# SENIOR PROJECT HANDBOOK

## DEPARTMENT OF ECONOMICS

## UNIVERSITY OF AKRON

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## I. INTRODUCTION

This Handbook provides information and advice relevant to undergraduate students in Economics engaging in their Senior Project. You should read it thoroughly and understand its contents; if you have any questions about it, ask your undergraduate or senior project advisor.[1]

Most of the material in this Handbook applies for BSLE as well as BA students, because a Senior Project is required for both degrees. For BSLE students, the Senior Project will be part of the final course required to be taken for the BSLE: Labor Market Analysis and Evaluation (3250: 434) which is taught each Spring (see Appendix C for a sample syllabus). We recommend that BA students also take this course, which allows students to be with other majors also carrying out their original research project, rather than the Senior project course (3250:496), which requires students to do their project as an independent study with a faculty advisor. In 3250:434 you will also learn more econometrics for your project. This course is also recommended for Honors students: they would register for 3 credits of Honors Project in Economics (3250:497), which is cross-listed with Labor Market Analysis (3250: 434). If students cannot do their Senior Project in the Spring, they need to register for 2 credits of the Senior Project in Economics (3250:496) or the Honors Project in Economics (3250:497) for Honors students *after finding a faculty member in the department with whom to work individually.* To get help in identifying an appropriate faculty member, please consult with the undergraduate advisor, as soon as possible.

Note that the **required texts** for the Senior Project, whether taken as a class or individually, are **Steven Greenlaw, *Doing Economics,*** and this ***Handbook***. We refer to Greenlaw at many points in this Handbook, as an essential source of advice on undergraduate research.

## II. ROLE OF THE SENIOR PROJECT

The Senior Project provides you with a capstone experience in which you are able to demonstrate the knowledge and skills you have developed during the pursuit of your undergraduate Economics degree. It allows you to bring together all the skills you have developed through your courses (analytical, problem-solving, quantitative and writing ability) and apply them to a research question of your choice. It will become a major item in your Portfolio because it illustrates to us and to potential employers that you have mastered specific Hansen proficiencies and that you can put them together to examine a real problem.

The Senior Project also allows you to demonstrate important, more general abilities. To carry out your project successfully requires that you develop an idea, organize the work to analyze it, complete that work, write about it and present it orally. The project requires effective organization of time, patience, hard work, ability to review and revise and yet meet deadlines. These are all abilities essential to success in the labor force, in graduate school, and most other endeavors.

Doing a Senior Project is a special experience, certainly a challenging and demanding one. Yet its successful completion will provide you with a real sense of satisfaction, accomplishment, and confidence that is very difficult to get in any other way and which you can proudly take with you as you as you complete your undergraduate studies. It puts you at the forefront of students who

[1] This Handbook includes material from the Handbook for the Independent Project, developed by the Department of Economics at the College of Wooster, where the Independent Project has been required for many years. We have also drawn on our own experiences with the Senior Project since 2004.

have majored in Economics elsewhere, many of whom have never done such a significant project.
To quote from our past students:-

> *"Working on this project was by far the most rewarding and challenging experience of my college career. The difficulty of the paper, and the tears of frustration cried over it, however, made the final product all the more worthwhile".*
>
> *"Perhaps the hardest part was staying on track because as you went along –you hit so many different obstacles, such as missing data, results that didn't seem meaningful etc.—However, when you finish your paper you have shown that you can complete a difficult project. You can find data, write a paper and do econometrics on another level."*
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> *"This assignment was at times fun and at times frustrating. Looking back, this was an amazing experience that will not only prepare me for graduate work, but also in my future work experiences. It taught me the research process and how to manage a large scale project over a long period of time"*
>
> *"The Senior Project was the biggest and most intensive school project I have ever undertaken. The other projects and papers seem like 5$^{th}$ grade art projects compared to this. Nearly 15 weeks of work, stress and lost sleep went into making this paper the best it could be. Every student of the University of Akron should have the opportunity to create new knowledge and use their skills to their fullest potential".*
>
> *"This process is much more time intensive that I ever could have imagined. Through much labor and many hours sitting in the lab looking at SAS and manipulating my programming, I eventually was able to produce valid output. There are no words to describe what that felt like!"*
>
> *."Without a project such as this, there is no evidence that a student has the ability to find, develop and synthesize a compete document using the student's own original ideas along with the implementation of a complete data set. With this project, I am now confident I can handle a larger project if need be".*
>
> *" Working with SAS was frustrating. But now I am out in the job market, I've found at least a third of the positions specifically mention wanting SAS".*
>
> *" Ultimately the Senior Project was a learning experience unlike any other at the University of Akron. The development of skills such as applying data into an original study is a life skill that I will surely be able to apply to multiple facets of life beyond the realm of academics".*

## III. PLANNING FOR THE SENIOR PROJECT

### A. Early course planning

Although you take the Senior Project near the end of your time as a student, you should start planning early on for that semester. Your senior project topic may help you decide your economic electives. For example, you cannot use a time-series data set unless you have taken Economic Forecasting in addition to the required Applied Econometrics course. You also cannot choose a topic that relates to a specific course if you have not taken that course (for example, you need to have taken International Trade to do an international trade topic).

**B. Time management & course planning in the Senior Project semester**

Planning how to organize your time in the semester before you take your Senior Project is essential. In our experience, students have two major problems in this time planning. First, underestimating the time it will take: you should expect it to take two or three times your initial estimate. We warn students to set up a light load for the semester of the Senior Project for that reason. Second, planning time effectively: which is why we have set intermediate deadlines which must be met (see Timeline below).

**C. Review your interests, strengths & weaknesses**

Before starting your Senior Project, no later than the previous semester, think about the following:

- What have you learned from your economics courses, theoretical, quantitative and applied? Re-reading your Portfolio should be helpful.
- What are your strengths and weaknesses in economics? Are there areas where you will need help?
- What topics in economics interest you (especially ones that you have worked on before)?
- What are your strengths and weaknesses in carrying out tasks in general? For example, will you need to work on meeting deadlines?

Your answers to these questions will help with further planning for your Senior Project

**D. Do background reading on writing skills & on econometrics**

This is a major writing project and economists are not fantastic writers, so start by reading Greenlaw's *Doing Economics*, Chapter 5. You should also read Deidre McCloskey's, *Economical Writing* and Strunk and White's *Elements of Style*, two slim volumes that are full of tips on good writing (both are available in the Grunberg Library). Doing this reading in advance will help you immensely when it comes to drafting and redrafting your Senior Project.

Most of you will be doing your research using econometrics. It will probably be a year or more since you took that class and your skills may be rusty at best. You should review your notes and text before the semester starts.

**E. Preparation for the concept paper**

The first item in the Timeline is preparing a Concept Paper (see Section VI for instructions). It is due at the end of the first week of the term in your Senior Project semester. This means you need to prepare it over the period before the term starts. That is, trying to define your research topic and research question are the primary tasks for the break before your Senior Project semester.

