# Senior Independent Study Handbook for Economics and Business Economics

Revised December 2025[1]

## Table of Contents



[1] This handbook is subject to revision by the Department of Economics and Business Economics. The resulting revisions will generally take effect at the start of the following academic year.

## Highlights/FAQs



# Introduction

The Economics Department enables students and faculty to collaboratively research and study consequential questions from a diversity of economic perspectives. By completing an academic program in the Economics Department, students will be equipped to address contemporary and historical issues of societal and personal concern by:

1. Designing potential research questions or identifying problems that can be answered with economic reasoning,
2. Synthesizing knowledge about economic research, policy, context, and critiques of the discipline from scholarly and credible sources,
3. Critically applying relevant economic theories or reasoning through a range of perspectives,
4. Analyzing data using appropriate methods to identify and test economic relationships, and
5. Interpreting empirical results in relation to economic theory and/or economic relevance

The Senior I.S. is the culmination of your academic experience as an Economics, Business Economics, or Global and International Studies – Economics major. It is your final step as a College of Wooster student in meeting all five of the learning goals above.

The I.S. process represents an opportunity for you to explore economic relationships and to propose novel solutions to economic issues. These projects can take many forms, depending on your interests, career goals, and Wooster experiences.

This handbook has been prepared to help you understand the Department's and the College's guidelines and procedures regarding I.S. You should read it thoroughly. If you have any questions, please ask your advisor.

# Deadlines and Deliverables Overview

Senior I.S. is completed over two semesters: ECON/BUEC 451 and ECON/BUEC 452.[2] Seniors are expected to enroll in 451 in the fall semester and 452 in the spring semester.[3]

**A broad overview of the I.S. process and deliverable deadlines during these two semesters is provided below.** More details on the entirety of the process are provided in the handbook sections that follow.

**ECON/BUEC 451 (Fall of Senior Year):**

1. Project Proposal: Preliminary topic and project form proposals for Senior I.S. are due the Monday of the second week of classes. Advisors will be assigned on Tuesday of the second week.
2. Second Reader Meeting: A conference with your advisor and second reader should be scheduled by the 8th week of the fall semester.
3. Two Completed Chapters: Seniors are expected to have two substantive components of the I.S. completed by the end of fall semester. In an econometric research paper, these are typically the Theory and Literature Review chapters. For other kinds of projects, you will need to work with your advisor to determine the deliverables.
4. Plans for ECON/BUEC 452: Seniors are also expected to submit plans for their next major component of I.S. by the end of ECON/BUEC 451. In an econometric research paper, these plans typically involve how you will acquire and analyze data.

**ECON/BUEC 452 (Spring of Senior Year):**

5. Full Senior I.S. Draft: Full project drafts should be completed two weeks prior to spring break. Advisors are under no obligation to review drafts or provide feedback after this time.

[2] Economics and Global and International Students – Economics majors should register for ECON 451/452. Business Economics majors should register for BUEC 451/452.

[3] It is the responsibility of students who must do I.S. out of sequence to determine whether they can find an advisor and second reader who are willing to advise I.S. during the summer session.

6. Final Senior I.S.: The final project must be submitted by 5pm on I.S. Monday, the first Monday after Spring Recess.[4] In addition to completing the process for submitting your I.S. to OpenWorks, you should submit a PDF copy of your I.S. to both your advisor and second reader. For empirical research, you should submit a copy of all Stata do files and data files to your advisor.
7. Oral Exams: Oral exams for acceptable I.S. projects will be scheduled approximately 3 weeks after spring break.
8. Final Grades: Your grades in Senior I.S. will be determined by your advisor and second reader after oral exams. You will receive an official notification from your advisor prior to the last day of classes.

# Choosing a Research Question and Project Form

To get started with Senior I.S., you need to make two decisions:

1. What **research question** do I want to answer or **problem** do I want to address?
2. What **form** will my project take?

Double majors with one I.S. advisor from each department will need to undertake this process in consultation with both advisors. See the "Senior I.S. for Double Majors" section below.

## A. Research question

Every I.S. project can be described as answering a question, whether it is a question about a certain economic relationship or a question about how to address a given economic problem. We can consider both to be a type of "research question."

Asking a good research question is a difficult skill to develop, but you have practiced this skill in your Economics and Business Economics coursework. Your goal is to identify a question that interests you and is feasible.

To brainstorm questions, we recommend…

- going back to texts and notes for courses in areas that are relevant to your interests,
- reflecting on your own areas of curiosity and post-Wooster goals,
- conducting an EconLit search using relevant search terms,
- consulting review articles in the *Journal of Economic Perspectives* and the *Journal of Economic Literature*,
- reading in the academic literature and other sources about potential economic problems or policies to be addressed or evaluated,
- speaking with people in your community about economic issues that are of concern to them, and

[4] Deadlines for students completing I.S. in the fall semester or summer session can be found in the section "Submitting Your Independent Study."

- discussing your topic ideas with faculty who have relevant expertise.

If you are continuing with the same general topic as in Junior I.S. or one that you explored in a previous Economics or Business Economics course, your Senior I.S. should be a more in-depth and sophisticated analysis of the question that you posed in your previous project.

## B. Project form

I.S. projects in Economics and Business Economics can take many forms, from research projects to documentary films. No one form is easier or more challenging than another. The correct form to choose will depend on the type of question you want to ask and your goals after Wooster. Your advisor will also play an important role in helping you finalize the form your deliverable will take to ensure that it is feasible and meets departmental expectations.

For many students, an **econometric research paper** is the form best suited to answering their research question. Such a form is appropriate if you are seeking to test whether a given economic variable, treatment, or policy impacts another economic variable. These projects typically include an introduction, literature review chapter, theory chapter, methodology chapter, results chapter, and conclusions chapter.

However, the Department also welcomes creative alternative forms for a Senior I.S. You should only consider an alternative form if you have a clear sense of why this form is uniquely well suited to your research question or economic problem.

