

CLASSROOM IN YOUR HAND

How to Design Effective Learning
in ULearn

Profesor Madya Ts Dr Azma Putra

Faculty of Mechanical Engineering

 Distinguished Educator




 Professional Learning Specialist



PROF MADYA TS DR AZMA PUTRA

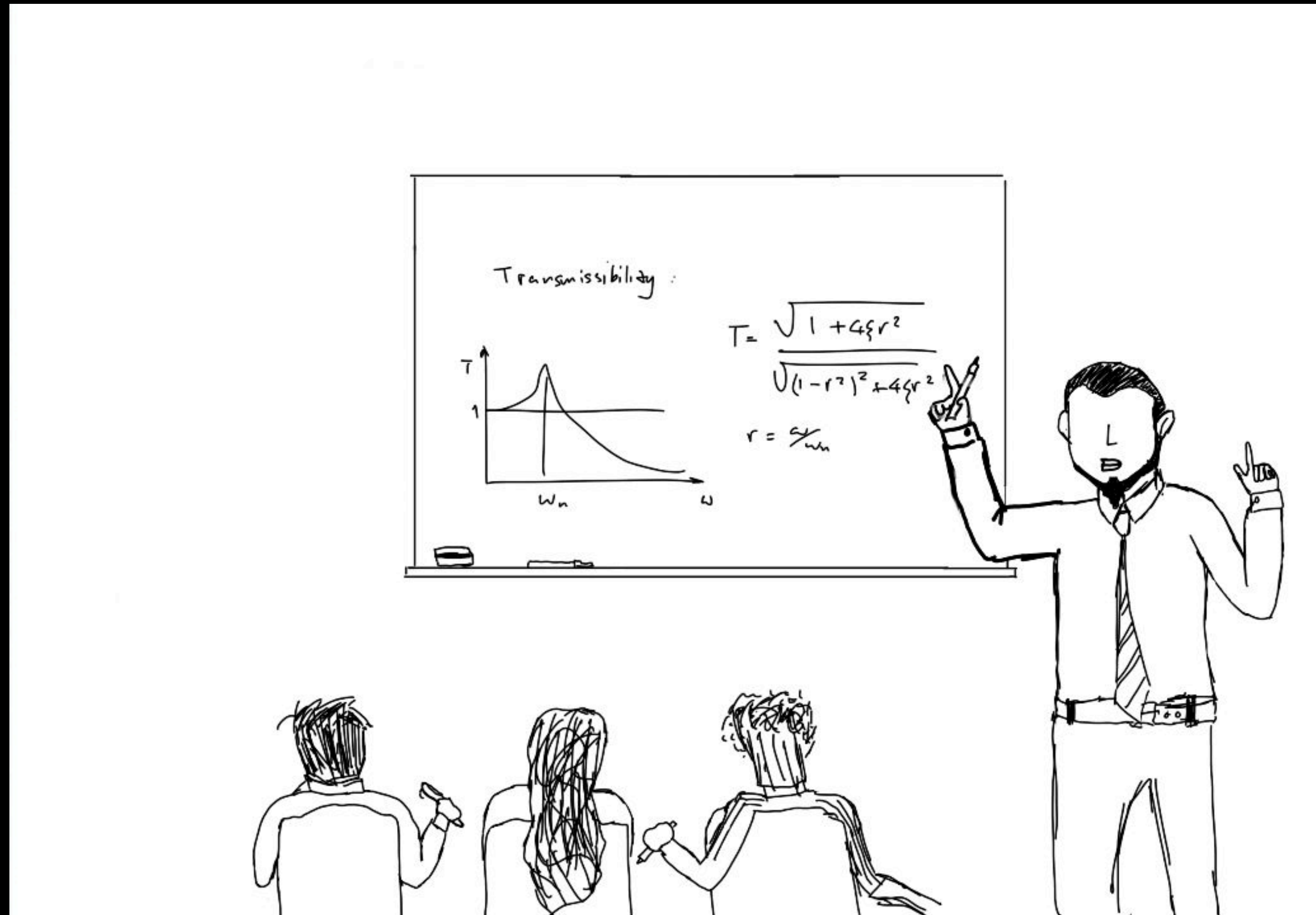
FACULTY OF MECHANICAL ENGINEERING

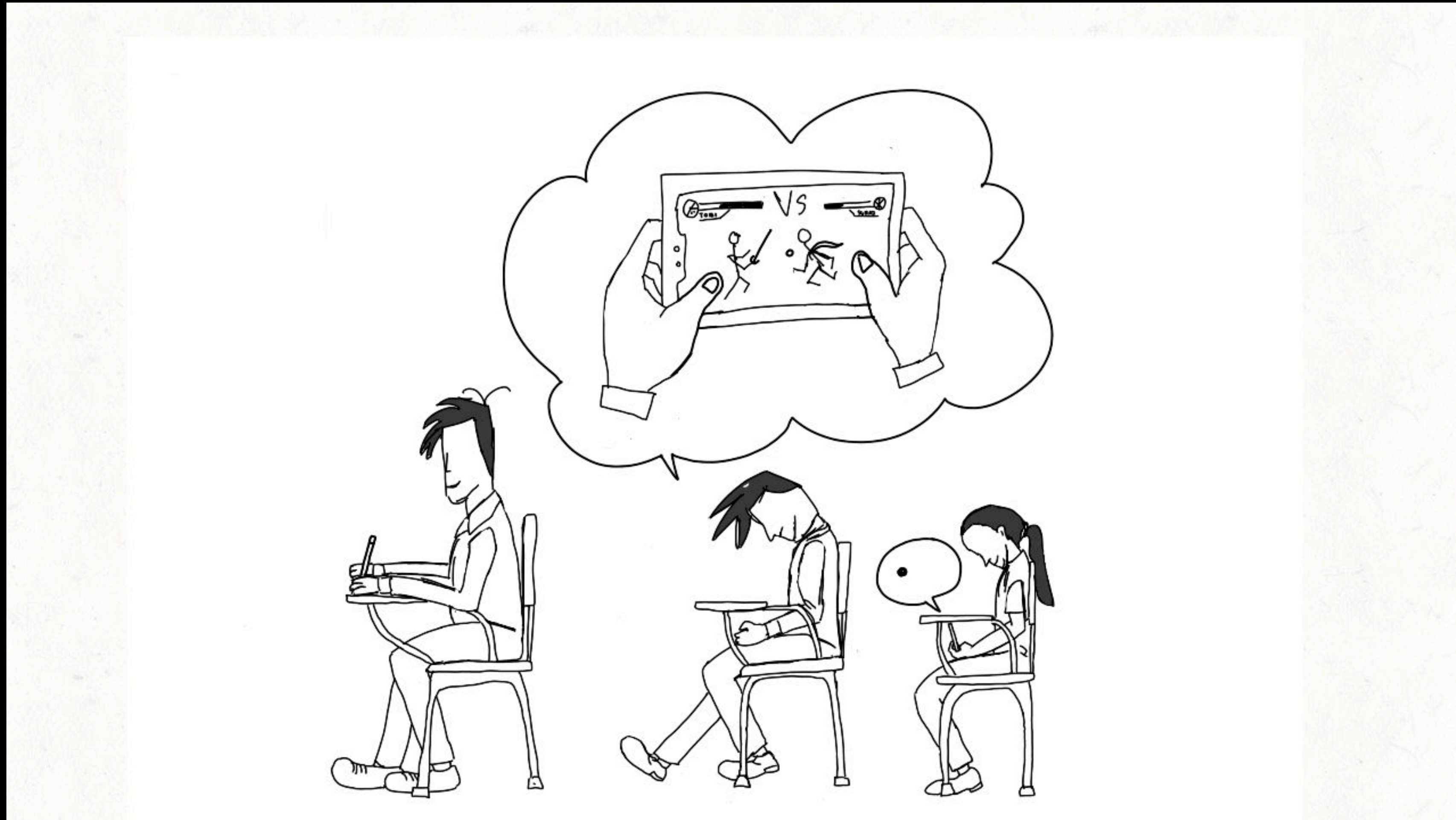


-  Distinguished Educator
-  Professional Learning Provider
-  Professional Learning Specialist



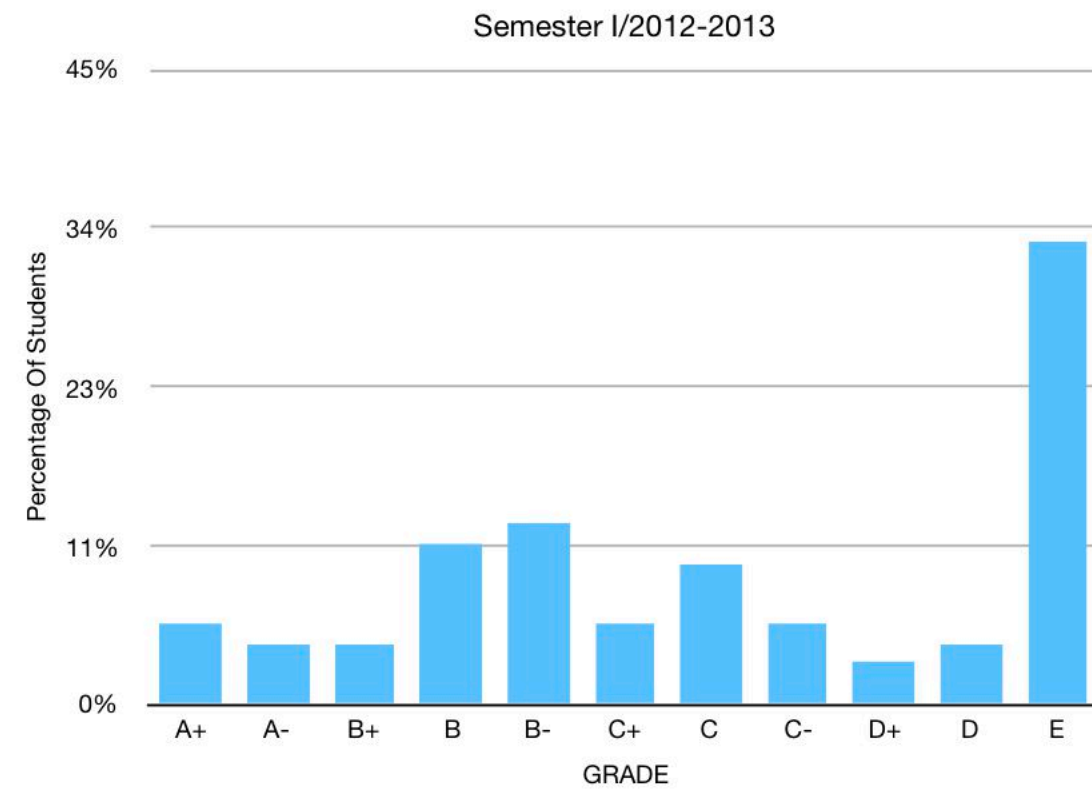
MY STORY





Semester I/2012-2013

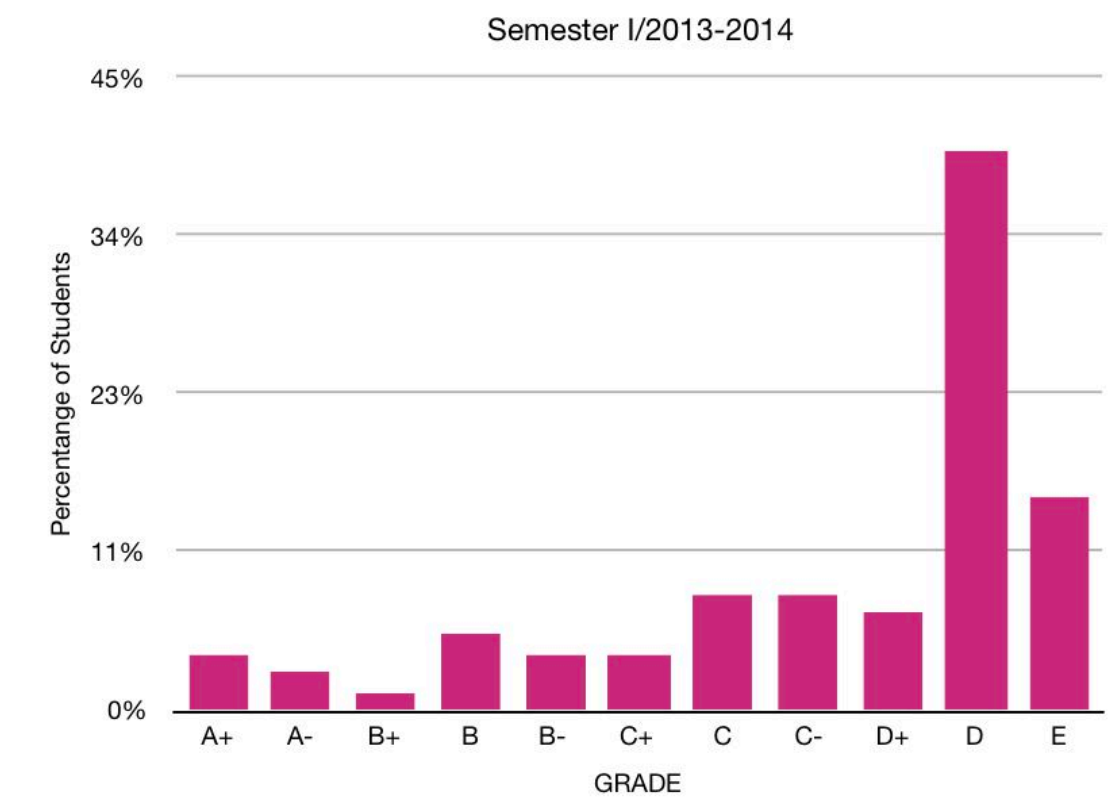
GRADE	No of Students	Percentage (%)
A+	4	5.7%
A-	3	4.3%
B+	3	4.3%
B	8	11.4%
B-	9	12.9%
C+	4	5.7%
C	7	10.0%
C-	4	5.7%
D+	2	2.9%
D	3	4.3%
E	23	32.9%
TOTAL	70	



