

January 11, 2017

MEMORANDUM

TO: State Board of Regents

FROM: David L. Buhler

SUBJECT: University of Utah – Bachelor of Science in Quantitative Analysis of Markets and Organizations with Emphases in: Business Economics and Analytics, and Finance

Issue

The University of Utah requests approval to offer the Bachelor of Science in Quantitative Analysis of Markets and Organizations (QAMO) with two areas of emphasis, one in Business Economics and Analytics, and another emphasis in Finance, effective Fall Semester, 2017. The proposed program was approved by the institutional Board of Trustees September 13, 2016.

Background

There is strong labor market demand for employees who understand and can apply analytic skills that assist in business decision-making and development of strategy. The intersection of business and economics often provides a core basis for analysis that leads to a solid understanding of operations and market position. Further, many graduate programs in business and related fields incorporate high-level analytic tools. This proposed program will provide students with a background in quantitative analytic tools that link business and economics and that are useful in a variety of workplace settings. Additionally, the program will prepare students for graduate programs in business and related fields.

The program will emphasize:

- Quantitative analysis to develop students' analytical, technical and problem-solving skills
- Econometrics skills that will give students an ability to answer real-world questions using real-world data
- Game theory, a toolkit that is essential for understanding strategic decision-making
- Business applications of economics with courses that blend economics and game theory with econometric analysis of real-world data.

While the program will be offered by the business school, it has been developed through partnership with the economics department. Students completing the QAMO degree will take three economics courses and will also complete the requirements for the emphasis in Business Economics and Analytics (BEA). The finance emphasis is an option for students and is the first of several possible emphases that will likely be developed as options within the program. Unlike other business programs, QAMO students will not be required to complete the business school's pre-business core or the upper division business core; it has its

own set of specialized courses. Additionally, the BEA emphasis will be offered as an option for economics students who wish to gain an understanding of business economics.

The institution has identified occupational groups for which the proposed program will prepare students. The following table shows these occupational groups along with labor market information as reported by the Utah Department of Workforce Services. Information is projected for the 2014 – 2024 time period.

Occupational Group	SOC Code	Percent Annual Growth	Annual Openings	Median Annual Income
Management Analysts	13-1111	4.3	380	\$70,850
Market Research Analysts	13-1161	5.2	350	\$53,120
Financial Analysts	13-2051	2.8	90	\$72,510
Credit Analysts	13-2041	2.6	70	\$41,840
Operations Research Analysts	15-2031	6.0	50	\$69,360
Budget Analysts	13-2031	2.2	20	\$71,830
Statisticians	15-2031	6.4	10	\$73,830

Policy Issues

The proposed program has been developed through established institutional procedures and Board of Regents policy. Chief academic officers as well as faculty in related departments from the Utah System of Higher Education institutions have reviewed the proposal and have provided input.

Commissioner's Recommendation

The Commissioner recommends the Board of Regents approve the Bachelor of Science in Quantitative Analysis of Markets and Organizations with Emphases in: Business Economics and Analytics, and Finance.

David L. Buhler
Commissioner of Higher Education

DLB/BKC
Attachment

Utah System of Higher Education Program Description - Full Template

Section I: The Request

University of Utah requests approval to offer the following Baccalaureate degree(s): Quantitative Analysis of Markets and Organizations with Emphases in Business Economics & Analytics and Finance effective Fall 2017. This program was approved by the institutional Board of Trustees on .

Section II: Program Proposal

Program Description

Present a complete, formal program description.

The purpose of the Bachelor of Science in Quantitative Analysis of Markets & Organizations (QAMO) degree is to give students a deep, rigorous and technical education in the application of economic analysis to business decision-making.

The degree is built around four points of differentiation from other degrees in economics and business at the University of Utah:

- First, the program is more quantitatively demanding, and is designed to build students' analytical, technical and problem-solving skills.
- Second, the program emphasizes econometrics; these skills will give students an ability to answer real-world questions using real-world data.
- Third, the program emphasizes the analytical tools of game theory, a toolkit that is essential for understanding strategic decision-making.
- Fourth, the program focuses on the business applications of economics, with courses that blend economics and game theory with econometric analysis of real-world data.

