

n Things You Always Wanted to Know about Teaching at UWaterloo, $n \geq 10$

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The advice we are giving today is based on our 74 years of teaching experience in the Faculty of Mathematics.



Ask for advice and help.

Don't try and do everything on your own.

Get feedback during the term.

HELP IS AVAILABLE FROM CTE



- Arrange for CTE to visit your class
 - » Request a teaching observation with or without a video record.
 - » Report can be tailored to your specific needs/request (what would you like us to focus on?)
- Teaching Tips on CTE website
 - » Listed as a quick link on homepage (right-hand side)
 - » Search using specific words or phrases or browse the tip categories
- Monica Vesely:
 - » EV1 326, ext.31721
 - » mvesely@uwaterloo.ca



CTE ONLINE RESOURCES

In Your Folder:

- **Creating Course Outlines**
- **Surviving Your First Day**
- **Large classes: Limiting the chaos**

ONLINE TEACHING RESOURCES

Some departments have online teaching resources (e.g. course syllabi from previous terms, course notes, tests etc.)

The Mathematics Undergraduate Office (MUO) has created a very useful website called *Guidelines for Instructors*:

<https://math.uwaterloo.ca/math/faculty-staff/guidelines-instructors>

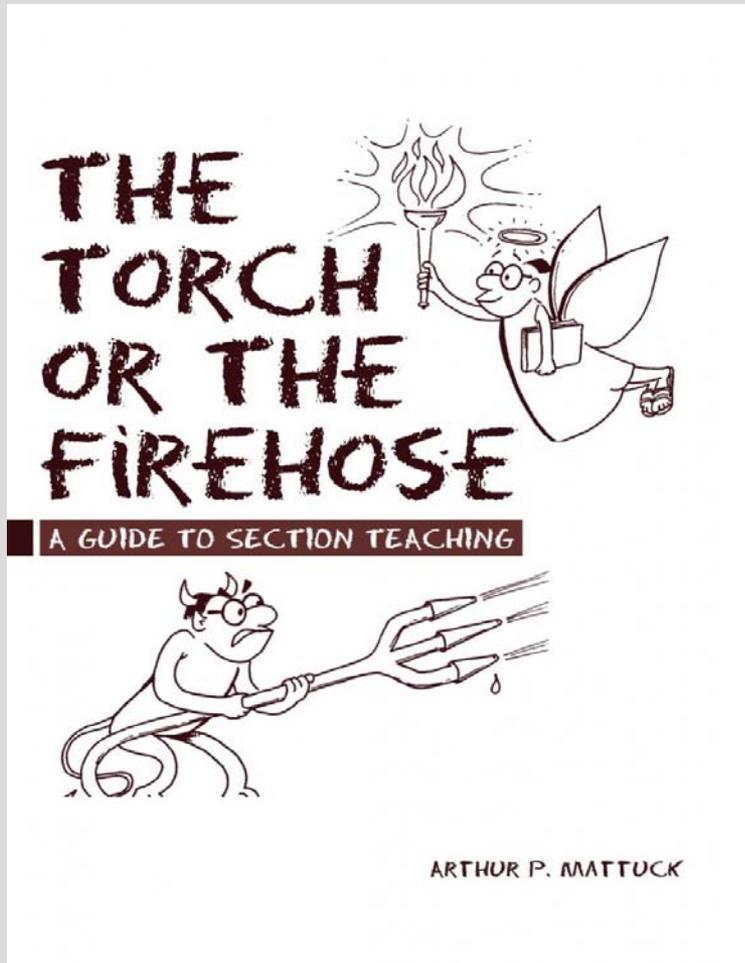
MATH FACULTY TEACHING PAGE

Check out the Math Faculty teaching webpage.

<https://math.uwaterloo.ca/math/teaching>

- **First Year Teaching Experiences**
- **Profiled Teachers**
- **How to Make Sense of Teaching Evaluations**

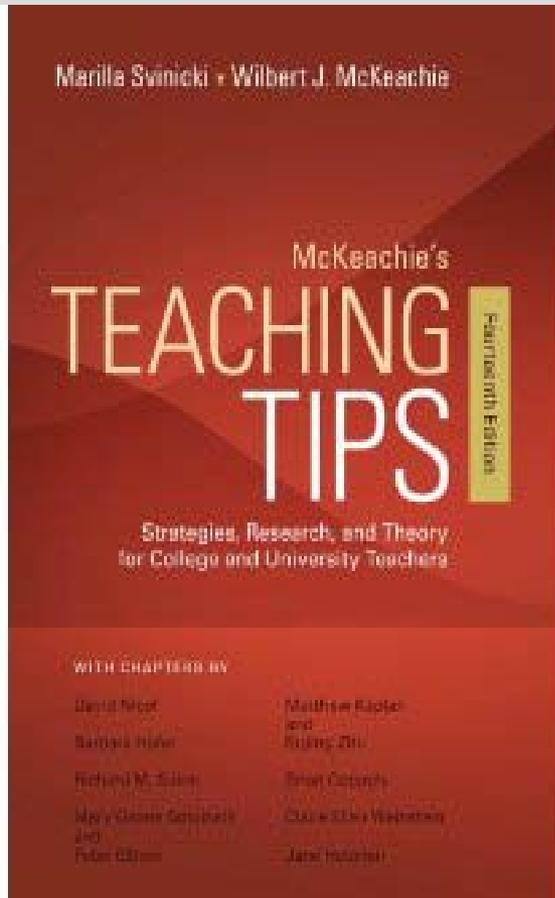
RESOURCES (PAPER)