Selecting an appropriate research topic is one of the most important steps in the successful completion of the Senior Project. A research topic "is the general area the project will cover: e.g. unemployment in the US; smoking among teenagers in the U.S." (Greenlaw p. 14). Note that a topic is a step further than the general area (e.g. Labor Economics, International

Trade). Start early. Think of possible topics as you do field courses and Applied Econometrics. An effective strategy is to develop a topic you have previously studied for a paper in another course, either a field course and/or the Applied Econometrics class. It definitely helps to have a topic which interests you and/or relates to an area in which you hope to be employed. Remember that your project will have a quantitative aspect and that is why a paper from Applied Econometrics may be a good starting point since you may have already found a data set for that project. Finding data successfully and downloading it is a very important and time-consuming step in your project.

Although most of you will probably choose an econometric project, it is perfectly acceptable to have other analytical techniques, such as those in cost/benefit analysis (CBA) or game theory. Once you have determined a research topic, you need to develop a good research question, which is the topic of Step 1 of the research process.

## IV. TIMELINE FOR SENIOR PROJECT

There are several parts to the process of carrying out a Senior Project: the concept paper and proposal developing the research question and hypotheses; data collection and analysis leading to a first draft; re-writing several times to prepare the final paper; and its oral presentation. Each part needs to be completed on time to allow you to finish an acceptable project in the time available.

The following timeline has been developed to assist you:

| | **Senior Project Semester** | | **Suggested Weights for Project Grade** |
|---|---|---|---|
| | **Fall or Spring** | **Summer** | |
| Concept Paper | end of 1st week | end of 1st week | 5 |
| Proposal | end of 4nd week | end of 1st week | 15 |
| First Draft | 10th week | 6th week | 5 |
| Second Draft | 12th week | 8th week | |
| Third Draft | end of 14th week | end of 9th week | |
| Oral Presentation | 15th or 16th week | 15th or 10th week | 10 |
| Final Paper | 16th week | 11th week | 65 |

Instructors may modify the timelines. Also, the weights listed at the right are suggestive: the exact percentages for each stage are the responsibility of the instructor. Most instructors would modify the grade as students go from first draft to final paper. Meeting the deadline for the first draft is essential. See Appendix C for an example of the syllabus used in the Spring 2011 "Senior Project" class.

## V. DISCUSSION OF STEPS OF RESEARCH PROCESS

Each of the items in the timeline has guidelines and requirements. These guidelines relate to the necessary steps in the research process and therefore to how your Senior Project is evaluated.

Discussing and providing advice on these steps is the objective of this Handbook. The steps in the process as defined by Greenlaw (Ch.2) are:

1. Developing an effective research question.
2. Surveying the literature on the topic.
3. Analyzing the issue or problem.
4. Testing your analysis.
5. Interpreting the results and drawing conclusions.
6. Communicating the findings of the research process.
7. Oral Presentation.

As you carry out your research project, you need to determine how well you have completed each step. To do this effectively, you should turn to the questions listed for each step in Section IX Evaluation of Senior Project and check your progress. Each of the discussions on the steps in the research process relates directly to these questions.

**Step 1: Developing an Effective Research Question**

You cannot set up a research hypothesis without a carefully defined research question. The research question "is the specific focus of the research". For example: "How do different levels of education affect unemployment rates?" (Greenlaw, p.14) Setting up a good research question is one of the hardest parts of your project. A good research question is:

- Problem oriented
- Analytical (rather than descriptive)
- Interesting and significant
- Amenable to economic analysis
- Feasible (is the data available?)

Greenlaw has a detailed discussion of all these aspects of a research question in Chapter 2. It is essential that you read that section carefully. One simple piece of advice: your question should relate to why? How? And so what?

You need to address a *problem*, to find a piece missing on a topic, an unanswered question (a gap), preferably with policy relevance. It needs to *be interesting and significant* to you and to your audience (so what?). Your question should *be analytical* rather than purely descriptive: Your question should try to explain, not just try to describe. It is relevant to see if data indicating two variables are related, but it is much more important to determine why. You may find that a high percentage of redheaded students pass economics (descriptive), but the analytical question is why?

An additional important aspect of your research question is that it has to involve an economic problem. What is an economic problem? You learnt this in Principles: does it relate to decisions under constraints? To supply and demand? Some problems may only involve physical or psychological variables, for example: Why does an apple fall downward? Why do children rebel? These are not problems with an economic dimension.

Finally and necessarily: a question has to be answerable in the time available. Many students want to tackle questions which are too complex to do in one semester, or they cannot find data to answer their questions. Remember that economists do not in most cases collect their own data and that an appropriate data set may not be available, that some data sets are proprietary, that aspects of the data set may make it impossible to use in SAS. This means you need to check out data availability and accessibility very early on.

Do not despair. Our past students have found research questions. Sometimes they have had to accept that they may need to take someone else's question and use it on slightly different data (see also Greenlaw, p.135 for similar suggestions). But some have identified a significant gap and have found an imaginative way to fill it, using unusual data sets. You have old Senior Projects to give you examples. You can view these by visiting the Department website at the following link:

http://economics.uakron.edu/SeniorProjects/

Also the attached link from the U.K. has a nice chart evaluating potential research questions:

http://www.economicsnetwork.ac.uk/handbook/ugresearch/31

**Step 2: Surveying the literature on the topic**

In this step you present a review and critique of the scholarly literature relevant to your research. The most important thing to remember is that you are telling a story that needs to flow and hold together. It's a narrative that starts with what is known about your topic, relates it to the major studies and their findings up to the present and evaluates critically how well the authors relate their conclusions to their findings. Finally, you point out gaps in the analysis of the topic and how your work will relate to those gaps: how it will add to the literature. You have then explained what leads to your question and identifies how you will go on to turn it into a hypothesis. This section may be viewed as a presentation of the current state of knowledge regarding your topic: What unanswered questions remain in the literature which, perhaps, your study can answer? What can your study do better than what's already been done? In addition, the literature review can serve as a guide to how previous researchers have employed theories similar to yours and how they have made these theories operational for empirical testing.

To accomplish this narrative effectively, you need to understand the relationships clearly so you can explain them to others. A lack of flow suggests that you really don't see how it all relates. Students also often develop literature reviews that are too narrow or too broad. If too narrow, they just include articles that relate directly to the chosen research question, and perhaps not even all of those, because they have not looked hard enough! Greenlaw points out that there may also be useful research on a similar question that uses an effective model that could be adapted to study your question. When a literature review is too broad, it includes everything you reviewed on the general topic even if it was not relevant to the research question (Greenlaw, p. 236).

Developing the literature review is time consuming and you will need advice. Greenlaw includes useful sections on finding sources (Ch. 3); learning how to read sources (Ch.6) and putting the review together (Greenlaw, pp. 235-7).

**Step 3: Analyzing the issue or problem**

At the end of this step, you will have defined your research hypothesis or hypotheses; an essential step before your empirical analysis. The research hypothesis is "the researcher's proposed answer to the research question or the researcher's principal assertion about the topic" (Greenlaw, Ch. 2). It is the assertion that the paper will address. The hypothesis should be no more than one sentence and be very specific. It must be something that data can either support or refute. For example,

*I will test to see if the level of criminal activity in a state decreases with more severe penalties against such activity.*

To reach your hypothesis you need to determine what economic theory or theories are relevant to your research question. This means using the knowledge of theory you have obtained from your courses and also applying the theory used by others that you have developed in your literature review. Greenlaw (Chapter 7) sets out the steps you then need to take:

- What are the essential economic concepts in the problem you are researching?
- How are the concepts related?
- What logical prediction or predictions can be made from these relationships?