Further, while the QAMO degree is granted by the David Eccles School of Business, it is an economics degree that emphasizes business applications as opposed to being a business degree. Students majoring in QAMO are not required to complete the Business School's Pre-Business Core or its Upper Division Core.

The QAMO major is connected to the business curriculum in three ways. First, QAMO students are required to take the "Honors Business Foundations" course (BUS 1051). This is a liberal-education course focusing on the nature of business and its historical, philosophical, and current role in today's world. Second, students are required to take a new survey course, "Economics and the Business Disciplines," which will be taught by invited faculty from other business disciplines (Accounting, Entrepreneurship, Finance, Information Systems, Management, Marketing, Operations, Strategy, with participation at their discretion). The goal of the course will be to provide a survey of the conceptual and practical content of each business discipline, and to illustrate the applications of economic reasoning within each discipline. Third, interested business departments can offer a transcribed emphasis in their discipline within the QAMO major. The courses in such an emphasis would illustrate the applications of economic analysis within that business discipline, and prepare interested QAMO students for business careers related to that discipline. One such emphasis (in Finance) is proposed below, and we expect to submit others to the college curriculum committee soon.

This major has been designed in collaboration with the University of Utah's Department of Economics, which is part of the College of Social and Behavioral Sciences. Students completing the QAMO degree must take three courses from the Department of Economics. Students completing the QAMO degree will also complete the requirements for an emphasis in Business Economics & Analytics (BEA). The Business Economics & Analytics emphasis has been jointly developed by the Department of Finance and the Department of Economics, and is available to students majoring in Economics as well as QAMO.

Consistency with Institutional Mission

Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at higheredutah.org/policies/policyr312/.

The mission of the University of Utah is to serve the people of Utah and the world through the discovery, creation and application of knowledge; through the dissemination of knowledge by teaching, publication, artistic presentation and technology transfer; and through community engagement. This major is consistent with the Regents-approved mission because it will disseminate knowledge to students about the applications of economic analysis to business problems.

Section III: Needs Assessment

Program Rationale

Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program.

Economics is both a foundational social science and a valuable toolkit for decision-making. The Quantitative Analysis of Markets & Organizations Major will fill a need by giving interested students a deep, rigorous and technical education in the applications of economic analysis to business decision-making.

Economics is an unusually broad field, and business economics is a growing subfield within economics. Leading MBA programs typically employ dozens of economics PhDs who teach and conduct research at the intersection of economics and business. Increasingly, universities are offering "business economics" as an undergraduate major. In some cases, such majors are collaborations between an economics department and a business school, while in other cases the majors are housed solely within a school of business.

The QAMO major, together with a Business Economics & Analytics emphasis, is designed to give students two ways to explore the connections between economics and business. The Business Economics & Analytics emphasis, which consists of three courses from economics and three from business, can be taken as part of a standard economics major. Additionally, students majoring through the school of business will have a foundation in economics and analytics that will be useful in almost all professional business settings.

QAMO students can opt for additional depth in the business disciplines by selecting an emphasis within the QAMO major. Business departments will offer a transcripted emphasis in their respective disciplines. The courses in such an emphasis would illustrate the applications of economic analysis within that business discipline, and prepare interested QAMO students for business careers related to that discipline. The first of these business emphases in Finance is part of this proposal. Other emphases will follow.

The QAMO major and the BEA emphasis will differ from the current economics major in four important ways.

First, the QAMO major and the BEA emphasis will require a high level of quantitative proficiency on the part of students. Math 1210 (Calculus I) and Math 1220 (Calculus II) will be pre-requisites for all BEA and QAMO courses. This choice will allow us to emphasize analytical rigor in our courses, and further develop students' quantitative and technical skills.

Second, the QAMO major and the BEA emphasis will develop students' econometric skills and their ability to apply econometric analysis for business decision-making. The emphasis includes two required econometrics courses, while the major includes three. Students electing the major will also take a series of electives that allow students to use real-world data to conduct business-relevant analyses.