The Torch or the Firehose by Arthur P. Mattuck

Concise teaching information for first time Math instructors presented in a humorous fashion.

RESOURCES (PAPER)



McKeachie's Teaching Tips: Strategies, Research, and Theory for College and University Teachers

by Marilla D. Svinicki and
Wilbert J. McKeachie
(2014, 14th edition)



FIND A TEACHING MENTOR

This could be the Course Coordinator or an instructor who has taught the course “successfully” before. See



<https://cas.uwaterloo.ca/cas/login?service=http%3A%2F%2Fmathsoc.uwaterloo.ca%2FCourseEvals>

Offer to buy your mentor a beverage of their choice once a week to talk about teaching related issues.

BEFORE YOUR FIRST CLASS

Course Outline or Syllabus:

- If you are teaching on your own then talk to your mentor and previous course instructors about a course outline.
- Check: <https://math.uwaterloo.ca/math/faculty-staff/guidelines-instructors#outline> for items that must be included.
- Like a contract, a syllabus should help students understand both their responsibilities and yours.

COURSE SYLLABUS CONTINUED

- **Your course syllabus should include a week-by-week schedule with clear references to the textbook or Course Notes.**

WHY?

- **Its sets a good impression. It shows that you are well organized, well-prepared and have a clear vision for the course.**
- **It also forces you to think about what can actually be done during class time.**

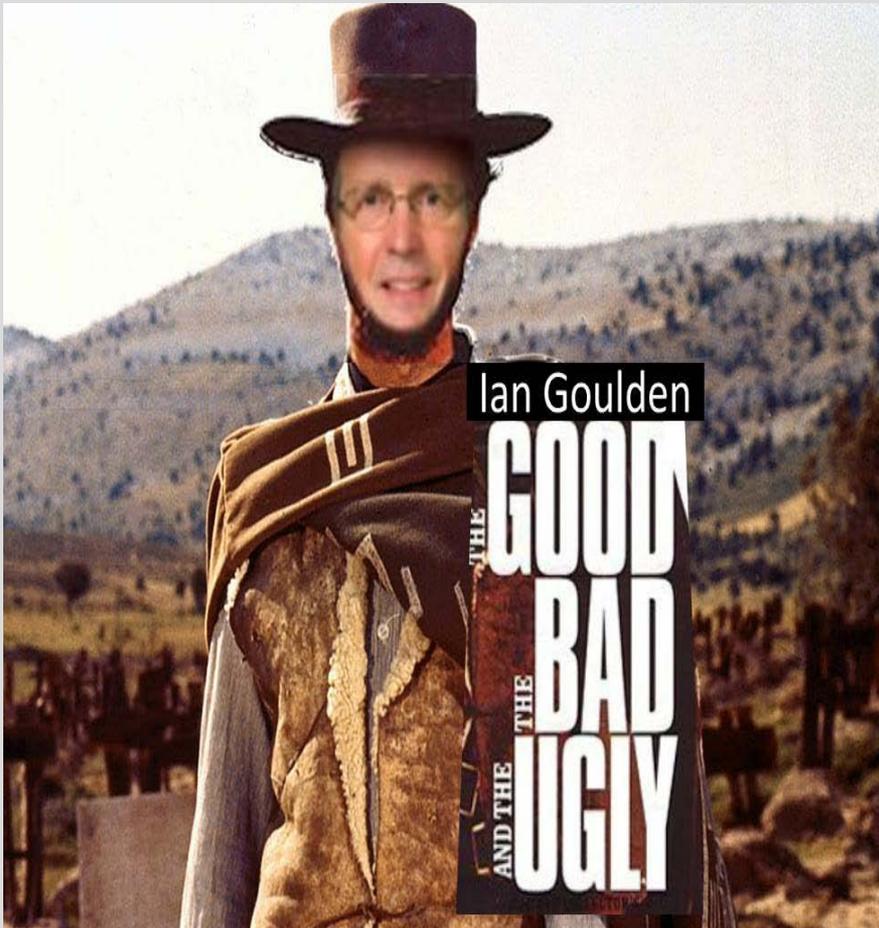
WHAT IF YOU'RE NOT THE ONE CREATING THE COURSE SYLLABUS?