You can find more examples and discussion of what makes a good research hypothesis in Chapter 7 of Greenlaw.

The next step is to develop an appropriate model incorporating the theory or theories, setting out the assumptions, identifying the variables involved and making logical predictions that relate to your problem. The model must be clearly described and include all the relevant variables.

It is essential that you base your hypothesis on theoretical analysis, otherwise you cannot make statements suggesting cause and effect: at best you can only report correlation. For example, for the criminal activity hypothesis stated above the theory behind that hypothesis would be based on individual decision making, whereby s/he compares the benefits and costs of criminal activity at the margin. You would find models based on that theory in any articles on the economics of crime.

Finally, it is important to recognize that you must have appropriate data with appropriate variability to test your hypothesis.

**Step 4: Testing your analysis**

***The Data***

A former student warns that data collection is “difficult, tedious and time-consuming” and that you must “start early”. He is right. You may have a great hypothesis but you may not be able to find the data to measure all the variables. Alternatively, you may find some data and learn that it is not available free or that is very difficult to download or it is confidential.

Greenlaw provides you with a starting point for a search strategy (Ch. 9). He points out that before you search you need to remember that you need an adequate sample size with appropriate statistical properties - that is randomness. You need to determine what variables you need and for what time period. Remember that you cannot do a time series study unless you have taken Economic Forecasting. However, you may still need data from multiple periods for some statistical techniques.

Greenlaw also has suggestions of where to look for data (Ch. 8). It is easier to obtain macro data sets than micro sets, although there are large micro-sets available in a number of fields. You should be able to track down those data sets in fields you have studied, or in published articles in the fields. Nevertheless tenacity is essential and the patience to follow all leads. In

some cases, where privacy issues are involved, you may be required to have Human Subject Review Board approval, which may take several weeks. You can see why starting early is essential.

You may want to use a data set actually used in a published study: you can ask the authors for permission to use that data or for suggestions on how to obtain it. To have the best chance of a reply, ask a faculty member to send on your request, adding their explanation of the Department's Senior Project added to the message.

Remember, as Greenlaw warns, you may not find data that is totally relevant, and/or all the variables you want, certainly in one data set. Then you have to modify: to incorporate data from more than one data set, to modify your variables, even modify your model. You will then have to make clear in your study what changes and assumptions you had to make and explain in your judgment why the data are relevant to test the hypothesis. The test is whether the data set is "large, rich and accurate enough to adequately test the hypothesis".

Once you have located seemingly adequate data, you need to explore it. (Warning: You may find it is very difficult to access.) You need to download it into SAS for data manipulation and variable creation. This may involve another time-consuming process. You will be tempted to try to get around using SAS for everything. Remember the quote in the introduction: it is skill with SAS that many employers want. Data preparation includes data cleaning; as you have been warned in econometrics- make sure you have done your best to deal with issues like missing data and errors in the data.

Your objective is to produce a clear table of descriptive statistics, as required in Econometrics class. See Appendix A to this document for an example.

***Empirical Testing and Analysis***

In this step, you are actually carrying out the statistical tests of your hypothesis. You have a number of things to consider. First how well does the econometric model you use reflect the economic model you developed in Step 3 and how well do the econometric variables relate to the variables called for by the theory behind your empirical setup. You have had to make modifications because of data problems: you will have to be able to justify them effectively.

You have to decide what statistical technique adequately tests your hypothesis. In most cases you will start with Ordinary Least Squares (OLS), but in many cases that model is not really appropriate. You may need to go beyond it to find a relevant estimation technique. You may even have to learn new techniques by yourself. Certainly you will find your initial results will be inadequate and you will have problems with issues like multicollinearity and specification error that require modifications of your model. In addition you will also need to test to see if your results are robust to changes in specification. All of this means thinking carefully, keeping your econometrics text beside you and getting feedback from your advisor(s) - and it involves lots of time!

Note again that the output from this step needs to be clear professional-looking tables of the variables and models that present your final, appropriate results and statistical tests. This is the material you will be interpreting in the next step. Do not use your unmodified SAS output and do not express data to more than a few decimal points.

If you are using a methodology other than regression analysis, this section should provide a detailed description of how you will be testing your hypotheses, or developing your idea or application. Your analysis and results (sometime quantitative and sometimes not) should follow.

**Step 5: Interpreting the results and drawing conclusions**

In this step, you are interpreting your results: that is explaining what they mean. You would usually start with the coefficients: What does each coefficient signify? Be specific. For example, if you have a log/log demand model and the coefficient for product price is .003, it indicates that a 1% increase in price would decrease quantity by .003%, other factors constant. You need to explain the statistical properties clearly: if it is "highly significant" what does this actually mean? You also need to make clear the economic significance of your results: e.g. if the price elasticity of demand is .003 and statistically significant at the 1% level, price still has virtually no effect on quantity. When evaluating coefficients, you also need to note and explain unexpected results: results where the signs are unexpected. Finally, what does goodness-of-fit mean to the results and to the hypothesis.

You need to go on to discuss what the problems with your model and data are and the limitations they have on your results.

You should then draw together the theoretical and/or empirical findings and set out your conclusions. You should specifically determine whether the hypotheses were supported or not, and point out the implications of your findings both for our understanding of economic phenomena and for policy recommendations.

Finally you should discuss how you would improve your study and go further to suggest specific future research on your topic.

**Step 6: Communicating the findings of the research process**

So now you have developed results for your project and you think it's done. However, you've still got the most important part to go: communicating those results. To quote Greenlaw:

> *"Purpose of written report is to present results of your research, but more importantly to provide a persuasive argument to readers of what you have found--The purpose of research is to advance knowledge—by providing a convincing argument supported by logic and empirical evidence."*

Good writing is essential to that process and it is not easy, so you should get all the advice you can on the process. Note that Greenlaw has two chapters just on writing (Ch. 5 & Ch.12), for you to start with (in fact three, when you include Ch. 4 on writing as process). In Ch. 5 Greenlaw lays out his features of good economic writing:" focused, organized, solidly developed, clear, concise and precise, free of grammatical errors". In the evaluation we have developed questions related to these issues under Organization, Argumentation and Quality of Writing.

Organization means meeting the requirements of an appropriate title page, table of contents, abstract — all the way to references in appropriate form, correct citations, and all needed Appendices. See the next section for further details on the organization of the final paper.

Argumentation is about building the persuasive argument. It starts with a clear thesis (research question and research hypothesis) (Greenlaw's "focus") and then builds the argument in an "organized and solidly developed" manner. This is where you need to organize your main points in a logically hierarchical order, making sure you don't have missing links in the argument or have material that is irrelevant. To achieve a clear argument, making a paragraph outline makes sense (Greenlaw, p. 80-81). It also leads to paragraphs with topic sentence and then an explanation of the idea. This is an effective method of giving a flow to your report. Be sure you understand your argument: your evaluators can tell when you do not.

