

TITLE: Graduate Certificate in Applied Econometrics

ORIGINATING DEPARTMENT: Department of Economics

ADMINISTERING UNIT (if different): n/a

First Term Certificate is to be offered: Fall 2015

Primary Contact Name: Craig Depken, II

Graduate Program Director Name (if different): n/a

A: Summary

The Graduate Certificate in Applied Econometrics program provides students an opportunity to expand and update their economics education. The certificate program requires completion of 12 semester hours (four courses) of existing Belk College of Business 6000-level courses in econometrics.

B: Catalog Copy

The Graduate Certificate in Applied Econometrics provides students with a strong foundation in applied econometrics, a skill set that is increasingly in demand. Additionally, students considering graduate study in economics have the opportunity to explore material prior to formally committing to a full graduate degree program. The certificate program requires completion of 12 graduate credit hours of coursework in econometrics (4 courses).

#### 1. Admission Requirements

In addition to the general requirements for admission to the Graduate School, the following are required for graduate study in Economics:

- A bachelor's degree, or its equivalent, from a regionally accredited college or university
- GPA of at least 2.75 (based on a 4.0 scale) on all previous work completed beyond high school (secondary school).
- An online application through the Graduate School's application system
- A statement of purpose
- Unofficial transcripts of all college course work attempted
- Official and satisfactory scores on the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS), if English is not the applicant's native language and he or she has not earned a post-secondary degree from a U.S. institution

#### 2. Program Description

The Graduate Certificate in Applied Econometrics requires completion of 12 semester hours of 6000-level courses in econometrics. Transfer credits are not accepted into the

Graduate Certificate in Applied Econometrics program. Students must earn a grade of B or above in all four courses that make up the certificate program.

This 12-credit certificate program consists of:

Core Requirement (9 credit hours):

- ECON 6112 Graduate Econometrics (3)
- ECON 6217 Advanced Microeconomics (3)
- ECON 6218 Advanced Business and Economic Forecasting (3)

Plus 1 of the following 2 elective courses (3 credit hours):

- ECON 6219 Financial Econometrics (3)
- ECON 6257 Applied Computational Economics (3)

3. Will the certificate program be delivered on campus, 100% online program, or a combination? Describe any distance education components in detail.

The Graduate Certificate in Applied Econometrics will be delivered on campus. The existing facilities in the Belk College of Business will be adequate to support the certificate program. The certificate program will also utilize existing classrooms at the UNC Charlotte Center City Building.

C: Justification

1. Need for program

The Graduate Certificate in Applied Econometrics would allow students to gain a strong foundation in applied econometrics, a skill set that is increasingly in demand. Having an advanced background in econometrics will enable students to be more competitive candidates and more prepared employees. Additionally, students considering graduate study in economics would have the opportunity to explore material prior to formally committing to a full graduate degree program.

Furthermore, the Charlotte branch of the Richmond Federal Reserve has inquired about additional training in economics for their employees who do not hold a Ph.D. The Graduate Certificate in Applied Econometrics will allow those employees to pursue advanced education while remaining fully employed. It will also serve as a bridge between industry and academics, allowing employees of banks and other financial sector firms to gain the skills necessary to develop within their current roles or to pursue their career goals.

2. Impact statement

- a. What group of students would be served by this certificate?

The Graduate Certificate in Applied Econometrics will serve post-baccalaureate and possibly post-graduate students interested in pursuing their education in

the area of applied econometrics. The certificate program may be pursued by students interested in only earning the certificate as well as students who intend to enroll in the Masters of Science in Economics program.

- b. What impact will this certificate have on existing curricula?

Students completing the Graduate Certificate in Applied Econometrics will take 12 semester hours of four existing Belk College of Business graduate econometrics courses. Little impact on the graduate economics courses is expected as there will only be around five students per year completing the certificate. The graduate economics courses have the capacity to absorb these students.

- c. What is the projected annual enrollment for the first five years? Include “new” student enrollment counts and indicate if the program will primarily be pursued by students who are concurrently enrolled in a master’s program or only enrolled in the certificate program.

It is anticipated that the Graduate Certificate in Applied Econometrics will enroll five students annually. The certificate program may be pursued by students interested in only earning the certificate as well as students who intend to enroll in the Masters of Science in Economics program.

- d. Are any new resources required to implement the certificate? If “yes” what are they and how will these needs be met?

No new resources are required to implement the Graduate Certificate in Applied Econometrics, as all courses are existing courses.

