

# MS IN QUANTITATIVE ECONOMICS

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**SACRAMENTO STATE**  
*Redefine the Possible*

## In Workflow

1. ECON Committee Chair (lang@csus.edu)
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3. SSIS College Committee Chair (wickelgr@csus.edu)
4. SSIS Dean (mendriga@csus.edu)
5. Academic Services (curriculum@csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Faculty Senate Executive Committee Chair (kathy.honeychurch@csus.edu)
8. Faculty Senate Chair (kathy.honeychurch@csus.edu)
9. Dean of Undergraduate (gardner@csus.edu)
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11. President (210748526@csus.edu)
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13. Chancellor's Office (catalog@csus.edu)
14. Board of Trustees (torsetj@csus.edu)
15. WASC (amy.wallace@csus.edu)
16. Catalog Editor (catalog@csus.edu)
17. Graduate Studies (jdsmall@csus.edu; mxiong@csus.edu)
18. Registrar's Office (k.mcfarland@csus.edu)

## Approval Path

1. Thu, 23 Feb 2023 02:15:06 GMT  
David Lang (lang): Approved for ECON Committee Chair
2. Thu, 23 Feb 2023 02:15:38 GMT  
David Lang (lang): Approved for ECON Chair
3. Thu, 02 Mar 2023 03:24:52 GMT  
Emily Wickelgren (wickelgr): Rollback to Initiator
4. Mon, 13 Mar 2023 18:44:38 GMT  
David Lang (lang): Approved for ECON Committee Chair
5. Mon, 13 Mar 2023 18:45:02 GMT  
David Lang (lang): Approved for ECON Chair
6. Thu, 06 Apr 2023 06:12:45 GMT  
Emily Wickelgren (wickelgr): Rollback to Initiator
7. Wed, 19 Apr 2023 19:49:12 GMT  
David Lang (lang): Approved for ECON Committee Chair
8. Wed, 19 Apr 2023 19:49:27 GMT  
David Lang (lang): Approved for ECON Chair
9. Fri, 05 May 2023 00:46:38 GMT  
Emily Wickelgren (wickelgr): Rollback to ECON Chair for SSIS College Committee Chair
10. Fri, 05 May 2023 16:10:46 GMT  
David Lang (lang): Approved for ECON Chair
11. Fri, 05 May 2023 19:12:33 GMT  
Emily Wickelgren (wickelgr): Approved for SSIS College Committee Chair
12. Tue, 16 May 2023 16:58:52 GMT  
Marya Endriga (mendriga): Approved for SSIS Dean

## New Program Proposal

Date Submitted: Wed, 19 Apr 2023 19:28:18 GMT

**Viewing: MS in Quantitative Economics****Last edit: Fri, 05 May 2023 16:10:40 GMT**

Changes proposed by: Suzanne O'Keefe (101028261)

**Academic Group: (College)**

Social Sciences &amp; Interdisciplinary Studies

**Academic Organization: (Department)**

Economics

**Catalog Year Effective:**

2023-2024 Catalog

NOTE: This degree major program will be subject to program review evaluation within six years after implementation.

**Individual(s) primarily responsible for drafting the proposed degree major program:**

Name (First Last)	Email	Phone 999-999-9999
Suzanne O'Keefe	sokeefe@csus.edu	9162786838

**Type of Program Proposal:**

Major

**Is this a pilot program?**

No

**Does this major plan to include any formal options, concentrations, or special emphases?**

No

**Title of the Program:**

MS in Quantitative Economics

**Designation: (degree terminology)**

Master of Science

**Abstract of the proposal:**

We propose a name and degree change from MA in Economics to MS in Quantitative Economics.

**Briefly describe the program proposal (new or change) and provide a justification:**

This is a name and degree change from MA in Economics to MS in Quantitative Economics. The MS in Quantitative Economics will replace the current MA in Economics program. The updated program name and catalog description emphasize the quantitative nature of our existing program, and make it consistent with changes in the field, sought out by students and employers.

