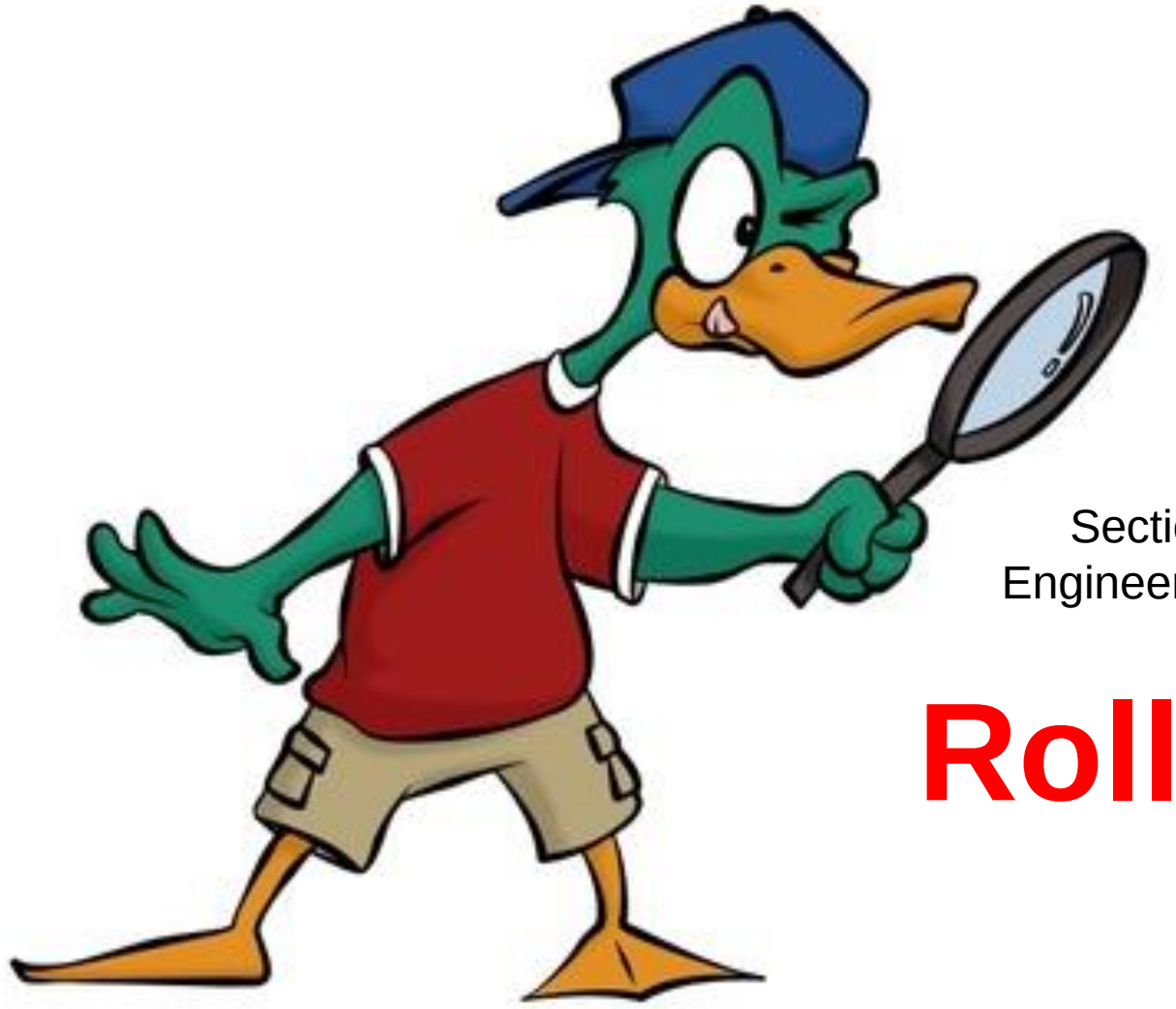
WELCOME TO EPICS!

WEEK 1, STUDIO DAY 1

ARE YOU IN THE RIGHT ROOM?



Section U –
Engineering Annex

Roll Call

A LOT OF FIRSTS!