Remarks:
Power Point lecture

Semester I/2013-2014

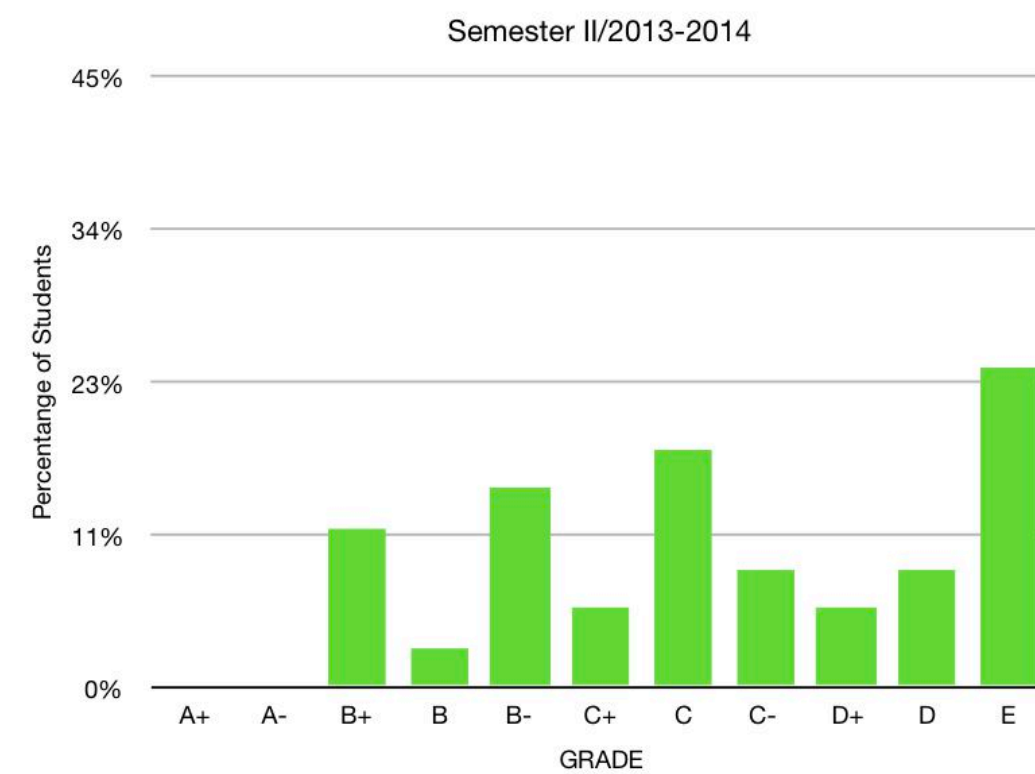
GRADE	No of Students	Percentage (%)
A+	3	4.1%
A-	2	2.7%
B+	1	1.4%
B	4	5.5%
B-	3	4.1%
C+	3	4.1%
C	6	8.2%
C-	6	8.2%
D+	5	6.8%
D	29	39.7%
E	11	15.1%
TOTAL	73	



Remarks:
Power Point lecture

Semester II/2013-2014

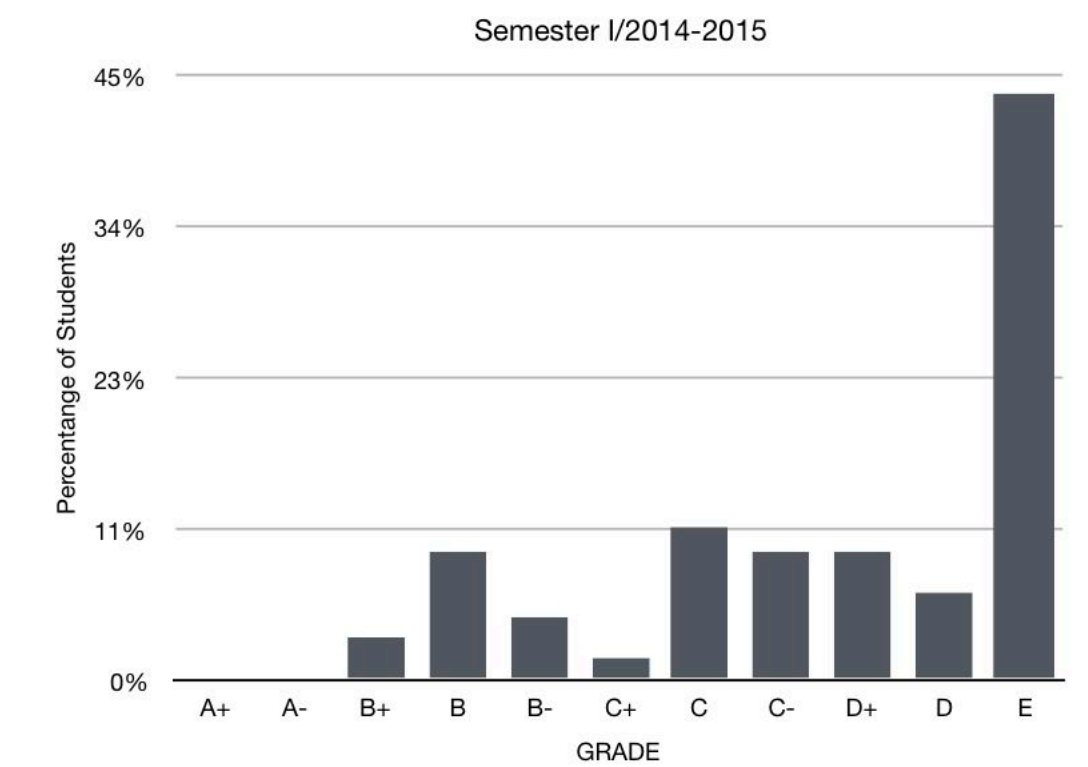
GRADE	No of Students	Percentage (%)
A+	0	0.0%
A-	0	0.0%
B+	4	11.8%
B	1	2.9%
B-	5	14.7%
C+	2	5.9%
C	6	17.6%
C-	3	8.8%
D+	2	5.9%
D	3	8.8%
E	8	23.5%
TOTAL	34	



Remarks:
Power Point lecture

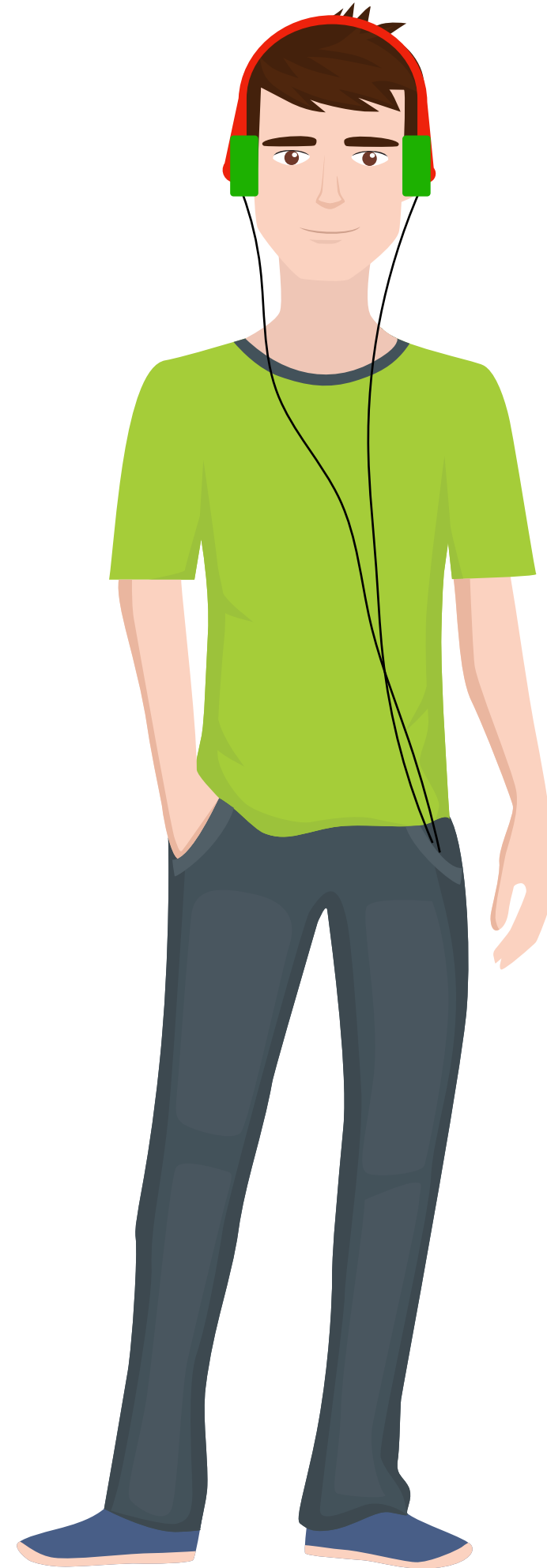
Semester I/2014-2015

GRADE	No of Students	Percentage (%)
A+	0	0.0%
A-	0	0.0%
B+	2	3.2%
B	6	9.7%
B-	3	4.8%
C+	1	1.6%
C	7	11.3%
C-	6	9.7%
D+	6	9.7%
D	4	6.5%
E	27	43.5%
TOTAL	62	



Remarks:
Power Point lecture

MILLENNIALS



LEARNING STYLE

Digital natives

Short attention span

Team oriented

Highly visual and kinaesthetic learners

Wired 24/7

Prefer social learning tools/apps

IN CLASSROOM

**A LECTURER
TO DO
TEACHING?**



**STUDENTS TO
EXPERIENCE
LEARNING?**

FLIPPED LEARNING + COLLABORATIVE LEARNING

FLIPPED LEARNING

- ✓ **Interactive Content**
- ✓ **Stand-alone content**
- ✓ **Online learning platform**

