Good practices when lecturing – Math 590, 591, 592

Preparation

Decide what goals you have and how you will try to achieve them
Rather than focus on what YOU will do, focus on what your STUDENTS will do
Have students do some work ahead of time, if possible
  For example, have them write down every blue box in the section,
  or have them do five exercises from the section you will cover
Prepare in detail
Prepare more material than you think you will need
Choose good examples and work through them ahead of time
Look at the homework you will assign when choosing examples
Prepare some activities for students to do, even if they're very brief
Talk through the class while driving, in the shower, etc.

General approaches to lecturing

Begin by writing down, briefly, the goals you have for the lecture
Motivate: this is important because ....
Give some context: you're going to see this a lot, or rarely
Start with numbers, not letters
Plan pauses for students to regroup and think
Do plenty of examples rather than just theory (especially with calculus)
Do a few examples, then have them do problems and see what they can do
Be prepared to be flexible, to allow more time on a topic than you thought
Mark a clear transition to a new topic when you start one
Stop and summarize occasionally in a long lecture

Board usage

Label things: Write down what section, page, or problem number you are covering. Is this an example? A definition? An important equation?
Write neatly, organize well
Write large enough
Avoid the extreme sides of the board
Don't write too much, don't write too little
Write in vertical columns
Use vertical and horizontal lines to organize the board
Don't stand in front of what you've just written; step to the side
Leave things on the board as long as you can, generally
Erase while students are thinking/writing something
Erase systematically; diagonally and completely, not seek and destroy

Voice

Speak loudly, clearly, and slowly enough
Don't speak to the board or mumble to yourself
Avoid saying things that are unnecessary. Silence is OK
Say what you are writing so students don't need to watch everything
Speak loudly, use some inflection, inject some energy into the classroom
Be bold! This is part of your role
Unlike people in English, History, etc. you have the advantage that what you're talking about is fun. It's math!

What the students are doing

Keep the students engaged; do something different to change the pace
Make your students do lots of homework! They need practice.
Require a high level of mastery, not just passing familiarity
When you really want their attention, tell them to take everything off their desk, put it on the floor, and listen. Then they can write it.

Interaction with students

Make eye contact and smile!
Learn to read their faces, and which students to watch
Look over the whole room, not just at certain students
Respond with patience to their questions
Understand the whole question before starting to answer it
Repeat the question to make sure everyone in the room hears it
Ask questions occasionally to get their attention back
Ask appropriate questions and wait for the answer. Not too many easy ones!
Respond to every answer as well as you can
Sometimes you need to say "I don't know where to go with that one ..."
When you ask "Are there any questions", wait 15 seconds to give them time
Ask specific students to read things aloud from the book
Respect your students

After class

Look ahead to the next section or two, make some notes for later

Good practices for a class you're teaching

Arrive to class a few minutes early, return things, chat, answer questions
Write the next homework assignment on the board
Ask if there are any questions from last time
Briefly review what happened last time if appropriate
Get their brains going, provide structure