Quality of writing is a matter of being "clear, precise and concise": of being professional. The most important thing is to be clear. If someone reads your work and can't quite understand it, it lacks clarity. To write clearly, you should start sentences with a subject then a verb, preferably using a strong verb. You should not use sentence fragments, nor turn verbs into nouns (for examples see Greenlaw pp82-89). Being precise means using words that are exact and specific, not vague. Using active verbs (e.g., "I taught" …) is more precise than passive verbs ("I was taught"….). Conciseness is saying things in as few words as possible: don't add filler.

Expect to revise and revise again to improve the quality of your writing. First make sure there are no grammatical errors or spelling mistakes. Then go through your draft and remove all unnecessary words. Check that what you say in each sentence is clear and that paragraphs cover one topic and discuss it effectively. Make sure the argument develops from paragraph to paragraph.

**Step 7: Oral Presentation**

To make an effective oral presentation, especially in ten minutes, requires significant preparation and practice. You need to

- Show why your problem is interesting and what gap you are addressing in the literature.
- Summarize your model, stressing how it addresses the gap.
- Describe how you tested your hypothesis with the model and the results you obtained.
- What the results add to knowledge.

Make sure you know your project so well that you can answer questions on the material.

You will be expected to provide visual aids (usually Power Point slides) to complement your presentation. They can do so in two ways: providing an outline (your talking points) and providing equations, data and empirical results. Do not overcrowd slides with too much data or words (e.g. Do not just copy complex graphs from your paper) and don't make them distracting.

Once you have prepared the outline of your presentation, practice giving it several times. You need to see if you are clearly presenting the story of your research, as well as getting comfortable giving it to an audience. It is also very important that the presentation fit into time allotted. Pace yourself and don't be rushed.

On presentation day, try to speak clearly and confidently, and fairly slowly. Be relaxed and remember that your slides are talking points, not something to be read. And of course, dress professionally.

Again, Greenlaw (pp. 250-259) has more very useful advice.

## VI. SENIOR PROJECT DELIVERABLES

The "deliverables" associated with the Senior Project begin with a "concept paper," followed by a formal proposal, a first draft and several follow-up drafts of the final project, and a oral presentation. Before discussing these steps it is useful to see how they relate to the content of each of the items you will need to produce over the period you are working on your Project. Organizational details of each are discussed in this section.

### Concept paper

The concept paper should be approximately 1 page long and consist of 2 parts:

- Part 1. Description of the research question. (Section V Step 1).

  In this "deliverable" you should address the nature of the economic problem. You need to briefly explain why the question is worthy of study. Spell out the hypothesis that you plan to test in the project and how it will advance our understanding of the problem (i.e. how it creates new knowledge). Finally indicate what data will be used in the analysis.

- Part 2. Short bibliography. (Step 2).

  This should consist of the five "major" papers written on the topic of your research question. At least one paper has to be no more than 2 years old. If you are taking 3250.434 you will present one of these papers in class.

### Proposal

The formal written proposal to be submitted to your advisor should be typed, double spaced, with headings for each of the following sections.

1. Research Question and Motivation for the Research. (Section V Step 1).

2. Initial Literature Review. (Section V Step 2).

3. Purpose of the Project. A specific statement of what the paper will demonstrate including the major hypotheses to be examined. (Section V Step 3).

4. An Initial Description of Data & Methodology: Indicate the general regression model you plan to use in your project,[2] making clear why you are including each of the variables in the model. Provide information on the available data you have found to use with the model. List fully the sources of the data, and provide a table of the descriptive statistics. For details of this requirement see Section V Step 4 and Appendix A.

[2] Or other model, if using another technique

Your proposal will probably be 8 to 10 pages, double spaced including the required table.

**Paper: drafts & final paper**

The first draft of your paper should follow as much as possible the required format for your final paper. Note that the technical guidelines for paper writing, listed in Appendix B, apply to both the draft and final paper. They are a modified version of the American Economic Review guidelines. It is important to use them in your draft, so you can correct any errors before you hand in the final paper. That includes providing your list of references: don't leave that task to the very end!

The final paper should consist of:

1. A title page (see the Department office for format).

2. Abstract.

   The abstract is a one-paragraph summary of the hypotheses tested in the paper or ideas and applications developed, the theoretical framework and methodology developed to test them and the major findings of the paper. Journal articles used in your project can provide models of appropriate abstracts. It is the last item you complete for the Project.

3. Table of Contents.

4. Introduction to the Paper.

   This opening section should provide: (a) motivation for the paper, offer background and explain why the topic is important; (b) an exact and complete statement of purpose which usually will consist of a set of questions and a concrete hypothesis that the paper will test or answer; (c) a statement of the method the paper will use to test the hypothesis; and (d) an overview of the rest of the paper. You will find discussion of these items under the appropriate headings below. The final form of the introduction is the second last item you complete, just before the abstract.

5. Literature review. (Section V Step 2).

6. Theoretical model development. (Section V Step 3).

7. Model specification and results. (Section V Step 4).

8. Interpretation of results. (Section V Step 5).

9. Conclusion and Suggestions for future study. (Section V Step 5).

10. Bibliography

    Make sure all the work you use in your project is listed in the Bibliography. All articles, journals and books must be cited using the format in the Guidelines in Appendix B. When citing websites use the complete URL and please note the date that you accessed the site. When a site is used as a source of data, provide instructions to actually get to the data you are using. Readers need to be able to find the original data, so that they can replicate results.

11. Appendices

    If you use empirical analysis, copies of the relevant computer output must be included in an appendix. Please note that tables derived from this computer output should be included in the section that presents your results. These tables should conform to the typing style used in the text of the chapter; do not consider the appendix to be a substitute for these tables.

The first draft needs to include items 1 to 7, that is up to and including your first quantitative results. Many of you will be thinking: now I'm done. Alas, that is not true. As everyone who has gone through the process will tell you, now you are beginning. The first results are likely to not be significant, or significant and have the wrong signs. Now you have to work out what went wrong and how to change it and you need to start by consulting your faculty advisor.

Revising a draft can make a significant difference to your final grade. That is why four weeks are assigned to it. The document will need three or four drafts: continuous revision is an essential part of the research and research writing process. In the first draft you need to just get down the material: in later revisions you put together the "persuasive argument to readers of what you have found" (Greenlaw), see Step 6. You should expect to make major changes in both content and presentation, based on the feedback from your advisor (in 3250:434) and from your peers. All comments by your advisor on your draft should be read carefully and those comments should be taken into account when making changes. While you need not make every change recommended by your advisor, you should be ready to defend your decision not to accept the recommendations. You can expect your advisor to provide general and specific evaluative comments on the content of your draft but no detailed instructions for revising it: that is up to you. Look carefully for comments on omissions and do substantive work to deal with them.

If there are comments on grammar and clarity, then you must re-write. Remember that most writing goes through numerous re-workings for clarity and improved style. Your writing is supposed to reach professional standards. (see Section V Step 6).