Third, the QAMO major and the BEA emphasis will require game theory (QAMO 3020) to develop students' strategic-thinking skills. For students electing the QAMO major, the game theory course will be a pre-requisite for all 4000-level electives. The application of game theory to economics (and the subsequent development of information economics) was perhaps the most important theoretical development in economics in the 1970s and 1980s, and the work done then has generated many Nobel Prizes. These tools are simply part of how mainstream economists think today, and the QAMO major will place this important toolkit front and center and use it throughout.

Fourth, the QAMO major and the BEA emphasis will emphasize business applications of economic reasoning. Leading business schools now employ large numbers of economics PhDs to teach MBA students, and the courses developed there provide a roadmap for developing business-relevant economics courses for undergraduates at the University of Utah.

It is not unusual for universities to offer various versions of an economics major. Economics is broad and diverse, and many universities have determined that students benefit from a variety of economics majors. This is increasingly common among universities with leading business schools. To illustrate, the list below shows five universities with Top-20 ranked undergraduate business programs (per Business Week) that offer economics majors or concentrations within their business schools. Each business economics program coexists with an economics department that offers an economics major through a college of arts and sciences.

Cornell University offers an "Economics" major through its College of Arts and Sciences and an "Applied Economics and Management" major through the Charles Dyson School of Applied Economics and Management.

Washington University offers an "Economics" major through its Faculty of Arts & Sciences and an "Economics and Strategy" major through the Olin Business School.

The University of Pennsylvania offers an "Economics" major through its School of Arts and Sciences and a "Business Economics and Public Policy" major through the Wharton School of Business.

Indiana University offers an "Economics" major through its College of Arts and Sciences and an

"Economic Consulting" major through the Kelley School of Business.

New York University offers an "Economics" major through its College of Arts and Sciences and an "Economics" major through the Stern School of Business.

Labor Market Demand

Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer (jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do) and the Occupation Outlook Handbook (www.bls.gov/oco).

The tools of economic analysis are in great demand in the labor market. Recently, the Brookings Institution has, through its Hamilton Project, published an online "Earnings by Major" interactive tool showing how lifetime earnings (from Census data) compare across different levels of educational attainment (high school vs. associates degree vs. bachelors degree) and across different college majors. The authors conclude: "Majors that emphasize quantitative skills tend to have graduates with the highest lifetime earnings. The highest-earning majors are those in engineering fields, computer science, operations and logistics, physics, economics, and finance."

The tool shows that

- Median annual earnings for full-time employed mechanical engineering majors 20 years after the start of the individual's career: \$100,000 (in 2014 dollars).
- Median annual earnings for full-time employed economics majors at the same point in the individual's career: \$94,000
- Computer science: \$90,000
- Finance: \$88,000

It is expected that the QAMO major, with its strong reliance on quantitative skills, will yield graduates who have better career prospects than a typical economics or business major at the University of Utah.

The degree is intended to give students strong analytical and quantitative skills, along with a firm understanding of how markets work, how to analyze data, and how to think strategically. These skills are in demand across a broad range of occupations, and it is difficult to think of many occupations in business or public policy where these skills would not be valuable.

As one data point from a similar program: Indiana University's Kelley School reports that business economics graduates have recently been hired into positions with the consultancies McKinsey, Bain, Deloitte, Accenture, PwC, KPMG; the banks Barclays, Goldman Sachs, Bank of America, and Lazard; and Fortune-500 stalwarts such as Google, Microsoft, IBM, and Procter & Gamble. According to Kelley's Career Service Office, Class of 2013 Business Economics majors earned an average starting salary of \$58,164, which is higher than that earned by accounting, finance, operations, management and marketing majors. Further, the Class of 2013 graduates obtained employment in a variety of industries:

- Consulting (41% of the Class of 2013)
- Banking and Finance (16%)
- Sales Management (10%)
- Public Accounting (10%)

- Operations (6%)
- Information Technology (4%)
- Other (12%)

Local demand for employees in data-analysis fields is strong and is likely to remain so. Projections from the Utah Department of Workforce Services for occupational groups related to the proposed program reveal the following labor market estimates for the 2014 - 2024 time period. Management Analysts are projected to grow at an annual rate of 4.3%, and have a current median annual wage of \$70,850. Market Research Analysts are projected to grow at an annual rate of 5.2% and have a current median wage of \$53,120. Budget Analysts are projected to grow at an annual rate of 2.2% and have a current median wage of \$71,830. Credit Analysts are projected to grow at a 2.6% annual rate, and have a current median wage of \$41,840. Financial Analysts are projected to grow at a 2.8% annual rate, and have a current median wage of \$72,510. Operations Research Analysts are projected to grow at a 6.0% annual rate, and have a current median wage of \$69,360. Statisticians are projected to grow at a 6.4% annual rate, and have a current median wage of \$73,830.