Alternative forms include but are not limited to…

- **Business plans:** A business plan uses concepts from economics, financial accounting, and entrepreneurship, qualitative or quantitative data, and evidence from existing literature to propose a new entrepreneurial undertaking. The plan should make clear how the undertaking creates value for its audience, why it is feasible, and how financial flows for the organization may evolve over time.
- **Historical research projects:** There are two subsets of "historical" research in economics.
    - *Economic history projects* study an economic or policy issue in its historical context, often with attention to how economic dynamics have changed over time and what can be learned from those changes. Such papers draw on the standard tools of applied economic analysis but also bring in historical sources and methods.
    - *History of economic thought projects* study how the discipline of economics has changed over time. It is strongly encouraged that you only undertake such a project if you have taken a course in the history of economic thought. You will need to work with your advisor to determine how theory and data can be incorporated into such a project.
- **Investment strategy:** Business economics coursework offers you tools for understanding risk preferences, the workings of financial markets, and other issues

relevant to investment strategies. An I.S. project could outline a long-term strategy for investors with a specific set of goals and use forecasting techniques to identify potential outcomes.

- **Multimedia and interactive projects:** An I.S. project could go beyond a written form. For example, one could develop an online dashboard where users can explore economic data or produce a documentary on an economic problem.
- **Public-facing or government-style reports:** Some projects that are focused on documenting an issue or evaluating a specific policy may be better suited to a report. These documents target a more general audience but still need to be informed by economic theory, literature, and data. For example, a government "white paper" conducts a deep-dive exploration of a problem and proposes a solution.
- **Theoretical research projects:** In rare cases, a research project may be fully theoretical. Such projects answer a research question by developing a model with assumptions and mechanisms that have not previously been presented in the academic literature. Purely theoretical research papers are uncommon even among professional research economists.

Advisors may decline requests to carry out an alternative I.S. based on concerns about rigor or feasibility. All alternative forms are subject to advisor approval.

All projects, even those with digital or multimedia deliverables, will have some written component. More details on what should be included in different types of projects and how they are evaluated are presented in the "Components of the Project" and "Independent Study Evaluation" sections that follow.

## C. Project proposal

At this point you are ready to present a written, *formal project proposal* to your advisor. It should include:

1. **Motivation for the Topic Choice**. Background information relating to the nature and importance of the topic.

2. **Purpose of the Project**. A specific statement of the research question or problem to be examined and your hypothesis or expected findings.

3. **Proposed Form.** A statement of the form that you are considering for the project (econometric research project, business plan, etc.).

4. **Preliminary Organizational Outline**. A tentative suggested sequence of major chapters and/or project components, including details about the types of material you will include in each chapter/component.

5. **A Description of the Primary Methodology**. Indicate what techniques will be used to answer your research question and produce your deliverable. Which resources and skills will you need to produce the deliverable? Which quantitative or qualitative data will you use and are they available?

6. **Initial Bibliography**. List the five to ten most important sources you expect to use.

This project proposal should be completed by the end of the sixth week of the semester. A joint meeting with your first and second readers should be scheduled for the eighth week of the semester.

# Components of the Project

Every I.S. in Economics, Business Economics, and Global and International Studies - Economics will look different. However, all projects should include certain components and a level of depth reflective of your experiences as a major in the Department.

**Drawing on the Department's learning goals, we expect every I.S. to:**

1. Pose a compelling and answerable **research question or problem**,
2. Synthesize existing **economic knowledge** from scholarly and credible sources,
3. Apply relevant **economic theories or reasoning** from a range of perspectives,
4. Analyze **quantitative or qualitative data** using appropriate methods,
5. **Interpret** these data in relation to economic theory,
6. Present clear **conclusions, implications, and next steps**, and
7. Provide **supplementary documentation** of your project.

The choice of an appropriate research question is discussed in the "Choosing a Research Question and Project Form" section above. The following subsections provide details on the remaining six components.

## A. Synthesizing economic knowledge

*Departmental learning goal: "Synthesizing knowledge about economic research, policy, context, and critiques of the discipline from scholarly and credible sources."*

You have taken courses in which you learn about the economic world—real policies, macroeconomic events, and other elements of economic context. You have also developed skills in reading peer-reviewed research papers in economics and related disciplines. Every I.S. should reflect your ability to locate, summarize, and apply this economic knowledge.

**If your I.S. takes the form of an econometric research paper:**
A common approach is to include a "Literature Review" chapter. This chapter should present the current state of knowledge regarding your research question: 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? The literature review can also serve as a guide to how previous researchers have employed empirical methods to apply questions like your own. For this reason, we require you to focus your literature review on empirical research.

The literature review should be interpretive and critical: It should specify the authors' purpose, methodology and empirical results and conclusions, and discuss how the literature relates to your work. This chapter should also incorporate synthesis that addresses why the body of literature reviewed was chosen and draws connections across and contrasts between articles.

To support the written literature review, the project should include a literature review table summarizing the methods and findings of each paper. This table will be included in the appendix of your paper. Your advisor can provide you with a blank copy of such a table.

Some research papers would also strongly benefit from a "background" or "context" chapter. For example, if you are studying the impacts of a particular policy, you would provide an in-depth, researched discussion of the policy's history, intent, and operation. All GLIS-Economics projects must include a chapter focused on the historical, political, and economic context of the research question.

**If your I.S. takes an alternative form:**
Some alternative written projects will still include literature review and background chapters. Others will need to demonstrate how you are making use of economic knowledge in different ways. Examples include but are not limited to…

- A documentary that draws on and presents peer-reviewed research in a way that involves appropriate visuals and is accessible for a general audience.
- An investment strategy that justifies its recommendations using, among other resources, peer-reviewed sources and reports from credible sources.
- An online data dashboard in which trends in certain data series are mapped to the relevant macroeconomic context and explained using the literature.