Note that examination and return of a working draft does not imply that the paper is acceptable. The paper is never officially judged acceptable or unacceptable until it is in its final and complete form and has been read by both readers and the oral presentation has been made.

Make sure your final paper meets all the style criteria and is a professionally presented piece of work, submitted by the required deadline. Discussion of issues related to writing and presentation are found under Section V Steps 6 and 7.

**Oral Presentation**

After you submit your final paper, you will make a formal oral presentation of your topic to your advisor, the second reader and others. That presentation should be about 15 minutes: 10 minutes for presentation and 5 minutes for questions. Discussion of the oral presentation is found in Section V Step 7.

## VII. PLAGIARSM

Do NOT plagiarize in your Senior Project and use paraphrasing appropriately. Plagiarism and paraphrasing can be confusing issues, which is why they are discussed in the University of Akron Office of the General Counsel guidelines:
http://www.uakron.edu/ogc/PreventiveLaw/plagiarism.php.

*Plagiarism,* as defined by the Office of General Counsel, is "the intentional or unintentional use of the words or ideas of another without acknowledging their source." Plagiarism in a senior project is sufficient to result in evaluation of a paper as unsatisfactory. While plagiarism is not usually intentional or deliberate, it can and does happen. Most often plagiarism occurs when you have followed a source (a chapter in a book or a journal article) too closely--you have simply paraphrased a few sentences or words of the author, or (worse) simply replicated the author's work without references or citations.

There are three things to keep in mind to help you avoid plagiarism: [1] when you are developing your theory and writing your literature review, make sure you understand what the author has written, and try as much as possible to put it into your own words. [2] Although you want to avoid excessive use of direct quotations, make sure that you accurately cite sources for ideas (this includes graphs, tables and equations) that are not your own. [3] If you are not sure whether you are following sources too closely, ask your advisor. It is a good idea, especially in the literature review section, to include a copy of the original article along with your first draft of your review.

*Paraphrasing* is essentially the rewording of another's thoughts and is acceptable only if properly footnoted. Undergraduate economics students are not, in general, expected to develop new theories. It is expected that you will be drawing on the thoughts and expressions of others. By reading a variety of sources, distilling the essential elements from those sources and by synthesizing the ideas you should normally have very little trouble avoiding paraphrasing. On the other hand, some sources are unique and occasionally so well written that the essence of the ideas are not readily summarized, synthesized and restated in your own words; in such cases it is desirable to paraphrase or quote, but clearly indicate the true source of the ideas when you do so. Avoid quotations that are not essential.

## VIII. SENIOR PROJECT AS AN ARTIFACT FOR PORTFOLIO

Your Senior Project is a required artifact for your Portfolio. It should be included in your electronic portfolio as a PDF file. You are required to add a reflective statement on your experience with the project.

In the reflective statement you should;

1. Identify how the project has helped you meet the Hansen proficiency of adding to knowledge.
2. Reflect on what you have learned from doing the project: remember this means what you have learnt about the process of doing research and what you have learned about your own strengths and weaknesses in that process.
3. State what you wish you had known before you started.

To repeat the comment in the Portfolio document, "Creating portfolios help(s) students learn where they had been, what they had done, and where they were going." (Spicuzza 1996).

## IX. EVALUATION OF SENIOR PROJECT

Your senior project advisor and a second reader will evaluate the Senior Project holistically according to the guidelines in this section. The evaluation questions relate to each of the six steps that make up the research process. The grading on each step of your project will be on a scale of 0 to 4. For each step there is a description after the questions of what is a "not acceptable (N/A)" level, what is a "minimally acceptable (M/A)" level and what is an "excellent (EXC)" level. All seven areas (steps) listed below have approximate equal weight in the determination of the final score (grade) of this project.

To develop a successful project, you should use the questions as a check list as you work on each step of your work, while at the same time identifying clearly from the scale what constitutes a high level performance. It gives an idea of what to avoid and what to aim for.

**Step1.Developing an effective research question**

*Evaluation Questions:*

- Does it clearly articulate a problem & the research question?
- Does it articulate the problem in terms of why and how rather than purely descriptively?
- Is it interesting & significant to economics?
- Is it innovative? Does it add to our understanding of the economic issue?
- Is it amenable to economic analysis?
- Is it feasible and can it be completed in the prescribed time frame?

*Evaluation Criteria:*

| Score | Criteria |
|---|---|
| 0<br>Not acceptable | Research question not clear. |
| 1<br>Minimally acceptable | Is problem oriented, has research question with minimal analytical content, is minimally interesting, significant and innovative, but is amenable to analysis & is feasible. Uses slightly different data set on published model. |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |
| 4<br>Excellent | Clearly identifies gap in existing literature & proposes a problem-solving solution to fill the gap. |

**Your score for this component:**

**Step 2.Surveying the literature on the topic**

*Evaluation Questions:*

- Does it give a narrative to the research, showing how to understand the problem?
- Does it review what is currently known on topic?
- Does it include the major studies?

- Does it include irrelevant studies?
- Does it identify major findings to the present?
- Does it discuss and evaluate authors' arguments?
- Does it point out major deficiencies or gaps the research plans to address?
- Does it explain clearly how the research will contribute to the literature?
- Does the reader understand that the writer understands?

*Evaluation Criteria:*

| **Score** | **Criteria** |
|---|---|
| 0 Not acceptable | No literature review, completely irrelevant literature review. |
| 1 Minimally acceptable | Just description of literature, with most articles not tied to question or a too narrowly defined literature (see Greenlaw). |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |
| 4 Excellent | Effective narrative of how knowledge on issue has developed that transitions seamlessly into research question. |

**Your score for this component:**

**Step 3.Analyzing the issue or problem**

*Evaluation Questions:*

- Does it effectively apply economic theory to issue or problem?
- Is the model used theoretically relevant to the research question?
- Does it use economic language?
- Does it clearly describe the theory relevant to the research?
- Does it include all the necessary complexity of the application of economic theory in the research?
- Does it present a logically deductive argument for the research hypothesis?
- Does it state the assumptions needed?
- Is the research hypothesis formulated so that the results can have meaning: i.e. is the hypothesis something that can be tested?

