Class 1.1: Introduction

Antony Hodgson, PhD, PEng
ahodgson@mech.ubc.ca

https://ah-ubc.appointlet.com/s/chat-mech328
Available: Mon 9:00-10:45, 1:00-2:00; Wed 1:30-2:45

Agenda

- Course Overview (20 min)
  - Cast of characters
  - Place in curriculum
  - Class operation & assessment
- Project Introduction (20 min)
- Your next steps (5 min)
- Collaborative Information Search (Green)
- Meet your TAs

Course Instructing Team

- Mr. Markus Fengler
  - mfengler@mech.ubc.ca, KAIS 1190
  - Director, MECH Machine Shop
- Dr. Antony Hodgson
  - ahodgson@mech.ubc.ca, EDC 234
  - Biomedical Engineering
  - Surgical Technologies Lab
- Dr. Sheldon Green
  - green@mech.ubc.ca, CEME 2058
  - Thermofluids
  - Applied Fluid Mechanics Lab
- Dr. Chris McKesson
  - mckesson@mech.ubc.ca, CEME 2208
  - Naval Architecture and Marine Engineering

Teaching Assistants


Shayan Fahimi – composites


Sarah Crosby – comp. fluid mechanics


Alireza Babaee – mechanics


Hooman Esfandiari – biomedical eng

Teaching Assistants

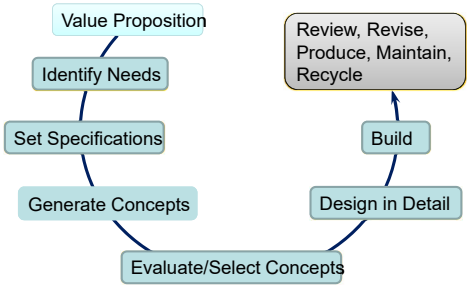
Jason Hu – optomechatronics

Naresh Kumar – machining

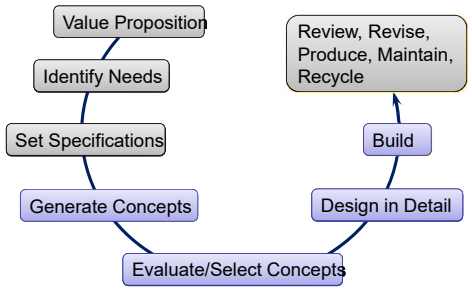
Denon Sheppard – building systems

MECH 328 IN CONTEXT

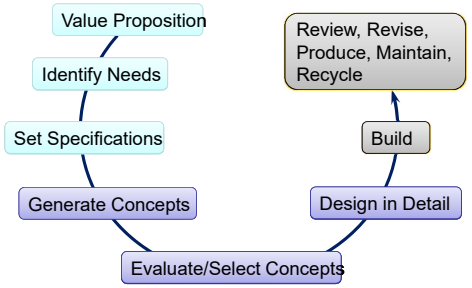
Design Cycle



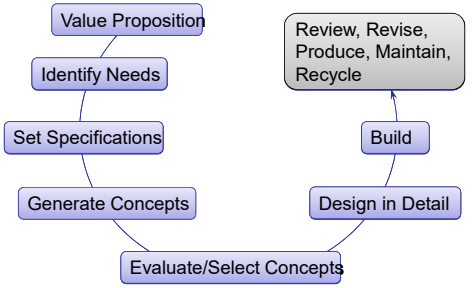
Design Cycle – 223



Design Cycle – 328



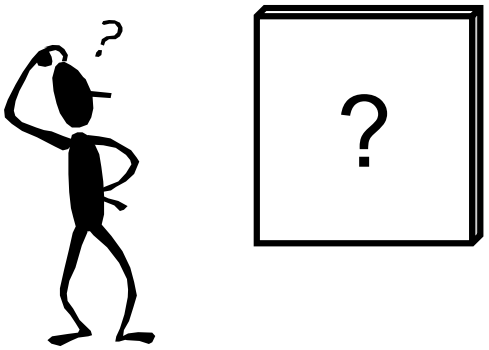
Design Cycle – 45X



UBC's Design Stream

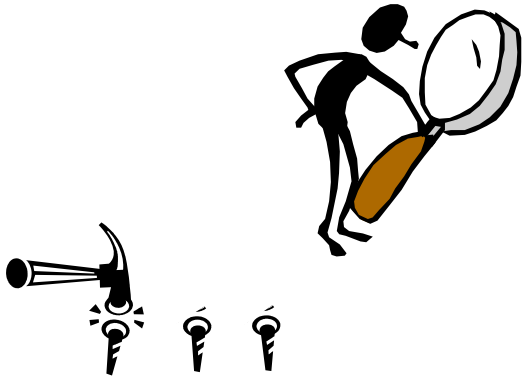
	223	328	45X
Duration	4 weeks	**11 weeks**	26 weeks
Project Variations	Same for everyone	**Some customization**	All unique
Real clients/ stakeholders	No	**Yes (one for class)**	Yes (all different)
Performance criteria and scope	Provided	**Defined by students**	Defined by students
Physical prototype	Yes	**Not required**	Yes
Drawings, reports, presentations	Yes	**Yes**	Yes

