Stevens Institute of Technology

School of Business

**AACSB
ASSURANCE OF LEARNING PLAN**

Learning Goal Assessment Guide

**Doctor of Philosophy in Business Administration**

**(Ph.D.)**

**LEARNING GOAL # 3**

**Ph.D. graduates will have sufficiently mastered analytical and methodological skills needed to know the prior literature and contribute to the research in his/her area of specialization.**

**Responsibility: Victor Luo, (or Course Instructor Fin 704)**

April 2021

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# Introduction: Learning Goal #3

*Ph.D. graduates mastered analytical and methodological skills needed to know the prior literature and contribute to the research in his/her area of specialization.*

This goal is assessed in FIN 704: Econometrics Theory and Applications, which is one of the required courses in the PhD in Business Administration core curriculum. The goal is to ensure that students will have the ***analytical*** and ***methodological*** skills necessary to complete high-quality, data-driven, original dissertations within 4 years of full-time study (the max. allowed time span to finish a dissertation is six years).

The current version of the course (Fin 704) focuses on applied econometrics theory and its applications in empirical research in social science. The course is offered once every academic year to first-year and second-year PhD students. In this course, students will learn in depth the statistical theory behind commonly used econometrics models, learn how to make “causal statements” in social science, and learn how to implement and test econometrics models in their own field of research. As a result, students will be able to stay abreast with latest statistical and econometrics techniques used in leading research papers in their field of study. Moreover, the students will also be able to apply those techniques in writing empirical papers in social science.

There are, in addition, specific competencies that are needed in PhD Business Administration education that this goal will address. The skills that are targeted are programming skills, critical thinking, and the ability to communicate technical materials to a non-technical audience.

# Learning Objectives and Traits

The following table shows the objectives and traits to assess goal 3 of the PH.D. program.

The first objective is that the students are able to understand the statistics and econometrics techniques in their own subfield of social science research from a thorough and deep theoretical angle.

 The second objective is that the students are able to apply the econometric and statistical tool kit to an actual dataset, generating a short research report that demonstrate their ability to make “causal statements” in social science.

 **Table 1: PhD Learning Goal 3, Objectives and Traits**

|  |  |
| --- | --- |
| **PhD – 3** | **Learning Goal, Objectives and Traits** |
| **GOAL** | **Students mastered analytical and methodological skills needed to know the prior literature and contribute to the research in his/her area of specialization.** |
| **Objective 1:** | *From a deep theoretical angle, students have a thorough understanding of the statistics and econometrics techniques in their field of study.* |
| Trait 1: | Students understands the basic statistical tools used in econometrics. |
| Trait 2:  | Students understands the basic principles of causal inference and its relationship to statistical correlations.  |
| Trait 3: | Students are able explain the intuition of econometric models to a non-technical audience  |
| Trait 4:  | Students are knowledgeable about how cutting-edge research in their subfield applies econometrics techniques to data analysis. |
| **Objective 2:** | *The students are able to apply the econometric and statistical to actual datasets and generate a short research report that demonstrate their ability to make causal statements in social science.*  |
| Trait 1: | The students demonstrate a strong command in a statistical software language.  |
| Trait 2:  | The students demonstrate a strong command in a basic programming language in scientific computation.  |
| Trait 3: | The students can interpret the statistical results in the context of social science research.  |