*Evaluation Criteria:*

| **Score** | **Criteria** |
|---|---|
| 0 Not acceptable | No application of economic theory - is totally ad hoc. Does not use economic language. Research hypothesis is totally unclear. |
| 1 Minimally acceptable | Little connection to economic theory, but with attempt to use economic language. Research hypothesis remains somewhat unclear. |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |

| | |
|---|---|
| 4<br>Excellent | Uses economic language and economic thinking to inform the research. Research hypothesis is clearly stated and developed, theoretical model is either mathematically or verbally complete in all its components. |
| **Your score for this component:** | |

| **Step 4.Testing your analysis** |
|---|
| *Evaluation Questions*: Data<br>• Is data set "large, rich and accurate enough to adequately test hypothesis"?<br>• Is sample size large enough with appropriate statistical properties?<br>• Is nature of data adequately explained?<br>• Has data been appropriately cleaned and prepared?<br>• Is data relevant to the problem?<br>• Does data set have enough variation in the relevant variables to test the hypothesis?<br>• Is there a clear chart of the descriptive statistics of the variables?<br>• Is data manipulation and variable creation done within SAS?<br><br>*Evaluation Questions*: Empirical Testing/Analysis<br>• Does the econometric model reflect the economic model and the econometric variables relate to the economic variables?<br>• Can the statistical methods used adequately test hypothesis & discriminate from alternative hypotheses?<br>• Is the relevant estimation technique used to address the problem? If not are the limitations of the method used explained?<br>• Is the empirical model stated clearly, with each variable defined, and its units of measurement and expected signs included?<br>• Do statistical analyses presented include all appropriate results and statistical tests?<br>• Are the results robust to slight changes in model specification?<br>• Are results presented in clear, understandable professional-looking tables? |

| *Evaluation Criteria:* | |
|---|---|
| **Score** | **Criteria** |
| 0<br>Not acceptable | Econometric model does not relate to economic model, key variables missing or not well explained. No statistical testing done, totally inappropriate data and/or techniques used. |
| 1<br>Minimally acceptable | Economic and econometric models are only loosely related. Data are minimally sufficient to test hypothesis and is not well described. Empirical technique & analysis is minimally relevant to testing hypothesis. |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |

| | |
|---|---|
| 4<br>Excellent | Uses exceptional data set or exceptional data preparation and/or demonstrated excellence in data manipulation with SAS. Has very effective analysis, including robustness checks. Has studied new technique in order to address statistical & data issues. Makes clear limitations of research. |
| **Your score for this component:** | |

| **Step 5.Interpreting the results and drawing conclusions** | |
|---|---|
| *Evaluation Questions:*<br>• Are limitations of data set clearly explained?<br>• Is it made clear what results mean?<br>• Are the coefficients clearly interpreted, including their statistical properties?<br>• Is goodness of fit evaluated?<br>• Is there an understanding of the difference between economic significance and statistical significance?<br>• Are appropriate conclusions made of results of the research?<br>• Are policy conclusions suggested and/or additions to knowledge made clear and justified?<br>• Are unusual results addressed and explained?<br>• Are shortcomings and limitations of research stated?<br>• Are future improvements suggested (that might be feasible)?<br>• Does paper identify effective future research? | |
| *Evaluation Criteria:* | |
| **Score** | **Criteria** |
| 0<br>Not acceptable | No interpretation of results. |
| 1<br>Minimally acceptable | Minimal interpretation of the results (no policy implications, no shortcomings, no identification of future research) |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |
| 4<br>Excellent | Has a clear interpretation of statistical results and their economic significance, Well-thought out policy implications, clear and well-focused suggestions for future research. |
| **Your score for this component:** | |

**Step 6. Communicating in writing the findings of the research project**

*Evaluation* Questions: Written Document

- Does it have all the elements included (title, abstract--- to references & citations)?
- Is the reference list complete and does it use correct citation style?
- Is data appendix complete, correct and adequately described?
- Does the research paper communicate a convincing argument supported by logic and effectively communicated empirical evidence?
- Is writing organized in logical hierarchical manner?
- Are there weak or missing links?
- Is the thesis clear?
- Does the paragraph order make sense?
- Is it easy for the reader to comprehend your writing without having to work at it?
- Is the argument/explanation completed in the least possible words?
- Does it include sections that are unclear because you do not understand what you are writing about?
- Is the writing clear: having a subject and verb as central?
- Is writing focused: e.g. using thesis sentences for each paragraph with remainder of sentences supporting?
- Is the writing close to plagiarism?
- Are paragraphs a single idea?
- Do the sentences make sense?
- Does it use strong verbs?
- Does it avoid using nouns that should be verbs (e.g. There was a failure instead of it fails)
- Does it use unnecessary long words that make it difficult to understand?
- Is most if not all of the writing in the active voice?
- Is the grammar correct?
- Is the writing concise? Have you chosen words that mean exactly what you want to say?

*Evaluation Criteria:*

| **Score** | **Criteria** |
|---|---|
| 0<br>Not acceptable | Disorganized, with substantial grammatical and/or spelling errors, unintelligible argument and writing, unprofessional presentation of results, portions plagiarized. |
| 1<br>Minimally acceptable | Free of major grammatical and spelling errors, argument and writing mostly clear and organized, professional presentation of results, no plagiarism. |
| 2 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 3 | |
| 4<br>Excellent | Well-organized, no grammatical or spelling errors; provides a clear, focused and persuasive argument in a concise and well-expressed narrative. Highly professional presentation of results. |

**Your score for this component:**

| **Step 7: Communicating orally the results of the research project** | |
|---|---|
| *Evaluation* Questions:<br>• Is the content for the presentation well organized?<br>• Has the presentation been practiced in advance?<br>• Is your voice clear and confident?<br>• Are aids (Power Point etc.) of high quality?<br>• Are aids high quality and relevant?<br>• Can presenter answer questions on project effectively?<br>• Does the presentation fit into the time frame required?<br>• Does the presenter have a professional demeanor? | |
| *Evaluation Criteria:* | |
| **Score** | **Criteria** |
| 0<br>Not acceptable | Content disorganized, presentation not practiced and/or confused, voice unclear, aids irrelevant or nonexistent, unable to answer most questions, not able to relate to timeframe, unprofessional demeanor. |
| 1<br>Minimally acceptable | Content organized, presentation planned if not practiced, mostly not confused, voice fairly clear, aids relevant and reasonably accurate, answered some questions, did not go over or under time period by much, professional demeanor. |
| 2<br>3 | (Exceeds criteria for minimally acceptable but does not meet the criteria for excellent with higher scores in this range closer to excellent.) |
| 4<br>Excellent | Content well organized, presentation well practiced, voice clear and confident, high quality relevant and accurate aids, answered questions easily, completed within time frame, (not too short or too long) professional demeanor. |
| **Your score for this component:** | |

## IX. DOING MORE WITH YOUR SENIOR PROJECT

You worked hard on your Senior Project and hopefully you have accomplished a great deal in the process. You have completed a piece of research and it makes sense to want to share it with others. Presenting at conferences and publishing in journals are the real measures of successful research .These venues are competitive: to be accepted at a conference and into publication requires review by others in the economics profession. If your research is accepted, you will have a very important addition to your resume. It validates your ability to do research. We strongly encourage you to put your Senior Project in for Conferences and or publications.

If you complete your Project a semester before graduation you will have the most options: some venues require being an undergraduate student when you apply. Those of you graduating in the same semester will need to check the requirements. However, there are a number of options that only require that you do the research as an undergraduate.