In these cases, you may be asked to provide supplementary documentation (e.g., a documentary script with parenthetical citations of your sources, an appendix with deep dives into important articles). All projects will also be expected to include a literature review table in the appendix, as discussed above.

## B. Applying economic theory

*Departmental learning goal: "Critically applying relevant economic theories or reasoning through a range of perspectives."*

Economic theory is simply your reasoning and conceptual framework. Theory is often presented using formal deductive methods such as graphs or mathematics. Because you have training in these methods from your theory courses, this will be the baseline expectation. For certain questions and theoretical frameworks, however, the reasoning may be qualitative in nature. Your advisor can help you identify such cases.

You should make use of theories and concepts that are at least from Intermediate Microeconomics, Intermediate Macroeconomics, or electives. In other words, your theory should go beyond concepts taught in Principles of Economics. You are encouraged to extend textbook materials with theories that you find in peer-reviewed articles.

**If your I.S. takes the form of an econometric research paper:**
Theoretical reasoning is often presented in its own "Theory" chapter. This chapter should walk the reader through one or more formal economic models to justify your hypothesis. Theory can also be used to identify potential counterarguments to your hypothesis or future econometric problems such as endogeneity.

The strongest I.S. projects use theory to understand the literature, to guide empirical choices such as the set of control variables applied, and to interpret the econometric results. These links should be made throughout the project.

**If your I.S. takes an alternative form:**
All projects must be supported by some form of economic reasoning. In economic history and history of economic thought papers, theory is likely to be included in a form that largely resembles that of an econometric research paper. Sufficiently advanced and novel models may even form the foundation for a theory-only paper.

Examples of how to incorporate theory in other projects include but are not limited to…

- An online data dashboard that includes learning activities in which macroeconomic theories are explained graphically and then compared to the dashboard data.
- An investment strategy that uses numerical examples to demonstrate how certain concepts in portfolio theory would guide one's choice of investments.
- A report written for governments or NGOs proposing investments in certain infrastructure based on theories from development economics.

In some projects, an in-depth and formal presentation of economic theory would not fit in the final deliverable (e.g., a documentary). In such cases, you would be expected to include a separate short theory chapter in which you offer more details on the theory.

## C. Analyzing quantitative or qualitative data

*Departmental learning goal: "Analyzing data using appropriate methods to identify and test economic relationships."*

All Economics, Business Economics, and Global and International Studies – Economics majors receive training in quantitative data analysis. The Quantitative Analysis course introduces key concepts in descriptive and inferential statistics. Econometrics builds on this foundation with a primer on multivariate regression.

As a result, every I.S. in the Department is expected, by default, to incorporate quantitative data and to analyze that data. In most cases, the data analysis methodology will involve the use of multivariate regression to test hypotheses about the relationship between two economic variables of interest. The types of regression methods used will vary. Rarely, descriptive statistics alone may be sufficient. A project that does not apply regression techniques should have a clear motivation for the choice and should include particularly strong data visualization.

The Department encourages you to consider a range of possible data sources. Some economic questions can be answered by locating publicly available observational data on the Internet. Other data are only available at a cost or do not yet exist. Past students have successfully carried out surveys, experiments, and web-scraping exercises, among other forms of data collection. The College offers Copeland Funding to support student I.S. projects. We strongly recommend applying for these funds early in the fall if you anticipate data collection costs. After applying for Copeland Funds, you may also be eligible for departmental financial support. Speak with your advisor to learn more about such support.

The Department welcomes mixed methods projects that incorporate qualitative data collected through interviews, focus groups, and content analysis. Projects that only analyze qualitative data must be approved by your advisor. You must have taken at least one course on qualitative data methodologies. Other methods such as historical approaches may also be approved on a case-by-case basis.

Projects that involve the collection of new data through interaction with human subjects must receive Human Subject Research Committee (HSRC) approval before data collection can begin. Speak with your advisor about the process of submitting a protocol to the HSRC.

**If your I.S. takes the form of an econometric research paper:**
Econometric research papers must include a “Methods” chapter in which you offer a detailed presentation of how your hypotheses will be tested. This section should specify the empirical model(s), describe the data and data collection/experimental methods, define dependent and independent variables, and describe the expected relationships based on your theory.

The results of your analysis will be presented in a “Results” chapter. All regression tables must follow best practices for formatting as introduced in Econometrics. You will be expected to apply appropriate regression techniques, estimate one or more clearly justified specifications, and carry out all necessary econometric tests and corrections. The

interpretation of your results (see subsection D below) will also be part of your Results chapter.

**If your I.S. takes an alternative form:**
Research papers that use qualitative data collection and analysis techniques will include similar Methods and Results chapters. Other types of deliverables can incorporate data analysis in many ways. Examples include but are not limited to…

- A history of economic thought paper that explores an underexamined contribution of a 19th century economist and tests their arguments empirically.
- An investment strategy that uses forecasting methods to predict portfolio outcomes.
- A documentary that blends interviews with people impacted by an economic issue with compelling data visualizations and/or the results of an econometric exercise.

For deliverables like documentaries, the written document that accompanies the deliverable will include methodological details that do not appear in the final deliverable (e.g., data sources, t-tests of differences in means, or econometric results).

## D. Interpreting data in relationship to theory

*Departmental learning goal: "Interpreting empirical results in relation to economic theory and/or economic relevance."*

Despite the common saying, the data never "speak for themselves." Every regression result, summary statistic, or theme across interviews must be interpreted. A successful I.S. will explain how the results of the data analysis answer the research question. It will also put the results in dialogue with the theory and literature: Do the results support some of your predicted theoretical mechanisms but not others? If your findings differ from conventional wisdom in the literature or among policymakers, why might that be the case?

**If your I.S. takes the form of an econometric research paper:**
The interpretation of regression results is typically part of the "Results" chapter. If the regression results are particularly complicated, a separate "Discussion" chapter may be useful for summarizing results and explaining how they together support or reject the hypothesis.

