0 / 10.0
  ▪ Team Evaluation 2.5 / 05.0
  ▪ Meeting Attendance, Preparation & Participation 0.0 / 05.0
In the capstone course, absence does not make your teammates’ hearts grow fonder.

- **Nonresponsive**
  - Email
  - Slack
  - Microsoft Teams Messages
- **Miss Meetings**
  - All-Hands
  - Triage
  - Client
  - Team
- **Miss Work**  
  - In Lab and/or Online with Teammates
  - During Sprints
  - Before Major Milestones
- **Miss Deadlines**
  - Other team members may be forced to do your work.
  - We may tell other team members they no longer need to assign you work.

NB: Your teammates will be evaluating you weekly and at the end of the semester.
Grading

• 100% In Person Meetings
  ▪ All-Hands & Split-Hands
  ▪ Triage
  ▪ Team Meetings with Sponsors
  ▪ Team Meetings

• Accommodating Student Schedules
  ▪ Only Reasonably
  ▪ Not for Students
    ○ Working ≥ 20 Hours Per Week
    ○ Commuting Long Distance to Campus
Unacceptable Excuses for Not Contributing

- My teammates...
  - never asked me to do anything.
  - never let me do anything.
  - mistreated me.
- My features were...
  - not included in the project.
  - deleted by our client
- I wrote lots of code, but it wasn’t included in the project.
- I work 20 hours per week at my job.
- I live 60 minutes from MSU.
- I didn’t want to work on this project team.
- I did a lot of research about stuff we never used.
- I was busy interviewing.
- Etc...
Grading

• We reserve the right to make changes with sufficient notice.
• No special consideration will be given for final grades, including but not limited to
  ▪ status in any academic program at MSU including CSE,
  ▪ the need to be graduated this semester,
  ▪ the ability to enroll in CSE498 next semester,
  ▪ financial aid,
  ▪ hours worked in a job while a student at MSU,
  ▪ distance commuting to MSU,
  ▪ anticipated graduation from MSU,
  ▪ acceptance of a job in anticipation of graduation,
  ▪ rank in the armed forces,
  ▪ mortgage on a property,
  ▪ Rental lease on a property,
  ▪ upcoming wedding,
  ▪ visa status,
  ▪ or anything else.
Grading

- Fall 2022 Grade Distribution
  - 4.0 120  72.3%
  - 3.5 19  11.5%
  - 3.0 11  6.6%
  - 2.5 5  3.0%
  - 1.5 0  0.0%
  - 1.0 1  0.6%
  - 0.0 8  4.8%

- Do students fail capstone? Yes
Grading

- Spring 2023 Grade Distribution
  - 4.0  119  68.0%
  - 3.5  15   8.6%
  - 3.0  9    5.1%
  - 2.5  4    2.3%
  - 2.0  5    2.9%
  - 1.5  4    2.3%
  - 1.0  7    4.0%
  - 0.0  12   6.9%

- Do students fail capstone? Yes
GitLab

• Every team must use MSU’s GitLab.
  ▪ Manage All Project Code
  ▪ Instructors must have access.
• Access by External Project Sponsors
  ▪ Can Accommodate
  ▪ Contact James
• To Receive Credit for Code, Student Must
  ▪ Commit Code
  ▪ Using Student’s GitLab Account
• Read the syllabus.
Team Contribution

• Based on Variety of Factors Including But Not Limited to...
  ▪ Attendance and Participation
    o Team Meetings
    o Project Sponsor Meetings
    o All-Hands/Split-Hands Meetings
  ▪ Completion of Tasks
    o Correctly
    o On Time
  ▪ Willingness to Take on New Tasks
  ▪ Making Significant Technical Contribution

• Read the syllabus.
Technical Contribution

- Required of Everyone
- Significant Work and Code
- Does Not Include Code...
  - Committed to GitLab by Someone Else
  - That Does Not Work
  - That Was Copied from the Internet
  - Not Included In The Project
  - For CheckInCount = 1 to 100 {Modify Code Slightly; Checked Code In Again}
  - Etc...
- Necessary, but Not Sufficient
  - Doing Research
  - Creating UI/UX Designs
  - Creating Documents
  - Giving Presentations
- Read the syllabus.
Technical Contribution

- Pair Programming
  - Writing Code Together
  - Not Watching Someone Else Write Code
  - Must Decide When Committing Who Gets Credit for What
  - Receive Credit Only for Code Checked Under Your Account
- Demonstrating and Explaining Software
  - By Author
  - Any Time
  - In-Person
    - Lab iMacs
    - Person Laptop
  - If Not Able, Assume Not Working
Technical Contribution

• Significant Effect on Team Contribution
• Project Software == 43% Team Grade
• No Significant Technical Contribution
  ▪ No Credit for Project Software
  ▪ Maximum of 57% of Team Grade
  ▪ Maximum Team Contribution of 5.7/10.0
  ▪ Most Likely Will Not Pass CSE498
• Read the syllabus.
Team Problems

- Can Be
  - Really Hard
  - Awkward
  - Frustrating
- Addressing Problems
  - ASAP
  - Directly
  - Respectfully
  - Maturely
- Resolving Problems
  - Internally First
  - TMs
  - Dr. D. and James
- “Bad” Team Not an Acceptable Excuse
- Managers
  - Can Help
  - Have Limited Experience with Time Travel

We don’t have one of these.
Schedule and Teamwork

✓ Schedule

✓ Teamwork
Office 365 on Windows

• Optimal
  ▪ Download Template
  ▪ Edit Template Using Only Office 365 On Windows
  ▪ The version of Office on the VM will work

• Possible
  ▪ Download Template
  ▪ Make Copy of Template
  ▪ Edit Copy of Template Using Teams PowerPoint Editor
  ▪ Edit Original Template Using Office 365 On Windows
  ▪ Copy-and-Paste From Copy to Original Template

• Don’t
  ▪ Use Web Version of Office
  ▪ Use Mac Version of Office
  ▪ Use Mac Version of Office and Export to Windows Version
What’s ahead?