The Masters of Science designation is appropriate for our program because the degree emphasizes a scientific approach to empirical analysis of data. Students master and apply programming skills using appropriate technology to conduct independent empirical research in the field of quantitative economics.

Every course in the Core Curriculum of the MS in Quantitative Economics requires development and application of quantitative skills. ECON 200M Mathematics for Economists teaches math skills including optimization and linear algebra required for ECON 241 (corequisite), ECON 200A, ECON 200B, and ECON 200C. ECON 241 Applied Econometric Analysis teaches the core "economic statistics" and programming required for empirical analysis. ECON 200A Advanced Macroeconomic Theory applies mathematical tools from 200M and 241 to understand aggregate income, employment and prices in the context of contemporary empirical work on aggregate relationships. ECON 200B Advanced Microeconomic Theory focuses on optimization of utility and production functions, subject to budget and cost constraints, and also introduces game theory; all concepts based in mathematical and quantitative modeling. ECON 200C Advanced Applied Economics develops advanced econometric skills in preparation for the master's thesis. ECON 500 Master's Thesis requires all students to complete an independent empirical thesis, applying econometrics, economic modeling, and evaluation. All elective course options enhance student learning in the quantitative degree by applying skills to field courses in Economics or enhancing math, statistics, or programming skills based on student preferences and goals. Changing our program name from "Economics" to "Quantitative Economics" is appropriate based on curricular changes to our program that have evolved over the past 20 years. Access to data and computing power to analyze big data have resulted in a curriculum with emphasis on quantitative and technological skills. Quantitative Economics is a recognized STEM field, CEP code 45.0603, making international graduates eligible for the OPT visa extension.

We are not adding or removing courses from the master's program. The new catalog description explicitly lists elective options that have been accepted and recommended as substitutions for years (MATH, STAT, CSC). It removes the unnecessary and confusing list

of unacceptable courses from the old description. Students currently in the MA in Economics will meet requirements for both the old and the new program, so they will be given the option to graduate with an MA in Economics or an MS in Quantitative Economics.

## University Learning Goals

### Graduate (Masters) Learning Goals:

Critical thinking/analysis  
 Communication  
 Information literacy  
 Disciplinary knowledge  
 Intercultural/Global perspectives  
 Professionalism  
 Research (optional)

## Program Learning Outcomes

### Program Learning Outcomes

#### Learning Outcome

1. Apply foundations of microeconomic and macroeconomic theory to model complex situations
2. Communicate research findings
3. Create informed research questions, analyze challenging problems, and critique research
4. Synthesize previous literature, and interpret findings and limitations of existing research
5. Demonstrate professionalism
6. Apply economic theory and research to address global and/or intercultural problems
7. Engage in and conduct economic research

**Will this program be required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

### Please attach a Comprehensive Program Assessment Plan (required)

MS Quantitative Economics Comprehensive Assessment Plan Table.docx

### Please attach a Curriculum Map Matrix (required)

MS in Quantitative Economics Curriculum Map Matrix.docx

### Please attach a five-year budget projection (required)

5-year-budget-template-Economics.xlsx

### Catalog Description:

**Total units required for MS: 30**

## Program Description

Students in the Master's of Science in Quantitative Economics develop analytical skills for modeling, interpreting, and understanding economic behavior with applications in business, public policy, and data analysis. Statistical analysis of economic phenomena and problems is emphasized.

In line with the applied emphasis of the graduate program, the Department maintains a relationship with both the California state government and many private organizations in the Sacramento area. Recent graduates have found careers in private businesses and corporations, federal, state, and local government, non-profits, and academia.