A complete discussion of the results should include an interpretation of each coefficient of interest. The interpretation should include units of measure, statistical significance, and economic significance (i.e., Is the effect large? Small? How do you know?). Significant results for some control variables should also be discussed.

**If your I.S. takes an alternative form:**

The interpretation of results is key for any kind of research paper, including those that use qualitative methods. Examples of how other types of deliverables may engage in the interpretation of data include but are not limited to…

- A history of economic thought paper that explains how and why the predictions of the 19th century economist may not have been supported using modern data.
- An investment strategy that explains why the forecasted changes in portfolio value represent a sufficiently strong performance relative to key benchmarks.
- A documentary that frames the interview and quantitative data in such a way that viewers can understand the implications for the problem or policy being discussed.

## E. Presenting your conclusions

An I.S. includes all the components that you need to answer a question or address an issue of interest to you. But an *impactful* I.S. brings those components together and provide an answer to that question or a solution to that issue. Taking a moment to reflect on what you learned from the project can also be personally meaningful.

The audience should step away from your deliverable with a clear sense of three things:

1. The most important take-away points that came out of your project as a whole: If your audience will only remember one to three points, what should those be?
2. The implications of your results: Why do your results matter? Who would want to know these results? What do the results mean for effective policy?
3. The next steps: What should future researchers examine that you could not? If you identified a problem, what should the audience do? What is your call to action?

**If your I.S. takes the form of an econometric research paper:**
The "Conclusions" chapter is where you examine these three points. It should summarize the rest of the paper and drive home the principal findings. It is also a good place to point out the limitations of the study and the consequent reservations. Ending with a discussion of next steps, including the need for specific future research, can be a compelling way to end your project.

**If your I.S. takes an alternative form:**
Every project needs to address the take-away points, implications, and next steps. In linear deliverables (like papers or documentaries), this discussion often comes at the end. In a non-linear project such as a website, you will need to be more creative about making sure that audiences understand your key conclusions regardless of how they progress through the project.

## F. Documenting your project

For an I.S. to be complete, every project must include the following components, regardless of research question or form:

- **Title:** Your project should include a title that conveys the research question, problem, or topic being addressed. For research papers, refer to peer-reviewed articles for examples of effective titles. The approach to titles for alternative projects will vary.
- **Abstract:** The abstract is a one-paragraph summary of the project. Even if your project is not a research paper, journal articles can provide models of appropriate abstracts.
- **Data files:** A copy of your raw data must be made available to your advisor. These files may include Excel or Stata files or interview/focus group transcripts.
- **Stata do files (if applicable):** If you use a statistics package like Stata, you must send a copy of all data cleaning and analysis do files to your advisor.
- **Screenshots of Stata output (if applicable):** If you use a statistics package, copies of the relevant computer output must be included in an appendix. The appendix is not a substitute for the polished presentation of the results in formatted tables.

# Oral Exam

After your advisor and second reader receive your I.S. project, they will determine whether the project is ready to move forward to an oral exam. You can expect to receive this notification within about two to three weeks of I.S. Monday.

An I.S. that has received "No Credit" in any one component (see "Departmental rubric" subsection below) is considered incomplete and will not be allowed to move forward to an Oral Exam. The Department may, at its discretion, allow revisions to be made to allow the I.S. to move to an Oral Exam within the normal exam timeframe. If the revisions are too extensive for this to be possible, the I.S. will receive a grade of "No Credit," and ECON/BUEC 452 will need to be repeated.

Oral exams are an opportunity for you to demonstrate your understanding of the project and reflect on what you have accomplished. You can therefore expect such questions as:

- How did you derive the graph on page [*x*]?
- In what ways to you think your work improves on (or is related to) the work of [*author in your literature review*]?
- How did your interviews in the course of making the documentary change the way you thought about your quantitative findings?
- What are the implications of your proposed business plan for [*economic problem that you did not discuss in the I.S.]*?
- If you had more time and resources, how would you address [*a certain limitation of your methodology]*?

Immediately following the conclusion of the oral exam, you will be informed whether you have successfully completed Independent Study. Your advisor will follow up with your

grade for ECON/BUEC 452 and further feedback in the weeks that follow, no later than the final day of classes.

# Independent Study Evaluation

Your progress in Independent Study is evaluated at two points:

**ECON/BUEC 451 (Fall of Senior Year):** At the end of the first semester, you will receive a grade of "Satisfactory Progress (SP)" or "No Credit (NC)." This grade is based on three criteria:

1. Successful submission of the two substantive components of the final project
2. Successful submission of planned next steps for ECON/BUEC 452
3. Successful demonstration of your understanding of project drafts and methods in weekly meetings with your advisor and in the second reader meeting

Your advisor and second reader reserve the right to submit a grade of "No credit" if you are unable to demonstrate a basic understanding of any aspect of your deliverable or to explain/demonstrate how any aspect of your deliverable components was produced.

**ECON/BUEC 452 (Spring of Senior Year):** Your grade in ECON/BUEC 452 will follow the College-wide I.S. grading scale:

- No Credit (NC)
- Satisfactory (S)
- Good (G)
- Honors (H)

If you are taking ECON/BUEC 452 in the fall or spring, you can expect to receive a notification of your final grade from your advisor prior to the final day of classes.

The sections that follow explain the College's and Economics Department's guidelines for evaluating Senior I.S. on the NC/S/G/H scale.