- First time in college?
- First time in eating dorm food?
- First time living in a new place?
- Other firsts?

- Education and a Degree

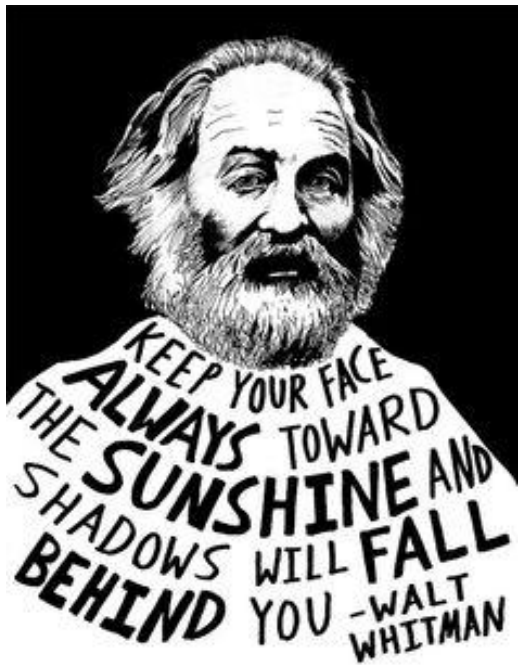
- Awareness Training Exercise

TODAY

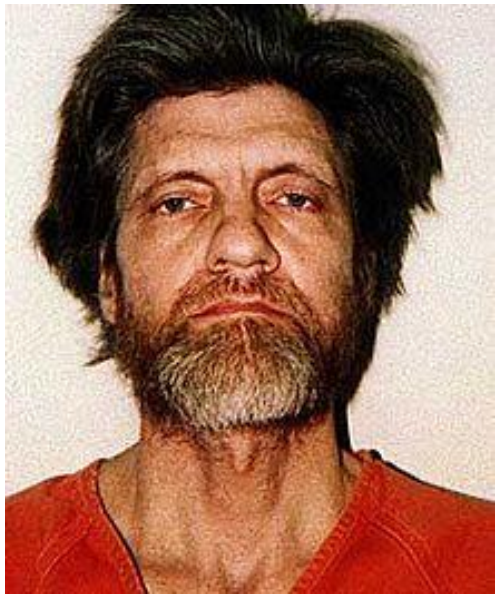
- Roll call ☑
- Mentor introduction
- A week in the life of an EPICS student
- Design cycle
- Mini team exercises
- Next up

MENTOR INTRODUCTION

- **Apologies for the Beard!**

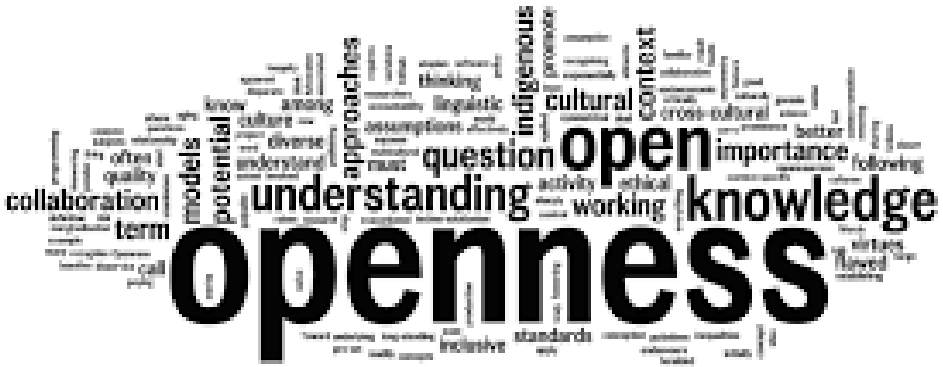


Me



MENTOR INTRODUCTION

- **Graduated from Mines in 1997**
  - Took EPICS as Freshman
  - Met my wife at Mines
  - Got the worst grades of my life here
  - Love this place
- ***Two daughters (ages 14 and 12)***