**Conferences**:

- "Midwest Economic Association" – deadline: November (http://web.grinnell.edu/MEA/)
- "Eastern Economic Association" – deadline: January (http://org.elon.edu/ipe/eeas.htm)
- "International Atlantic Economic Society" – deadline: July

(http://www.iaes.org/)

- "Ohio Association of Economists and Political Scientists" – deadline September (http://www.oaeps.org/meeting.htm)
- "International Economics Conference" – deadline: March (http://carrollround.georgetown.edu/)
- "Economic Scholarship Program for Undergraduate Research" – deadline: March (http://www.dallasfed.org/educate/index.html)
- "Undergraduate Poster Exhibit" – Deadline: April (http://www.clevelandfed.org/learning_center)
- BGSU Undergraduate paper competition – deadline: Spring
- UA Conference on Undergraduate and Graduate Student Research – Spring
- Council on Undergraduate Research poster presentation – deadline November (http://www.cur.org/pohcall.html)
- National Conferences on Undergraduate Research (http://www.ncur.org)
- North American Society for Sport Management (http://www.nassm.com/InfoAbout/Conference/StudentCompetition)
- The Interuniversity Consortium for Political and Social Research (http://www.icpsr.umich.edu/ICPSR/prize/index.html)

**Journals:**

- "Issues in Political Economy" (http://org.elon.edu/ipe/)
- "Undergraduate Economic Review" (http://digitalcommons.iwu.edu/uer/)
- "Undergraduate Business and Economic Research Journal" (http://uberjournal.net/)
- "Journal for Economic Educator" (http://frank.mtsu.edu/~jee/submissions.html)

## Appendix A

## Variable Definitions, Summary Statistics and Data Sources: An Example

| Variable | Definition [mean; standard deviation] | Source |
|---|---|---|
| ***LCigSales*** | Taxable cigarette sales per capita by state (packs). [4.34; 0.37] | Orzechowski and Walker |
| ***LCigPrice*** | Retail price per 20-pack of cigarettes, by state, in 1982-84 dollars based on the Consumer Price Index (CPI) (cents/pack). [5.06; 0.28] | Orzechowski and Walker |
| ***Internet*** | Percentage of state households with internet access. [0.43; 0.22] | Current Population Survey (CPS) and Goolsbee, et al (2010). CPS data available for 1993, 1997, 1998, 2000, 2002, 2003, 2007, 2009. Estimates for other years are interpolated from these data. |
| ***LINCpc*** | Per-capita state disposable income (deflated by the CPI). [9.56; 0.16] | Bureau of Economic Analysis |
| ***LBorderP*** | Minimum retail price in geographically contiguous border states (deflated by the CPI). [4.96; 0.26] | Author's calculations based on above data. |
| ***RegShip*** | State bans the delivery of cigarettes directly to consumer. [0.04; 0.20] | Chriqui, et al (2008) |
| ***RegEvade*** | State has law to deter tax evasion by internet vendors of cigarettes. [0.24; 0.43] | Chriqui, et al (2008) |
| ***Mexico*** | Dummy variable identifying states sharing border with Mexico. [0.08; 0.27] | |
| ***Canada*** | Dummy variable identifying states sharing border with Canada. [0.21; 0.41] | |
| ***Producer*** | Dummy variable identifying main tobacco producing states: Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia. [0.13; 0.33] | |
| ***Casino*** | Dummy variable identifying states housing one or more American Indian casinos. [0.81; 0.40] | Goolsbee, et al (2010) |

*Notes: The data include annual state level observations from 1994-2009. All monetary variables deflated by the Consumer Price Index (1982-84 = 100). Alaska and Hawaii excluded from the data set (no border states). Prefix L denotes a natural logarithm.*

## APPENDIX B

## STYLE OF DRAFT AND FINAL PAPER FOR SENIOR PROJECT

Both your draft and final paper for the senior project must meet the following guidelines.

**1.** Use only standard-size paper (8.5 x 11 inches). Use a 12-point Times New Roman font and maintain a 1-inch side, top, and bottom margin. Number all your pages excluding the title page and abstract page.

**2.** ***DOUBLE-SPACE*** the entire text.

**3**. ***TITLE PAGE*** should be on a separate page with project name and author.

**4.** ***TABLE OF CONTENTS*** is required and should note headings and sub-headings by page number.

**5.** ***ABSTRACTS*** are required. See Structure of Draft for details.

**6.** ***SECTION HEADINGS AND SUBHEADINGS*** should be clearly detailed in your paper. These headings should have a physical layout that helps the reader comprehend the structure of the paper. Make the headings informative. Section headings should be given Roman numerals (I., II., etc.); subsections should be lettered A., B., etc.

**7.** ***FOOTNOTES*** must be single-spaced. The footnotes should be numbered consecutively (i.e., 1, 2, 3, etc.).

**8.** ***REFERENCE TO INDIVIDUALS IN THE TEXT*** should include the first name, middle initial, and last name in the first instance. Subsequent references should give last name only. Do not refer to individuals as Mister, Doctor, Professor, etc.

**9.** ***REFERENCE TO ORGANIZATIONS OR GOVERNMENTAL AGENCIES IN THE TEXT*** should give the name in full, followed by the abbreviation in parentheses -- subsequent references should give abbreviation only; for example: Social Science Research Council (SSRC) [first occurrence], SSRC [subsequently].

**10.** ***REFERENCE TO ARTICLES AND BOOKS IN THE TEXT:*** Give full name (first name, middle initial, and last name) of author(s) and year of publication in the first citation, with page number(s) where appropriate. When more than one work by the same author is cited, give the last name of author and year of publication in parentheses for each subsequent citation. When listing a string of references within the text, arrange first in **chronological** order, then alphabetically within years. If there are three or more authors, refer to the first author, followed by et al. and the year. If there is more than one publication referred to in the same year by the author(s), use the year

and a, b, etc. (example: 1997a, b). References to authors in the text must exactly match those in the Reference section.

**11. *REFERENCE TO INFORMATION ON THE WEB***: When citing internet sources as a general rule include information on the (a) author(s), (b) title of work, (c) print publication information, (d) title of online site, project, journal or database, underlined, (e) the date when the work was posted or updated electronically, (f) date when you accessed the site, and (g) electronic address (URL). For more information on citing internet and other electronic sources refer to the MLA Web site at http://www.mla.org.

**12. *MATHEMATICAL EQUATIONS*** should be typed on separate lines and numbered consecutively at the right margin, using Arabic numbers in parentheses.

**13. *QUOTATIONS*** must correspond exactly with the original in wording, spelling, and punctuation. Page numbers must be given. Changes must be indicated: use brackets to identify insertions; use ellipsis dots (...) to show omissions. Also indicate where emphasis has been added. Only lengthy quotations (more than 50 words) should be separated from the text; such quotations must be double-spaced and indented at the left margin.

**14. *TABLES*** must be on separate pages – not incorporated within the text – and should be numbered consecutively with Arabic numbers. Each table must have a title and should be *no more* than 10 columns wide. Use Panel A and Panel B to denote sections of a table.
Do not abbreviate in column headings, etc. Spell out "percent"; do not use the percent sign. Place a zero in front of the decimal point in all decimal fractions (i.e., 0.357, not .357).

Table footnotes are also to be single-spaced. For footnotes pertaining to specific table entries, footnote keys should be lowercase letters (a, b, c, etc.); these footnotes should follow the more general table Note(s) or Source(s). Use asterisk (*) footnotes for the following: *Significantly different from 0 at the 5-percent level. Full citations of the sources are to be included in the References.

**15. *GRAPHS*** should be full size page. Also label all axes, curves, and intersections in the graphs, number them consecutively, and provide full footnotes wherever relevant. All graphs should have a clear number, title and source attribution.