## A. College guidelines

The College-wide learning goals for Senior I.S. are as follows:

> *Through the process of Independent Study (451 and 452 courses), students will be able to:*
>
> - *articulate an appropriate and manageable research question, topic, or focus (**content**)*
> - *plan and develop an application, creative expression, original research, or scholarship, recognizing how it fits within the broader context of existing work (**method**)*

- *implement the appropriate methodology or techniques necessary for application, creative expression, original research, or scholarship (**method**)*
- *clearly communicate the results or development of the project in a way consistent with the content and method (**form**)*
- *critically discuss the project with scholars, practitioners, or experts in the broader field (**defense**)*

The evaluation of the I.S. project in these three areas—content, method, and form—correspond to the four possible grades for the second semester of Independent Study as defined by the College:

> ***Honors** - Outstanding in terms of content, method and form.*
>
> ***Good** - Significantly above average in terms of content, method and form.*
>
> ***Satisfactory** - Acceptable overall in terms of content, method and form, though consideration may be given to balancing weakness in one area by strength in another.*
>
> ***No Credit** - Seriously deficient in content, method and form with no compensating strengths in other areas.*

## B. Department I.S. rubric

Your final grade in ECON/BUEC 452 will be based on your final project, oral exam, and process throughout both semesters. These evaluation criteria are described in the rubric below (Table 1).

The assessment of your final project is not limited to the written or multimedia deliverable itself. It also includes your process of carrying out the project and the oral exam. As in ECON/BUEC 451, if you are unable to demonstrate a basic understanding of any aspect of your deliverable or explain/demonstrate how any aspect of your deliverable was produced, you may receive "No credit" in ECON/BUEC 452.

A total of 32 points may be earned on this rubric. Each grade outcome *tends* to correspond with the following score ranges. However, the final grade decision is made by the advisor's and second readers' holistic consideration of the project. There is no purely numeric cutoff.

> **Honors:** 29 – 34 points
> **Good:** 23 – 28 points
> **Satisfactory:** 13 – 22 points

An I.S. that receives "No Credit" in any component, including the Oral Exam, will receive a grade of "No Credit" for ECON/BUEC 452.

## Table 1: ECON/BUEC 452 Senior Independent Study Rubric

| *I.S. Component* | Honors | Good | Satisfactory | No Credit* |
|---|---|---|---|---|
| **LG1: Pose a compelling and answerable research question or problem (4 points = 12.5% of total)** | | | | |
| *Choice of research question or problem* (2/1/0) | **Honors:** The project undertakes a particularly ambitious, multifaceted, or creative research question or problem. | **Satisfactory:** The project addresses a question that is meaningful and answerable using economic methods. | | **No Credit*:** The project addresses a question without clear economic significance or that cannot be answered using economic methods. |
| *Choice of research form* (2/1/0) | **Honors:** The project form is very well suited to the question and demonstrates particularly creative, advanced, or thoughtful application of the chosen form. | **Satisfactory:** The project form is appropriate to the question. | | **No Credit*:** The project form is inappropriate. |
| **LG2: Synthesize existing economic knowledge from scholarly and credible sources (6 points = 18.75% of total)** | | | | |
| *Application of existing economic knowledge* (3/2/1/0) | The project is clearly situated relative to existing research, deeply integrates reliable sources, and offers nuanced explanations of the economic or policy context. | The project uses reliable sources to strengthen the project, summarizes and critiques articles, and offers some economic or policy context. | The project includes summaries of reliable research articles with some critique and application. | The project does not include reliable research sources or cites or does not explain sources. |
| *Explanation of technical terminology* (3/2/1/0) | Technical terms are explained thoroughly and demonstrate a strong understanding of the concepts. | Technical terms are explained in sufficient detail to demonstrate a basic understanding of the concepts. | Technical terms are briefly explained. | Technical terms are not explained or are inaccurately explained. |
| **LG3: Apply relevant economic theories or reasoning from a range of perspectives (6 points = 18.75% of total)** | | | | |
| *Choice of economic theories or reasoning* (3/2/1/0) | The project applies advanced models from intermediate-level coursework or peer-reviewed sources to clearly support a hypothesis or conclusion. | The project uses multiple models or one detailed model from intermediate-level coursework to clearly support a hypothesis or conclusion. | The project uses at least one model from intermediate-level coursework to support a hypothesis or conclusion. | The project does not include theoretical reasoning, uses Principles-level models only, or does not link the models to the hypothesis or conclusion. |
| *Presentation of economic theories or reasoning* (3/2/1/0) | The theory is presented with impressive depth, polish, and intuition. | The theory is presented with strong detail and clarity. | The theory is accurately presented with at most minor errors. | The theory is presented with major errors that lead to erroneous conclusions. |
| **LG4 and LG5: Analyze quantitative or qualitative data using appropriate methods and interpret these data in relation to economic theory (6 points = 18.75% of total)** | | | | |

| *I.S. Component* | Honors | Good | Satisfactory | No Credit* |
|---|---|---|---|---|
| *Data analysis and methodology* (3/2/1/0) | The project uses particularly rich, complex data that are a strong fit for the question asked. The methods used and their intuition are discussed in depth with notable attention to limitations (e.g., relevant econometric tests and corrections). | The project uses rich data that are well suited to the question asked. The methods are well documented and clearly explained with attention to most relevant limitations. | The project uses data that are appropriate to answer the question asked. The methods are documented with some explanations and brief attention to limitations. | The project does not use data, does not document methods, or includes no attention to limitations. |
| *Interpretation of results* (3/2/1/0) | The project offers nuanced interpretations of the data analysis results and carefully (re)evaluates theory and other parts of the project given those results. | The project offers accurate interpretations of the data analysis results, including control variables. The results are linked to theory. | The project offers accurate interpretation of the main data analysis results. Some links are drawn between the results and theory. | The project does not include an interpretation of results, or the interpretations are substantially inaccurate. |
| **LG6 and LG7: Other components of the project (6 points = 18.75% of total)** | | | | |
| *Conclusions, implications, and next steps* (3/2/1/0) | The project concludes with a summary of selected findings, a compelling takeaway, a thoughtful reflection on why the results matter and to whom, and detailed suggestions for further action or research. | The project concludes with a clear summary of the findings, a sense of why the results matter and to whom, and recommendations for further action or research. | The project concludes with a summary of the findings, limited discussion of implications, and general areas for further action or research. | The project is missing any of the following: a summary of results, implications, or next steps. |
| *Supplementary documentation* (1/0) | **Satisfactory:** The project submission includes a title, abstract, data files, do files (if applicable), and screenshots of Stata output (if applicable). | | | **No Credit*:** The project is missing any of these components. |
| *Process* (2/1/0) | **Honors:** Student was engaged during weekly meetings and demonstrated a high degree of independence, identifying new questions and tasks to address. | **Satisfactory:** Student was present for most weekly meetings and took initiative on certain parts of the project. They made consistent progress throughout. | | **No Credit*:** Student did not attend weekly meetings, was unresponsive to feedback, and did not complete suggested tasks. |
| **Oral exam (6 points = 18.75% of total)** | | | | |
| *Understanding of project methods and findings* (3/2/1/0) | Student led a detailed conversation about their methodological choices and findings. | Student effectively discussed the intuition of their methods and findings. | Student identified their methods and findings accurately. | Student did not complete an oral exam or did not demonstrate familiarity with the project during the exam. |
| *Extensions and applications* (3/2/1/0) | Student discussed new and compelling extensions and policy applications of their project. | Student showed a consistent awareness of the project's extensions and applications that went beyond their written work. | Student primarily reported extensions and applications that were already noted in the deliverable. | Student did not complete an oral exam or did not speak to extensions or applications during the exam. |