**Admission Requirements: Course prerequisites and other criteria for admission of students to the degree major program, and for their continuation in it.**

## Admission Requirements

Admission as a classified graduate student in Economics requires:

- a minimum 3.0 GPA in the last 60 units attempted;
- a minimum 3.0 GPA in undergraduate Economics work;
- ECON 100A (Intermediate Macroeconomic Theory) or equivalent; and ECON 100B (Intermediate Microeconomic Theory) or equivalent;
- ECON 141 (Introduction to Econometrics) or equivalent;
- MATH 26A (Calculus I) or equivalent; recommend MATH 26B (Calculus II) or equivalent;

- two letters of recommendation from undergraduate instructors;
- a minimum score of 550 on the TOEFL (this requirement applies only to students earning degrees abroad whose primary language is not English); and
- a baccalaureate degree.

Students not meeting the above requirements may be granted conditionally classified graduate status with permission of the Economics Department Graduate Committee, providing the applicant submits in writing the reasons for pursuing graduate training and why the Committee should waive one or more of the above requirements. GRE scores are not required, but will be considered by the admissions committee if they are included with an application. Students accepted on a conditional basis may be required to complete a set of courses prior to beginning the Economics Graduate core, or to fulfill other conditions prior to approval for fully classified status. Failure to conform to this stipulation will result in the revocation of the conditionally classified status.

### Admission Procedures

Applicants must complete a university application and also meet departmental requirements by the posted application deadline date for term applying. *For more admission information and application deadlines, please visit <http://www.csus.edu/gradstudies/>.* Applications submitted after the deadline will only be reviewed in the event that room for new students exists. All prospective graduate students, including Sacramento State graduates, must file the following documents with the Office of Graduate Studies, Riverfront Center 215, (916) 278-6470:

- an online application for admission;
- official transcripts from all colleges and universities attended, *other than Sacramento State*;
- two letters of recommendation. Contact information for two faculty references is sufficient if the applicant is a current Sacramento State economics student;
- TOEFL scores, if applicable.

Any applicant not meeting admission requirements as specified above should submit to the Department in writing reasons for requesting a waiver of the admission requirements.

Approximately six weeks after the application deadline, a decision regarding admission will be sent to the applicant.

### Minimum Units and Grade Requirement for the Degree

Units required for the MS: 30

Minimum Cumulative GPA: 3.0

### Advancement to Candidacy

Each student must file an application for Advancement to Candidacy as soon as the graduate student has:

- successfully completed the following, and with a minimum grade of "B":

Code	Title	Units
ECON 241	Applied Econometric Analysis	3
ECON 200A	Advanced Macroeconomic Theory	3
ECON 200B	Advanced Microeconomic Theory	3

- be enrolled, or have successfully completed ECON 200C;
- been recommended for advancement by the Graduate Committee; and
- take a Graduate Writing Intensive (GWI) course in their discipline within the first two semesters of coursework at California State University, Sacramento.

Advancement to Candidacy forms are available on the Office of Graduate Studies website. The student fills out the form after planning a degree program in consultation with the Economics Department Graduate Coordinator. The completed form is then returned to the Office of Graduate Studies for approval.

**Program Requirements: (If new courses are being created as part of a new program, it will be useful to propose courses first.)**

### Program Requirements

All students are required to complete the core course sequence outlined below with a minimum grade of "B" in each course. After completing the core courses, the student selects a thesis plan to finish the degree requirements. The core courses, elective options, and the thesis, are outlined below.

Code	Title	Units
<i>Core Courses (15 Units)</i>		
ECON 200A	Advanced Macroeconomic Theory	3
ECON 200B	Advanced Microeconomic Theory	3
ECON 200C	Advanced Applied Economics	3
ECON 200M	Mathematics for Economists	3
ECON 241	Applied Econometric Analysis	3
<i>Elective Courses (12 Units)</i>		
Select 12 units of electives from the following list of courses <sup>1</sup>		12
ECON 213	U.S. Economic Development in Historical Perspective	

