Tips to ATOC6020 on Lecture Slides for ATOC1060

1 Contacts

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2 Getting Help!

I am usually available by email.

3 General Comments on Lecturing

The essence of a teaching at a university is lecturing–here the priorities in learning are laid out, arguments are clarified, and the synthesis of slides, reading, homeworks, and exams is made. The lecture slides are a summary of the lecture, and great care is needed in their creation.

4 Rules for Creating Slides

I have developed the following rules for creating slides for myself. Some are just rules of thumb (e.g., slides per minute), and some are rules of academic conduct (e.g., cite every figure source). For the purposes of this class, they should be strictly followed, unless exceptional circumstances prevent it (in which case I want to know exactly why!) The lecture slides will be available to the students whether or not they attend lecture, and they use them as study guides. Thus, precision, reading clarity, and consistency, are key.

1. I generally lecture at 2 slides/min in undergraduate classes. So for one TuTh1060 75min lecture, I need 35-40 slides.

2. The first slide gives names of professor, lecturer/s (guests if need be), slide creator, and TA. It also gives professor’s and TA’s email, time and date of lecture, lecture number, and chapter of the text being discussed (or reading if not from text).

3. The second and last slides should be summaries of the lecture. The second slide should be less detailed than the last. The second slide should be readable *without any prior knowledge* aside from material covered already in the class. The last slide can also use material from the lecture.

4. All figures and cut and pasted or directly ‘lifted’ text must be cited. The citation need not be large or complete if familiar (e.g., ‘KKC’ is adequate for Kump, Kasting, & Crane, which is the required textbook).

5. All figures must be legible (trace thin lines if necessary) and all axes must be labeled.

6. All lecture slides should be numbered for easy note-taking.
7. Critical concepts (from syllabus) should be highlighted in bold, red.
8. Glossary words (defined in textbook glossary) should be highlighted in bold, cyan.
9. Key ideas should be highlighted in bold, yellow
10. All slides require words on them, but not too many. All sentence structures should be maximally terse, and complete sentences are not required.
11. No more than 5 topics should appear on a single slide.
12. Font size should be fairly consistent from slide to slide, but font should always be maximized if space allows. If words wrap awkwardly or hyphenated overly, font can be reduced, but not too much.
13. As a rule of thumb, the slide text should be easily legible when the width of the slide is the length of your hand and your monitor is at arm’s length. If figure captions are cut and pasted, they can be smaller than visible, but only if they are the same figure captions as appear in the textbook.
14. Strip-tease slides, where later bullet points are revealed in later slides, are not allowed.
15. Excessive slide transition animations, where my poor hackintosh will die, are not allowed.
16. Movies, outside figures, schematics, etc are strongly encouraged with proper citation!
17. Humor is good, but not crass, dirty, or in-your-face humor. The best slide humor is subtle and only noticed by the students paying close attention. As they begin to laugh, it wakes the other students up and stimulates them to re-engage.

5 Rules for Creating Clicker Problems

I will be using clickers heavily in the class, and they will be required and for credit. Some guidelines:

1. Plan for 1 question every 15min–i.e., every 8th slide. Choose them at natural breakpoints in concepts.
2. No trick questions–time is too short
3. Specify number of points for answering the question at all and number of points for correct answer (if there is one), that is 2+1 (2pts for answering, 1 pt for correct) or 2+0 (2 pts for answering, no correct answer)
4. Adding one or more humorous possible responses is helpful in keeping everybody on their toes
5. The fewer words, the better!
6. Quizzing on reading without revisiting in class makes for bad questions
7. Mathematical calculation makes for bad questions
8. Trivial regurgitation from the previous slide makes for bad questions
9. Non sequiturs make for bad questions
10. Wordy setups make for bad questions
11. Checking figure interpretation makes for good questions
12. Polling opinion makes for good questions
13. Testing the basics makes for good questions
14. Checking opinion before and after presentation of material makes for the best questions
6 Rules for Creating Homework Problems

We will be creating large numbers of homework problems. Here are some guidelines.

1. No trick questions. They will have trouble enough with direct questions.

2. At this level, HW questions should focus on one concept, not layers of concepts. Exam questions, especially essays, can be more involved. The exception is that basic knowledge—manipulation of units, understanding of geographical notation (5N, 10E), concepts from earlier in the course—can be used to access concepts late in the course that rely on these basics.

3. Multiple choice are generally better than true-false, even if the added choices are bizarre.

4. Matching should be limited in number to about 4 answers.

5. Quantitative questions should have many possible answers that differ slightly to illuminate process—units, order of magnitude, conceptual failures, missing step, etc.

6. In developing questions, it is not only OK, but advisable to isolate an important sentence or heading in the text and create a question based directly on it.

7. Questions about the interpretation of figures are a nice balance to word-only questions

8. Gender, nationality, location balance should be standard for application and geographical problems

9. Once you get a really good question, perturb it to produce related questions

10. Humor is probably not a good idea in homework problems

The questions will be subdivided into 5 groups, which are

1. Quantitative—questions requiring calculations or parameter estimation

2. Conceptual—questions about the definition or interpretation of a concept

3. Language—questions about vocabulary or precise use of language with technical meaning required

4. Application—questions where a concept, vocabulary, or quantitative analysis is used on a particular application.

5. Observation/Geographical—questions where an experiment or observation on the Earth is key.

All students will receive equal numbers of each type on each homework and each exam. However, within each category, questions will be shuffled among students. Thus, equal difficulty in questions among a given category is advisable. Also, roughly equal numbers of each question type are advisable.