

Communication Instruction in the Department of Mathematics

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Writing Across the Curriculum

Communication Instruction in the Department of Mathematics

**Before
(AY2001)**



Writing instruction for **~20**



No Institute Lab

4 Undergraduate Seminars

Communication Instruction in the Department of Mathematics

**Before
(AY2001)**



Writing instruction for **~20**



No Institute Lab

4 Undergraduate Seminars

**After
(AY2011)**



Writing &/or oral instruction for **~250**



50 students took math lab

10 Undergraduate Seminars

18.100C *Real Analysis*

18.310(C) *Principles of Applied Mathematics*



Math CI Space

Purpose: to provide an online space that will assist instructors of communication-intensive subjects in the department of mathematics

Desired functionality

- * instructor should be able to develop and share semi-static resources and "best practices" in the form of attached documents and page text
- * instructor should be able to hold ongoing discussions about these resources and about any other topics of relevance.
- * the space must be flexible so it can evolve as topics of interest change

Ideas for implementation

The default page format is a semi-static wiki in the top half of the page and a discussion blog with threads in the bottom half. A person viewing the page should be able to adjust the size of each "half" (including making it disappear & reappear). A navigation bar should appear at the side of each page, and the size of this bar should also be adjustable. The sketch below shows the page for the topic "Rubrics."

Handwritten notes: semi-static wiki, discussion blog with threads, navigation bar

Rubrics

- General post about rubrics
- Attachment
- Rubric for presentations
- Rubric for writing

Discussion re: Rubrics

- Presentation Rubrics
- How do I grade a draft?
- Should we give C's?

Handwritten notes: navigation bar

Semi-static wiki

The semi-static wiki contains resources and "best practices" that are of long-term use. After initial development, this portion of each page is expected to evolve relatively slowly.

Discussion blog

The discussion blog is for ongoing discussion. Only the last year of the blog need be visible because the most important points of the discussion are expected to be incorporated into the semi-static wiki.

Because spaces may be tight, the default or an option should be to show only thread titles, sorted by the number of replies; next to the title expands the blog portion of the page (scrolling to the top of the page). Clicking on a thread title expands the thread, with the oldest replies shown first and a new-reply box below. For an example of a good blog layout, see <http://cbowman.wordpress.com/>

Handwritten notes: and searching the blog ("master blog"). Each page can be added to a thread in the master blog and is visible in the space, two things: ensure that the thread is visible in the space; and be prompted to create a new thread will be ordered with the most-recently added threads.

Handwritten notes: edit tags of blog entries and recreate the page should include both wiki and blog material and vice versa. The default view for that page should expand one of the "halves" as the page evolves. (As the size of any page at any time. This is a page.)

Handwritten notes: partitioning of the master blog into categories to add new categories to the blog. The CI space, with the default view being the wiki "half."

Handwritten notes: be able to share documents, it should be able to link to it within text (only visible within both the wiki and the blog).

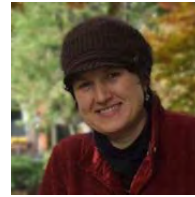
Handwritten notes: develop document, there should be some control. For example, when a user posts a document, they should specify whether the document is a "best practice" or a "discussion." If the latter, the user should be able to add it to a thread and to summarize the thread (grouped together in any lists).

Handwritten notes: attempted to accept a creative license to share each others documents, but this is not possible with a math.mit.edu domain.

Handwritten notes: users should remain logged on for hours, but this is not possible with a math.mit.edu domain.

Handwritten notes: a simple list of pages within the space with collapsible sections. It should be possible to make the space conform to a user's preferences. It should be possible to make the space visible only on a user's screen when they get there. It should be possible to make the space visible so we can see it.

Handwritten notes: items to be added to the space who store their documents to any CI space thread.



MIT Mathematics CI Space - Mozilla Firefox

File Edit View History Bookmarks Tools Help

MIT Mathematics CI Space collaborative space for instructors of communication-intensive subjects

[HOME](#) [TEACHING TIPS](#) [COURSE ARCHIVE](#) [DISCUSSIONS](#) [SITE HELP](#)

Welcome

This website is for instructors of [communication-intensive subjects](#) in the math department.

A one-page summary of ideas to consider as you plan the term is available [here](#).

The site contains both discussions and pages. The discussions are intended to be less formal and more ephemeral than the pages. If you disagree with content on a page, please start a discussion about it. When a good idea emerges in a discussion, you should add that idea to the relevant page. (When you edit a page, old versions of the page are saved.)

This is your site! Explore it. Change it. Add to it.

- ▶ *Navigating the site* ← Click on maroon headings like this one to see more text
- ▶ *Joining discussions and changing pages*

DISCUSSIONS RELATED TO WELCOME:

This page displays all discussions with the tag(s) [home](#).