# Rubrics

|  |
| --- |
| **Objective 1:** *From a deep theoretical angle, students have a thorough understanding of the statistics and econometrics techniques in their field of study.* |
|   | **Trait** | **Poor (0-6)** | **Good (7 - 9)** | **Excellent (10)** | **Score** |
|   | **Value** | **0** | **7** | **10** |  |
| Trait 1: | Students understands the basic statistical tools used in econometrics. | Poor understanding of basic statistics concepts | Adequate understanding of most econometrics models  | Deep understanding of how each model is analytically derived.  |   |
| Trait 2: | Students understands the basic principles of causal inference and its relationship to statistical correlations.  | Failure to distinguish correlation and causation | The understanding clearly shows students knows factors that strengthens “causal statement”  | The evidence where students implemented methods of “causal inference” in their own research report |   |
| Trait 3: | Students are able explain the intuition of econometric models to a non-technical audience | Not able to explain econometrics models in technical terms.  | The understanding clearly shows students have good intuition about the econometrics models | The understanding clears shows a superb command of economic intuition.  |   |
| Trait 4: | Students are knowledgeable about how cutting-edge research in their subfield applies econometrics techniques to data analysis. | Not able to name any leading empirical work in their field of study  | Able to explain in some depth the key statistical and econometrics models used in several leading papers.  | Able to identify the limitations in current methods and suggest improvement.  |   |
| **Criterion: Does not meet expectations: 0 – 28; Meets: 29-35 ; Exceeds: 36-40**  |

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| **Objective 2:** *The students are able to apply the econometric and statistical techniques to actual datasets and generate a short research report that demonstrate their ability to make causal statements in social science* |
|   | **Trait** | **Poor (0-6)** | **Good (7 - 9)** | **Excellent (10)** | **Score** |
|   | **Value** | **0** | **7** | **10** |  |
| Trait 1: | The students demonstrate a strong command in a statistical software language. | Struggling to perform basic tasks in data cleaning  | Able to implement most models using statistical packages | Evidence of writing well-organized computer scripts leading software  |   |
| Trait 2: | The students demonstrate a strong command in a basic programming language in scientific computation. | Struggling to perform basic tasks in scientific computation | Evidence of writing estimation routines from scratch for well-known models | Evidence of modifying and improving existing estimation routines |   |
| Trait 3: | The students can interpret the statistical results in the context of social science research | Only thinking in terms of statistical correlations | Able to think in the context of social science research | Understanding the limitation of their statistical results and thinking critically.  |   |
| **Criterion: Does not meet expectations: 0 – 18; Meets: 19-26 ; Exceeds: 27-30** |

# Assessment Process

All Ph.D. students will be assessed every academic year.

|  |  |  |
| --- | --- | --- |
| **Where and when measured?** | **How measured?** | **Criterion** |
| Course-embedded assignments in required in course FIN 704: Econometrics Theory and Applications. *A direct measurement –* Assessment will be done, typically in the Spring semester each year.   | Sampling: All PhD students.* Homework assignments
* In-class Pop Quizzes
* Final Exam
* Research Report
 | 90% of students get a grade of meets or exceeds expectation on the assessment assignment as measured by the rubric for this learning goal. |

# Results of Learning Goal Assessment

The results of the initial learning goal assessments carried out to date are included below.

**Explanation**

The learning goal has several learning objectives which are measured using a rubric that in turn contains a number of desired “traits”. Students are scored on each trait.

The grading sheets for each student are used to develop a Summary Results Sheet for each learning goal objective. A selection of these Summaries is included below.

The assessment is conducted by classifying students into the three categories:

- Does not meet expectations
- Meets expectations
- Exceeds expectations

The right-hand column in the table is used to record the average score of the students on each trait. This table provides an indication of the relative performance of students on each trait.

The second table on each sheet provides the counts of students who fall in each of the above three categories for the overall learning objective.

The person doing the assessment provides explanatory comments and recommendations on the bottom of the Results Summary Sheet. The recommendations improve content or policies of the program.

# Results of Assessment: Spring 2022

**We will start assessment in Spring of 2022**

**ASSESSMENT DATE: May 10th, 2022**

**ASSESSOR: Victor Luo, Course Instructor for “Fin 704”**

**NO. OF STUDENTS TESTED: 7 COURSE: Fin 704**

|  |
| --- |
| **Objective 1:** *From a deep theoretical angle, students have a thorough understanding of the statistics and econometrics techniques in their field of study.* |
|  | **Number of Students** |  |
| **Learning Goal Traits** | **Not Meet Expectat-ions 0 - 6** | **Meet Expectat-ions 7-9** | **Exceed Expectat-ions 10** | **Avg. Grade on Trait** |
|  |  |  |  |  |
| Trait 1. Students understands the basic statistical tools used in econometrics. | **0** | **4** | **3** | **8.86** |
| Trait 2. Students understands the basic principles of causal inference and its relationship to statistical correlations. | **0** | **6** | **1** | **8.29** |
| Trait 3.Students are able explain the intuition of econometric models to a non-technical audience | **0** | **6** | **1** | **8.57** |
| Trait 4. Students are knowledgeable about how cutting-edge research in their subfield applies econometrics techniques to data analysis. | **1** | **4** | **2** | **8.86** |
| **Average Grade (Maximum 10)** | **8.64** |

