Assurance of Student Learning 2018-2019	
Gordon Ford College of Business, Ogden College of Science and Engineering	Economics, Mathematics
Mathematical Economic 731	

Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.			
Student Learning Outcome 1: Students will demonstrate their ability to apply mathematical models to study economic questions and to present the results of their research in writing.			
Instrument 1	**Direct: Analysis of Capstone Project/Research Paper**		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.		**Met**	Not Met
Student Learning Outcome 2: Students will demonstrate ability to convey research ideas and findings using <u>oral</u> communication and appropriate visual aids.			
Instrument 1	**Direct: Capstone Project Poster Presentation**		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2		**Met**	Not Met
Student Learning Outcome 3: Students will demonstrate knowledge of key principles of micro- and macroeconomics.			
Instrument 1	**Direct: Microeconomics Exam**		
Instrument 2	**Direct: Macroeconomics Exam**		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.		**Met**	Not Met
Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)			
Students met the stated learning objectives. Analysis of the individual items of assessment rubrics identified potential areas of improvement that including better placing of student research in the context of existing literature, and better use of visual aids in the research presentation.			

Student Learning Outcome 1	
Student Learning Outcome	Students will demonstrate their ability to apply mathematical models to study economic questions and to present the results of their research in writing.
Measurement Instrument 1	DIRECT measures of student learning: Students in the Mathematical Economics major (731) are required to complete a capstone course at the end of the program (ECON 497 or MATH 497). One of the requirements of the course is to write a research paper that synthesizes the knowledge or economics and mathematics. The goal of the project is to assess how well the students can apply their knowledge to study real-world questions. The papers are evaluated on the following criteria: 1. Did a student formulate an appropriate research question grounded in economic theory? 2. Does the paper contain an adequate literature review? 3. Did a student design an appropriate quantitative model to study the research question? 4. Did the student employ appropriate data to test the hypothesis and interpret the findings correctly?
Criteria for Student Success	At the end of the program, students should be able to perform on average at the level of Capstone (4) or Milestone (3) according to LEAP *Inquiry and Analysis* and *Quantitative Literacy* rubrics.

Program Success Target for this Measurement	80% or more	**Program Success Target for this Measurement**	83.3%

Methods	For the purpose of consistent measurement, direct artifacts were collected from only from the students in the ECON 497 senior assessment course – only one student was registered for MATH 497 during the assessment period. The data cover the entire population of 2018-19 graduates of the program who took ECON 497 (N=1 in the fall of 2018 and N=11 in the spring of 2019). The papers were evaluated by three economics faculty on the four criteria listed above using a 1-4 scale for each criterion. The scores were assigned based on LEAP *Inquiry and Analysis (IA)* and *Quantitative Literacy (QL)* rubric items (1) Topic Selection [*IA*], (2) Existing Knowledge, Research and/or Views [*IA*], (3) Representation [*QL*], (4) Application/Analysis [*QL*]. Using this rubric, each evaluator produced an average score for each paper by computing a simple average of the four items of the rubric. Therefore, each paper received three scores – one from each evaluator – and the mean of these three score was computed for each student.

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.	Met	Not Met

Student Learning Outcome 2			
Student Learning Outcome	Students will demonstrate ability to convey research ideas and findings using <u>oral</u> communication and appropriate visual aids.		
Measurement Instrument 1	DIRECT measures of student learning outcomes: Students in the Mathematical Economics major (724) are required to complete a capstone course at the end of the program (ECON 497 or MATH 497). Students in ECON 497 are required to write a paper and present it to the economics faculty. The presentations are structured as a mini-conference with each student giving a poster presentation. Each student is required to prepare a poster, deliver a brief summary of his or her paper, and answer follow-up questions. The presentations are evaluated on the following criteria: 　　1. Was the information organized well on the poster? 　　2. Did the student follow good practices when designing the poster? 　　3. Did the student present the material well?		
Criteria for Student Success	At the end of the program, students should be able to perform at the level of Capstone (4) or Milestone (3) according to LEAP *Oral Communication* rubric.		
Program Success Target for this Measurement	80% or more	**Percent of Program Achieving Target**	83.3%
Methods	For the purpose of consistent measurement, direct artifacts were collected from only from the students in the ECON 497 senior assessment course – only one student was registered for MATH 497 during the assessment period. The data cover the entire population of 2018-19 graduates of the program who took ECON 497 (N=1 in the fall of 2018 and N=11 in the spring of 2019). Three faculty members served as the assessment committee tasked with evaluating all of the poster presentations to ensure consistency of measurement. Students' presentations were rated on the three criteria listed above using a 1-4 scale for each criterion. The scores were assigned based on LEAP *Oral Communication* rubric items (1) Organization, (2) Supporting Material, (3) and Language. Using this rubric, each evaluator produced an average score for each presentation by computing a simple average of the three items of the rubric, with each student receiving three scores – one from each evaluator – and the mean of these three score was computed was computed for each student.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.		==Met==	Not Met

	Student Learning Outcome 3		
Student Learning Outcome	Students will demonstrate knowledge of key principles of micro- and macroeconomics.		
Measurement Instrument 1	DIRECT measures of student learning: Students in the Mathematical Economics major (724) are required to complete a capstone course at the end of the program. During the course, students have two take two exams – a microeconomics exam and a macroeconomics exam. The exams used in the class have been developed by the National Council for Economic Education (NCEE). These exams were designed with two objectives in mind: "(1)… to offer a reliable and valid assessment instrument for students in principles of economics curses; and (2) to provide norming data for large national sample of students in principles classes…". The exams cover a range of economic topics and can serve as a good measure not only of the attainment of knowledge in the principles courses but also as a measure of retention and reinforcement of that knowledge throughout the program.		
Criteria for Student Success	At the end of the program students should perform at the 70th percentile or higher compared to the national sample of economics principles students.		
Program Success Target for this Measurement	80% or more on each subject	**Percent of Program Achieving Target**	Micro – 81.8% Score >15 Macro – 90.9% Score>16
Methods	The tests used as the instrument are the Test of Understanding of College Economics (TUCE), developed by NCEE in conjunction with the American Economic Association. The tests cover a range of topics normally covered in the principles courses as well as in the rest of the upper-level courses of a typical economics program. Both micro- and macroeconomics tests consist of 30 multiple-choice questions. Based on the national sample of 3,255 college and university students who took these tests, for the microeconomics test, the score of 14 corresponds to a 67-th percentile and a score of 15 corresponds to 74th percentile. For the macroeconomics test, the score of 16 is the 69th percentile and 17th is 74th percentile. The tests were administered to all of the students in the ECON 497 capstone course (N=1 in the fall of 2018 and N=11 in the spring of 2019).		

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.	**Met**	Not Met

Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)

While all of the learning objectives have been met, analysis of individual items in the rubrics identified potential areas of improvement. On the SLO 1, 81.8% of the students scored 3 or higher on *Existing Knowledge and Research* (81.8%). On SLO 2, 81.8% of students scored above 3 on *Supporting Materials* item. While this performance meets our targets, between 90% to 100% of other items received a scores of 3 or above. This indicates that students in the Mathematical Economics excel in their modeling skills and the analysis but don't do as well on contextual understanding of their research and visual presentation of their results. These are relatively minor problems and are being address through better advising of the students in the senior assessment course.

Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)

At the end of the 2019-20 academic year, graduating seniors will be assessed on the same criteria and a more detailed picture will emerge.