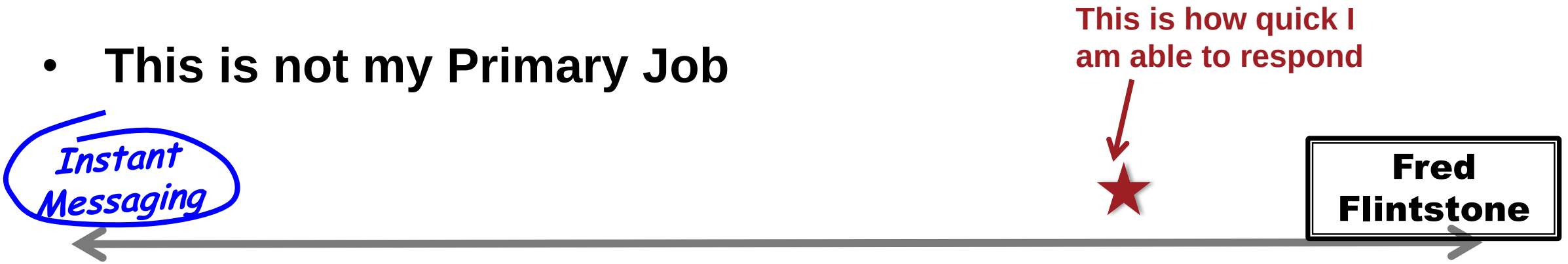


MENTOR INTRODUCTION

- **Career Continuum**
  - Designed Power Delivery Systems
  - Masters of Engineering
  - Designed Water & Wastewater Plants
  - Masters of Business Administration
  - Director of O&M at the NTP
  - Adjunct EPICS Professor at Mines.
  - More Firsts to Come!

MENTOR INTRODUCTION

- This is not my Primary Job



- Email me at my work address

MENTOR INTRODUCTION

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A WEEK IN THE LIFE

Project Day 1	Project Day 2	Graphics Lab
• TUES 3:30 pm • ANNEX • With your mentor(s)	• Thurs 3:30 pm • ANNEX • With your mentor(s)	• Varies by student (W,Th,F) • CTLM 129 • With graphics instructors

- **All the rest of your classes, fun stuff, people, experiences**
- **Remember Education and Degree and Awareness Training!**