COLLABORATIVE LEARNING

- ✓ **Learning space**
- ✓ **Learning activities**

OUTSIDE the classroom



Students learns the fundamental concepts through the learning platform

Self-paced

**Connect with the students through:
Whatsapp, Telegram**

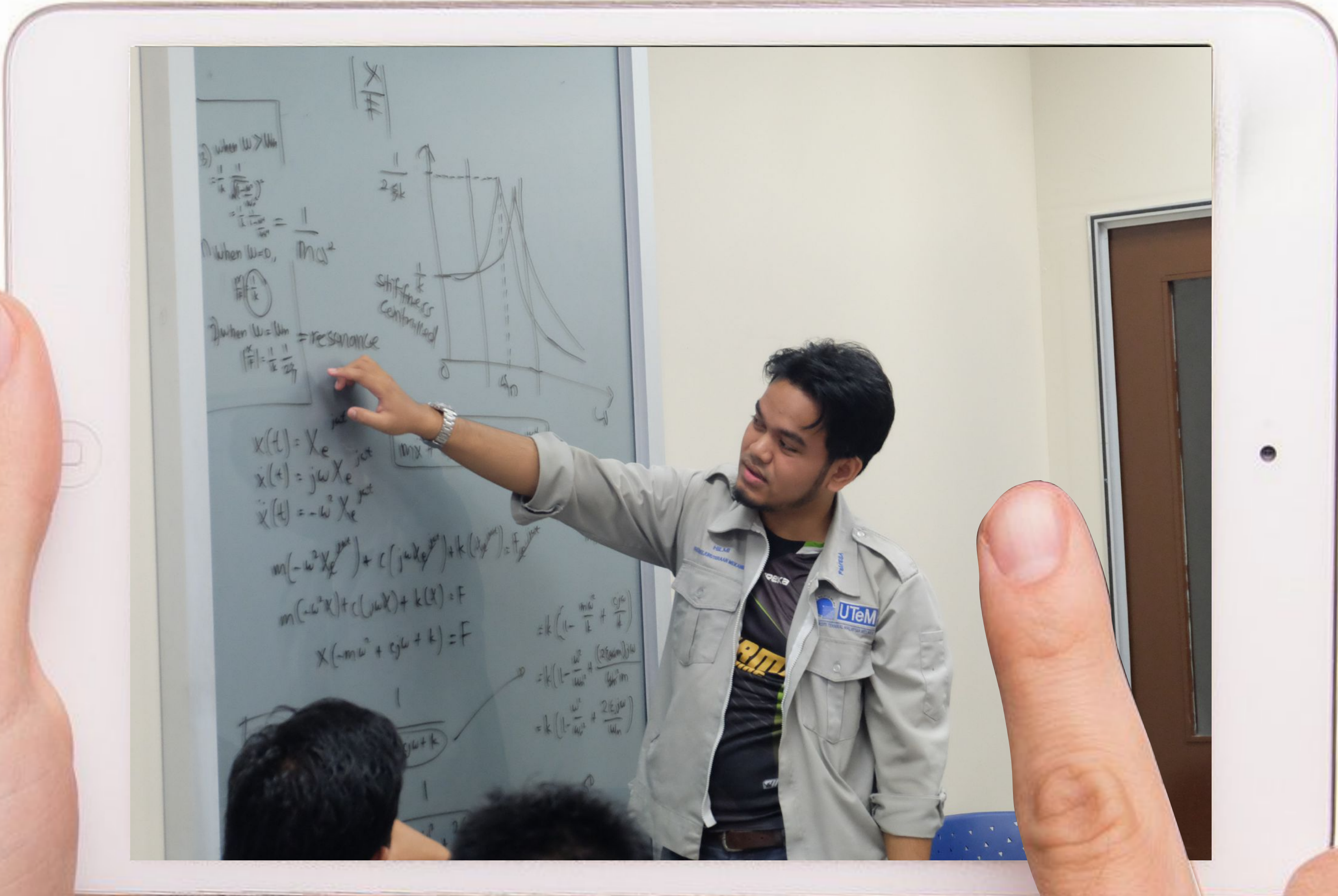
Collaborative Learning



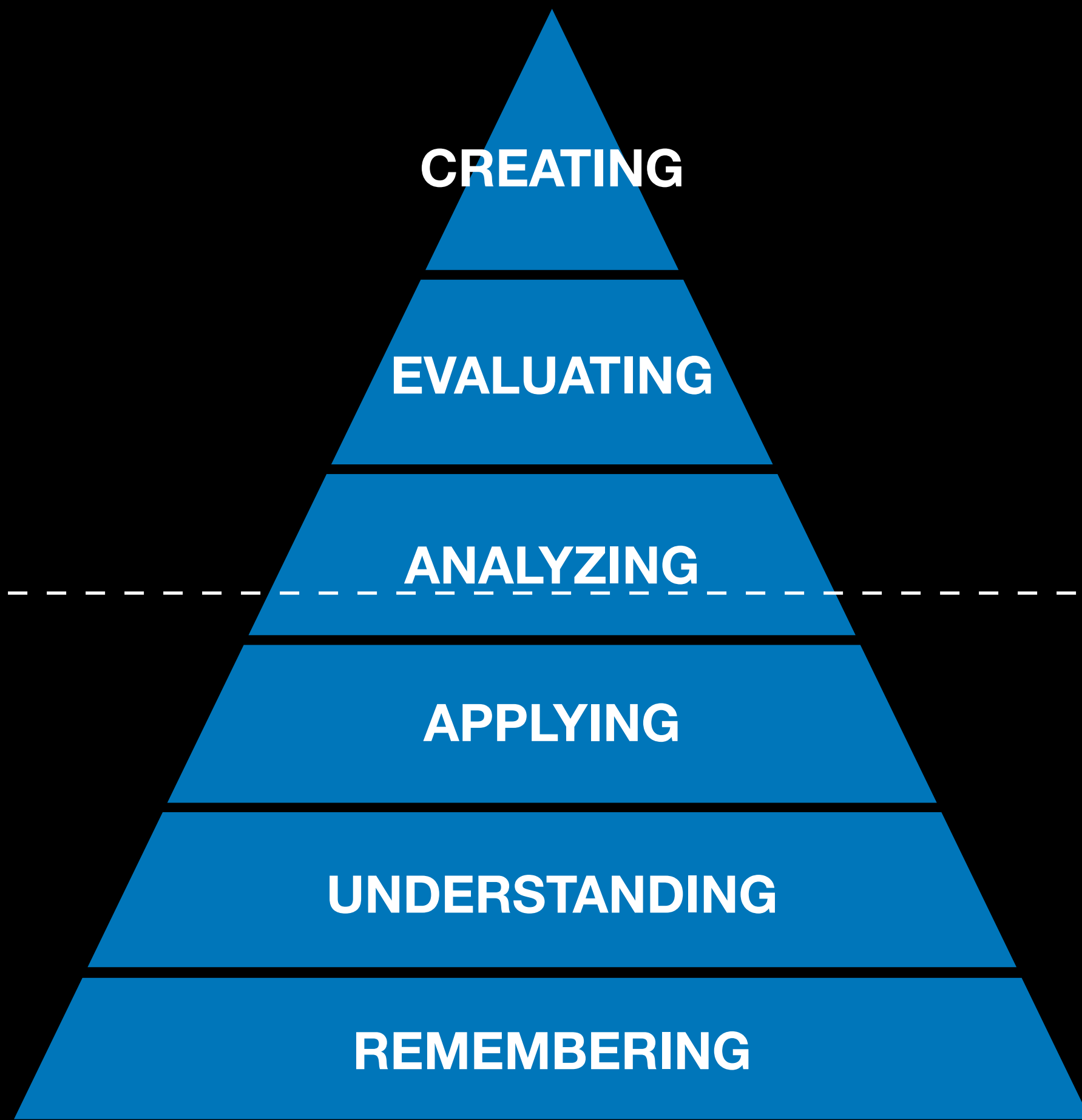
Collaborative Learning Room, Faculty of Mechanical Engineering, UTeM

IN the classroom

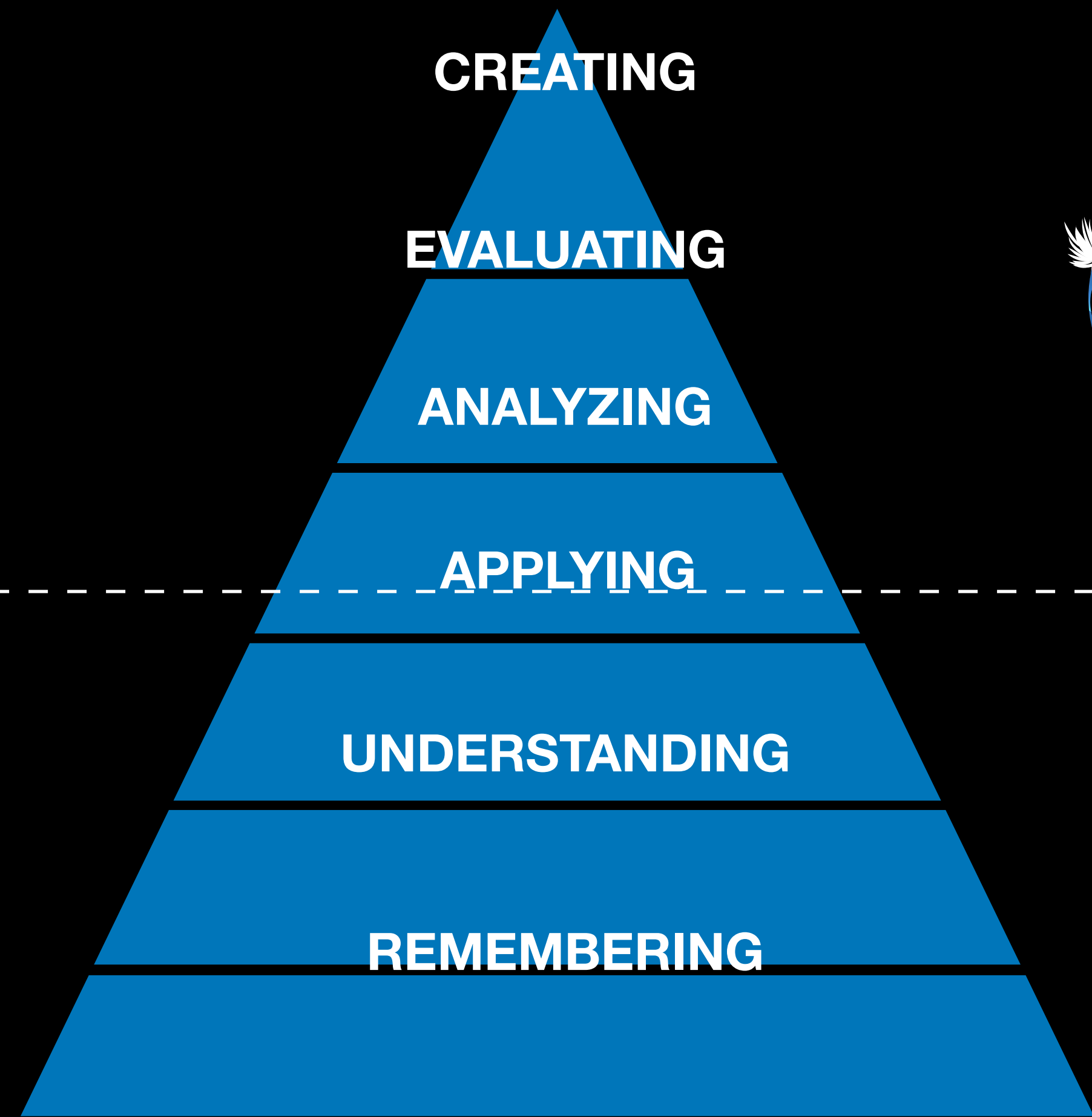
- Problem Solving**
- Discussion**
- Reflection**



Student Centred Learning



LECTURING CENTRED

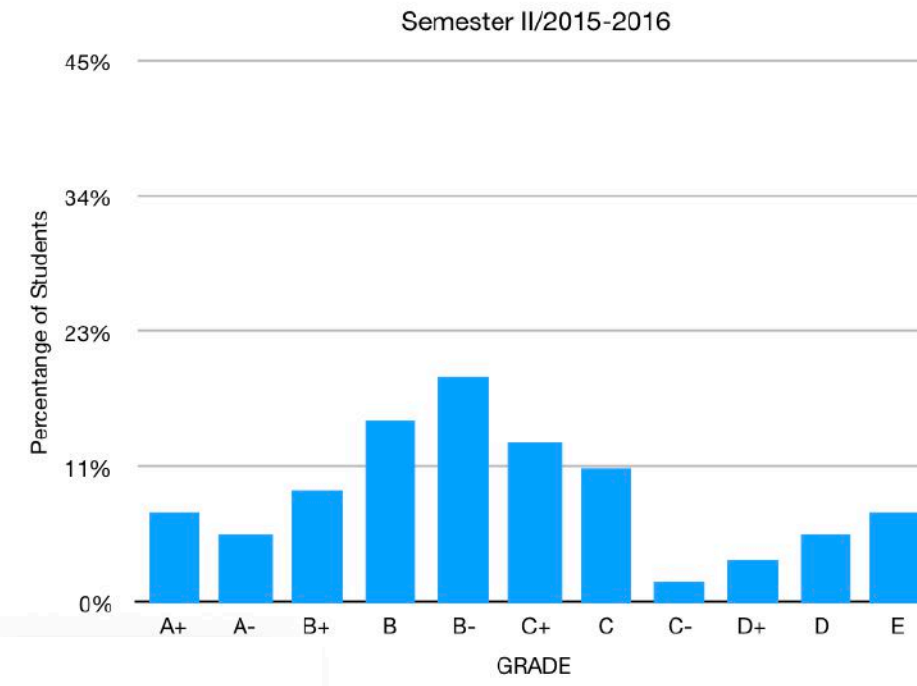


FLIPPED LEARNING
COLLABORATIVE LEARNING

Flipped and Collaborative Learning

Semester II/2015-2016

GRADE	No of Students	Percentage (%)
A+	4	7.5%
A-	3	5.7%
B+	5	9.4%
B	8	15.1%
B-	10	18.9%
C+	7	13.2%
C	6	11.3%
C-	1	1.9%
D+	2	3.8%
D	3	5.7%
E	4	7.5%
TOTAL	53	



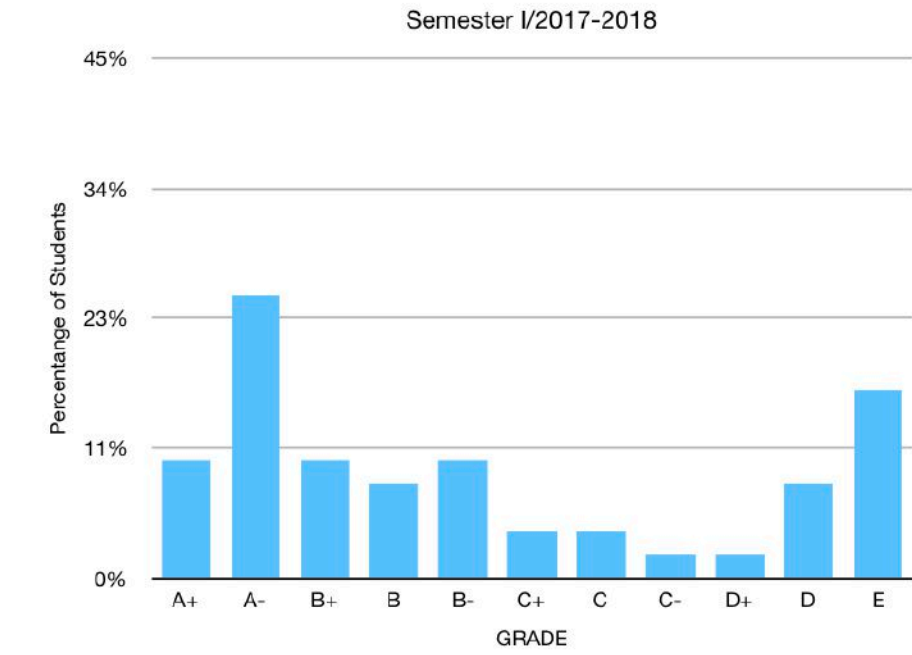
Remarks:

Start to implement collaborative learning in class
 Schoology was used as the online classroom platform
 No video lectures created yet

Flipped and Collaborative Learning

Semester I/2017-2018

GRADE	No of Students	Percentage (%)
A+	5	10.2%
A-	12	24.5%
B+	5	10.2%
B	4	8.2%
B-	5	10.2%
C+	2	4.1%
C	2	4.1%
C-	1	2.0%
D+	1	2.0%
D	4	8.2%
E	8	16.3%
TOTAL	49	



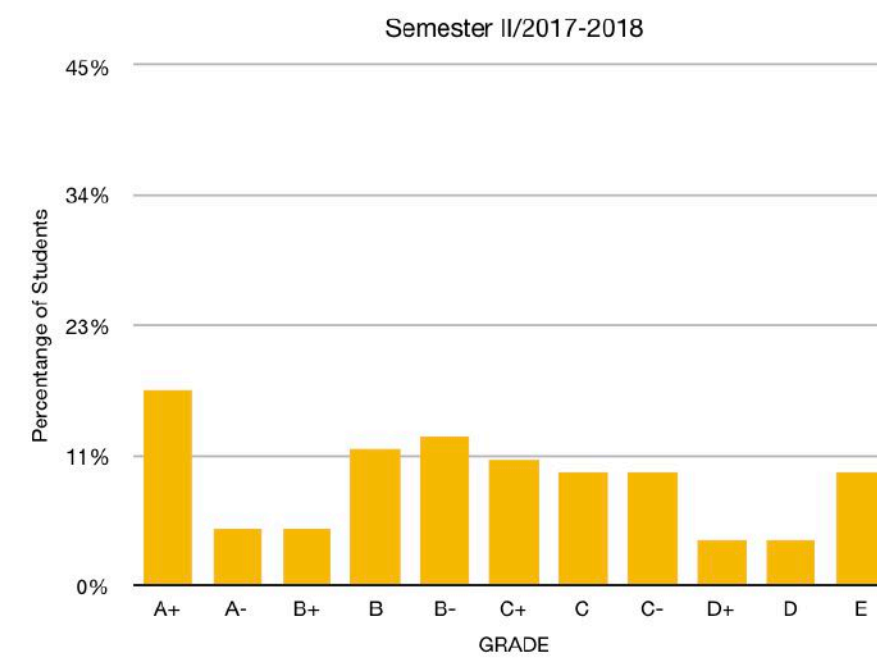
Remarks:

Collaborative learning in CLEAR room
 Open Learning was used as the platform, more interactive than Moodle
 where students (and also lecturer) can interact in the platform (give comments, feedback, etc)

Flipped and Collaborative Learning

Semester II/2017-2018

GRADE	No of Students	Percentage (%)
A+	17	16.8%
A-	5	5.0%
B+	5	5.0%
B	12	11.9%
B-	13	12.9%
C+	11	10.9%
C	10	9.9%
C-	10	9.9%
D+	4	4.0%
D	4	4.0%
E	10	9.9%
TOTAL	101	



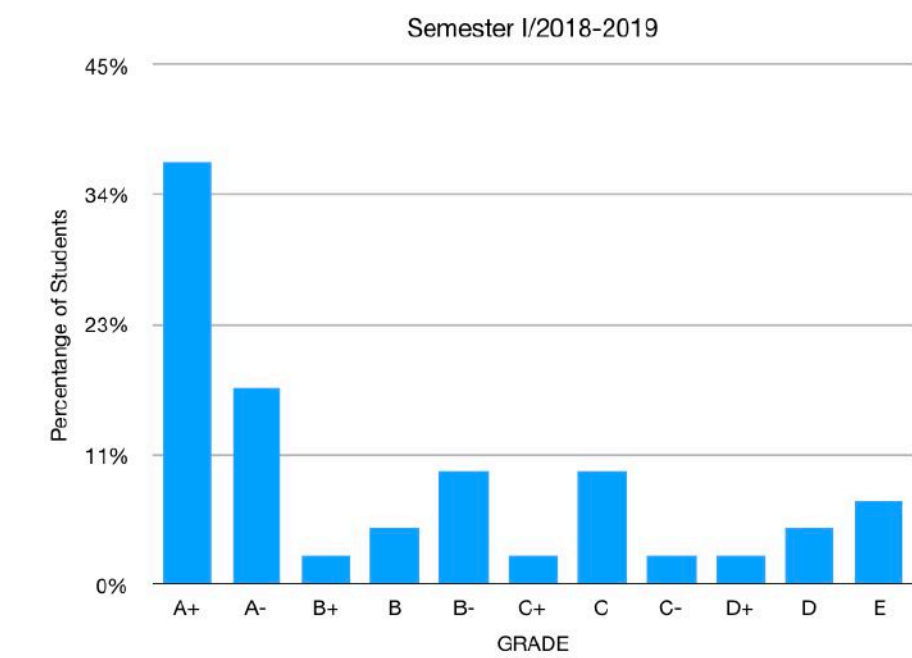
Remarks:

Collaborative learning in CLEAR room
 Open Learning was used as the platform, more interactive than Moodle
 where students (and also lecturer) can interact in the platform (give comments, feedback, etc)

Flipped and Collaborative Learning

Semester I/2018-2019

GRADE	No of Students	Percentage (%)
A+	15	36.6%
A-	7	17.1%
B+	1	2.4%
B	2	4.9%
B-	4	9.8%
C+	1	2.4%
C	4	9.8%
C-	1	2.4%
D+	1	2.4%
D	2	4.9%
E	3	7.3%
TOTAL	41	



Remarks:

Collaborative learning in CLEAR room
 Free Open Learning was terminated
 Moodle (U-Learn) was used as the platform and the features are optimised to be as closed as OpenLearning

SYNCHRONOUS

ASYNCHRONOUS

SYNCHRONOUS

Exchanges of perspectives among your students.

Students learning from each other.

Interactions in which you're playing the role of **facilitator**.

ASYNCHRONOUS

Students developing a common foundation before class (especially of basic ideas or concepts).

Students being able to engage with the material at their own pace.

Students spending a substantial amount of time pondering and reflecting.

UULEARN EET | SEM 1 2020/2021

UTeM E-LEARNING PORTAL



WELCOME TO
UULEARN
UTeM E-LEARNING PORTAL
Learn Anywhere. Learn Anytime



FRAMEWORK

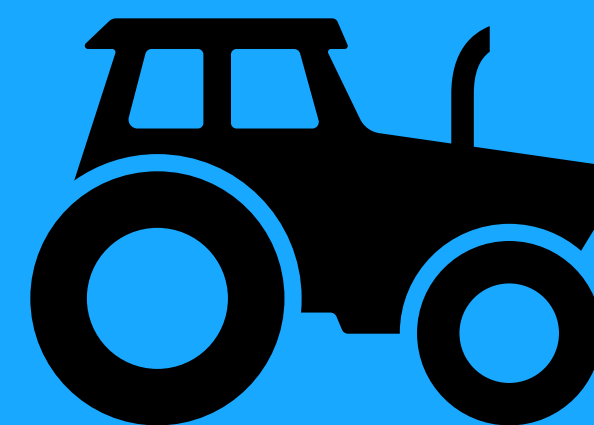
DESIGN



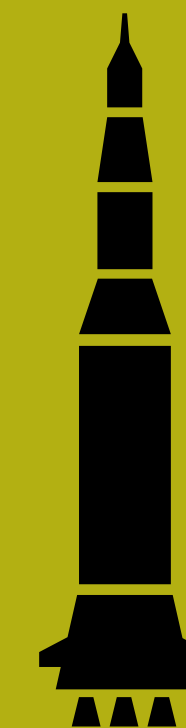
BUILD



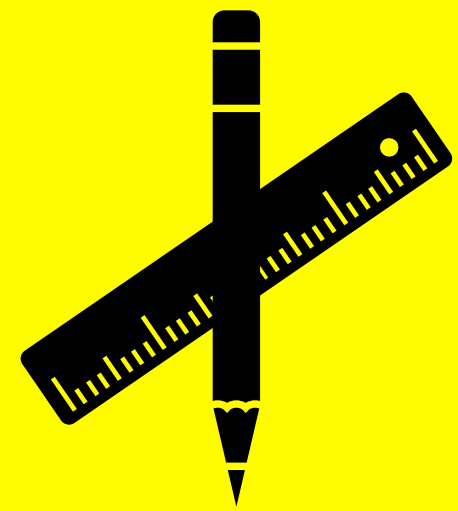
CULTIVATE



DEPLOY

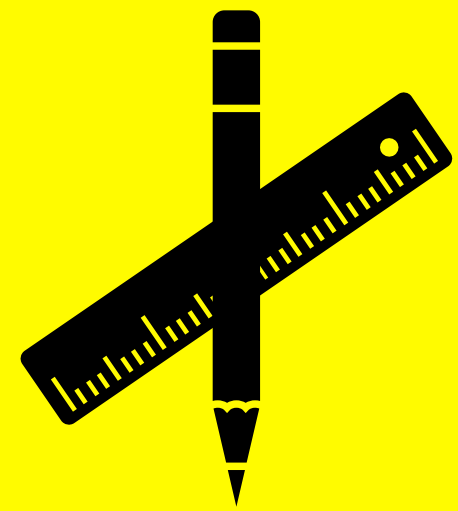


DESIGN



- **Teaching Plan**
- **What are learning outcomes for each section?**
- **What are the media for learning?**
- **What learning activities?**

DESIGN



Always start with analysis

- Animation that shows how to simplify complex everyday problem into simple 'free body diagram' (FBD)
- Steps by steps annotation showing all the terminologies on the simplified FBD. Has to be clear here. CRUCIAL.

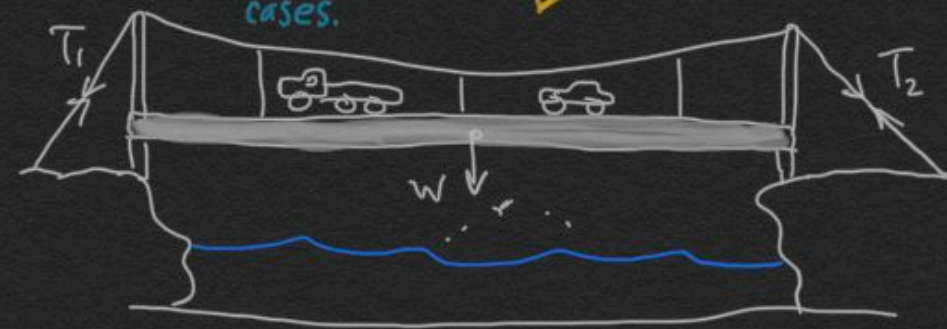
- Current practise is using slides or conventional whiteboard and it is hard for students to visualize without animation and structured annotation
- 'filler' topic that requires clear understand to move forward in static course.

Who: • First year engineering student
is affected?

What: • Is the problem?
• Students need to understand this topic or they will be lost for the next coming topics
• Student should be able to draw free body diagram to simplify complex problem to be able to solve problems.

Where: • Can we improve?
• The transition of simplifying complex problem into simple sketching (FBD)

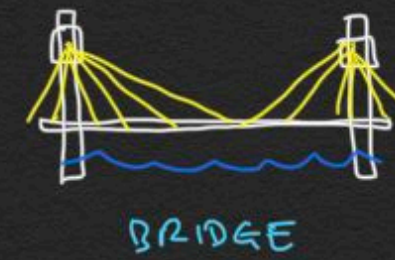
When: • After explaining contextual example like bridge structure and ladder on the wall cases.
to tackle the problem



↑ towards a bit more engineering application (e.g. bridge)

① Why study 'Static'?