🔍

PAGE TREE

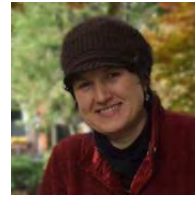
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 - 📁 Teaching Tips
 - 📁 Course Archive
 - 📁 Discussions
 - 📁 **Welcome**
 - 📁 Site Help

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- [Giving a Writing Lecture or Workshop](#)
- [Discussions](#)
- [Using the dashboard to edit efficiently](#)

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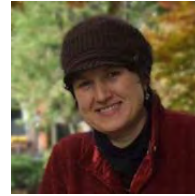
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MIT MATHEMATICS

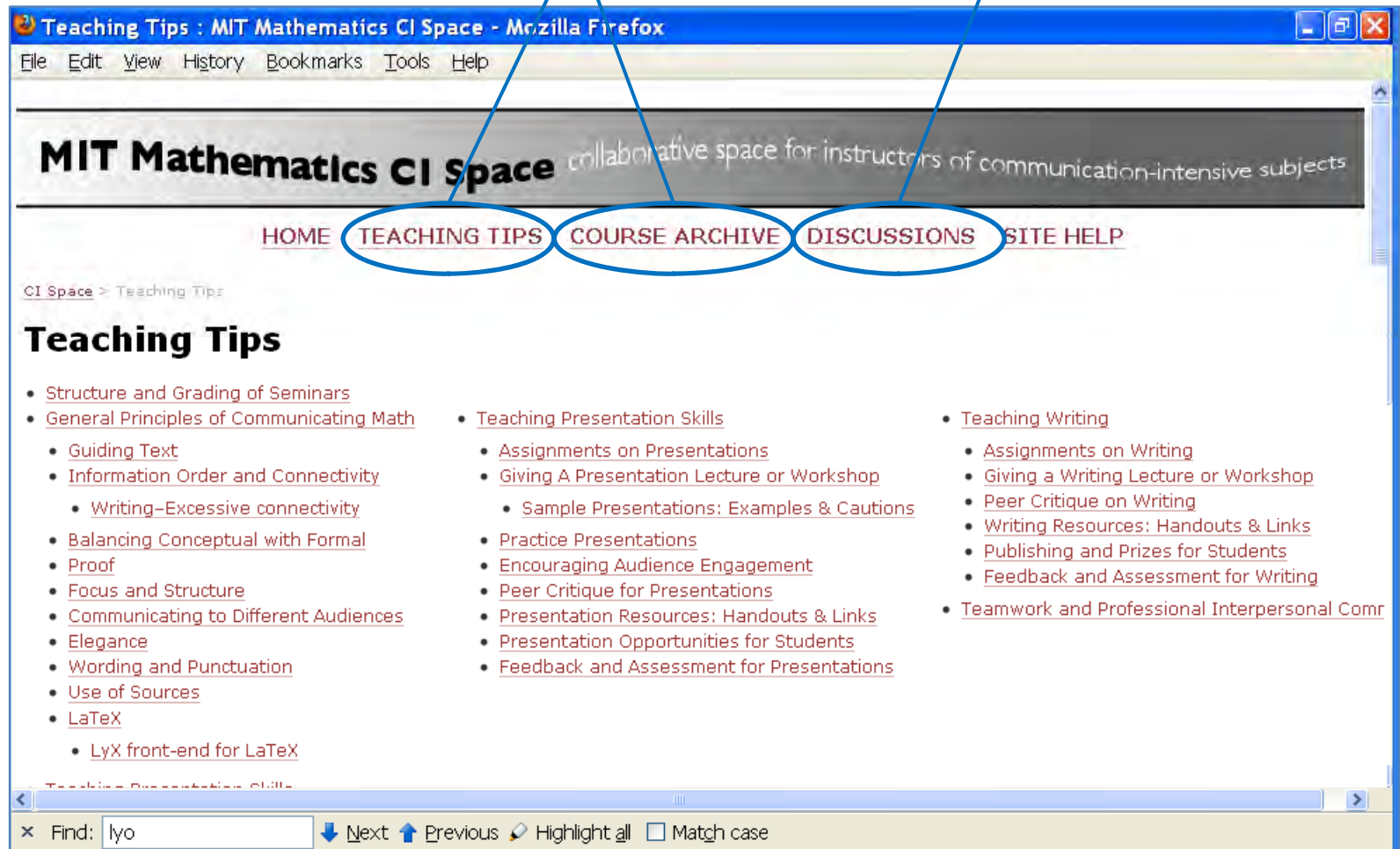


MIT WAC@MIT

The CI Space has

114 pages with
111 attached files

8 online discussions

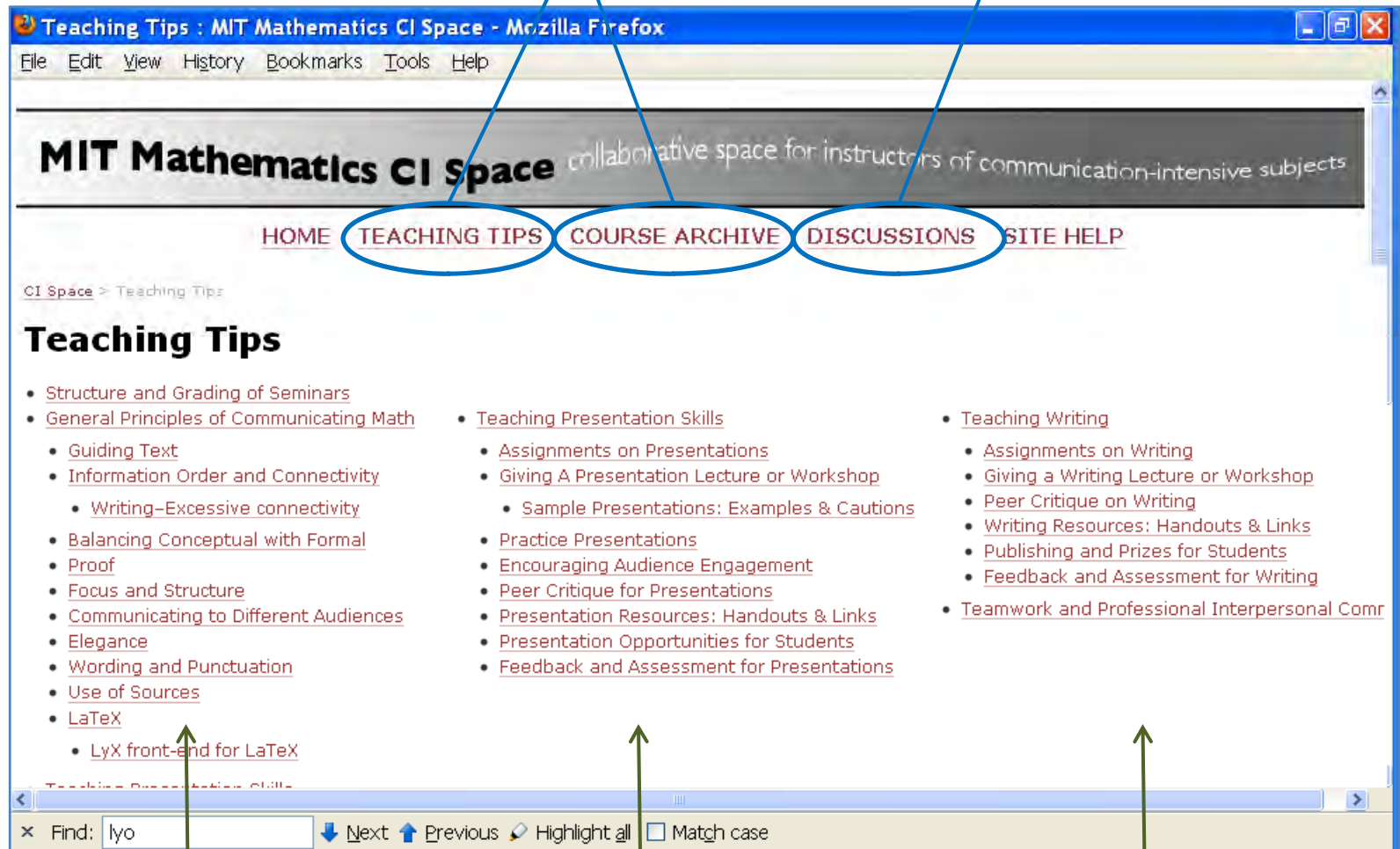


A variety
of content

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114 pages with
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8 online discussions



A variety
of content

General principles of
communicating math

*Teaching how to
present math*

*Teaching how to
write math*

The content represents a variety of classes and pedagogical styles.

MIT Mathematics CI Space Collaborative space for instructors of communication-intensive subjects

HOME TEACHING TIPS COURSE ARCHIVE DISCUSSIONS SITE HELP

Giving a Writing Lecture or Workshop

The characteristics of good writing are too many to address in a single writing lecture or workshop, so the instructor should choose which characteristics to which to focus.