EPICS 151 AND COURSE DELIVERABLES

Design EPICS I Weekly Schedule Fall 2016

ate (Mon)	Week	Project Studio 1 (Monday or Tuesday, Engineering Annex)					Project Studio 2 (Wednesday or Thursday, Engineering Annex)					Graphics (Wed, Thu, or Fri, CT129)			
		Due	Pre-Class	Topic	Assigned	rning Objecti	Due	Pre-Class	Topic	Assigned	rning Objecti	Due (SW HW due Tue 11:59 PM on BB)	Topic	Assigned	arning Objectiv
Aug 22	1		Welcome Email	Introduce course, instructor, design log, marshmallow challenge in mini-teams.	IDEO video	3.1		Buy Comp. Notebook IDEO Video	Where do problems come from? Bug lists; "Fix the classroom" exercise.	Buglist, problem definition	1.1		Field & Engineering Sketching: Why hand sketching? Design	Sketchbook (I); Process	7.2, 7.3, 7.5, 8.8
Aug 29	2		Food storage solutions; mini-teams	Part 1: Problem Definition Part 2: System breakdowns Systems Video		1.2, 1.3			Team work part 1 (5 dysfunctions), Team Assignments	watch videos, answer Blackboard	4.1, 4.2, 4.3?	In-class: Process with Lettered	Field & Engineering Sketching: 1-Point Perspective, 2-Point	Perspective & Isometric Drawings (I)	7.1, 8.5
Release Call For Proposals															
Sept 5	3	**Labor Day --no class Mon 5th or Tues 6th**					Design Log Food Desert Reflection &	Read Call for Proposals; Read	Stakeholders, user empathy (in week 2 day 1). Project questions. Interviewing (incoming	Problem Definition;U	2.4, 2.5	In-class: Perspective & Isometric	Field & Engineering Sketching: Obliques, 3rd Angle Orthographic	Dimensioning Packet (I)	7.1, 8.4, 8.8
Sept 12	4			Scholarly and Authoritative sources, and guided research. (Meet @ Arthur Lakes Library)	Team Contract (using first	2.1, 2.2	User Empathy Reflection (I)	Problem Definition	Part 1 - finalize problem definitions. Project questions, work break down structure? tech req'tsPart 2 - Team	Problem Definition Refinement	2.3, 4.1, 4.5		Introduction to SolidWorks: setting up, interface, introduction to	SolidWorks HW 1 (I)	8.1
Sept 19	5	Team Contract (T)	Refined Problem Definition;	Part 1 - Idea generation. Part 2 - Rapid prototyping - how and why. Workshop safety and tour.	Idea log peer feedback; Looks-like	5.3, 3.2			Focusing and decision-making tools.	Project Proposal (T)	5.4	Blackboard: SolidWorks HW 1 (I)	SW: Basic part modeling; design intent, sketching tools, contours.	SW HW 2 (I)	8.9, 8.10
Sept 26	6		360 Review Reading	Part 1- Teamwork part 2, peer reviews, 360 reviews. Part 2 - Presentation skills, and		4.1-5, 6.1			Part 1 - Project Planning Part 2 - why hand graphics	Project Plan (T)	5.1,5.2, 7.1?	BB: SW HW 2 (I)	SW: Features and applied features.	SW HW 3 (I)	8.9, 8.10
Oct 3	7	Looks-Like Prototype (I); Project		eam Presentations: Design Proposal; 4-5 "Looks-like" prototypes: pitch & justify best idea.		6.1, 3.2,		Teammate Evaluation	Part 1 - conduct 360 review Part 2 - confirm chosen design direction		4.1-5, 3.4	BB: SW HW 3 (I)	SW: working with planes, multiple bodies, modeling (equation, variables,	SW HW 4 (I)	8.9, 8.10
Oct 10	8			Part 1- Breaking down a big project: Subsystems and interfaces. Part 2- Works-like prototype: why /	Works-like prototype (T)	1.3, 2.3, 3.3, 3.5		Industrial catastrophe research.	Part 1 - Subsystems approval and direction. Part 2 - Risk assessment	Testing protocols and safety plan	1.3, 3.6	In-class: Dimensioning Packet (I).	Field & Engineering Sketching: Auxiliary Views, Section Views,	Auxiliary, Section Views Packet (I)	8.6, 8.7, 8.8
17-Oct	9	**FALL BREAK -- No class Mon 17th or Tue 18th**					Project Plan (T); Testing Protocol w/		Part 1- Team time - subsystems, testing, prototypes. Part 2- Overview of sushystems	Subsystems Report (I)	3.4	BB: SW HW 4 (I)	SW: sweep, shell, split, revolve, dome, patterns, ribs, holes.	SW HW 5 (I)	8.9, 8.10
Oct 24	10	Prototype Portions Progress (T)		Part 1 - Subsystems Testing Part 2 - Technical writing		3.3, 3.4, 3.5, 6.3			**Stakeholder feedback on works-like prototype (HOW??). Coaching of design iterations**	Stakeholder Feedback	2.5, 3.1, 3.4	BB: SW HW 5 (I)	SW: Assemblies and exploded views; smart fasteners.	SW HW 6 (I)	8.9, 8.10
Oct 31	11	Prototype Portions (T)		Part 1- Prototype testing.		3.3-5	Subsystems Report (I)		TBD Part 1 Embedding graphics, tables.Part 2- validating claims		6.2, 6.3	In-class: Dimensioning Packet	Field & Engineering Sketching: Working Drawings;		7.1-7.5, 8.1-8.9, 8.12
Nov 7	12	Works-Like Prototypes Progress (T)		Part 1- Prototype testing.		3.3-5			Part 1 Overview of final report, tradeshow presentations.	Final Design Report (T); Trade Show	5.6, 6.2, 6.3	BB: SW HW 6 (I)	SW: Drawing sheet, dimensioning, Bill of Materials, design intent.	SW HW 7 (I)	8.6, 8.7, 8.8, 8.11, 8.12
Nov 14	13	Works-Like Prototypes (T)		Part 1- Prototype testing.		3.3-5	Works-Like Prototype Testing		Materials list and cost estimation. Peer review of subsystems.		3.3-5, 5.5	BB: SW HW 7 (I)	SW: Exam review, tips & tricks		8.9, 8.10
Nov 21	14	Works-Like Prototype Testing (T)		Part 1 - Prototype testing (for teams not cleared yet) Part 2- Other catch-up		3.3-5	**THANKSGIVING -- No class Wed 23rd, Thu 24th or Fri 25th**					**No GRAPHICS**			
Nov 28	15	Final Teammate Evaluation (I)		Trade fair presentations and artifacts. Supervised feedback: peer and team.		6.2, 4.4			Course evals. Other course wrap up.		4.4	In-class: Design	SolidWorks Exam. 180-minute CSWA exa		8.9, 8.10
Dec 5	16	Final Design Report (T); Trade Show		Exhibit final solution; judging		6.2, 6.3			*EPICS 151 Final Competition 5-7:30 pm, Location TBD*	cd be Wed nig	6.2	**No GRAPHICS**			
Dec 19-Jan 10		**Exams & Winter Break**													