• Upcoming Meetings
  ▪ 01/25, Th: Schedule and Teamwork
  ▪ 01/26, Fr: Team Photos (10:00 a.m. – 3:30 p.m.)
  ▪ 01/30, Tu: Team Project Plan Presentations
  ▪ 02/01, Th: Team Project Plan Presentations
  ▪ 02/20, Tu: Team Alpha Presentations
  ▪ 02/22, Th: Team Alpha Presentations
What’s ahead?

- Capstone Team Photos
  - Arrive 10 Minutes Before Your Time
  - Dress is Business or Business Casual
  - Photos Taken Outside of EB 3105

<table>
<thead>
<tr>
<th>Time</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>Ludus</td>
</tr>
<tr>
<td>10:10</td>
<td>Auto-Owners</td>
</tr>
<tr>
<td>10:20</td>
<td>TechSmith</td>
</tr>
<tr>
<td>10:30</td>
<td>DRIVEN-4</td>
</tr>
<tr>
<td>10:40</td>
<td>HAP</td>
</tr>
<tr>
<td>10:50</td>
<td>WK Kellogg's Co</td>
</tr>
<tr>
<td>11:00</td>
<td>MillerKnoll</td>
</tr>
<tr>
<td>11:10</td>
<td>United Airlines Training</td>
</tr>
<tr>
<td>11:20</td>
<td>Vectra</td>
</tr>
<tr>
<td>11:30</td>
<td>Meijer</td>
</tr>
<tr>
<td>11:40</td>
<td>BREAK</td>
</tr>
<tr>
<td>11:50</td>
<td>Michigan State University CSE</td>
</tr>
<tr>
<td>12:00</td>
<td>GM</td>
</tr>
<tr>
<td>12:10</td>
<td>Ford</td>
</tr>
<tr>
<td>12:20</td>
<td>Michigan State University Enviroweather</td>
</tr>
<tr>
<td>12:30</td>
<td>Urban Science</td>
</tr>
<tr>
<td>12:40</td>
<td>Google</td>
</tr>
<tr>
<td>12:50</td>
<td>Anthropocene Institute</td>
</tr>
<tr>
<td>13:00</td>
<td>Evolutio</td>
</tr>
<tr>
<td>13:10</td>
<td>Ally</td>
</tr>
<tr>
<td>13:20</td>
<td>BREAK</td>
</tr>
<tr>
<td>13:30</td>
<td>BREAK</td>
</tr>
<tr>
<td>13:40</td>
<td>BREAK</td>
</tr>
<tr>
<td>13:50</td>
<td>RPM</td>
</tr>
<tr>
<td>14:00</td>
<td>Union Pacific</td>
</tr>
<tr>
<td>14:10</td>
<td>Roosevel Innovations Knowledge Science</td>
</tr>
<tr>
<td>14:20</td>
<td>Amazon</td>
</tr>
<tr>
<td>14:30</td>
<td>Whirlpool</td>
</tr>
<tr>
<td>14:40</td>
<td>Stryker</td>
</tr>
<tr>
<td>14:50</td>
<td>MSUFCU</td>
</tr>
<tr>
<td>15:00</td>
<td>UWM</td>
</tr>
<tr>
<td>15:10</td>
<td>Elektrobit</td>
</tr>
<tr>
<td>15:20</td>
<td>Magna</td>
</tr>
<tr>
<td>15:30</td>
<td>Lockheed Martin Space</td>
</tr>
</tbody>
</table>
What’s ahead?

• 01/25 11:59pm: Check Capstone Website for Typos
  ▪ Review Name and Hometown Spelling
  ▪ Let us Know by Midnight Tonight if Any Typos
  ▪ This is Your Only Chance to Fix These
What’s ahead?

- **Split-Hands Meetings**
  - Used On Presentation Days
    - 01/30, 02/01: Team Project Plan Presentations
    - 02/20, 02/22: Team Alpha Presentations
  - Three Locations
    - Luke: Natural Resources 152
    - Griffin: Engineering 2250
    - Sam: Natural Resources 158
  - Find the rooms in advance.
  - Attendance Taken As Usual Including Lateness
What’s ahead?

• Major Milestones
  ▪ 01/30: Team Project Plan Presentations
  ▪ 02/20: Team Alpha Presentations
  ▪ 03/28: Team Beta Presentations
  ▪ 04/16: Project Videos
  ▪ 04/17: All Deliverables
Misc. Notes

• Talk With your TM About Adapters for Presentations
  ▪ We Will Order Any Adapters That You Might Need
• Please Remember That Photos Will Be Posted On The Capstone Website and in the Design Day Booklet
Misc. Notes

• Do **NOT** Contact Dr. D About Absences
  ▪ He will Ignore Your Email and You Will be Marked Absent
  ▪ Contact Myself and CC Your TM
Questions?