Introduction paragraphs + images + short video (< 3 min)

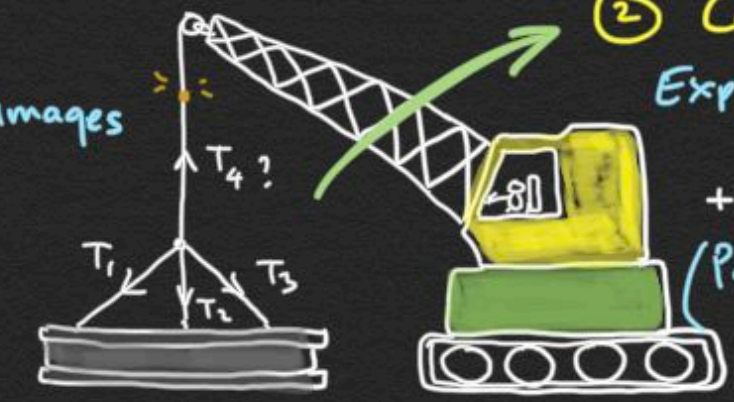


BRIDGE

Keynote iMovie

② Concept of Vector

Explanation on vector vs scalar & resultant of force + Example Problem



(Paragraph + diagram + short video)

- diff scalar vs vector

- vector components

- vector additions

Triangle vs parallelogram

keynote + iMovie & inset in pages

Free Body Diagram - STATIC -

ENGINEERING MECHANICS

③ Equilibrium

Concept of Newton's First Law
 $\Sigma F = 0$

Concept of Newton's Second Law

$$\Sigma F = ma$$

when velocity is constant, $a = 0$; Hence,

$$\Sigma F = 0$$

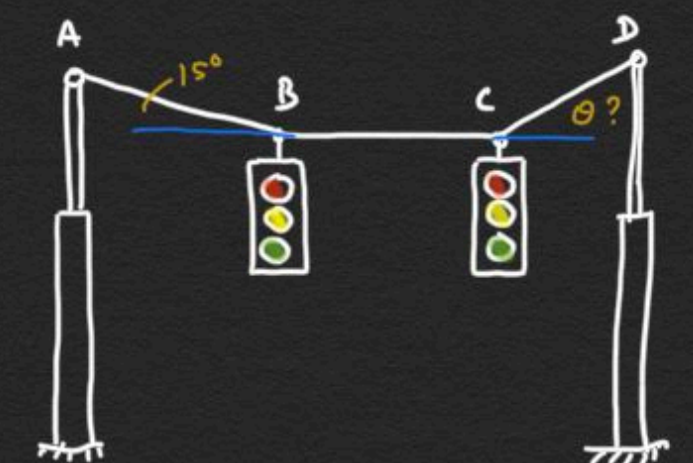
Paragraph + Images + Short video



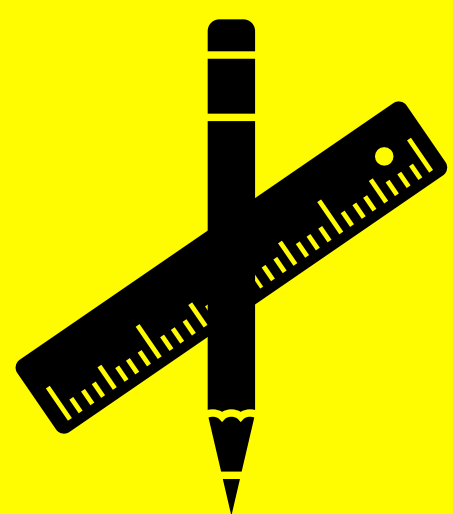
④ Free Body Diagram

Procedure & Analysis of FBD

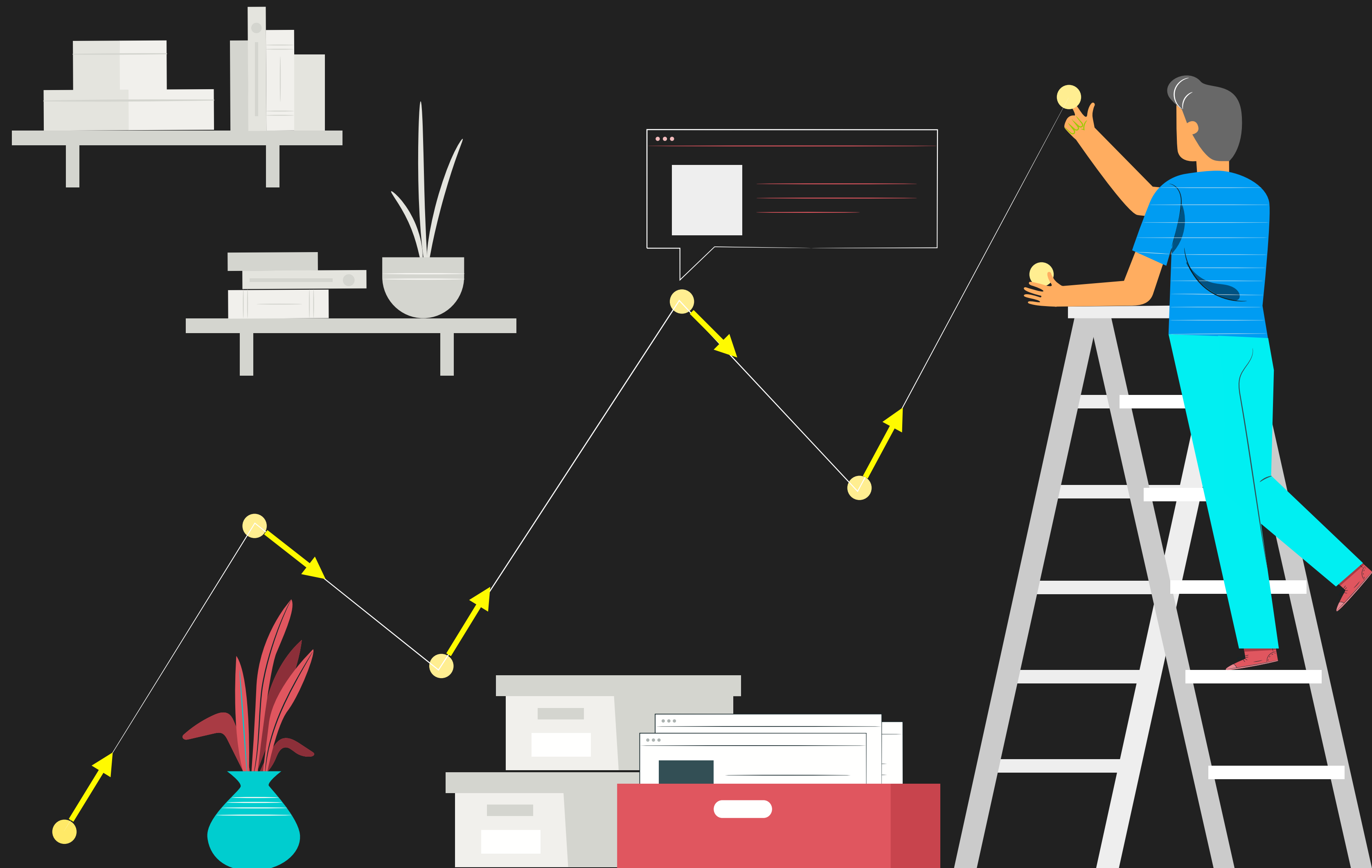
- Definition (Paragraph + Video)
- Examples (Videos)
 - Bridge
 - Tensions of cables



DESIGN



Learning scaffolding



BUILD



- **Create your video lecture**
- **Build the structures of learning flow in ULearn**
- **Combine text, image, video and animation**
- **Utilise tools in ULearn for the students to engage with the content**
- **Improve the visual look of your ULearn**

See Example in ULearn

BUILD



WHY VIDEO?

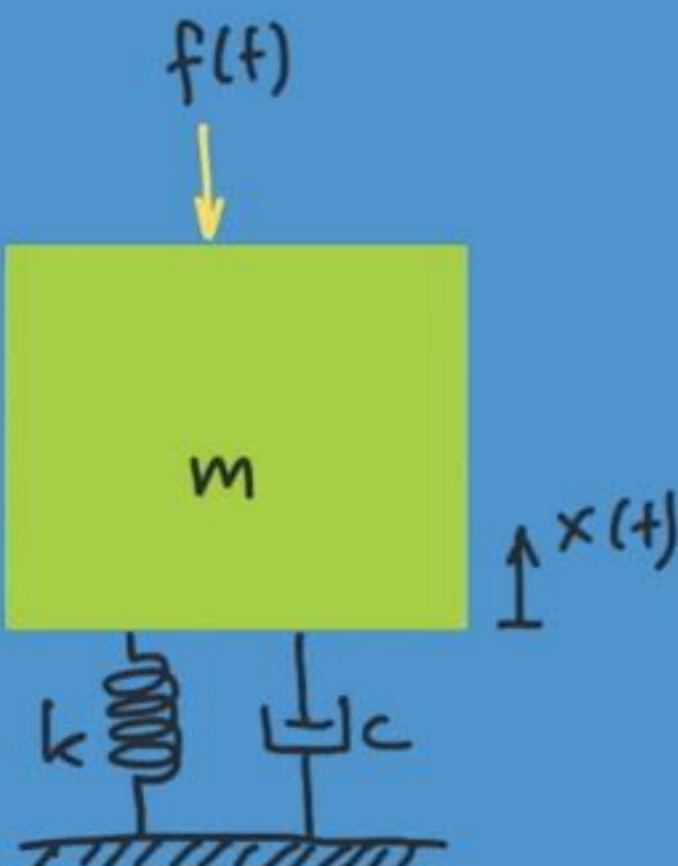
- **Much more engaging**
- **Millennials are visuals and kinaesthetic learners**

See Example in ULearn

BUILD



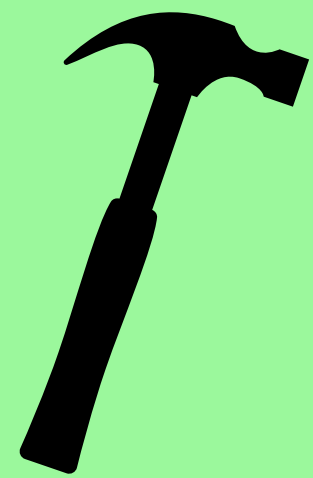
TYPES OF VIDEO: Animation Whiteboard


$$\frac{X}{F} = \frac{1/k}{\underbrace{1 - \frac{\omega^2}{\omega_n^2}}_{\text{Re}} + j \underbrace{\frac{2\xi\omega}{\omega_n}}_{\text{Im}}}$$

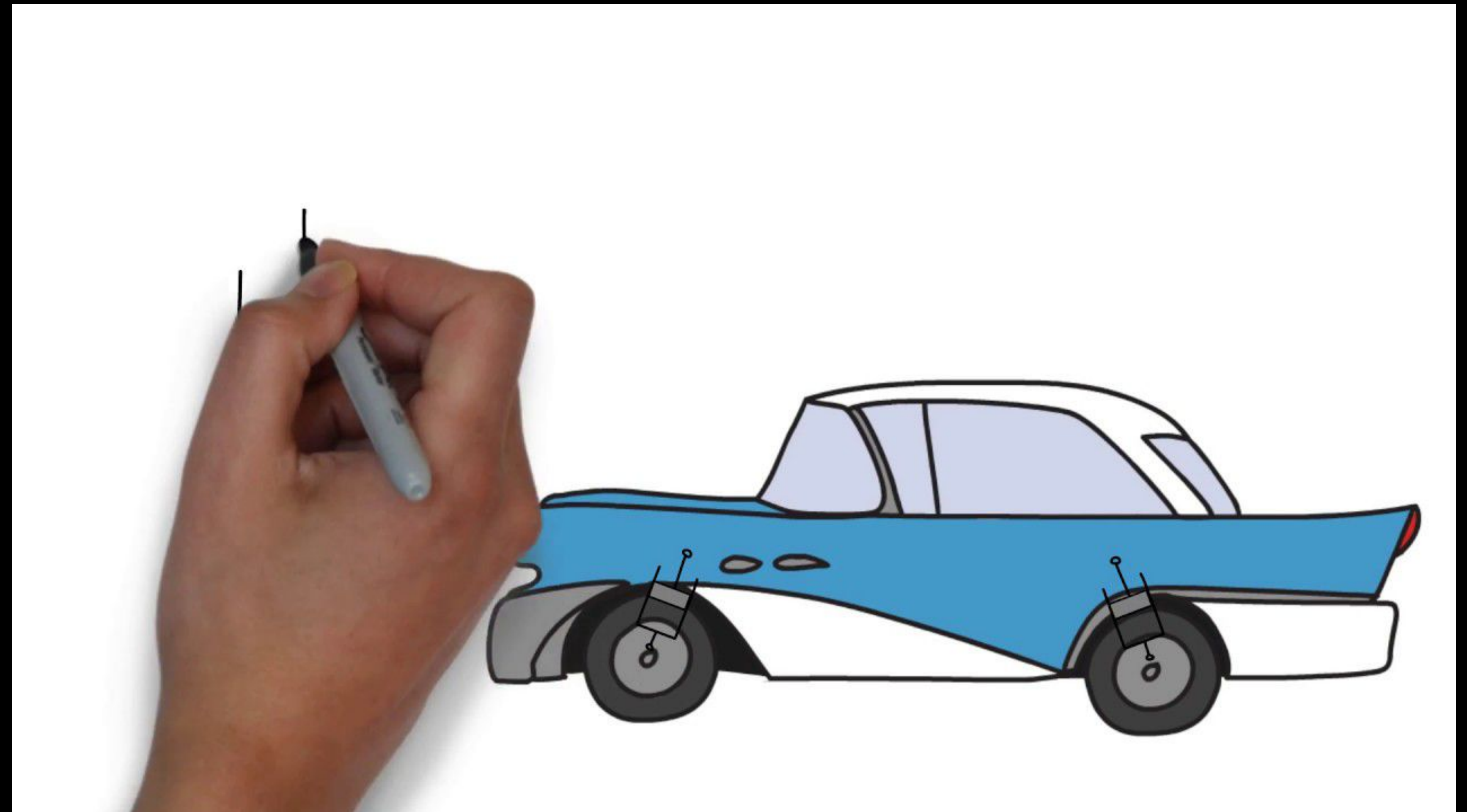
complex number

$$\left| \frac{X}{F} \right| = \frac{1/k}{\sqrt{\left(1 - \frac{\omega^2}{\omega_n^2}\right)^2 + \frac{4\xi^2\omega^2}{\omega_n^2}}}$$
$$\angle \left| \frac{X}{F} \right| = -\tan^{-1} \left(\frac{2\xi\omega/\omega_n}{1 - \frac{\omega^2}{\omega_n^2}} \right)$$
$$z = \frac{1}{a + jb}$$
$$|z| = \frac{1}{\sqrt{a^2 + b^2}}$$
$$\angle |z| = -\tan^{-1} \left(\frac{b}{a} \right)$$