- **Ask the course coordinator about creating a week-by-week schedule.**
- **Create your own end-of-week summary for the students and post it on the course website.**

PRE-REQUISITE MATERIAL

- **Find out what out what material has been covered in pre-requisite courses and at what level by talking to instructors who have taught the pre-requisites.**
- **Ask the students. Online or paper survey of previous knowledge is better than “Have you seen this before?”**

COORDINATED COURSES



The Good:

You have a built-in group with which to discuss teaching issues related to the course.

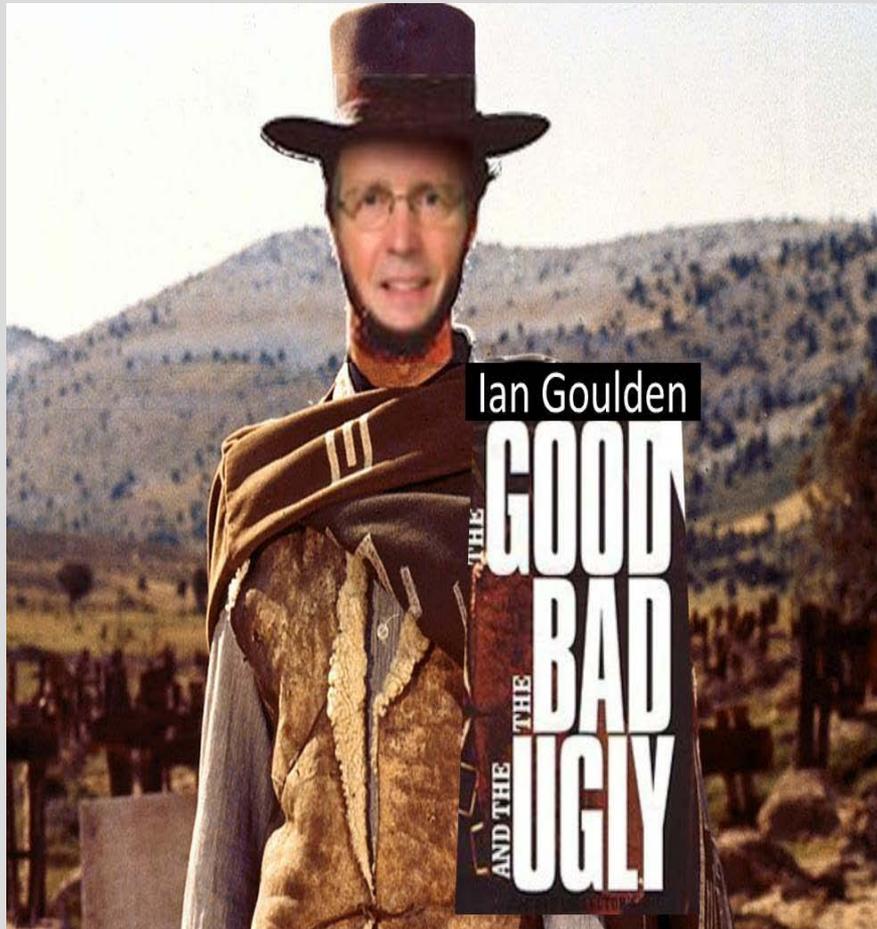
COORDINATED COURSES



The Bad:

You have to teach to a syllabus and schedule not determined by you.

COORDINATED COURSES



And The Ugly:
The students will flee your section en masse and attend a section they feel will prepare them better for tests/exam.

COORDINATED COURSE ADVICE

- **Stick to the syllabus.**
- **Since there are common tests and exam, it is not fair to the students to do otherwise.**
- **Be a team player.**
- **If the coordinator asks for input/feedback, take the time to give it.**

SEEING IS UNDERSTANDING

- Visit your classroom before your first class. Check the lighting.
- Look for obstacles in the students' line of vision (rope off bad seats?).
- Whatever you use (black/white board, doc cam, slides) make sure the students can read it.
- Walk to the back of the room and look. (Do this during a lecture.)

SEEING IS UNDERSTANDING

- If you use black/white board, write neatly and in an organized fashion. Stay between the lines!
- Use fat chalk!
- Practice writing on the board.
- Use different colours.
- Put important things in boxes.
- Use titles.