**16. *REFERENCE SECTION*** must be double-spaced, beginning on a new page following the text, giving *full* information. Use *full* names of authors or editors (**last names first**), using initials only if that is the usage of the particular author/editor. List all author/editors up to/including 10 names. Authors of articles and books and material without specific authors or editors, such as government documents, bulletins, or newspapers, are to be listed alphabetically.

A) ***Books***: List Author or Editor. *Title*. Place of publication: Publisher, year.

B) ***Articles***: List Author. "Title of Article." *Journal*, month and year of issue, *volume* (and issue number) in Arabic numerals, inclusive of page numbers. Specify if volume is part of title (*volume 2*) or not (Vol. 2).

C) ***Unpublished Papers***: List Author. "Title." Working paper or discussion paper (including number if any), institutional affiliation, date.

D) ***Chapters in Edited Volumes***: List Author. "Title," Editor, *Volume Title*. Place of publication: Publisher, year, inclusive page numbers. Specify if volume is part of title (*volume 2*) or not (Vol. 2).

**17. *DATA SOURCES*** must be given with full information and listed in the References.

**18. *SPELLING*:** Authority for spelling, capitalization, and hyphenation of words is *Merriam Webster's Collegiate Dictionary, Tenth Edition* and *The Chicago Manual of Style*. Foreign words or phrases are underlined (italicized) unless they are also part of the English language (listed in *Webster's*); for example, "a priori," "ex officio," and "per se" are not underlined, but "*ex ante*" and "*ex post*" are underlined. Avoid overcapitalization and excessive underlining or italics for emphasis. Use quotation marks only for the *first* occurrence of terms with special meaning.

**19. *OTHER STYLE POINTS*:** (1) In the acknowledgement footnote, feel free to acknowledge your senior project advisor and anyone else you feel has helped you with your paper. (2) Do not use the % sign; always spell out the word percent; (4) Apostrophes are used for decades (i.e., 1990's), not generally for pluralization (i.e., HMOs); (5) Hyphenate compound adjectives when they come before a noun, not after (i.e., a well-known author; an author well known). Generally, the following prefixes are not hyphenated: non, pre, post, over, under, intra, pro, re, semi. However, quasi and self are hyphenated whether they precede or follow the noun.

**20**. ***LENGTH*** of the paper should be approximately 15-20 pages.

## APPENDIX C
## EXAMPLE OF 3250:434 SYLLABUS

LABOR MARKET ANALYSIS AND EVALUATION
Spring 2011
3250: 434-01
I**nstructor**: Dr. Francesco Renna

**Phone**: 972-7411
**Office Hours**: T-TH 3-4pm or by appointment.
**Email**:frenna@uakron

**Class material**:
1. Hill, Griffiths, and Lim, *Principles of Econometrics*, 3rd edition.
2. Department of Economics. *Senior Project Handbook*, University of Akron
3. Greenlaw Steven. *Doing Economics*. Houghton Mifflin Company, 2006

**Class Description:** In this class we will cover some advanced topics in econometrics, we will discuss academic papers, but mainly we will focus on your own research paper. During the semester you will conduct a research study and present your paper to the Faculty in a seminar at the end of the semester. Remember that this paper will go into your electronic portfolio as Senior Project. This paper should contain all the Hansen proficiencies, and in particular it should focus on the last proficiency: "Create new knowledge".

**Methodology:** Writing a paper is a very complex process. We will go through the process of choosing a topic, writing a literature review, and present the result. It is important that you constantly present your work at each stage of development of the paper to receive feedback from me, your colleagues, as well as from the Faculty and the other students. You will have three opportunities to revise your work before turning in your final paper. Each time you turn in a revised draft, you will have a chance to improve on your previous grade.

**Requirements for students graduating in May 2011**
You will be dropped from this class if you don't have a draft of each proficiency on your electronic portfolio by January 25. This draft needs to have:

a) An artifact for the first five proficiencies. This item has to be from one of the classes you have taken, not something you wrote for the Computer Skills course.
b) A reflective statement on each item. Please read the instructions on portfolios on "what is a reflective statement?" and the information you have on your portfolio for each proficiency. The instruction manual is on-line on the Portfolio site. Remember, the portfolio is in part for you use in job-hunting. Make it intelligible to a potential employer.

Also, no final grade will be assigned to you unless you have turned in an exit survey.

**Extra Credit:** On Friday April 29, 2010 there will be the annual undergraduate poster exhibit at the Federal Reserve Bank of Cleveland. If you decide to participate to the event, you'll earn extra points toward your final grade.

**Assessment**:
In computing your final grade I will weight each assignment as follows

| | |
|---|---|
| Concept Paper: | 5% |
| Lit review and presentation of main paper: | 5% |
| Proposal and presentation of proposal: | 10% |
| Presentation of results: | 5% |
| Econometrics homework: | 20% |
| Critiques of other student's paper: | 5% |
| Your paper: | 40% |
| Seminar presentation: | 10% |

Note: you need to a have a grade of C or better on the paper to pass this class

**Tentative Course outline**

| ***date*** | ***Topic*** | ***Assignment due*** | ***Reference*** | ***in class activity*** |
|---|---|---|---|---|
| Jan. 11 | Intro | Concept Paper | Greenlaw, Ch 3 | |
| Jan. 13 | | | | Presentation of concept papers |
| | | | | |
| Jan. 18 | Writing a paper | | Greenlaw, Ch 2 | Lecture |
| Jan. 20 | Analysis and presentation of an article | | Greenlaw, Ch 6 | |
| | | | | |
| Jan. 25 | . | Lit. review | | Presentation of main paper in the lit. review |
| Jan. 27 | | | | |
| | | | | |
| Feb. 1 | Proposal | | See handbook | |
| Feb. 3 | | Proposal | | presentation proposals |
| | | | | |
| Feb. 8 | | | | presentation proposals |
| Feb. 10 | Create data set | | | Meeting in the lab |
| | | | | |
| Feb. 15 | Econometrics | | | Lecture |
| Feb. 17 | Econometrics | | | Lecture |
| | | | | |
| Feb. 22 | President's day | | | No class |
| Feb. 24 | Run regressions | | | Meeting in the lab |
| | | | | |
| March 1 | | | | Presentation regression |
| March 3 | Econometrics | | | Lecture |
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| March 8 | Econometrics | | | Lecture |
| March 10 | Econometrics | Draft #1 | | Lecture |
| Spring Break | | | | |
| March 22 | Individual meeting | Econometrics Homework | | |
| March 26 | Individual meeting | | | |
| | | | | |
| March 29 | Individual meeting | | | |
| March 31 | | | | No Class |
| | | | | |
| April 5 | | Draft #2 | | Choose 2nd reader |
| April 7 | | | | No Class |

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| April 12 | | Critique of a colleague's senior project | My presentation |
| April 14 | | | Presentation |
| | | | |
| April 19 | | | Presentation |
| April 21 | | | Presentation |
| | | | |
| April 26 | Seminar | Draft #3 | |
| April 28 | Seminar | | |
| Exam | | Final Paper | |