TODAY

- Roll call ☑
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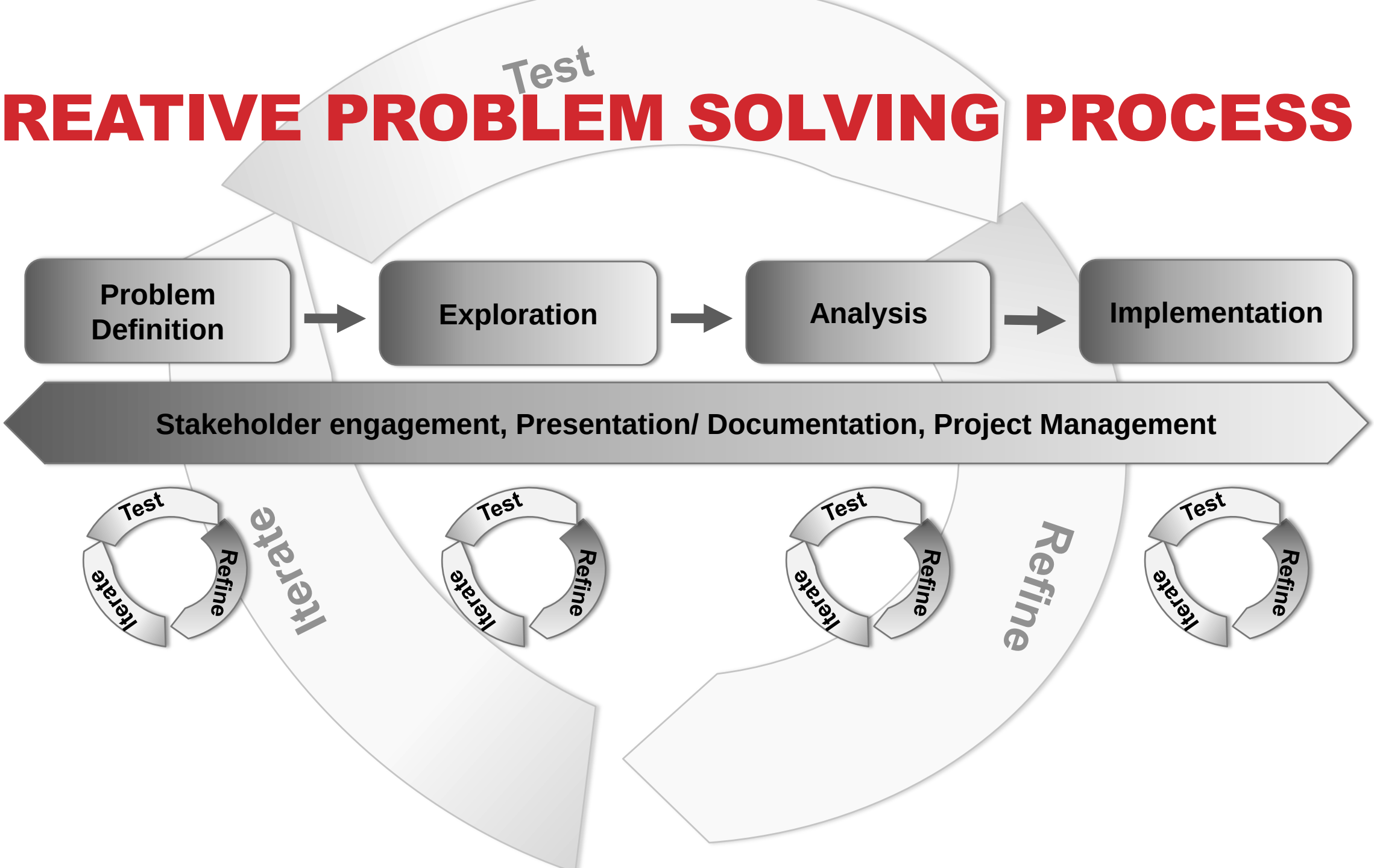