These occupational categories are representative of analyst occupations related to the proposed program and demonstrate evidence of demand and median wage data. These occupational groups, however, are not intended to represent a comprehensive list of occupations for which the QAMO major will offer preparation. As noted above, the analytical, statistical, and strategic thinking skills are applicable to nearly any occupation in business and public policy.

Student Demand

Provide evidence of student interest and demand that supports potential program enrollment. Use Appendix D to project five years' enrollments and graduates. Note: If the proposed program is an expansion of an existing program, present several years enrollment trends by headcount and/or by student credit hours that justify expansion.

Student demand is evidenced in two ways. First, the Business Economics and Public Policy major at Indiana University's Kelley School of Business graduates around 100 students per year. Indiana is larger than the University of Utah (32,000 undergraduates compared to our 24,000), and hence there likely be smaller numbers at the University of Utah's program.

Second, freshman and sophomore students who were enrolled in BUS 2010 were surveyed. BUS 2010 is an intermediate microeconomics course taught by economics faculty in the School of Business. These students were given a sketch of the proposed major and asked about their level of interest. The results suggest that there is considerable student interest:

- 5 students out of 44 surveyed (11%) said they would "definitely" select the proposed major
- 20 students out of 44 surveyed (45%) said they would "strongly consider" selecting the proposed major
- 16 students out of 44 surveyed (36%) said they would "consider" selecting the proposed major

Thus, 41 out of 44 would at least consider such a major. This conclusion is, of course, subject to caveats. The surveyed students are (a) interested in business, and (b) sufficiently interested in business economics to take a required economics course from School of Business. Hence, it is not likely that the responses from this group are representative of the preferences of other groups of students. However, the survey does suggest there is sufficient interest for students to consider such a major.

Similar Programs

Are similar programs offered elsewhere in the USHE, the state, or Intermountain Region? If yes, identify the existing program(s) and cite justifications for why the Regents should approve another program of this type. How does the proposed program differ from or compliment similar program(s)?

Among the five USHE universities, the University of Utah is alone in housing the Department of Economics outside the School of Business. At Southern Utah University, Utah State University, Weber State University and Utah Valley University, the Economics Department is part of the School of Business, and hence the economics majors there do emphasize the business applications of economics. These programs do not, however, offer a similar focus on quantitative proficiency, econometrics, and game theory. This major will be unique within the USHE system.

Collaboration with and Impact on Other USHE Institutions

Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in higheredutah.org/policies/policyr315/. Assess the impact the new program will have on other USHE institutions. Describe any discussions with other institutions pertaining to this program. Include any collaborative efforts that may have been proposed.

This program will not be offered outside the University of Utah's designated service area, thus the impact on other USHE institutions should be negligible.

External Review and Accreditation

Indicate whether external consultants or, for a career and technical education program, program advisory committee were involved in the development of the proposed program. List the members of the external consultants or advisory committee and briefly describe their activities. If the program will seek special professional accreditation, project anticipated costs and a date for accreditation review.

No outside consultants were involved in the development of the program. The institution does plan to convene an advisory board from industry, but at this point it does not exist. It is anticipated that such a board would assist in curriculum review and development as well as internship and job placement. As part of the David Eccles School of Business, the new major will be part of the School's review by the Association to Advance Collegiate Schools of Business (AACSB). The School of Business underwent an accreditation review in the 2014-15 academic year, and the next accreditation review will likely be in 2018 or 2019. It is not expected that the addition of this major to the School of Business will complicate the process of gaining accreditation. The AACSB assesses the School of Business on two measures: (1) participating faculty, which is an indicator of faculty engagement, and (2) academic qualifications, which is an indicator of faculty currency. The Economics Department has committed to staff the courses required for this major with tenure-line faculty, which should be sufficient to maintain academic qualifications for accreditation purposes.