|  |  |  |  |
| --- | --- | --- | --- |
| Objective 1  | **Not meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on Average score across all traits)* | **1** | **3** | **3** |
| **Students meeting or exceeding expectations:****Target is 90%** | **6 out of 7** |

**NO. OF STUDENTS TESTED: COURSE: Fin 704**

|  |
| --- |
| **Objective 2:** *The students are able to apply the econometric and statistical techniques to actual datasets and generate a short research report that demonstrate their ability to make causal statements in social science* |
|  | **Number of Students** |  |
| **Learning Goal Traits** | **Not Meet Expectat-ions 0 - 6** | **Meet Expectat-ions 7-9** | **Exceed Expectat-ions 10** | **Avg. Grade on Trait** |
|  |  |  |  |  |
| Trait 1: The students demonstrate a strong command in a statistical software language. | **0** | **1** | **6** | **9.57** |
| Trait 2: The students demonstrate a strong command in a basic programming language in scientific computation. | **1** | **3** | **3** | **9.00** |
| Trait 3. The students can interpret the statistical results in the context of social science research | **0** | **6** | **1** | **8.43** |
|  |  |  |  |  |
| **Average Grade (Maximum 10)** | **9.00** |

|  |  |  |  |
| --- | --- | --- | --- |
| Objective 2 | **Not meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on Average score across all traits)* | **0** | **1** | **6** |
| **Students meeting or exceeding expectations:****Target is 90%** | **7/7** |

**Comments:**

**REMEDIAL ACTIONS:**

# OUTcomes from PRevious Assessments.

After the Review Spring 2022

Add Comments

#

The following table shows the average scores on each goal objective over time.

We will add to this over time.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Objective 1 | Objective 2 | Fraction of “Excellent” performers. |
| 1. Round 2022 | 8.64 | 9.00 | 43% ( 2 out of 7) |
| 2. Round 2023 |  |  |  |
| 3. Round 2024 |  |  |  |

# CLOSE LOOP PROCESS – CONTINUOUS IMPROVEMENT RECORD

**Assurance of Learning**

**Assessment/Outcome Analysis**

**Close Loop Process - Continuous Improvement Record**

**Program:** PhD in Business Administration

**Goal 3:** *Ph.D. graduates mastered analytical and methodological skills needed to know the prior literature and contribute to the research in his/her area of specialization*

**Goal Owner:** Victor Luo (or Course instructor of Fin 704).

**Where Measured:** Course-embedded assignments in required course *Fin 704: Econometrics Theory and Applications.* Assessed in the Spring semester each year.

How Measured: Sampling: All PhD students.

* Homework assignments
* In-class Pop Quizzes
* Final Exam
* Research Report

|  |  |
| --- | --- |
| **Objective 1** | *From a deep theoretical angle, students have a thorough understanding of the statistics and econometrics techniques in their field of study.* |
| **When** **Assessed** | Spring 2022 |
| **Remedial****Action**  | Encourage more in-class discussion to monitor closely the student’s progress.  |
| **Outcome from previous assessment** | THIS WILL BE BLANK FOR THE FIRST ASSESSMENT |
|  |  |

|  |  |
| --- | --- |
| **Objective 2** | *The students are able to apply the econometric and statistical techniques to actual datasets and generate a short research report that demonstrate their ability to make causal statements in social science* |
| **When** **Assessed** | Spring 2022 |
| **Remedial****Action**  | No action needed. |
| **Outcome from previous assessment** | THIS WILL BE BLANK FOR THE FIRST ASSESSMENT |
|  |  |