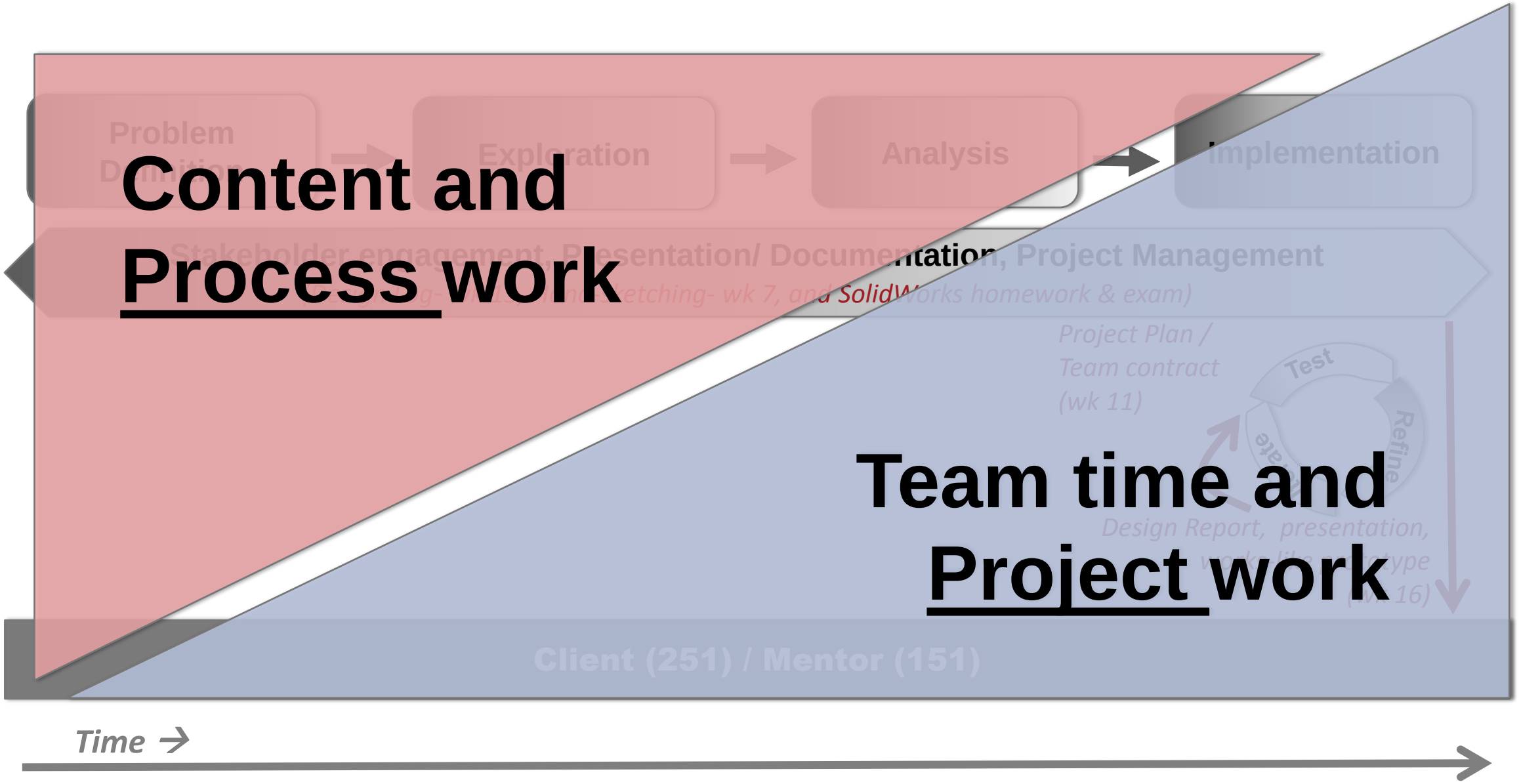
CREATIVE PROBLEM SOLVING PROCESS