ECON 230	Public Finance	
ECON 238	Monetary and Fiscal Policy	
ECON 251	Urban Problems, Economics and Public Policy	
ECON 260	Industrial Organization and Performance	
ECON 263	Food Economics	
ECON 265	Cost Benefit Analysis	
ECON 290	International Trade	
STAT 115A	Introduction to Probability Theory	
STAT 128	Statistical Computing	
STAT 129	Analyzing and Processing Big Data	
MATH 100	Applied Linear Algebra	
MATH 108	Introduction to Formal Mathematics	
MATH 130A	Functions of a Real Variable	
CSC 177	Data Analytics and Mining	
<b>Culminating Requirement (3 Units)</b>		
ECON 500	Master's Thesis	3
<b>Total Units</b>		<b>30</b>

- <sup>1</sup> Of these 12 units, at least **six** units (i.e., 2 courses) must come from 200-level courses. Note the following:
- 100-level economics electives with prerequisites can substitute as graduate electives, but there can be no 100-level/200-level duplication of similar courses (e.g., you cannot receive credit towards the Master's degree for both ECON 130 and ECON 230, ECON 138 and ECON 238, etc.).
  - STAT 115A, MATH 100, MATH 108, MATH 130A, and CSC 177 have additional prerequisites.
  - Students interested in careers in data analysis are encouraged to select STAT 128 Statistical Computing and/or STAT 129 Analyzing and Processing Big Data as 100-level electives. STAT 128 is a prerequisite for STAT 129.
  - Students interested in pursuing a Ph.D. in Economics are encouraged to select MATH 100, MATH 108, MATH 130A, and/or STAT 115A, or other math and statistics courses as 100-level electives.
  - A maximum of 6 units of 100-level electives can be applied to the MA degree.
  - Selected courses (e.g. Math, Statistics, or Computer Science) from other departments may be allowed as substitutes with the approval of the Graduate Coordinator.
  - ECON 295 and ECON 298 do not count as electives toward satisfying the 12 unit requirement without the approval of the Graduate Coordinator.

**Explanation of special characteristics of the proposed degree major program; e.g., in terminology, units of credit required, types of course work, etc.:**

None

### **Will this program require specialized accreditation?**

Establishment of a master's degree program should be preceded by a national professional accreditation of the corresponding bachelor's degree major program.

**Will this program require accreditation?**

No

### **Need for the Proposed Degree Major Program**

**Is the proposed degree program offered at any California State University campus or any neighboring institutions?**

Yes

**List of other California State University campuses currently offering or projecting the proposed degree major program; list of neighboring institutions, public and private, current offering the proposed degree major program:**

Cal Poly SLO, Cal State East Bay, San Francisco State University

**Differences between the proposed program and the programs listed above:**

Our program is an evening 2-year program located in Sacramento. This allows students to complete the program while working in the Sacramento region, the State Capitol.

**List of other curricula currently offered by Sac State which are closely related to the proposed program:**

N/A

**Attach the results of a formal survey in the geographical area to be served indicating demand for individuals who have earned the proposed degree and evidence of serious student interest in majoring in the proposed program:**

MS Quantitative Economics Labor Market Analysis.docx

**Provide justification for any discrepancies between national/statewide/professional manpower surveys and local findings:**

N/A

**For graduate programs, the number of declared undergraduate major and the degree production over the preceding years of the corresponding baccalaureate program:**

500+ Economics Majors and 200+ BA degrees awarded in 2020-21.

**Professional uses of the proposed degree major program:**

There are a wide range of professional opportunities available for graduates with a Master's degree in quantitative economics. Here are some examples:

**Data Analyst:** Many organizations rely on data to make decisions and improve performance. A quantitative economics graduate with strong analytical skills can work as a data analyst to collect, organize, and analyze data, and communicate insights to stakeholders.

**Financial Analyst:** A quantitative economics graduate can work as a financial analyst, using quantitative methods to evaluate financial performance, assess risk, and make investment decisions.

**Econometrician:** Econometricians use statistical and mathematical models to study economic phenomena and make predictions. Graduates with a Master's degree in quantitative economics are well-suited for this role.