Examples:

- A 30-minute mini-lecture could devote 5-10 minutes to handouts about **guiding text**, **paper structure**, and use of sources, followed by a 20-25-minute explanation of information order and **connectivity**.
- A longer (50-90 min) writing workshop could involve the students in some active learning. For example, **Pedro Reis** used his own drafts as a springboard for discussion. Before the workshop, he asked the students to read an early draft and a later draft of one of his papers, focusing their reading with questions that he supplied. These questions were then used to focus discussion during the workshop. The students were interested to hear about Pedro's writing and revision process, and Pedro was able to use the writing samples to draw attention to writing issues he wanted to emphasize for the students.
- Paul Seidel created weak, good, and better **writing samples** to use as a springboard for class discussion. These samples do a good job of drawing students' attention to common but non-obvious student writing mistakes; they also do a good job of illustrating how to avoid those mistakes.
- Mia Minnes' 90-minute writing workshop combined mini-lectures with **hand work** and class discussion. Students talked in pairs to discuss how to focus their papers, and the class discussed a **writing sample** taken from their textbook.
- In 1.6.1000 writing recitations focus on various writing topics. For example, a 50-minute workshop on information order and connectivity combines a mini-lecture with class discussion of two writing

RELATED FILE GROUPS

- MIT Mathematics CI Space
- Teaching Tips
 - Structure and Grading of
 - General Principles of
 - Teaching Presentation SI
 - Teaching Writing
- Assignments on Writi
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- Peer Critique on Writi
- Publishing and Prizes
- Feedback and Assessm
- Teamwork and Professio
- Course Archive
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The introduction of a paper should include:


- give a rationale for the paper
- place the work in the field
- preview the paper's findings/conclusions
- preview the structure of the paper

From the work within the context of the field:

- create a map
- orienting maps

900 work is intended to synthesize history of field, state of the field, and mathematical problem-solving

From MIT Undergraduate Journal of Mathematics, 2009
Abstracting summary of "algebra" work.
Student: Cameron de Lencastre Braga
Checked by: _____




PHYSICAL REVIEW LETTERS

The Clipping Book: Word-Division Classification in a Stack of Elastic Beads

PHYSICAL REVIEW LETTERS

The Clipping Book: Word-Division Classification in a Stack of Elastic Beads

DRAFT




Questions to ask about the introductory section:


- Does it give the reader a good intuitive grasp of what the problem is?
- Does it express your approach to the problem?

1. Introduction (Third version, can serve as a model)

Mathematical knots are closed loops or strings in space, without kinks or self-intersections. The main question in knot theory is: how can we tell whether a knot can be deformed into another one? For instance, look at the following two knots (figures taken from [3,5]):



The one on the left is an *unknot*, which means that it can be deformed into a circle; in contrast, the one on the right, called a *trefoil knot*, is a genuine nontrivial knot. The first fact can be shown by going through an elementary sequence of transformations; however, the second one requires more advanced tools, namely *knot invariants*.




The CI Space enables reuse and refinement of pedagogy

Two spinoffs: A collaborative platform



Educational Collaboration Space

a demo site for collaborative teaching



[WELCOME](#) [GOOD PRACTICES](#) [DISCUSSIONS](#) [COURSE PAGES](#) [SITE HELP](#)

Home

Welcome

[Replace the following text with your own front-page text.]

This platform supports pedagogical collaboration. The platform has three main components, which can be accessed from the maroon bar, above.

- **Good Practices** pages are for current pedagogical wisdom; these pages are fairly static but are expected to improve gradually over time.
- **Discussions** are less formal and more ephemeral than the pages. When discussion generates good ideas, those ideas should be added to the relevant Good Practices pages.
- **Course Pages** are for experimentation. Here can be archived the specific materials and strategies used each term along with commentary on their effectiveness. Successful materials should be linked to the Good Practices pages.

These three work closely together. For example, an idea from a discussion may be tested in a course, discussed further, revised and retested, and finally added to the Good Practices pages (where it may continue to evolve). This platform is very flexible: your site is not restricted to the structure described above.

► *Get Started!* <-- *Click maroon heads to see more text*

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 - 📁 Course Pages
 - 📄 Discussions
 - 📄 Good Practices
 - 📄 Site Help
 - 📄 **Welcome**

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- [Join and Start Discussions](#)
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Demo at ecs.mit.edu

Two spinoffs: A collaborative platform



Educational Collaboration Space a demo site for collaborative teaching

WELCOME GOOD PRACTICES DISCUSSIONS COURSE PAGES SITE HELP

Home Search

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MATH IN THE NEWS
 April 26, 2011
Body-Mass Index is Mathematical Snake Oil
 Scientists at the University of South Carolina have found that, for those over 60-years-old, fitness trumps the math-based body-mass index (BMI) as a predictor of health.
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 April 26th,
 1874 [Edward Vermilye Huntington born. This enthusiastic and innovative teacher was ...](#)
 1900 [Charles Richter born. This American seismologist developed the earthquake magn...](#)
 1920 [Srinivasa Aiyangar Ramanujan died. He was 32. This self educated mathematici...](#)
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 Welcome to Loci, the online publication of MathDL. Loci is the continuation of three former MathDL publications: The Journal of Online Mathematics and its Applications (JOMA), Digital Classroom Resources (DCR), and Convergence.
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~1 year

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