EPICS 151 AND COURSE CONTENT



TODAY

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TODAY'S OBJECTIVES

3 - Design solutions through cycle of testing, refining, iterating, and feedback.

4 - Determine equivalency and equitably contribute to team efforts from start to end on a collaborative project, and participate in learning activities and coaching activities in the team.

THE MARSHMALLOW CHALLENGE

- **Build the tallest free-standing tower you can, with a marshmallow at the top in 18 minutes**
- **Materials:**
  - **20 sticks of spaghetti**
  - **1 yard of tape**
  - **1 yard of string**
  - **1 marshmallow**

MINI TEAM EXERCISE

On a sheet of paper, write two lists:

1. **Attributes of a high functioning team**

   Include things you've experienced on a team that you've liked

2. **Attributes of a dysfunctional team**

   Include things you've experienced on a team that you don't like

4-5 minutes

THE MARSHMALLOW CHALLENGE

- **Build the tallest free-standing tower you can, with a marshmallow at the top <u>in 18 minutes</u>**
- **Materials:**
  - **20 sticks of spaghetti**
  - **1 yard of tape**
  - **1 yard of string**
  - **1 marshmallow**

20 minutes

THE MARSHMALLOW CHALLENGE: TAKE AWAYS

- **Ideas?** ***What was the point of all this?***

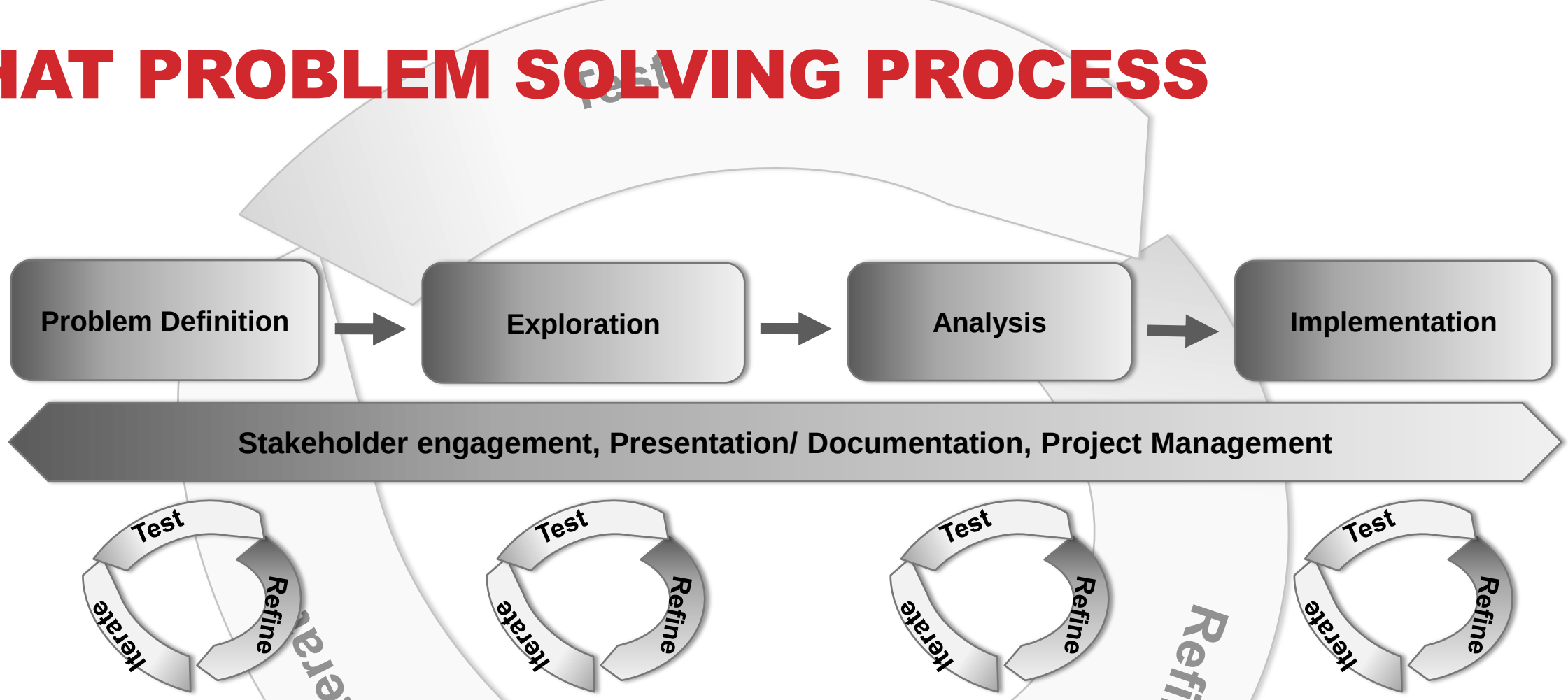
http://marshmallowchallenge.com/TED_Talk.html