3. Will a tuition increment be charged for this certificate? If “yes”, how much?

The Belk College of Business has a graduate student tuition increment in place for all BCOB graduate certificates and degree programs as shown in the tuition and fee schedule below. The same structure will be in effect for the Graduate Certificate in Applied Econometrics. The tuition increment for a full-time graduate student is \$2,750.00 per semester and is incremented for part-time students based on the number of credit hours as shown in Table 1 below.

**Table 1. Belk College of Business Graduate Tuition**

	0 - 2 Credit Hour	3 - 5 Credit Hour	6 - 8 Credit Hour	9+ Credit Hour
Tuition NC Resident	\$501.00	\$1,002.00	\$1,503.00	\$2,004.00
Tuition Non-Resident	\$2,037.00	\$4,073.75	\$6,110.75	\$8,147.50
Tuition Increment	\$687.50	\$1,375.00	\$2,062.50	\$2,750.00

D: Student Learning Outcomes (provide SLOs in template format)

The Student Learning Outcomes assessment plan is included in Appendix B.

E: For an educational program to be eligible for Title IV federal financial aid (unsubsidized student loans), it must lead to a degree, prepare students for further study, or lead to gainful employment. Because certificate programs do not necessarily lead to a degree, the U.S. Department of Education requires institutions to disclose certain information about the programs. If the proposed certificate is approved, it will be subject to annual Gainful Employment approval, disclosure, and most likely reporting requirements as established by the U.S. Department of Education.

F: How will the certificate be evaluated?

Evaluation of the certificate program will include reviewing metrics such as the number of students enrolled in the program and the number of students completing the certificate on an annual basis. The Student Learning Outcomes assessment report will also be used to evaluate whether students are learning what is intended they will learn after completion of the certificate and its courses.

G: Letters of support or consultation as required. All units sponsoring and participating in the certificate should approve the proposal and provide letters of support.

The proposed Graduate Certificate in Applied Econometrics will operate out of the Department of Economics. Faculty members from the Department of Economics made up the certificate planning committee and engaged with departmental faculty to gauge interest. Discussions were favorable. A copy of the Graduate Certificate in Applied Econometrics proposal was shared with Jennifer Troyer, Economics Department Chair; and Craig Depken, II, MS Economics Program Director. Their letter of support is included in Appendix A.

H: Additional requested information

The Graduate Certificate in Applied Econometrics requires completion of 12 semester hours (four courses) of existing Belk College of Business 6000-level courses in econometrics. The certificate program will generally take three semesters to complete. If a student is interested in pursuing a Master of Science in Economics, all certificate courses will transfer to the degree program. Prerequisite requirements for each of the certificate courses is listed below:

ECON 6112. Graduate Econometrics. (3) Prerequisites: Admission to graduate program and permission of program coordinator.

ECON 6217. Advanced Microeconomics. (3) Prerequisites: ECON 6112 or ECON 6113.

ECON 6218. Advanced Business and Economic Forecasting. (3) Prerequisite: ECON 6112.

ECON 6219. Financial Econometrics. (3) Prerequisite: ECON 6113, ECON 6218, or MATH 6201.

ECON 6257. Applied Computational Economics. (3) Prerequisites: ECON 6201 and ECON 6202, or permission of the program coordinator.

I: Signatures and date (as appropriate). If the certificate is interdisciplinary, signatures from each participating unit are required.

1. Department Chair: Jennifer Troyer \_\_\_\_\_

2. Graduate Program Director: Craig Depken, II \_\_\_\_\_

3. College Graduate Curriculum Committee Chair: Alan Blankley \_\_\_\_\_

4. College Dean: Steven H. Ott \_\_\_\_\_

5. Graduate Council Chair: Alan Freitag  6 April 2015

**Procedure for certificate program approval**

1. The originating unit files the proposal simultaneously with the appropriate college or colleges and with the Graduate Council. If any issues arise during the review with the college(s) or Graduate Council, the process will stop until the issue is resolved.
2. Approvals by the appropriate college committees and deans, the Graduate Council and the appropriate consultations (if required) are forwarded to the Dean of the Graduate School (DGS). The DGS, having determined that all appropriate consultations have been conducted and that the home college has approved the proposal with wording consistent to that approved by the Graduate Council, forwards the proposal to Academic Affairs to be placed on the FEC Consent Calendar.
3. The proposing unit and the DGS will work cooperatively to ensure timely consideration by by all involved.
4. Certificate programs will be approved for a five-year period. They are reviewed for renewal every five years using the Certificate Renewal Process approved by the Graduate Council (4/4/2006).
5. Certificates can be modified at any time through the same procedure as new programs, or can be ended at an earlier date at the request of the program or discretion of the Provost if they are no longer justified.