SEEING IS UNDERSTANDING

- **If you use the data projector make sure your slides are legible from the back of the room. Use large print size.**
- **Don't put too much information on one slide.**
- **Mix it up. Use slides and the board.**
- **Problem with data projectors in most rooms is that the instructor is in the dark. (Ask AV Dept. for help.)**

TIPS FOR FIRST CLASS

- **Introduce yourself.**
- **Introduce the class to each other.**
- **Choose material that allows interaction. Quiz the class orally on background material or work a review problem.**
- **Don't stop early! Your first class sets the tone for the remainder of the term.**

GET TO KNOW YOUR STUDENTS

- **The “Millennials” (born between 1980 & 2005) have grown up surrounded by fast-paced, interactive, and constantly changing media-based activities.**
- **To sit just listening is not their style.**
- **Because they have been treated as special throughout their childhood, they have a strong sense of self and self-confidence.**

BELOIT MINDSET LIST 2018

2. Since they binge-watch their favorite TV shows, they might like to binge-watch the video portions of their courses too.
16. Hong Kong has always been part of China.
30. There has always been “TV” designed to be watched exclusively on the web.
37. Bill Gates has always been the richest man in the U.S.
55. Since Toys R Us created a toy registry for kids, visits to Santa are just a formality.

TEACHING CULTURALLY DIVERSE STUDENTS

- **Approximately 40% of our undergrad students are international students.**
- **The top three source countries are China, Pakistan and Trinidad & Tobago.**
- **To be culturally sensitive teachers, we must keep in mind that behaviours from different cultures have different meanings.**

TEACHING CULTURALLY DIVERSE STUDENTS

- **For example, from a Western perspective a student not making eye contact means the student is not paying attention.**
- **In some ethnic groups, however, looking away may be indicative of careful attention rather than inattention.**

TEACHING CULTURALLY DIVERSE STUDENTS

What can you do?

Your first step is to avoid the false assumption that lack of eye contact and nonparticipation mean lack of attention, disinterest, or boredom.

See also Chapter 12 in McKeachie's Teaching Tips.

IN THE CLASSROOM

- **Come early**
- **Start on time**
- **End on time**
- **Stay Late**

IN THE CLASSROOM

- Present an outline for your lecture on the board or on a slide.
- Use titles:
 - Ideas covered in last lecture:
 - Ideas to be discussed today:
- Make it clear when class starts.

“Okay class, I would like to start.”
(Then wait until they are quiet.)

GET TO KNOW YOUR STUDENTS

- **Communication is easier with people we know better.**
- **Learning names encourages class interaction. If you have a large class you may not be able to learn all their names but you should try to get to know as many names as you can.**
- **How? Pictures, information sheet.**

CLASS INTERACTION

- **Lack of interaction makes it hard for you to know the difficulties your students are having.**
- **You can't tell if your explanation is helping them to understand, or whether you need to try another approach.**
- **How can you grow as a teacher if you don't get feedback from your students?**
- **Achieving real communication with your students isn't easy.**

RESPONDING TO STUDENT QUESTIONS IN CLASS

- **Welcome all questions**
- **“That is an excellent question. Did everyone hear Susan’s question? Okay, the question is Did I get your question correct? The reason this is a good question is The answer is... Thank you for asking that question Susan.”**

ASKING QUESTIONS IN CLASS

- **Ask a clear question. Prepare!**
- **Give them time to think. Count!**
- **If there is no response, then remind them of ideas that might help them answer the question.**
- **Start with questions with simple answers. If you can give them positive feedback on answering simple questions it is more likely they will try to answer harder questions.**

ASKING QUESTIONS IN CLASS

- **Always react positively to answers even when their answer is incorrect.**

“Students often think that is the answer but if you remember ..., you know that answer can’t be right.”

“You’re almost correct. Let me ask the question a slightly different way.”

HOW TO MAINTAIN ATTENTION

- **Students' comprehension is greater when the students can see the speaker's face and lips. Look at your audience.**
- **Best device for maintaining attention is to break up the lecture rather than trying to hold attention for an hour or more.**
- **For other strategies see McKeachie: Chapter 6 and The Torch or the Firehose: A Word about Pedagogy**

GET FEEDBACK AND USE IT

- **Have yourself videoed (week 3).**
- **Ask a colleague to observe your class and give you feedback both early in the term and later in the term.**
- **Do a midterm course evaluation (week 4 or 5).**
- **Don't wait until the end-of-term evaluations to find out what went wrong/well.**

USE A MIDTERM EVALUATION

- 1) Please write down one thing you would like the instructor or the class to keep doing.
- 2) Write down one thing you would like the instructor or the class to stop doing.
- 3) Write down one thing you would like the instructor or the class to start doing.
- 4) On a scale of 1-5, with 1 being low and 5 being high, how is the course going for you?



Ask for advice and help.

Don't try and do everything on your own.

Get feedback during the term.

- <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/planning-courses/course-design/creating-course-outlines>
- <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/managing-students/setting-tone/surviving-your-first-day-class>
- <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/managing-students/large-classes/large-classes-limiting-chaos>