Section IV: Program Details

Graduation Standards and Number of Credits

Provide graduation standards. Provide justification if number of credit or clock hours exceeds credit limit for this program type described in R401-3.11, which can be found at higheredutah.org/policies/R401.

Students must complete all courses listed in the program of study with a grade of C- or better. The total number of credit hours required is 39. To graduate, students must complete all required major coursework

with a grade of "C" or better. Students must also have an overall GPA in major coursework of 2.3 or better.

Admission Requirements

List admission requirements specific to the proposed program.

Admission to the major will be selective. The goal is to give students a deep, rigorous and technical education in the application of economics to business decision-making. As such, coursework will be quantitatively demanding, and assessment of prospective students' quantitative skills prior to admission into the major needs to take place to assure student success. Admission decisions will be based on a student's background in mathematics and performance in the QAMO 3010 course.

Curriculum and Degree Map

Use the tables in Appendix A to provide a list of courses and Appendix B to provide a program Degree Map, also referred to as a graduation plan.

Section V: Institution, Faculty, and Staff Support

Institutional Readiness

How do existing administrative structures support the proposed program? Identify new organizational structures that may be needed to deliver the program. Will the proposed program impact the delivery of undergraduate and/or lower-division education? If yes, how?

The major will require an investment in course development. None of the QAMO courses proposed as part of the major currently exist at the University of Utah, although several of these courses have been taught by our faculty at other institutions. This major is being proposed by the Finance Department, and all Finance faculty members have been consulted repeatedly during the preparation of this document. The Business Economics & Analytics Emphasis, which is shared between Finance and Economics, has been reviewed by faculty in both the Finance and Economics Departments.

Faculty

Describe faculty development activities that will support this program. Will existing faculty/instructors, including teaching/graduate assistants, be sufficient to instruct the program or will additional faculty be recruited? If needed, provide plans and resources to secure qualified faculty. Use Appendix C to provide detail on faculty profiles and new hires.

The institution has committed to hire four additional tenure-track faculty members in business economics over the next few years. These new faculty will provide support for this and other business and economics programs.

Staff

Describe the staff development activities that will support this program. Will existing staff such as administrative, secretarial/clerical, laboratory aides, advisors, be sufficient to support the program or will additional staff need to be hired? Provide plans and resources to secure qualified staff, as needed.

It is not expected that additional staff will be required to support the program.

Student Advisement

Describe how students in the proposed program will be advised.

Initial enrollments in the program are expected to be modest. The Undergraduate Advising Office at the David Eccles School of Business has sufficient capacity to serve these students. If there is a significant net increase to students into the School of Business, an increase in advising resources may be required. The Dean's Office at the School of Business has committed to support the program in the event that this becomes necessary.

Library and Information Resources

Describe library resources required to offer the proposed program if any. List new library resources to be acquired.

The institution does not expect that additional library resources will be required to support the program. The program's needs will be similar to those of existing business and economics majors.

Projected Enrollment and Finance

Use Appendix D to provide projected enrollment and information on related operating expenses and funding sources.

Section VI: Program Evaluation

Program Assessment

Identify program goals. Describe the system of assessment to be used to evaluate and develop the program.

The program's goals are:

1. To serve University of Utah students by giving them strong analytical and quantitative skills, as well as foundational knowledge about economics, econometrics, and game theory, and the application of these tools to business problems.
2. To serve the people of the State of Utah by producing graduates with strong analytical and quantitative skills, and with a firm understanding of how markets work, how to analyze data, and how to think strategically. These graduates will strengthen the state's economy by making valuable contributions to our firms and our state and local governments, and by helping attract national employers who demand the skills of economic and econometric analysis.