Employment approval, disclosure, and most likely reporting requirements as established by the U.S. Department of Education.

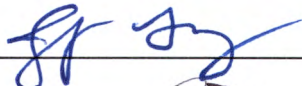



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3. The proposing unit and the DGS will work cooperatively to ensure timely consideration by all involved.





**J. Murrey Atkins Library**

**Consultation on Library Holdings**

**To:** Nicole Tarr  
**From:** Nicole Spoor  
**Date:** November 24, 2014  
**Subject:** Proposed Graduate Certificate in Applied Econometrics

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**Summary of Librarian's Evaluation of Holdings:**

**Please Check One:**

- 1. Holdings are superior
- 2. Holdings are adequate
- 3. Holdings are adequate only if dept. purchases additional items
- 4. Holdings are inadequate

**Comments:**

After an evaluation of Atkins Library resources with regards to journals, databases, and circulating books that are relevant to the establishment of a new graduate certificate in Applied Econometrics, it is found that the library's resources are sufficient to support this certificate.

The following table shows some of the print source holdings that are relevant to this certificate. Individual books not owned by the library may be requested through the library's interlibrary loan service.

Catalog Search Performed	Total Results	Results Less Than 3 Years Old
econometrics	621	93
(business OR economic) AND forecasting	1294	242

The library also provides access to many databases that are relevant to this certificate, including Business Source Complete, EconLit, JSTOR, Lexis Nexis, and Science Direct.

Conclusion: The holdings of Atkins Library with regards to print resources, databases and journals are sufficient to support an graduate certificate in Applied Econometrics. It is suggested that the participating academic departments continue ordering new resources as they are published.

**Evaluator's Signature: D. Nicole Spoor**

**Date:** November 24, 2014

**APPENDIX A**

**Letters of Support**



**UNC CHARLOTTE**

**BELK COLLEGE *of* BUSINESS**

9201 University City Blvd, Charlotte, NC 28223-0001  
t/ 704.687.7577 f/ 704.687.4014 www.belkcollege.uncc.edu

**Memorandum**

**To:** Dr. Craig Depken, Program Director, M.S. in Economics  
**From:** Dr. Jennifer Troyer, Chair, Department of Economics  
**Subject:** Consultation Regarding Proposed Graduate Certificate in Applied Econometrics  
**Date:** November 19, 2014

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I am writing in full support of the new Graduate Certificate in Applied Econometrics.

As you know, all twelve of the hours in the proposed certificate would come from graduate classes already taught by the Department of Economics. We currently offer ECON 6112, ECON 6218 and ECON 6219 in both Fall and Spring. ECON 6257 and ECON 6217 are currently offered once per year. At this point, all classes have room for additional students.

The combination of courses would provide individuals with a strong and current set of tools that could be brought to data to answer a wide range of business and policy-relevant questions, such as predicting the demand for products, modeling the probability that a consumer engages in a particular behavior, and exploring the causal effects of policy changes on individuals and firms. We have received input from industry indicating that there is demand by those doing quantitative analyses who are interested in advancing or updating their applied econometrics skills. The Certificate may also be a useful stepping stone into the M.S. in Economics program for students who are contemplating the full degree.

Please let me know if I can be of further assistance.





UNC CHARLOTTE

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**Memorandum**

**To:** Dr. Richard Buttimer, Senior Associate Dean, Belk College of Business  
**From:** Dr. Craig A. Depken, II, Program Director, MS Economics  
**Subject:** Consultation Regarding Proposed Graduate Certificate in Applied Econometrics  
**Date:** November 19, 2014

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This letter is to convey my full support for the proposed Graduate Certificate in Applied Econometrics.

The proposed graduate certificate program will fill a gap in the offerings of the Belk College of Business in the area of applied econometrics. As you are aware, the college currently offers a thirty hour MS Economics, a thirty hour MS Math Finance, and a thirty hour PHD in Finance. In all three of these program students are required to take certain econometrics classes and have the option to take others, in both the Department of Economics and the Department of Finance. The proposed graduate certificate program would require only twelve hours and would focus on four core applied econometrics classes offered in the Department of Economics. Of the four courses, three are required and include graduate econometrics, advanced microeconometrics, and business forecasting. The fourth course will be chosen between financial econometrics, a highly valuable class for those who work in the financial sector, or computation economics, a highly valuable class for those who work in simulation models and systems optimization.