BUILD



TYPES OF VIDEO: **Scribed Animation Whiteboard**



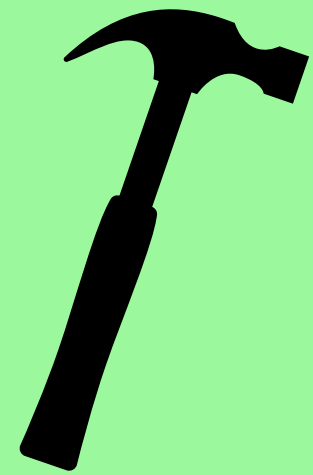
BUILD



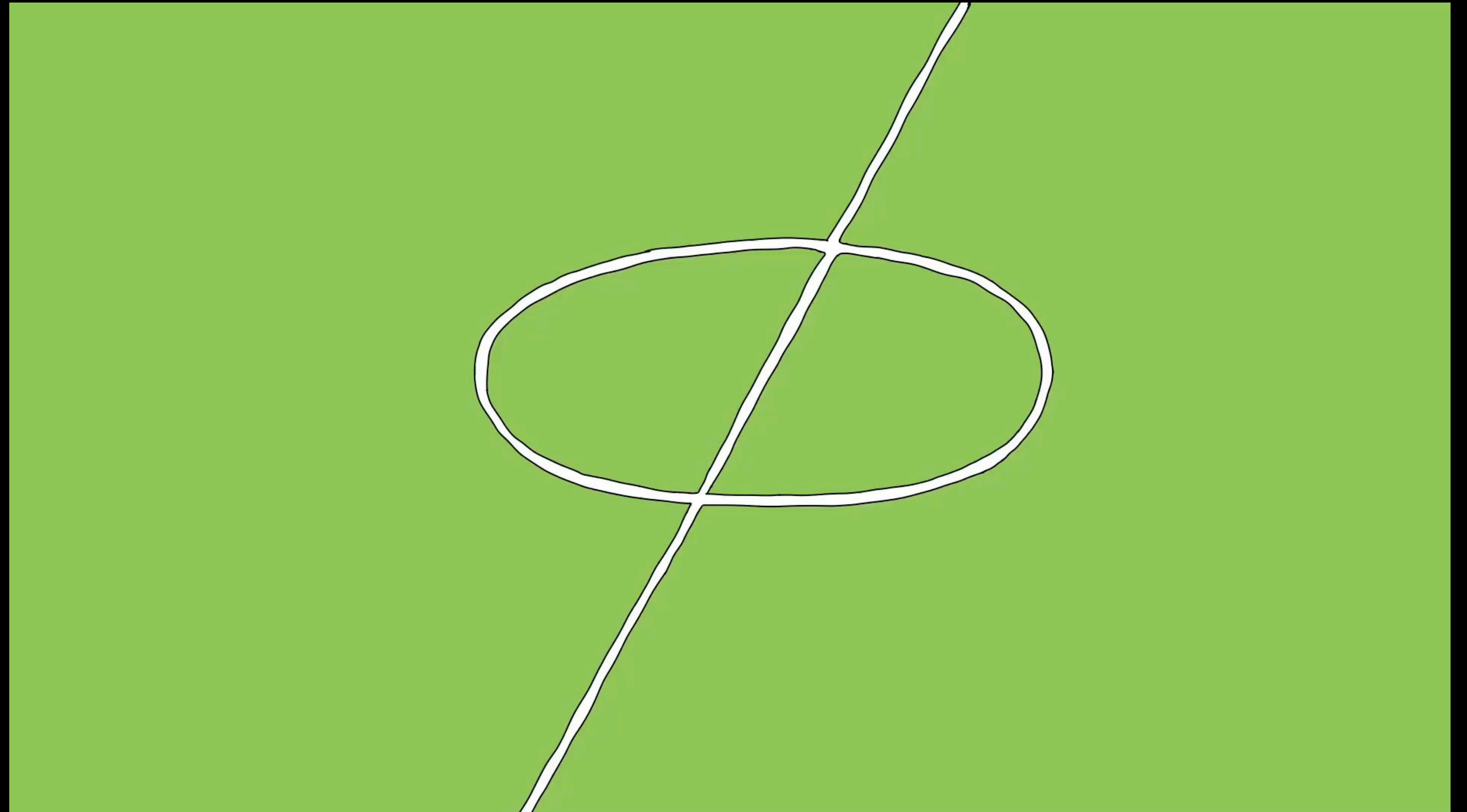
TYPES OF VIDEO: Keynote Animation (Shape + Drawing)



BUILD



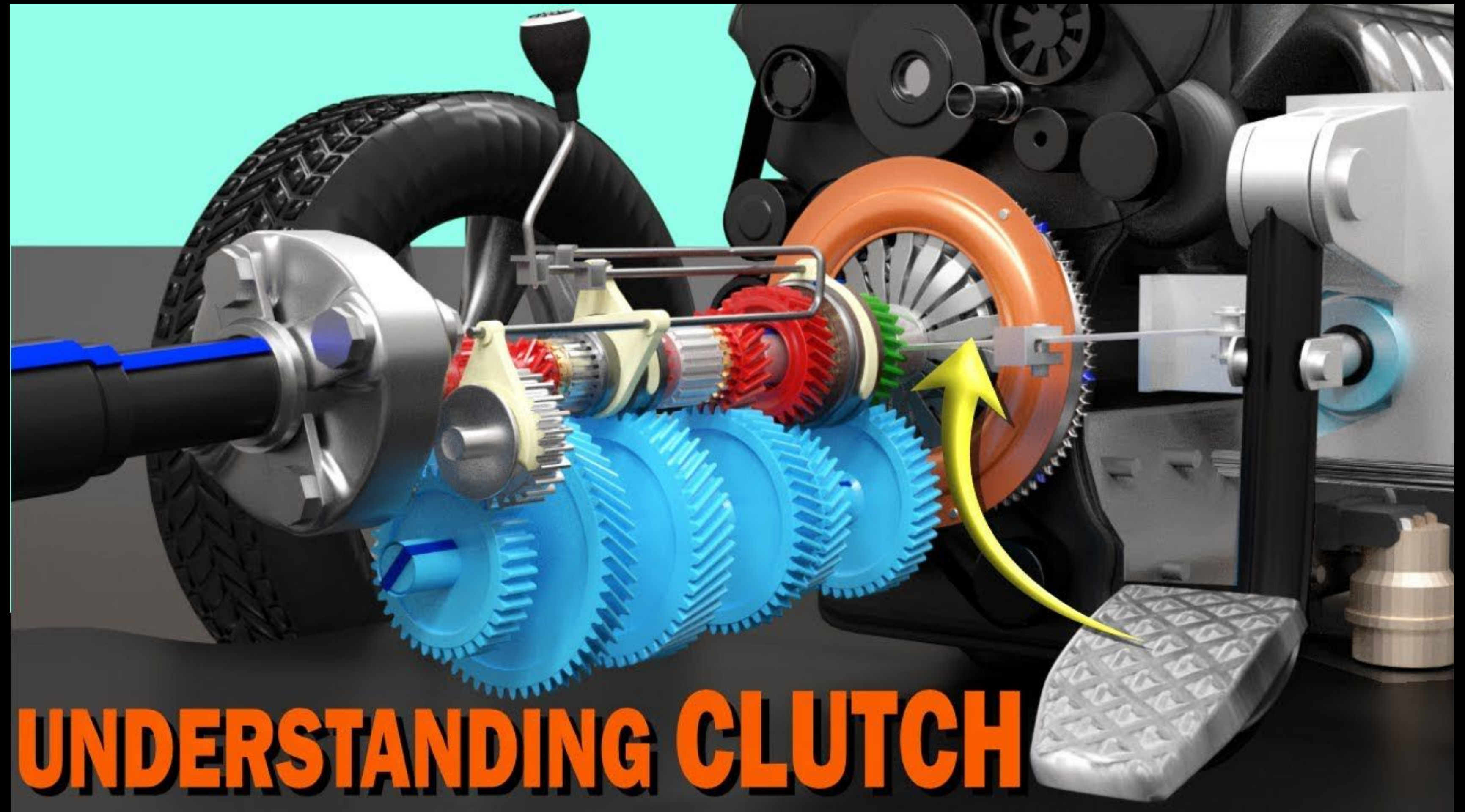
TYPES OF VIDEO: **Keynote Animation (Drawing)**