Progress toward these goals will be measured in two ways. On the student side, the institution will track overall interest in courses required within the major. It will also survey students in program courses and within the major to determine overall satisfaction. On the employer side, we will track starting salaries and placement rates of students to determine their post-graduation marketability. Faculty will consult with employers to learn about students' preparedness to meet today's business and policy challenges. By the fifth year of implementation, faculty will prepare a progress report to the advisory board and to the Dean's Office at the David Eccles School of Business.

Student Standards of Performance

List the standards, competencies, and marketable skills students will have achieved at the time of graduation. How and why were these standards and competencies chosen? Include formative and summative assessment measures to be used to determine student learning outcomes.

Graduates will be expected to:

1. Make use of analytically rigorous approaches to problem-solving

2. Understand, conduct, and present (in both written and oral forms) quantitative analyses
3. Build economic models using principles such as marginal analysis, optimization, and equilibrium, and apply such models to business decision-making
4. Analyze data using sophisticated econometric techniques and state-of-the-art software packages
5. Use game theory and information economics to assess the effects of strategic interactions and asymmetric information on business situations
6. Understand economic efficiency, and be able to use economic reasoning in thinking through issues of sustainability and business ethics.

These standards were selected because they form the core of how economic analysis can be applied to business situations. Students' competencies on these dimensions will be assessed in examinations, projects and assignments throughout the program.

The program's emphasis on data analysis means that students will be asked to analyze data and present their findings in many courses. Written reports and oral presentations will be a substantial part of the Business Econometrics I and Business Econometrics II courses, and are likely to be included in many elective courses.

Appendix A: Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to be awarded the degree.

For variable credits, please enter the minimum value in the table for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box at the end of this appendix.

Course Number	NEW Course	Course Title	Credit Hours
General Education Courses (list specific courses if recommended for this program on Degree Map)			
General Education Credit Hour Sub-Total			
Required Courses			
BUS 1051		Honors Business Foundations	3
ECON 4011	X	Intermediate Microeconomic Analysis for BEA	3
ECON 4651	X	Principles of Econometrics for BEA	3
ECON 3201	X	Money and Banking for BEA	3
QAMO 3010	X	Business Economics	3
QAMO 3020	X	Game Theory	3
QAMO 3030	X	Business Econometrics I	3
QAMO 3040	X	Business Econometrics II	3
QAMO 3050	X	Economics and the Business Disciplines	3
Required Course Credit Hour Sub-Total			27
Elective Courses			
QAMO 4010	X	Economics of Strategy	3
QAMO 4020	X	Personnel Economics	3
QAMO 4030	X	Economics of Organization	3
QAMO 4040	X	Managing in Non-Market Environments	3
QAMO 4050	X	Contracts and Bargaining	3
QAMO 4060	X	Economics of Business Taxation	3
QAMO 4070	X	Design of Markets and Institutions	3
QAMO 4080	X	Information Economics	3
QAMO 4999	X	Honors Thesis	3
Elective Credit Hour Sub-Total			12
Core Curriculum Credit Hour Sub-Total			39

Are students required to choose an emphasis? Yes or X No

Course Number	NEW Course	Course Title	Credit Hours
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Course Number	NEW Course	Course Title	Credit Hours
Name of Emphasis:		Business Economics & Analytics	
		Note: All courses below are required for completion of the QAMO major, so there is no increase in credit hours to complete this emphasis.	
QAMO 3010	×	Business Economics	3
QAMO 3020	×	Game Theory	3
QAMO 3030	×	Business Econometrics I	3
ECON 4011	×	Intermediate Microeconomic Analysis for BEA	3
ECON 4651	×	Principles of Econometrics for BEA	3
ECON 3201	×	Money and Banking for BEA	3

Emphasis Credit Hour Sub-Total	18
Total Number of Credits to Complete Program	57

Course Number	NEW Course	Course Title	Credit Hours
Name of Emphasis:		Finance	
ACCTG 2600		Survey of Accounting	3
FINAN 3014		Honors Financial Management	3
		Choose three of the following six:	
ACCTG 3600/1		Principles of Accounting / Honors version	3
FINAN 3050		Introduction to Investments	3
FINAN 4050		Intermediate Investments	3
FINAN 4211		Honors Valuation	3
FINAN 4380		Financial Modeling	3
FINAN 5880		Honors Student Investment Fund	3

Emphasis Credit Hour Sub-Total	15
Total Number of Credits to Complete Program	54

Program Curriculum Narrative

Describe any variable credits. You may also include additional curriculum information.