* An I.S. that has received “No Credit” in any one component is considered incomplete and will not be allowed to move forward to an Oral Exam. The Department may, at its discretion, allow revisions to be made to allow the I.S. to move to an Oral Exam within the normal exam timeframe. If the revisions are too extensive for this to be possible, the I.S. will receive a grade of “No Credit.”

# Senior I.S. for Double Majors

We welcome double majors and the diversity they bring to the department and our collective understanding of complex issues. The following sections outline the I.S. options for double majors, principles for planning a multidisciplinary or interdisciplinary I.S. project, and the learning goals for students working on such projects.

## A. I.S. options

The Economics Department offers several options for how double majors may complete I.S. The feasibility of these options will depend on the I.S. policies of the department or program that houses the other major. All double majors should speak with the Chair of the other department/program early on to discuss their options.

**Double majors in our department are encouraged to pick one of the following options:**

1. Complete one **multidisciplinary or interdisciplinary ("joint") I.S.** with two advisors (one from each department). You must complete Junior I.S. in both departments.
2. Complete **Junior and Senior I.S. in the Economics Department** and take one additional course and Junior I.S. in the other department.
3. Complete **Junior and Senior I.S. in the other department** and take one additional course and Junior I.S. in the Economics Department.

Rarely, two additional options are possible:

1. Complete a **multidisciplinary or interdisciplinary ("joint") I.S.** with **one advisor** in the Economics Department and a second reader in the other department. This is only possible in select cases.
2. Complete **one I.S. in each department** with two advisors (one advisor from each department). We generally discourage this option: Completing two separate I.S. in one academic year is very challenging.

## B. Principles for joint I.S. projects

Joint I.S. projects will need to blend methods and content from both disciplines and meet a set of I.S. expectations that integrate expectations from both departments.

The process and guiding principles for managing these "joint" I.S. projects are as follows:

1. In the first two weeks of ECON/BUEC 451, in consultation with your advisors in the two departments, you should decide what your question or issue is, identify your project form, and decide whether you are going to attempt an interdisciplinary or multidisciplinary approach.

2. You must submit a Double Major I.S. Agreement form that documents this plan no later than the fifth week of ECON/BUEC 451. The criteria used for evaluation will be determined jointly by the two advisors.

3. If you choose to undertake an *interdisciplinary* approach, you and your advisors must agree on the how you will integrate these two disciplines. Your goal is to take the disciplinary perspectives and *integrate their theories or methodologies* to say something novel that the disciplines have not said on their own.

4. If you choose to take a *multidisciplinary* approach, you will not spend as much time on the integration of methodology and theory, and these indeed can be *separate and come from distinct areas of inquiry*. You may also answer two related questions from two different perspectives. In any case, you must attempt a synthesis of the lessons learned from these two disciplines.

5. You will meet regularly with both advisors over both semesters of senior I.S., either meeting weekly with both advisors or alternating.

### C. Learning goals

While the exact components and nature of a joint I.S. project will vary in each case, we expect that all such projects will require students to…

1. To articulate a **clear question or problem** that requires multidisciplinary or interdisciplinary inquiry.
2. To understand the **context** of the question or problem within each discipline.
3. To understand and, to the extent possible, integrate the **methodology** used by both of the disciplines to arrive at a conclusion.
4. To understand and develop the **theoretical critique or theoretical underpinnings** of a question from the perspective of each of the disciplines separately or together.
5. To arrive at a **synthesis of the two disciplines** in framing your conclusions.

## Submitting Your Independent Study

Your I.S. deliverable and all supplementary documentation must be submitted on OpenWorks by 5pm on the first day of classes following Spring Recess.[5]

**To submit your I.S., you must complete all three of the following steps:**

1. Submit your I.S. to the OpenWorks website.
2. Submit your I.S. to your I.S. advisor(s) and second reader.
3. Bring a printed copy of the title page to the Registrar's office.

[5] If you are completing ECON/BUEC 452 in the fall semester, the submission is due by 5pm on the day four weeks prior to the end of classes. If you are completing ECON/BUEC 452 over the summer, the submission is due by 5pm at the end of the eighth week from the beginning of the summer session.

More information on each of these steps can be found on the Registrar's website.

