CAAM 600: WRITING THE MASTER'S THESIS
SPRING 2014: SYLLABUS

Instructors: Drs. Bill Symes (symes@rice.edu, Jan Hewitt (jhewitt@rice.edu), and Danny Sorensen (sorensen@rice.edu)

Goals:

- Complete a large portion of a coherent, accurate, well documented, and persuasive MA thesis. Your thesis draft must include, at a minimum, an acceptable abstract, literature review, and methods section. The draft must meet departmental standards as they apply to these parts of the thesis and must clearly answer the Seven Key Questions;
- Develop oral presentation skills for delivery of a conference paper and a persuasive defense of the thesis with clear and sufficient visual and oral explanations of your research;
- Develop oral and written communication skills necessary to communicate your research to someone mathematically trained, but not knowledgeable in your area of expertise.

Logistics: 3-hours credit; class meets in Mech Lab 253 from 10:00 – noon on Fridays. Required of all second-year CAAM graduate students; open to others as space permits. Attendance is required; be ready to start promptly at 10:00. If you are scheduled to give a talk, arrive by 9:45 to set up—you must bring a projector and laptop. Conferences will be scheduled with Drs. Symes, Hewitt, or Sorensen to discuss your abstract and literature review. If you have a documented disability, please talk with one of us about your needs.

Homework: You will write a minimum of two drafts of an abstract, literature review, and methods section, plus other short writing assignments. Oral presentations will include a 3-minute introduction to your research, a 10-minute moderately technical talk, a 3-minute progress report, and a final 20-minute technical presentation similar to your thesis defense or a conference paper. You will also be assigned to introduce a speaker and lead the discussion of that talk. Put a **paper** copy of all written work in the mailboxes of Drs. Hewitt, Symes, and Sorensen by the due date.

Grading: Grades will be based on your written work, oral presentations, and class participation; they will be assigned jointly by the three instructors. If you need extra time for an assignment, you must receive permission in advance. Check all work carefully so that it includes no plagiarism; all sources must be documented, and all exact wording from another source must be in quotation marks.

Letter grades will be given for the progress report, the 10-minute talk, the 20-minute talk, the second drafts of written work, and the final thesis submission at semester end. All other work will be graded with a check plus, a check, or a check minus.

Your goal is a well edited, complete thesis for those ready to graduate in May 2014, but we realize that circumstances may prevent completion by May. The final grade for the course will be based on satisfactory completion of

- A near-final abstract
- A final and complete literature review
- A near-final methods section

- A final 20-minute technical oral presentation
- Attendance and class participation.

SEMESTER SCHEDULE (to be revised as necessary during the semester):

WEEK ONE: January 17

1. **Course overview**: syllabus, expectations, due dates, grading, and attendance
2. **CAAM departmental Guidelines for Evaluation of a Master's Thesis** (photocopied)
3. **Thesis overview** (photocopied)
4. Discuss the **Seven Key Questions** (photocopied); answer some of them informally in class in reviewing the approved thesis topics
5. Discuss the **purpose and content of the 3-minute talk**: Explain your research focus (problem that needs to be solved), your motivation (what is new), and possible applications, theoretical or practical. No slides. Must be understandable to the class as a whole .
6. Discuss the **Checklist for Evaluating Visuals** (photocopied)
7. Sign up for your 10-minute talk. Discuss the instructor grading sheets and the class members' evaluations of the talk (photocopied). Assign the introducer/discussion leader for each talk.

HOMEWORK #1: Write out the answers to the Seven Key Questions. Use technical specifics in your answers, but define your terms and limit yourself to two single-spaced pages in 12-point. Note: Some answers will overlap. For example, the method you develop may be you unique contribution and may also indicate an application. Put a paper copy in our mailboxes by 3:00 p.m. on Thursday, January 23.

HOMEWORK #2: Prepare a **3-minute oral presentation** (see #5 above). Do not use terms the class as a whole will not understand. Due next Friday, January 24.