Math 1210 (Calculus I) and 1220 (Calculus II) are pre-requisites for all courses requires for the QAMO major except for "Honors Business Foundations". Additionally, an introductory statistics course is a pre-requisite for "Principles of Econometrics for BEA". None of the QAMO courses listed currently exist at the University of Utah, although current faculty have taught courses like these at other institutions. QAMO 3010, QAMO 3020 and QAMO 3030 will be pre-requisites for all 4000-level electives. The ECON

courses listed above are modifications of existing courses, with the modifications designed to make use of the students' greater quantitative sophistication.

A transcribed emphasis in Business Economics & Analytics is part of the program design. This emphasis has been jointly designed by the Department of Economics and the Finance Department in the David Eccles School of Business, and students may elect to complete this emphasis either within the QAMO major or within a standard economics major. QAMO students will benefit from completing this emphasis because their transcripts will show an expertise in both economics and the analysis of data. Note that this set of courses is a subset of the courses required to complete the QAMO major, so all students electing the QAMO major will graduate with an emphasis in Business Economics & Analytics. As a result, there will be no institutional or financial impact beyond that required for the QAMO major. Further, the program schedule listed above will suffice for students to complete the BEA emphasis.

An additional emphasis in Finance is being submitted with this proposal. This emphasis has been designed by the Department of Finance at the David Eccles School of Business, and students may elect to complete this emphasis in addition to the QAMO major. QAMO students will benefit from completing this emphasis because their transcripts will show an expertise in both finance and the analysis of data.

Many economics graduates begin their careers in finance. The University of Utah's Career Services website reports that over 25% of undergraduate economics majors for which they have data accepted positions with traditional financial firms. With QAMO's focus on markets, the application of economic tools to business problems, and training in analytics, finance is a natural career path for QAMO majors. The finance emphasis for QAMO majors has two required courses, ACCTG 2600 and FINAN 3041, which will provide students with a grounding in interpreting financial statements and the basics of finance. Students will choose three additional electives from a list of existing finance and accounting courses that will complement the QAMO training. The finance emphasis would add 15 credit hours to the QAMO major. A total of 54 credit hours are required to complete the QAMO major and the finance emphasis, which would allow a student to complete the requirements for a bachelor's degree with the emphasis well within the university's 122 credit minimum. All of the classes in the emphasis are offered currently to David Eccles School of Business students. Given the predicted size of the QAMO major, we anticipate the incremental enrollment from students selecting the Finance Emphasis will not require adding additional sections of existing courses. As a result, there will be no institutional or financial impact beyond that required for the QAMO major.

Degree Map

Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see <http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf> (Item #3).

Please cut-and-paste the degree map or manually enter the degree map in the table below.

First Year Fall	Cr. Hr.	First Year Spring	Cr. Hr.
Math 1210 - Calculus I	3	Math 1220 - Calculus II	3
BUS 1050 - Honors Business Foundations	3	Math 1070 - Intro to Statistical Inference	3
Total	6	Total	6
Second Year Fall	Cr. Hr.	Second Year Spring	Cr. Hr.
QAMO 3010 - Business Economics	3	QAMO 3020 - Game Theory	3
ECON 4011 - Int Microeconomic Analysis (BEA)	3	QAMO 3030 - Business Econometrics I	3
ECON 4651 - Principles of Econometrics (BEA)	3	QAMO 3201 - Econ and the Bus Disciplines	3
Total	9	Total	9
Third Year Fall	Cr. Hr.	Third Year Spring	Cr. Hr.
ECON 3201 - Money and Banking (BEA)	3	QAMO 4020 - Personnel Economics	3
QAMO 3040 - Business Econometrics II	3	QAMO 4030 - Economics of Organization	3
Total	6	Total	6
Fourth Year Fall	Cr. Hr.	Fourth Year Spring	Cr. Hr.
QAMO 4010 - Economics of Strategy	3	QAMO 4040 - Manging in Non-Market Env	3
Total	3	Total	3

	First Name	Last Name	Tenure (T) / Tenure Track (TT) / Other	Degree	Institution where Credential was Earned	Est. % of time faculty member will dedicate to proposed program.	If "Other," describe

Part III: New Faculty / Staff Projections for Proposed Program

Indicate the number of faculty / staff to be hired in the first three years of the program, if applicable. Include additional cost for these faculty / staff members in Appendix D.