The College-wide policy regarding late I.S. submissions is established in the Faculty Handbook as follows:

> *In exceptional circumstances, a student may petition the Dean for Curriculum and Academic Engagement in advance of that date for an extension of the deadline. Any extension to the Independent Study Thesis deadline can only be granted by the Dean for Curriculum and Academic Engagement and only with the support of the I.S. adviser. No thesis turned in after the deadline will receive a grade of Honors without the unanimous vote of the department and the approval of the Dean for Curriculum and Academic Engagement.*
>
> *Any delay in turning in a thesis (project) beyond the deadlines specified above automatically establishes the grade of 'I' [Incomplete] for the thesis. The conditions for changing the 'I' to a passing grade will be established by the Dean for Curriculum and Academic Engagement after consultation with the student's adviser. The 'I' automatically becomes 'NC' two weeks after the deadline for the submission of the thesis unless prior approval for an extension of the "I" has been given by the Dean.*

## Academic Integrity Expectations

We share the College's commitment to upholding academic integrity, as outlined in the Scot's Key. **The Economics Department will uphold the following academic integrity expectations throughout the I.S. process.** Students will not…

1. Engage in plagiarism, knowingly representing the work of others, including materials from electronic sources, as their own.
2. Use generative artificial intelligence tools in any way that violates the AI expectations outlined in subsection B.
3. Falsify or fabricate data.
4. Submit an assignment provided for another course as part of their I.S. without the authorization of all the instructors involved.
5. Give false reasoning to a Dean, their advisor, or their second reader when requesting an extension on a I.S. draft or final I.S. submission.
6. Tamper with the I.S. work of other students by stealing, misplacing, or destroying their materials.
7. Violate the spirit of the academic integrity expectations as defined here and in the Scot's Key.

In all cases of suspected academic integrity violations, the advisor and second reader will first discuss the situation with the student. If the situation is still deemed to be an academic integrity violation following this conversation, the case will be reported to the

Dean for Curriculum & Academic Engagement. The remainder of the process will proceed as defined in the Scot's Key section on "Violation and Enforcement of Academic Policies."

Per this policy, a violation of academic integrity may result in penalties including a grade of "No Credit" in ECON/BUEC 451 or 452. In the case of repeated violations, the Student Conduct Process may result in additional penalties up to expulsion from the College.

The subsections that follow provide more information on plagiarism and uses of generative artificial intelligence.

## A. Plagiarism

Plagiarism is the representation of another's ideas as your own. Most often plagiarism occurs unintentionally when following the language of another text too closely. There are several things you can do to avoid plagiarism:

- Make sure you understand what other authors have written and try as much as possible to put their research into your own words.
- Be sure to provide an intuitive explanation of jargon in your own words, appropriate for a junior or senior ECON/BUEC/GLIS-ECON major, rather than relying on the author's usage of the term alone.
- Always cite sources for ideas (this includes figures, tables, and equations) that are not your own, using quotation marks and page numbers if necessary.
- If you are not sure whether you are following sources too closely, ask your advisor.

There are three ways to take information from a source and incorporate it into your writing:[6]

- **Direct quotes:** If the author's original language is important or impossible to paraphrase, you should quote the text directly by putting the author's language in quotes and using parenthetical citations to indicate the page number(s) where the quote appeared. Direct quotes should be used sparingly.
- **Paraphrase:** If you want to incorporate ideas that span one or several sentences without quoting, you will need to explain the idea of that passage in your own words. Your goal is to convey largely the same information but with sentences that are meaningfully different. You should not use the same words (other than names or key terms) or sentence structure.
- **Summary:** If you want to incorporate information about large parts of a text, you will need to describe the key points made without including many specifics. A summary is typically much shorter than the original source material.

Plagiarism can also occur if you successfully paraphrase or summarize a source but do not include a parenthetical citation indicating the source from which the information came. This misrepresents the material that you have paraphrased/summarized as your own ideas.

[6] Adapted from this guide on paraphrase and summary by the University of Kansas Writing Center: https://writing.ku.edu/paraphrase-and-summary

Please see the "Citation instructions" subsection of the "Style Instructions" for more information on when and how to cite sources.

Cases of knowingly engaging in plagiarism will be treated as violations of academic integrity. Whether the plagiarism occurred intentionally or not, an I.S. that includes plagiarized material will receive a grade of "No credit."

## B. Artificial intelligence tools

In recent years, access to generative artificial intelligence (AI) tools has grown dramatically. These tools include, but are not limited to, AI assistants/chatbots such as ChatGPT, Claude, Gemini, Copilot, and DeepSeek, as well as other programs or websites that have implemented AI such as Google's AI overview or Grammarly's writing assistant software.

**The use of AI tools is only authorized as a tool for furthering your understanding of content or methods related to your IS, not as a means of generating your written work.** The Economics Department recognizes that AI tools are unlikely to disappear and may have useful applications as part of the research **process**. However, reliance on AI to generate your I.S. **product** undermines the opportunity to develop your own communication, research, data management, and critical thinking skills and raises serious ethical concerns. It also tends to result in work that lacks the depth we expect for a Senior I.S.

Our guidelines for AI use are the following:

1. You may <u>not</u> use AI for tasks that include, but are not limited to:
    a. Generating or editing any portion of your written text (we encourage you to seek out support from your advisor and the Writing Center)
    b. Providing information that you use directly in your text and cannot attribute to a particular source (which would result in plagiarism)
    c. Generating theoretical or empirical graphs, figures, or tables
    d. Conducing data cleaning that you could feasibly carry out in Stata
2. You may find AI useful for "process" tasks that include, but are not limited to:
    a. Supporting data analysis in ways that are i) not otherwise feasible with standard software packages or manual techniques and ii) can be replicated consistently (which is generally <u>not</u> true with online AI tools such as ChatGPT)
    b. Summarizing complicated content or methods to support your own understanding (however, see 1b above)
    c. Providing feedback on the organization of your written work to support your own reorganization of that work
    d. Finding relevant research articles for a literature review
3. Any AI use, even use that falls under the examples above, should be discussed with your IS advisor(s) before being implemented.