HOMEWORK #3: Begin preparing your 10-minute oral presentation, answering the Seven Key Questions for this class (smart and mathematically literate, but not familiar with your topic. Define terms as necessary—for example, not every student in CAAM is familiar with wavelets; students not in earth science don't know about reservoirs, porosity, and permeability.) Use a maximum of 8 slides plus a cover slide. Practice to make sure your presentation fits within the 10-minute limit. You will need to bring a laptop and a projector; get to class by 9:45 if you are speaking or introducing.

HOMEWORK #4: If your committee is not already formed, work with your advisor to choose appropriate members from the tenured faculty. **E-mail a list of the members of your committee to Symes, Hewitt, and Sorensen by 5 p.m. of Friday, January 31.**

WEEK TWO: January 24

1. Discuss the **Template for Taking Notes on a Research Article** and a student-written sample.
2. 3-minute oral presentations and discussion.

HOMEWORK #5. Bring 2 copies to class of your answers to the Seven Key Questions.

WEEK THREE: January 31

1. Discuss how to write a **letter of application and a brief cover e-mail**.
2. **10-minute oral presentations** (2) and discussion.

3. Choose a classmate not working in your area and discuss your answers to the Seven Key Questions (20 minutes).

HOMEWORK #6. Write an e-mail subject line and cover paragraph. On a separate page write a letter of application to be sent as an attachment. (Both should be single-spaced; can be dbl-sided.) Put paper copies in our mailboxes by 5:00 on Friday, February 7.

HOMEWORK #7: Using the Template or something similar, **begin an electronic file of papers** you read as background for your thesis. Put a paper copy of ONE filled-in template in our mailboxes by 3 p.m. on Monday, February 10. Can be single-spaced.

HOMEWORK #8: The electronic file, with a minimum of 5 entries, will be due on Monday, February 17 at 10:00 p.m. Send the file electronically to Drs. Symes and Sorensen.

HOMEWORK #9: A sizeable portion of **your literature review, with a minimum of 5 references, will be due by 5:00 p.m. on Monday, February 24.**

WEEK FOUR: February 7

1. Plagiarism and paraphrase (photocopied)
2. 10-minute oral presentations (2) and discussion

HOMEWORK #10: Choose a key section from a paper you have read for your electronic file. Write a paraphrase of the key ideas in that section, remembering that a paraphrase is always shorter than the original, puts the ideas in your own words (OK to use the paper's technical terms and algorithms, etc.), and avoids imitating sentence structure. Merely changing the verb tense or one or two words in a sentence will not result in an acceptable paraphrase. Write it so that it can be incorporated into your Literature Review. Put a paper copy of your paraphrase and the page(s) it is based on in our mailboxes by 5:00 on February 14. [Please bracket the portion you are paraphrasing so we won't have to search for it!] Paraphrase should be dbl-spaced; 12 pt.

HOMEWORK #8 is due by 10:00 p.m. on Monday, February 17. Identify the answers to the Seven Key Questions in each of the papers read to that you can correctly summarize and characterize the contributions of each. Link those findings to your thesis research by showing how they relate to your work.

WEEK FIVE: February 14

1. Overview of **how to write a good Lit Review** (highly valued in your field); discuss the **photocopied model**.
2. 10-minute oral presentations (3) and discussion.

HOMEWORK #9: A **3-5 page portion of your lit review, with a minimum of 5 references, is due in our mailboxes by 5:00 p.m. on Monday, February 24.** Dbl-spaced, 12 pt; can be dbl-sided. Clearly identify the issues, along with the similarities and differences in methods and results among your selected papers. Link the contents of those papers with your research so that it is always clear why we are reading about that reference. For example, if you report three approaches and then modify one of them in your work, make that clear. Be careful to paraphrase and to cite accurately. Include the Bibliography.

HOMEWORK #11: Read "**Scrutiny of an Abstract**" by K. Landes.

WEEK SIX: February 21

1. Discuss the Landes article. What should an abstract do? Identify the passive verbs in both versions. How well does his final abstract answer the Seven Key Questions?
2. **Evaluate the three drafts of a practice abstract** for the completeness and clarity of the answers to the Seven Key Questions and for use of active verbs.
3. 10-minute **oral presentations** (2) and discussion**.**

HOMEWORK #12: **Write a 150-word practice abstract** about your thesis topic, answering the Seven Key Questions and using a max of one passive verb. Write a strong first sentence that does not simply give background. Include the word count. Dbl-spaced, 12 pt. Bring 4 copies to class.