BUILD



TYPES OF VIDEO: Full Animation



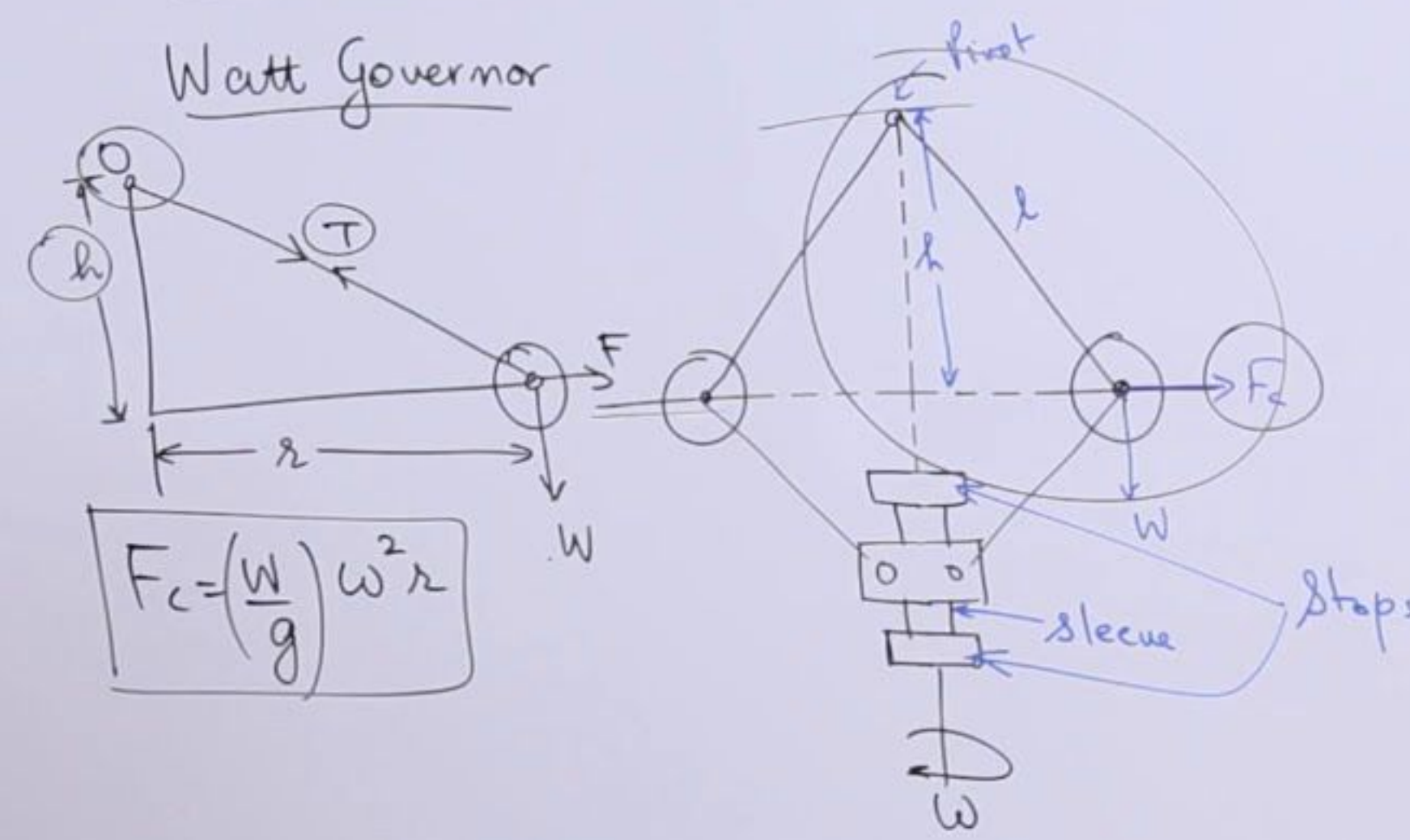
UNDERSTANDING CLUTCH

BUILD



TYPES OF VIDEO: Fully recorded lecture

GOVERNORS
Watt Governor



$$F_c = \left(\frac{W}{g}\right) \omega^2 r$$

BUILD



TYPES OF VIDEO: Recorded lecture slide style





Azma Putra
4.14K subscribers

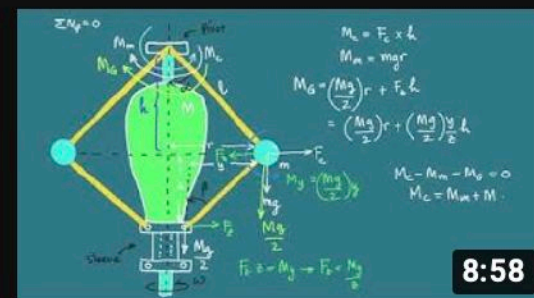
CUSTOMISE CHANNEL

MANAGE VIDEOS

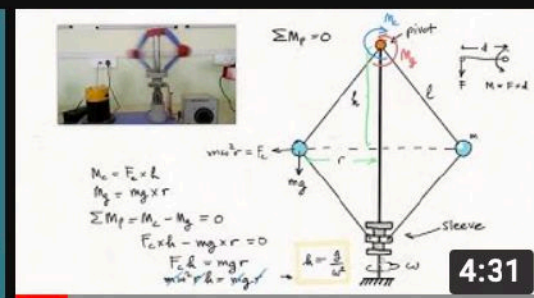
HOME VIDEOS PLAYLISTS COMMUNITY CHANNELS ABOUT 🔍

Uploads

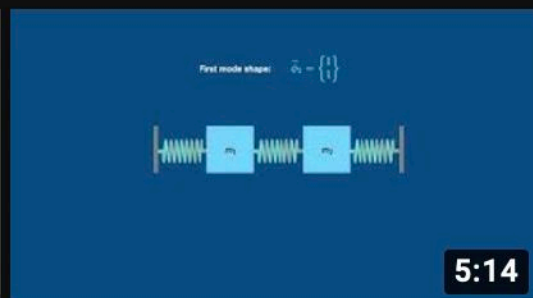
☰ SORT BY



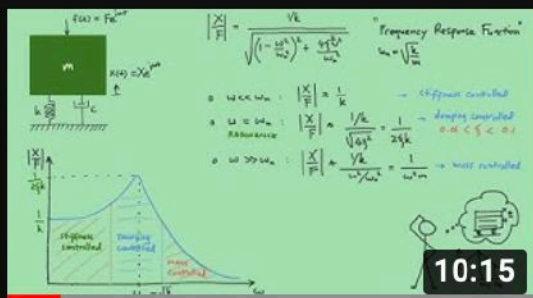
Mechanics of Machines: Porter Governor
102 views • 1 month ago



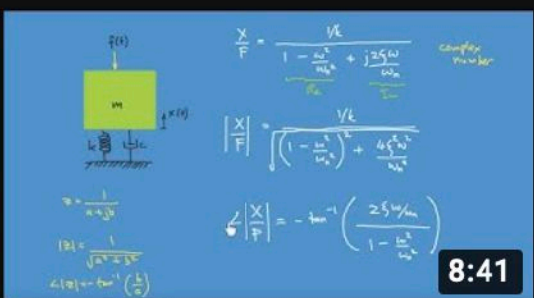
Mechanics of Machines: Watt Governor
131 views • 1 month ago



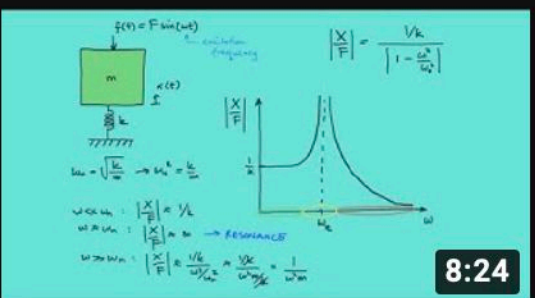
Mechanical Vibration: MDOF - Mode Shape
1K views • 4 months ago



Mechanical Vibration: Damped Forced Vibration -...
1.2K views • 5 months ago



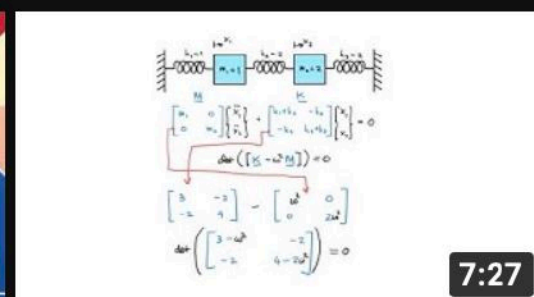
Mechanical Vibration: Damped Forced Vibration...
1.5K views • 5 months ago



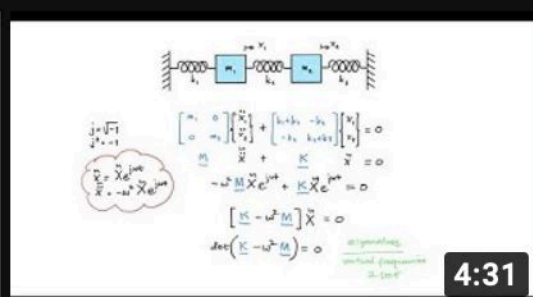
Mechanical Vibration: Undamped Forced Vibration
2.2K views • 6 months ago



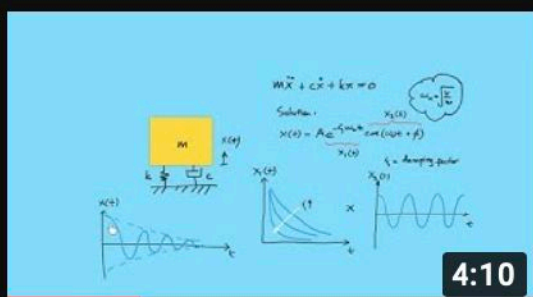
About Dr Azma's Mechanical Vibration Classroom: Stude...
249 views • 8 months ago



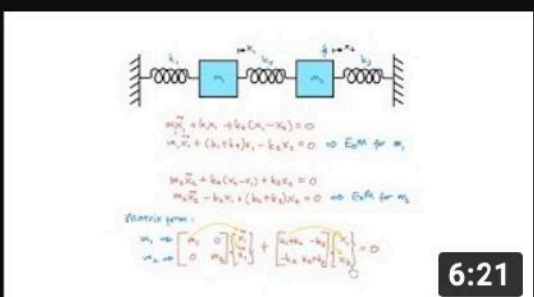
Mechanical Vibration: MDOF Calculating the Natural...
3.9K views • 11 months ago



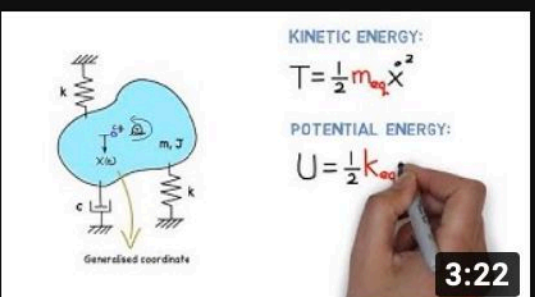
Mechanical Vibration: MDOF Calculating the Natural...
3.6K views • 11 months ago



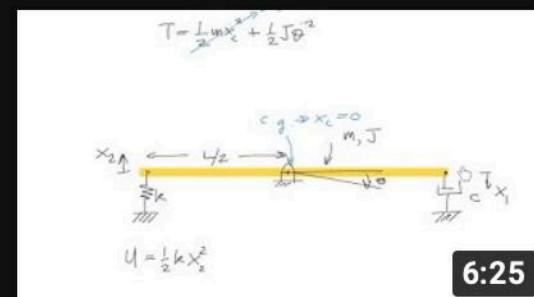
Mechanical Vibration: Damping Loss Factor
1.4K views • 11 months ago



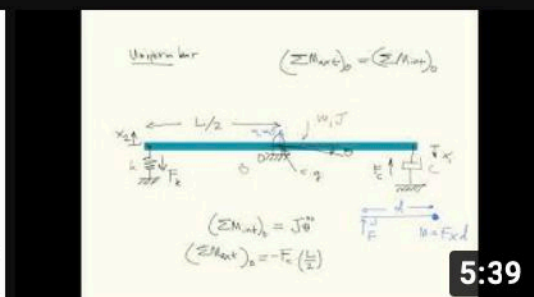
Mechanical Vibration: MDOF Deriving Equations of Motio...
12K views • 1 year ago



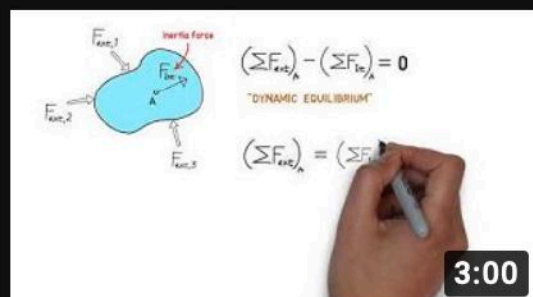
Mechanical Vibration: System Equivalent Analysis
3.5K views • 1 year ago



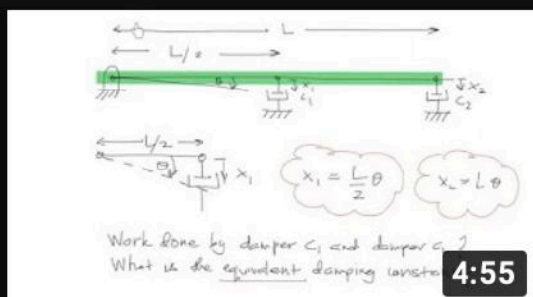
Mechanical Vibration: System Equivalent Analysis...
4.8K views • 2 years ago



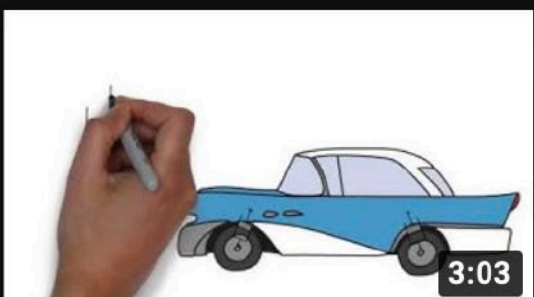
Mechanical Vibration: D'Alembert Principle...
6.5K views • 3 years ago



Mechanical Vibration: D'Alembert Principle
11K views • 3 years ago



Mechanical Vibration: Equivalent Damping Constant
6.8K views • 3 years ago



Mechanical Vibration: Damping Element
26K views • 3 years ago

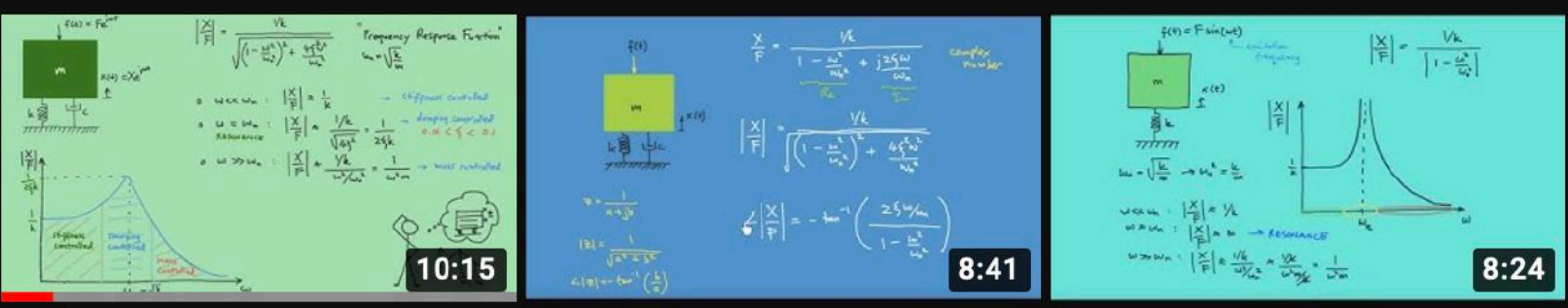


Student's feedback on my Flipped Learning (and SCL)...
365 views • 3 years ago



CUSTOMISE CHANNEL MANAGE VIDEOS

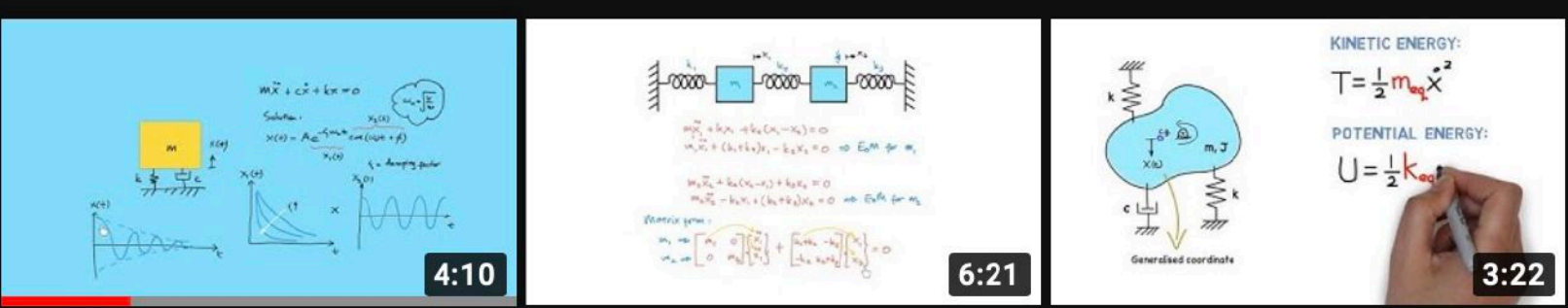
ABOUT SORT BY



Mechanical Vibration: Damped Forced Vibration - ...
1.2K views · 5 months ago

Mechanical Vibration: Damped Forced Vibration....
1.5K views · 5 months ago

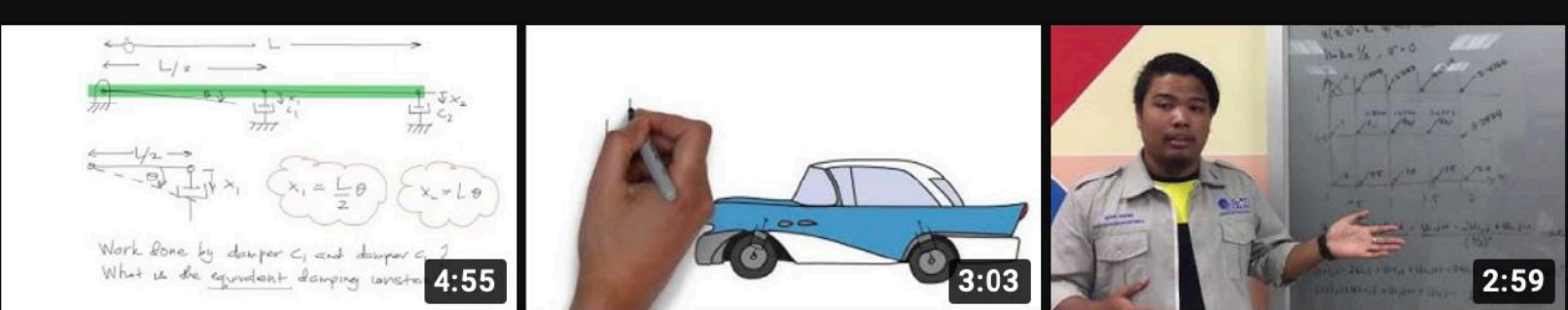
Mechanical Vibration: Undamped Forced Vibration
2.2K views · 6 months ago