WHAT WAS THE POINT?
…TODAY'S OBJECTIVES

3 - Design solutions through cycle of testing, refining, iterating, and feedback.

4 - Determine equivalency and equitably contribute to team efforts from start to end on a collaborative project, and participate in learning activities and coaching activities in the team.

THAT PROBLEM SOLVING PROCESS



The longer you resist those round-about arrows, the bigger your failures will be. *Really.*

(....umm.... not just in EPICS...)

FINALLY,

On that sheet of paper, add to your 2 lists:

1. **Attributes of a high functioning team**

   Include things you've experienced on a team that you've liked

2. **Attributes of a dysfunctional team**

   Include things you've experienced on a team that you don't like

1-2 minutes

NOTICE WHERE YOU'RE SITTING

Sit with the same folks in Day 2 and next week.

Your official project teams will be determined late week 2. But this group is your initial, 2-week team.

NEXT CLASS:
BRING YOUR DESIGN LOG (NOTEBOOK)

Purpose:

1. **Documentation of your process throughout this class** ***(1st half of book)***
   - **Major project decisions**
   - **Conceptual sketches**
   - **Notes from testing, interviews, discussions, lectures, observations**
   - **Bug lists**
2. **Sketching practice** ***(2nd half of book - stay tuned…)***

The Campus Bookstore sells composition notebooks

(blank, grids, lines: your choice)

**** Tape your 2 lists of team function into it.**

NEXT CLASS:
BRING YOUR DESIGN LOG (NOTEBOOK)

- **Format**:
  - Informal document (internal use)
  - Bound book, NOT spiral/perforated
  - FRONT COVER: Write your name, semester, and EPICS project and lab section
  - FIRST PAGE: Write your name, contact info, and team name
  - NO loose papers tucked inside
    - Staple or tape in extra sketches, class information, project plan, etc
  - Some folks number pages of the Design Log
    - And include a basic Table of Contents *(for 8-15 key pages)*
  - Use pencil or pen but CROSS OUT your work instead of ERASING
- Graphics instructors will talk about additional use of your Design log

LASTLY, STUDENT INFORMATION CARD

Purpose: to help us place you in teams

How: we'll work to create teams with a breadth of skills

Why: it won't ensure your team experience is heavenly, but it's how things are done in the workplace

Return at the end of class, or bring beginning of day 2.

COMING UP NEXT!

Project Day 2:

Sit with your 2-week team again.

Assignments:

1- Bring your design log! (buy at bookstore)
2- Tape today's paper in it. *Yes, the one with the 2 lists.*
3- Read course outcomes, highlight, and bring questions
4- Watch IDEO design video: https://youtu.be/taJOV-YCieI

Write in your design log:

- Two things you liked from the video
- Two things that left you wondering, or that you didn't like about the video

Graphics Day 1:

Conceptualization and visualization, and perspective sketching