The proposed graduate certificate program will therefore allow students who are not ready to commit to one of the other three programs the opportunity to obtain skills while retaining the option to join one or more of the programs in the future. Furthermore, students who complete the certificate program will have a skill set that is in high demand in the current and future business environment. We have heard from industry that the proposed certificate program is in demand and we hope to have a steady-state enrollment of 5-10 students after a couple of years.

Finally, the proposed graduate certificate program will not require any more resources from the Department or the College.

Thank you and please feel free to contact me if you have further questions.

Sincerely,

Craig A. Depken, II  
Professor of Economics  
Program Director – MS Economics



UNC CHARLOTTE  
BELK COLLEGE *of* BUSINESS

Department of Finance

9201 University City Blvd, Charlotte, NC 28223-4001  
t: 704.687.7623 f: 704.687.6987 www.belkcollege.uncc.edu

**Memorandum**

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**To:** Dr. Jennifer Troyer, Chair, Department of Economics  
**From:** Dr. Dolly King, Chair, Department of Finance  
**Subject:** Consultation Regarding the Establishment of the Graduate Certificate in Applied Econometrics Program  
**Date:** November 20, 2014

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Thank you for consulting with the Department of Finance on the establishment of the Graduate Certificate in Applied Econometrics Program. I have reviewed the proposal and note that one Finance course is included in the list of elective courses in this program: FINN 6219 Financial Econometrics. The Department of Finance offers this course regularly in fall semesters. The inclusion of this course in the proposed program does not require any additional resources from our department.

On behalf of the Department of Finance, I fully support your proposal to establish the Graduate Certificate in Applied Econometrics Program. Please let me know if I can be of further assistance.

APPENDIX B



**Student Learning Outcomes Assessment Plan**

**College:** Belk College of Business

**Department:** Economics

**Degree Program:** Graduate Certificate in Applied Econometrics

**Student Learning Outcome 1**

(knowledge, skill or ability to be assessed)

Students will demonstrate knowledge of advanced quantitative methods as applied in economics.

**Effectiveness Measure:** Identify the data collection instrument, e.g., exam, project, paper, etc. that will be used to gauge acquisition of this student learning outcome and explain how it assesses the desired knowledge, skill or ability. A copy of the data collection instrument and all scoring rubrics associated with this student learning outcome are to be attached to the plan.

The instruments used to assess student knowledge of advanced quantitative methods as applied in economics will be questions and problems embedded in two courses. Specifically, the questions and problems test the concepts below, which, together effectively gauge overall student understanding:

1. Students will demonstrate the ability to formulate and specify appropriate statistical methods.
2. Students will demonstrate the ability to identify and collect data adequate to test relevant hypotheses.
3. Students will demonstrate the ability to use a standard statistical software package to complete the statistical analysis component of problem sets and projects.
4. Students will demonstrate the ability to formulate and assess appropriate univariate and multivariate forecasting models.
5. Students will demonstrate the ability to communicate the analysis of results in a written report.

**Methodology:** Describe when, where and how the assessment of this student learning outcome will be administered and evaluated. Describe the process the department will use to collect, analyze and disseminate the assessment data to program faculty and to decide the changes/improvements to make on the basis of the assessment data.

This SLO will be measured in two graduate economics courses: ECON 6112, *Graduate Econometrics*, every other Fall semester and ECON 6218, *Advanced Business and Economic Forecasting*, every other Spring semester.

Students will be assessed using course embedded questions and problems designed to measure student knowledge related to each of the five effectiveness measures.

Program faculty members are responsible for collecting assessment data. Program faculty report(s) individual student assessment results to the Belk College of Business Assurance of Learning [AoL] Data Center. The Data Center collects and combines the program's assessment data from across multiple courses. The Data Center then aggregates the data and returns statistical results to all program faculty. Program faculty members analyze these results and hold a closing the loop meeting each semester to complete the continuous improvement process. At this meeting, program faculty determines what changes or improvements should be made to instruction, the program, individual courses, or to the assessment process. Changes are implemented the next time the course is taught.

**Performance Outcome:** Identify the percentage of students assessed that should be able to demonstrate proficiency in this student learning outcome and the level of proficiency expected. *Example: 80% of the students assessed will achieve a score of "acceptable" or higher on the Oral Presentation Scoring Rubric*

75% of students will correctly answer 75% of the questions correctly and/or earn a score of 75 or higher (out of 100) on the assessment questions and problems related to each effectiveness measure.