Mechanical Vibration: Damping Loss Factor
1.4K views · 11 months ago

Mechanical Vibration: MDOF Deriving Equations of Motio...
12K views · 1 year ago

Mechanical Vibration: System Equivalent Analysis
3.5K views · 1 year ago



Mechanical Vibration: Equivalent Damping Constant
6.8K views · 3 years ago

Mechanical Vibration: Damping Element
26K views · 3 years ago

Student's feedback on my Flipped Learning (and SCL)...
365 views · 3 years ago

- ✓ **Link to ULearn**
- ✓ **Share your contents worldwide**
- ✓ **Global presence**
- ✓ **Increase UTeM visibility internationally**
- ✓ **Can be monetized**

Comments ⚙️

Published comments
Held for review
Likely spam

🔍

Classroom in Your Hand
▼

Top comments ▼

Arielle Jean Barcenas 5 months ago

Thank you for sharing your practical and useful lecture videos. I love watching them. I understand Mechanical Vibration now way better than listening to my professor reading all those paragraph-full slides. Looking forward for more of your videos. :)

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Azma Putra 5 months ago

Thanks Arielle. Will upload more videos for the subject. Finger crossed:))

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Azmi Mohd Tamil 11 months ago

I see someone showing off his new "Pencil" in the video. Very good presentation.

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Comments ⚙️

Published comments
Held for review
Likely spam

🔍

Mechanical Vibration: Spring Element
▼

Top comments ▼

Mark Sony 7 months ago

nice video thnx
plz can u tell what program are u using to teach?!

Reply · 👍 🗨️

🗑️ 🚩 ▼

Azma Putra 6 months ago

Hi Mark. Thanks. I used 'Explain Everything' app in my iPad:)

Reply · 👍 🗨️

🗑️ 🚩 ▼

Mark Sony 6 months ago

thnx!

Reply · 👍 🗨️

🗑️ 🚩 ▼

JS PADMANABHAN 7 months ago

Good and very nicely explained

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Dennis Patel 11 months ago (edited)

Hey Azma,

I just wanted to thank you and let you know, your videos are VERY helpful. i was so lost about the topic till i saw your videos, i am doing my HW right now and you have no idea, how grateful i am. Thank you once again and please keep these videos coming.

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Fuad S9S 11 months ago

Great ! Many thanks ..can't wait for the next video 🙌

Reply · 1 👍 🗨️

🗑️ 🚩 ▼

Fuad S9S 11 months ago

clear and brilliant explanations ,waiting for the next video ..

Reply · 👍 🗨️

🗑️ 🚩 ▼

Comments



Published comments

Held for review

Likely spam

Search comments



Mechanical Vibraton: Mass-Spring-Da...

Top comments



Ann Reina 11 months ago (edited)

Sir, how is it that the soil can be modeled as a spring? The soil, unlike a spring or even the rubber, will not exert a force back on the system, will it? Or is this just based of an assumption of the soils properties. Conceptually it is confusing for me. Would it be possible to have a surface/material that damps but does not act as spring? Or is it that we assume any solid surface exerts an opposing/damping force?

Thanks :)

Reply · 1



Azma Putra 11 months ago

+Ann Reina A certain type of 'soil'/ground has a spring-like behaviour plus its damping property. Engineers also model this when designing vibration of a building where the ground is assumed to have stiffness and damping properties. When you think of a ground to have type of soil like the one on the beach, yes, it acts more like a damping rather than a spring.

Reply ·



Fuad S9S 11 months ago

great work sir ..please keep up the good work ! =D

Reply · 1

Top comments



Ann Reina 11 months ago

Hi sir. Can you please explain why the magnitude of the force turns out to be square root of $3\text{squared} + 4\text{squared}$? I am confused what happened happened to all of the terms in the original $f(t)$ equation. Thanks for these videos they are very helpful!

Reply · 1



Azma Putra 11 months ago

+Ann Reina You have to go back to the concept of complex number. The 'magnitude' of a complex number is the square root of (real part square + imaginary part square). You can refer tu this link: <http://www.regentsprep.org/regents/math/algtrig/ato6/absvlecomlesson.htm>

Hope that helps.

Reply ·



Nostramis 4 months ago

Please make more of these excellent videos

Reply ·



Lucas Shearer 10 months ago

Thank you for the video, it looks like a lot of time and effort went into that. I can't help but think that the units at the very end, the magnitude of acceleration, should be $m/(s^2)$ and therefore the ending ratio would have units of $m/(N*s^2)$.

Reply ·



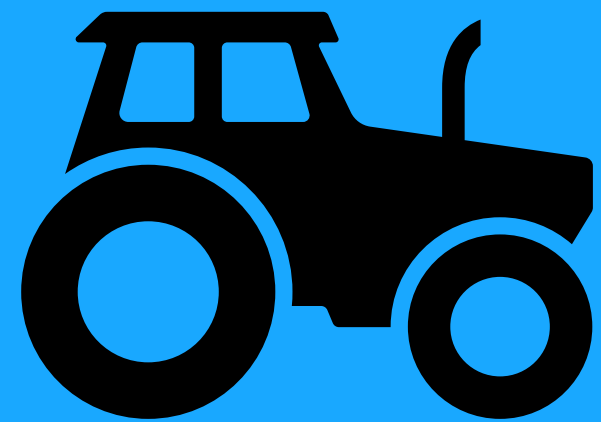
Myla Maghanoy 1 year ago

Wow. This is a really nice video. Very well explained. More power sir. :D

Reply · 1

CULTIVATE

- Use some already available online contents
- Use them as part of the contextual learning activities



See Example in ULearn

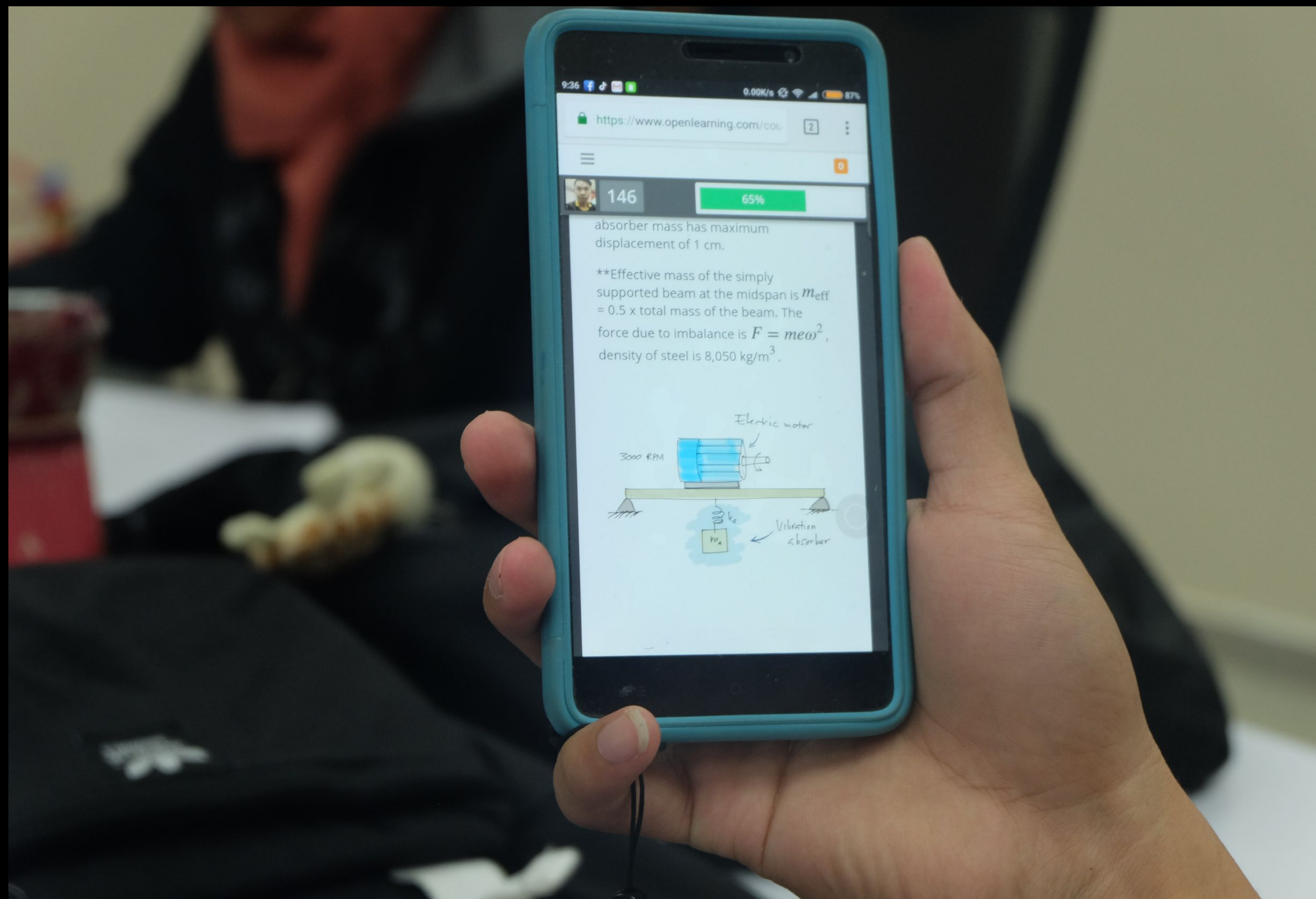
DEPLOY



- **Launch the ULearn**
- **Communicate with students through Whatsapp/Telegram**
- **Ensure the students do the learning activities (must have some kind of enforcement)**

See Example in ULearn

Mobile Device is Best



FRAMEWORK

FRAMEWORK CLASS ROOM IN YOUR HAND

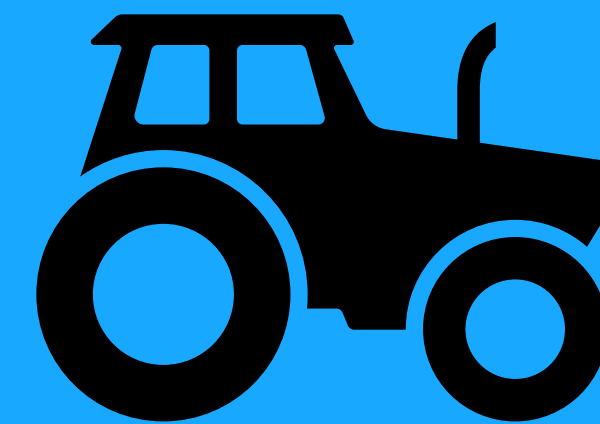
DESIGN



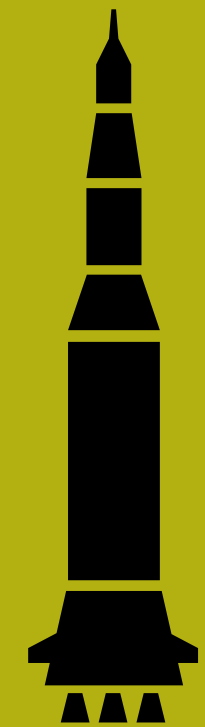
BUILD



CULTIVATE



DEPLOY



**PROGRESS IS IMPOSSIBLE
WITHOUT CHANGE,**

**AND THOSE WHO CANNOT CHANGE
THEIR **MINDSET** CANNOT CHANGE
ANYTHING**