**Researcher:** Graduates can also work as researchers in academic institutions, non-profits, or private research organizations, conducting studies and analyzing data to inform public policy or private sector decision-making.

**Government Economist:** Graduates can work for the government in a variety of roles, such as economic advisor, policy analyst, or research economist. They may work for federal, state, or local government agencies.

**Marketing Analyst:** Graduates can also work as marketing analysts, using quantitative methods to analyze consumer behavior, market trends, and competition in order to develop marketing strategies for businesses.

A Master's degree in quantitative economics can open up many different career paths for graduates, from finance and data analysis to public policy and research.

**The expected number of majors in:**

**1st Year Enrollment:**

15

**3rd Year Enrollment:**

31

**5th Year Enrollment:**

35

**1st Year Graduates:**

0

**3rd Year Graduates:**

15

**5th Year Graduates:**

16

## Existing Support Resources for the Proposed Degree Major Program

List faculty members, with rank, appointment status, highest degree earned, date and field of highest degree, and professional experience (including publications if the proposal is for a graduate degree), who would teach in the proposed program:

Name	Rank	Appointment Status	Highest Degree Earned	Year of Highest Degree Earned (YYYY)	Publications/Professional Experience
Jonathan Kaplan	Professor	Full Time	Doctorate	1999	<p><a href="https://www.csus.edu/faculty/k/kaplanj/">https://www.csus.edu/faculty/k/kaplanj/</a>            "Stay-at-Home Orders during the COVID-19 Pandemic Reduced Urban Water Use." (with Dongyue Li, Ruth A. Engel, Xiaoyu Ma, Erik Porse, Steven A. Margulis, and Dennis P. Lettenmaier.) Environmental Science &amp; Technology Letters 2021, DOI: 10.1021/acs.estlett.0c00979.</p> <p>"Long-Term Benefits of Protecting Table Grape Vineyards against Trunk Diseases in the California Desert." (with Gispert, Carmen, Elizabeth Deyett, and Philippe E. Rolshausen). Agronomy 10, no. 12 (2020): 1895.</p> <p>"Managing Grapevine Trunk Diseases in California's Southern San Joaquin Valley." (with K. Baumgartner, V. Hillis, M. Lubell, and M. Norton) American Journal of Enology and Viticulture, 2019. <a href="https://doi.org/10.5344/ajev.2019.18075">https://doi.org/10.5344/ajev.2019.18075</a>.</p>
Mark Siegler	Professor	Full Time	Doctorate	1997	<p>Introduction to Data Analysis and Economic History of the United States: 1#137#39395#            1), second edition under contract with Bloomsbury.</p> <p>"The Rhetoric of 'Signifying Nothing': A Reconsideration." Rhetoric and Public Affairs 12, no. 1 (2009): 68.</p>

Ta-Chen Wang	Professor	Full Time	Doctorate	2006	<p>"Entry, Competition, and Terms of Credit in Early American Banking" Research in Economic History 32 (2016), 367-390</p> <p>Publishing Pays: Economists' Salaries Reflect Productivity" with Suzanne O'Keefe, Social Science Journal 50:1 (Mar 2013) 45-54.</p> <p>"Financial Market and Industry Structure:A Comparison of Banking and Textile Industry between Boston and Philadelphia in Early Nineteenth Century" in Economic Evolution and Revolution in Historical Time, edited by Paul Rhode, Joshua Rosenbloom, and David Wieman, Stanford University Press, Stanford, CA, 2011</p>
Joni Zhou	Professor	Full Time	Doctorate	2006	<p>"Reserves and Exchange Rates for Small Island Developing States (SIDS): A Threshold Cointegration Analysis," with Smile Dube, Advances in Management and Applied Economics, forthcoming</p> <p>"Interest Rate Asymmetries in South Africa's Lending-Deposit Spread," with Smile Dube, International Economics (Economía Internacional), forthcoming</p> <p>"South Africa's Short and Long Term Interest Rates: A Threshold Cointegration Analysis," with Smile Dube, 2013, Business and Economic Research, Volume 3, No. 1, 187-211</p>
Raul Tadle	Assistant Professor	Full Time	Doctorate	2018	<p>FOMC Minutes Sentiments and their Impact on Financial Markets R Tadle 2021</p> <p>Monetary policy press releases: An international comparison M Gonzalez, RC Tadle Banco Central de Chile 2021</p> <p>Signaling and Financial Market Impact of Chile's Central Bank Communication M González, RC Tadle Economía 20 (2), 127-178</p>