Open-Ended Problems

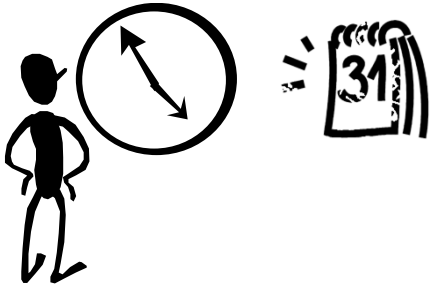


Determining Key Elements

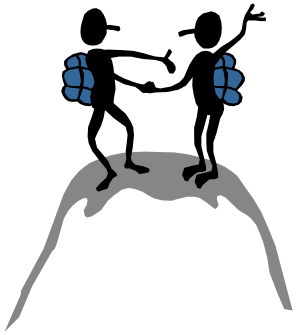
Using Appropriate Analysis



Managing Deadlines, Limited Resources



Finishing



Build your skills in:

- Problem definition and scope
- Applying analysis tools
- Working with a client + other stakeholders
- Design management
- Sourcing, sizing and specifying components
- Collaboration
- Professional work

Weekly Schedule

- Classes Wed 15h-17h (lecture +activity)
- "Labs" Mon, Wed 11h-13h
  - Team times: all team members available; use for group work; weekly meeting with TA

Weekly Meetings

- Teams report progress, TAs give guidance
- Instructors visit groups weekly (~20 min)
- Weekly progress report
  - use posted template
  - submit to TA 24h prior to meeting (start this week!)
- Meeting times and locations:
  - see *Team Rosters and Weekly Meeting Schedules* folder posted on Canvas

Assessment

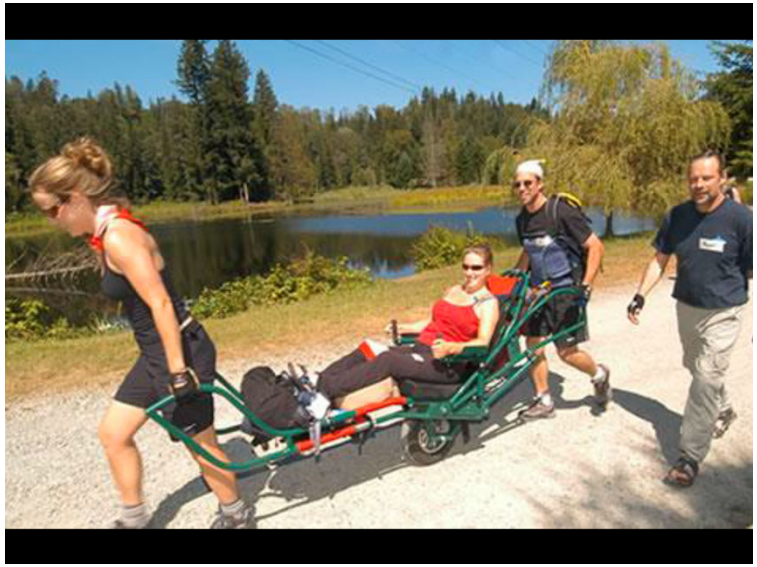
- Group Work:
  - Weekly Reports 10%
  - Concept Selection Review 10%
  - Oral Presentation 10%
  - Project Report 40%
- iPeer multiplier applies to group grade:
  - 25% iPeer 1 + 35% iPeer 2 + 45% iPeer 3
- Individual Work:
  - Log Book 5%
  - Oral Presentation Feedback Quality 5%
  - iPeer Feedback Quality 5%
  - Final Exam 15%

Scenario

Request for Proposal (RFP):

BCMOS is approaching UBC Co. to help develop a new TrailRider design that they could build for future clients

Deadline: Report due 4 pm, Nov 15



BCMOS “Wish List”

- Lighter / easier for ‘Sherpas’ to operate
- Shorter / more maneuverable
- Smaller when folded / easier to transport
- Safer, less bumpy
- Give rider more control
- Operable by single ‘Sherpa’
- Lower cost (currently $7500)
- More robust (water, dirt)
- Useful for Search and Rescue

Project Scope

- Truly open-ended
- We don’t know the problem
- We don’t know the solution(s)

Project Scope

- Assess Needs*
- Define Specifications (Requirements, ECs)
- Generate Concepts
- Evaluate Concepts
- Select Most Promising
- Optimize Design
- Perform Detailed Design
- Present Design
- Report Recommendations

Key Deadlines

- Weekly update reports
- Concept selection review – Oct 9
- Report – Nov 15
- Oral presentations – Nov 20
- Feedback sessions – Nov 27
- Logbooks due – Nov 29

Time Management

- 8h/w per person (yes, this includes class)
- No overtime pay ☺
- Manage activities to series of deadlines; maintain regular reporting to supervisors
- Accountability (to teammates & supervisors)
  - Document personal time spent (weekly reports)

Document Management

- Capture your thinking – make it visible
- Personal – logbook, electronic notes
- Team – shared documents
  - maintain master list
  - note authors and contributions for reference
- Consider different audiences
  - Personal
  - Team
  - Supervisors
  - Client

Managing Team Issues

vs

- Work in parallel
- Discuss expectations (team contract)
- Balance strengths vs learning opportunities
- Identify any issues early

Next Steps

- Read “Guide for Students” (Canvas)
  - Detailed instructions, especially for final report
  - Start scheduling – work backwards from deliverables to set earlier internal deadlines
  - Capture planning in form of Gantt or PERT charts
- Get personal logbook
- Meet with your team (next session)
  - Plan for first weekly meeting
  - Divvy up initial tasks

Questions?