	# Tenured	# Tenure -Track	# Non -Tenure Track	Academic or Industry Credentials Needed	Est. % of time to be dedicated to proposed program.
Faculty: Full Time with Doctorate		4		PhD in Economics	100
Faculty: Part Time with Doctorate					
Faculty: Full Time with Masters					
Faculty: Part Time with Masters					
Faculty: Full Time with Baccalaureate					
Faculty: Part Time with Baccalaureate					
Teaching / Graduate Assistants					
Staff: Full Time					
Staff: Part Time					

Appendix D: Projected Program Participation and Finance

Part I.

Project the number of students who will be attracted to the proposed program as well as increased expenses, if any. Include new faculty & staff as described in Appendix C.

Three Year Projection: Program Participation and Department Budget						
	Year Preceding Implementation	New Program				
		Year 1	Year 2	Year 3	Year 4	Year 5
Student Data						
# of Majors in Department		240	250	270	280	290
# of Majors in Proposed Program(s)		15	25	45	55	65
# of Graduates from Department		85	85	90	100	105
# Graduates in New Program(s)		0	0	5	15	20
Department Financial Data						
	Department Budget					
	Year Preceding Implementation (Base Budget)	Year 1	Year 2	Year 3		
		Addition to Base Budget for New Program(s)	Addition to Base Budget for New Program(s)	Addition to Base Budget for New Program(s)		
<i>Project additional expenses associated with offering new program(s). Account for New Faculty as stated in Appendix C, "Faculty Projections."</i>						
EXPENSES – nature of additional costs required for proposed program(s)						
<i>List salary benefits for additional faculty/staff each year the positions will be filled. For example, if hiring faculty in year 2, include expense in years 2 and 3. List one-time operating expenses only in the year expended.</i>						
Personnel (Faculty & Staff Salary & Benefits)	\$6,316,946	\$325,000	\$650,000	\$650,000		
Operating Expenses (equipment, travel, resources)	\$130,000	\$0	\$0	\$0		
Other:						
TOTAL PROGRAM EXPENSES		\$325,000	\$650,000	\$650,000		
TOTAL EXPENSES	\$6,446,946	\$6,771,946	\$7,096,946	\$7,096,946		
FUNDING – source of funding to cover additional costs generated by proposed program(s)						
<i>Describe internal reallocation using Narrative 1 on the following page. Describe new sources of funding using Narrative 2.</i>						
Internal Reallocation						
Appropriation	\$2,038,067					
Special Legislative Appropriation						
Grants and Contracts						
Special Fees						
Tuition						
Differential Tuition (requires Regents approval)	\$4,408,879	\$325,000	\$650,000	\$650,000		
PROPOSED PROGRAM FUNDING		\$325,000	\$650,000	\$650,000		
TOTAL DEPARTMENT FUNDING	\$6,446,946	\$6,771,946	\$7,096,946	\$7,096,946		
Difference						
Funding - Expense	\$0	\$0	\$0	\$0		

Part II: Expense explanation

Expense Narrative

Describe expenses associated with the proposed program.

The primary expenses will be the hiring of new faculty.

Part III: Describe funding sources

Revenue Narrative 1

Describe what internal reallocations, if applicable, are available and any impact to existing programs or services.

See response below under Narrative 2.

Revenue Narrative 2

Describe new funding sources and plans to acquire the funds.

There have been numerous discussions between Dean Taylor Randall and Sr VP Ruth Watkins wherein Dr. Watkins has agreed, in principle, to fund the addition of faculty needed for this department. The institution is committed to provide start-up funding through internal reallocations from existing graduate programs within the business school. In the long-term it is expected the program will be self-sufficient and not require sources of outside funding.