Teaching Practice for Lecturing and Presenting in Engineering

This course will offer you an intense opportunity to practice teaching and to get detailed feedback on your teaching. The practice will come in the form of 5 short lessons on specific topics. On Days 1-4, you will teach your "mini" lesson to a group of 4-5 other students and on Day 5, you will have a group of 10 participants for your "maxi" lesson.

The feedback you receive on your teaching will be more valuable to you if you are well prepared.

A lesson is a short teaching sequence, like solving an exercise session or introducing a lab experiment. See the guidelines below about topics and duration for each day. Choose a subject which is important or interesting to you, but please do keep in mind the varied backgrounds of the other participants.

While it can be useful to already have a topic in mind for each day, we suggest that you prepare only first day's teaching sequence now. For each lesson, *you should incorporate ideas and strategies seen previous day or from the readings, as well as the feedback you received and your personal reflections*.

Ultimately what you get out of this class, far exceeding the importance of your grade, will come from teaching practice and your peers' feedback on these short lessons.

Day	**Duration**	**Topic**	**Requirements** ******Use lesson planners***
1	5 minutes	Motivation + potential outcomes of your thesis project	Be sure to include a lead-in, key message and summary.
2	10 minutes	Resolution of an exercise, problem solving activity, etc.	Use of the board or flipchart (no PowerPoint or slides). Use of questions/interactivity, plus lead-in + summary
3	10 minutes	Cutting edge experimental technique or procedure, which is cognitively challenging to understand (ie difficult concept, rather than overwhelmingly detailed)	LOAFS structure
4	10 minutes	Quantitative data FOR A GENERAL PUBLIC AUDIENCE	Use of visualisation/diagram + LOAFS structure
5	12 minutes	RE-DO a previous lesson - Incorporate peer feedback and self-reflection - For an INTRODUCTORY ENGINEERING AUDIENCE	LOAFS structure

See the following pages for the Day 1 lesson planner and 2 sample lesson plans

Day 1: lesson plan

Topic:

Time	Phase	Description, instructions, content…	Material
	Lead-In		
	Key message		
	Summary		
	Total time		

model Day 1: lesson plan

Topic: FOOD SAFETY → EGGS

Time	Phase	Description, instructions, content...	Material
1 min	Lead-In Serves as your « hook » to pull students' attention and makes the connection with what your students know, value or find interesting.	Draw big egg on the board Q: Where do you store your eggs at home? Why?	chalk board
3 min	Key message Imagine that someone who attended your mini lesson meets up with a friend that evening – what 1-2 sentences would you like them to use to explain what you taught? make connection	lecture: Key to storage is minimising bacteral growth - moisture - surface area - temperature - use air pocket to keep yolk from touching shell	" * keep it short!
1 min	Summary Consolidates and integrates the lesson. Broadens the perspective and helps students make links to other concepts and contexts to facilitate transfer.	- in or out of the fridge doesn't matter - but don't take them in + out → condensation on the shell & moisture & bacterial growth.	"
5	*Total time*		

Day 1: lesson plan Topic: Neural Plasticity author: Salif Komi, 2020

Time	Phase	Description, instructions, content…	Material
1	Lead-In	Draw a brain and 2 neurons with an arrow around and ask : "How does your brain learn?" What is the neural subrate of learning? What mechanisms are involved?	White Board, Black, Red, Blue, Green markers
3	Key message	Key to learning is **neural plasticity and structural adaptation of the brain networks responsible of the task you train**: - Ask: How to elicit these changes? - Through training and repetition: Hebbian Rule (1 Minute Explaination) - **"Cells that fire together wire together"** - Give example: - Associative Memory (1minute example:) - - Multiple mechanisms (Structural and functional plasticity) - With first color draw structural plasticity (30s) - With Second color draw functional plasticity (30s)	
1	Summary	Plasticity through repetition is key to learning. That's the basis of recent engineering approach of machine learning such as Deep Learning using repetitive training of artifical neural networks.	
	Total time		