Teaching a Class?

Just Stay CALM

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CPET
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Work Products of CALM

- Everything is done before classes start
- Course information documents written
  - Syllabus
  - Course Calendar
  - Policies: Rules, Regulations, Requirements
- Processes established
  - Communication
  - Distribute → Work → Submit → Grade → Return
  - Continuous Improvement
Curriculum: What to Teach

You should always tailor the course curriculum to best meet the needs & situations of students.
Curriculum: Tailoring

Factors that affect what you teach

- Pre/Post/Co-Requisites
- Other Typical Coursework
- Student Professional Exp.
- Student Career Goals
- Student Capabilities
- Student Interests
- Accreditation
- Departmental Goals
- Your Background
- Your Interests
- Time
Curriculum: Accreditation

Examples of accreditation requirements

• Understanding of professional & ethical responsibility

• Knowledge of contemporary issues

• Ability to use the techniques, skills and modern engineering tools necessary for engineering practice

• Ability to function on a multi-disciplinary team
Curriculum: Organizing

• In four columns list *everything* about
  • Concepts to Teach
  • Required Skills
  • Applications
  • Other (Ethics, Life Lessons, Sustainability,…)

• Filter/refine (tailor) the lists
• Order concepts to tell a linear story
• Assign skills to concepts
• Make connections with other classes
Curriculum: Elevator Pitch

Say what you teach in <15 seconds

Ch1a: The Chemical Bond

Ch1b: ???

ChE103a: \( \rho C_p \frac{\partial T}{\partial t} + \rho C_p u.\nabla T = k \nabla^2 T + S_H \)
Assessment

You *always* need to assess three things:

- Students
- The Course
- Yourself
Assessing Students

• What methods are you going to use?
  – Active: Problem sets, quizzes, exams, memos, reports, presentations, lab notebooks, notes, …
  – Passive: Observational

• Let students know what to expect
  – Breakdown/distribution of overall grade
  – How many or how often
  – Requirements for different work types
Assessing the Course

$\ln(\Delta t)$
(time in days)

- century
- decade
- 5 years
- 2 years
- year
- term
- half term
- week
- day

$\Delta t$: time between assessment events

- Institute Accreditation; Core Curriculum Review
- Option Accreditation
- Student-Faculty Conf.
- TQFR (Student Evals)
- Ombudsperson Meeting
- Moodle; Lunches; Clickers; Conversation
“Thirty seconds. Every player. Every day. You want to connect.”

Mike D’Antoni
Coach, New York Knicks

Quote source: Eric Neel, “Gotham’s Savior.” ESPN.com
Logistics: The Basics

- Meeting times: Who, when, where, how often
  - Classes, labs
  - Recitations
  - Review sessions
  - TA office hours
  - Your office hours
Logistics: The Calendar

• Compile a course calendar that includes:
  – Institute holidays
  – Your travel days
  – Important dates
    • Add/drop day
    • Midterm reports and grades due
    • Exam periods
  – Course meeting times: re-evaluate if necessary
Logistics: The Basics II

• Student Work: When, where, how
  – Due dates & return dates (add due dates to calendar)
    • Return dates must allow students enough time to adjust
    • Check due dates for work in other courses if possible
  – Submitting & returning work
    • Physical location (drop box, mailbox, classroom, etc.)
    • Email (email alias)
    • Solution sets
  – Policies
    • Collaboration & allowable resources
    • Late work & penalties
    • Minimum effort clause
Logistics: Communication

• Communicate with entire class
  – Class/Lab time
  – Email/REGIS
  – Website
  – Resource calendar
  – Blog, Twitter (any technology with subscription)

• Communicate with all TAs
  – Email aliases
Logistics: Hidden Work

• TA meetings
  – Specify frequency and purpose

• Grading process
  – Identify who is writing solutions
  – Specify who is grading and turnaround time
  – Process for version control
  – Identify who is documenting student grades
  – Identify who is collecting sample documents
Logistics: Ch1ab Example

Course coordinator writes solutions and distributes them to recitation TAs

Recitation TAs work with solutions and suggest changes based on student interactions

Course coordinator updates and distributes solutions to graders

Distribute → Work → Submit → Grade → Return

Graders suggest changes based on how they graded work

Course coordinator updates and publishes solutions
• A stand-alone set of materials that:
  – addresses a single concept;
  – can be easily related to the elevator pitch;
  – has a duration equal to, or shorter than, the time period between assignments;
  – finishes on time and allows students enough time to complete assignment.

• Add module titles to the course calendar and syllabus
Modules: Materials

Modules should include:
  – Lectures
  – Problem set (or other assignment)
  – Exam/Quiz questions

and cover essential parts of the curriculum
  – Concept
  – Skill(s)
  – Application(s)
  – Other topic(s)
How to make sure a module ends on time
Curriculum
- elevator pitch
- concepts
- skills
- connections
- applications
- soft topics

Assessment
- students
- course
- methods
- expectations
- SFC/TQFR
- accreditation
- 30 sec

Logistics
- meeting times
- calendar
- work detail
- communication plan
- TA meetings
- grading plan

Modules
- identify topics
- add to calendar
- assemble materials
- layer lectures
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PDCA Cycle

Plan

Do

Check

Act
Assessment
- students
- course
  - methods
  - SFC/TQFR
  - expectations
  - accreditation
  - 30 seconds

Logistics
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- TA meetings

Tailored Curriculum
- elevator pitch
- concepts
- skills
- connections
- applications
- soft topics

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