WEEK SEVEN: February 28

1. **Exchange practice abstracts; identify the answers to the Seven Key Questions. Discuss the clarity of the answers, use of active verbs, and effectiveness of the opening sentence**.
2. **Discuss alternatives to using "I", "we," and "my."**
3. 10-minute **oral presentations** (3) and discussion.
4. If time, **generate a list of active, precise verbs**.

HOMEWORK #13: **Prepare a 3-minute Progress Report to give on March 14**. (1 or 2 slides, max; no cover slide.) Remind us of what you told us in your 10-minute talk, tell us what progress you have (or haven't) made since then, and suggest your next step(s). Must be understandable to the whole class. Start with a sentence that commands our attention; use at least one example; end with a memorable sentence.

NO CLASS ON FRIDAY, MARCH 7: SPRING BREAK

WEEK EIGHT: March 14

1. **3-minute Progress Reports** and brief discussions
2. Discuss **the role of a Methods** section; evaluate a photocopied Methods section.

HOMEWORK #14. **Rewrite your practice abstract**. Put the word count on the page. Give Dr. Hewitt your original with her comments along with your revised draft. Due at the start of class on March 21.

HOMEWORK #15. **Write at least 5 pages (dbl-spaced, 12 pt) of your Methods section**, which can be technical, though you will probably need to define some terms. What would your reader need to know to duplicate your work? Is the math accurate? More than one method was possible—why did you choose this method? (The answer is NOT because this is the method your advisor told you to use.) Defend your choice of method. What could you leave out because it is common knowledge even to an advanced undergraduate? What explanations do you need to add for clarity? **Because much of a CAAM thesis may be "method," this portion is due in the mailboxes of Drs. Symes and Sorensen by 5 p.m. on Friday, March 28. The nearly complete Methods section draft will be due on Friday, April 18, along with the further revised and nearly complete Abstract, and the nearly complete Literature Review.**

HOMEWORK #16: Read "A Scrutiny of the Introduction" by Claerbout.

HOMEWORK #17: Get date, time, and the room for your defense set up and OK'd by your committee. If you plan to graduate in May, you should defend by Friday, April 18 at the latest

so you will have time to make revisions. The deadline for submitting your thesis for May graduation is NOON of FRIDAY, APRIL 25.

WEEK NINE: March 21

1. Discuss the Claerbout article and the sample Introductory paragraphs.
2. Generate a list of active, precise verbs.
3. Practice writing the claim that should be the first sentence of your abstract and the first sentence of your Introduction, whether for a thesis or a jounal paper.
4. Discuss how to summarize your results, their significance, and possible applications.
5. Sign up for **your final 20-minute technical talk** (thesis defense or conference paper). Cover slide with 18 other slides max. Answer all Seven Key Questions; include explanations and examples. Put nothing on your slides you don't talk about. Design clear, clean, uncluttered slides with everything readable from a distance. Number the slides. End with a slide that summarizes what you want us to remember (NOT "Thank you," "Any questions?" or a Bibliography.) Memorize your opening attention-grabbing sentence and your memorable closing sentence. Give the rest of the talk by glancing at your slides; do NOT memorize the entire talk.

HOMEWORK #18: **Prepare and PRACTICE your 20-minute final talk**.

HOMEWORK #15: Methods Section due to Drs. Symes and Sorensen on March 28 at 5 p.m.. Dbl-spaced; 12 pt.

WEEK TEN: March 28

1. Discuss use **transitions** in written and oral work.
2. 20-minute oral presentations (3) and discussion.

HOMEWORK #19: Final written work is due on April 28. (A complete thesis for those graduating in May)

NO CLASS ON FRIDAY, APRIL 4: MID-TERM RECESS

WEEK ELEVEN: April 11

1. 20-minute oral presentations (3) and discussion
2. Techniques to reduce wordiness

WEEK TWELVE: April 18

1. 20-minute oral presentations (3) and discussion
2. Elevator talks

WEEK THIRTEEN: April 25 (Last day of classes)

1. 20-minute oral presentations (3) and discussion
2. Elevator talks