4. When you use AI tools, ~~cite~~ acknowledge that you are doing so in an "AI statement" at the end of all drafts and final documents and explain how AI was used. However, AI is not a legitimate "source" of information that can be "cited" like a peer-reviewed research paper.
5. AI use should *improve*, not *jeopardize* your ability to explain your own work. Your ability to explain the work that you submit and how you created it is part of the assessment of your project, oral exam, and weekly meetings.
6. Violations of any of these guidelines may be treated as an academic integrity violation, which is reported to the Dean of Curriculum and Academic Engagement.

# Comments and Suggestions

## A. Time scheduling

A successful and less anxiety-provoking I.S. is more likely if you schedule a daily time slot for I.S. and keep your regular weekly appointments with your advisor. Be candid with your advisor about your problems and your progress. Set up a schedule of deadlines to maintain progress.

**General Recommended Timetable for an Econometric Research Project**

The recommendations that follow are for an econometric research project that does not involve novel data collection (e.g., conducting surveys or an experiment). The timeline and two substantive components due at the end of 451 will vary for other types of projects.

**ECON/BUEC 451 (Fall Semester of Senior Year):**
Week 1: Background reading and discussion with faculty to determine tentative topic.

Week 2: Advisor assigned; meet with advisor to develop specific statement of purpose; begin literature search.

Weeks 3 – 4: Literature search and final topic development

Weeks 5 – 6: Literature search and development/drafting of theory chapter.

Weeks 7 – 8: Meet with first and second reader [provide second reader with a copy of your research proposal]; complete work on theory draft.

Weeks 9 – 11: Work on literature review draft

Weeks 12 – 13: Revisions of theory and literature review.

Week 14: Begin formulation of model and location of data.

**ECON/BUEC 452 (Spring Semester of Senior Year):**
Weeks 15 – 17: Data collection and analysis

Weeks 18 – 19: Draft of empirical chapter

Weeks 20 – 21: Work on introduction, conclusions, revisions

Week 22: Final Revisions

## B. Working drafts, feedback, and I.S. grades

Your I.S. advisor will periodically ask you to submit working drafts of parts of the project or the whole project. All written working drafts should be double spaced, neat, and easily read. You can expect your advisor to provide general and specific comments on working drafts, but you should not expect detailed instructions for revising the draft. Responsiveness to feedback is assessed as part of the "process" component of the departmental I.S. rubric.

At times students have expressed surprise at their final grades, indicating that the comments received during the project did not lead them to expect the grade they received. Advisors will do their best to communicate areas where the project could be strengthened as you go and will always aim to help you thrive in I.S. However, the absence (or presence) of negative comments or suggestions on drafts does not imply that the project will receive any given I.S. grade. The final decision regarding an I.S. grade is taken collaboratively by your advisor and second reader. Your grade also includes an evaluation of your oral exam and process, as noted in the departmental rubric.

## C. Writing advice

The following are some simple suggestions to help you produce an effective written component of your I.S. project.

1. Use section headings and subheadings to help the reader comprehend the structure of the paper. The headings should appear in the table of contents.

2. If you are writing a research paper or report, the introduction to the paper should provide: (a) motivation for the paper, including background and an explanation of why the topic is important; (b) a statement of the research question and hypothesis; (c) a description of your methods; and (d) a preview of your findings.

3. It may help to outline your entire paper paragraph by paragraph so you can double-check the unity of and transitions between each paragraph. Each paragraph should have one main idea stated in a topic sentence at the start of the paragraph.

4. Provide ample transitional statements. Because of the length of the I.S., it is important to remind the reader of overall structure of the paper. Each chapter should begin with an introduction that outlines the chapter and links it to the rest of the I.S. At the end of a long chapter, review what the chapter accomplished.

5. Go to the Writing Center for advice or assistance. The tutors in the Writing Center can help with both mechanics and bigger-picture topics such as organization.

6. Avoid unsupported assertions. If something is "generally accepted" as being true, say so. Otherwise, state your source or fully develop your supporting arguments.

7. Avoid quotations that are not essential.

8. In presenting graphs with important detail: (a) make graphs the size of a full page, (b) label all axes, curves, and intersections, (c) number consecutively, (d) provide full footnotes where relevant. All graphs should have a clear number, title and source attribution.

# Style Instructions

The following partial directions for the style of Economics/Business Economics I.S. projects must be followed. Failure to adhere to these rules is sufficient cause for grade reduction and a possible grade of “No credit” on the project.

You should follow APA style in all written parts of your research project except where otherwise noted. Information on this style is available online through the Writing Center’s *Resources for Writers* and the Purdue Online Writing Lab. The style guidelines include information on the proper form for both in-text and bibliographic citations for books, journal articles, and online sources.

## A. Formatting the written document

Every deliverable will need to include a written document to meet the expectations outlined in the “Components of the Project” section. The exact contents of that written document will vary by project form, but it should follow the general organization below:

- Title Page
- Dedication (optional)
- Acknowledgments (optional)
- Abstract
- Table of Contents
- Main Text
- Appendices (if applicable)

- Bibliography

In addition to referencing the sample pages in part C below, refer to the College's I.S. Word templates or the LaTex template available on the Economics Department Voices webpage when formatting your written document.

Formatting expectations for multimedia deliverables will be determined in consultation with your advisor and should follow best practices for your form of deliverable.

## B. Citation instructions

As noted above, all sources should be cited in accordance with the APA style guide. The basic purpose of citations is to a) provide useful information about the source of ideas, b) give credit to the true origins of ideas, and c) to enable the reader to check the accuracy of your statements or to find further information. Failure to cite material that should be cited represents a form of plagiarism as defined in the academic integrity section above.

The following types of material should always include parenthetical citations:

- Direct quotations
- Paraphrased or summarized information that is **not** "common knowledge"
- Graphs or text drawn or adapted from other sources
- Statistical data

In the context of I.S., "common knowledge" includes the basic elements of economic theory and methods as covered in Intermediate Macroeconomics, Intermediate Microeconomics, and Econometrics.

We encourage you use to use a bibliography management tool such as Zotero to collect and cite your sources. Zotero also allows you to share access to your library of sources with your advisor.