Daniel Burghart	Assistant Professor	Full Time	Doctorate	2016	Daniel R. Burghart, 2020. "The two faces of independence: betweenness and homotheticity," <i>Theory and Decision</i> , Springer, vol. 88(4), pages 567-593, May. Daniel R. Burghart & Thomas Epper & Ernst Fehr, 2020. "The uncertainty triangle – Uncovering heterogeneity in attitudes towards uncertainty," <i>Journal of Risk and Uncertainty</i> , Springer, vol. 60(2), pages 125-156, April. Burghart, Daniel R., 2018. "Maximum probabilities, information, and choice under uncertainty," <i>Economics Letters</i> , Elsevier, vol. 167(C), pages 43-47.
Herman Li	Associate Professor	Full Time	Doctorate	2011	Conklin, J., Diop, M., & Li, H. (2020). Contact High: The External Effects of Retail Marijuana Establishments on House Prices. <i>Real Estate Economics</i> , 48(1), 135–173. Clauret, T. M., & Li, H. (2019). Land Values: Size Matters. <i>Journal of Real Estate Finance and Economics</i> , 58(1), 80–110. Coulson, N. E., & Li, H. (2013). Measuring the External Benefits of Homeownership. <i>Journal of Urban Economics</i> , 77, 57–67.
Suzanne O'Keefe	Professor	Full Time	Doctorate	1999	"Publishing Pays: Economists' Salaries Reflect Productivity" with Ta-Chen Wang, <i>Social Science Journal</i> , March 2013, Vol. 50, Issue 1, p 45-54.  "The Effects of Manufacturing on Educational Attainment and Real Income" with Caitlin Donaldson, <i>Economic Development Quarterly</i> , 2013, Vol. 27, Issue 4, p. 316.  "The Impact of Slow Growth Policies on Local Economies: Through Housing Boom and Bust" <i>Applied Geography</i> , Volume 32, Issue 1, January 2012, Pages 66-72.

**Space and facilities that would be used in support of the proposed program: Show how this space is currently used and what alternate arrangements, if any, will be made for the current occupants.**

The MS in Quantitative Economics will use classroom space currently used for the MA in Economics, which the new program replaces. Rooms include AMD 217, AMD 240 and MRP 1011. Courses are offered in evenings, so demand on classroom space is usually low.

**Library resources to support the program, specified by subject areas, volume count, periodical holdings, etc.:**

EconLit and EBSCO and current databases the library subscribes to provide access to all relevant economic journals.

**Equipment and other specialized materials currently available:**

The Department of Economics purchases a license for statistical programs including Stata and Eviews which graduate students may use. They may also access R which is free for users.

## **Additional Support Resources Required**

**Enrollment and faculty positions should be shown for all discipline categories which will increase because of the new program and for all discipline categories which will decrease because of the new program. If faculty positions are to be transferred into the new program from other areas, the reductions in faculty positions should be shown on the appropriate discipline category or categories:**

This is a substitute program, sustainable with existing faculty in the Department of Economics.

**Any special characteristics of the additional faculty or staff support positions needed to implement the proposed program:**

No additional faculty or support staff will be needed.

**The amount of additional lecture and/or laboratory space required to initiate and sustain the program over the next five years: Indicate any additional special facilities that will be required. If the space is under construction, what is the projected occupancy date? If the space is planned, indicate campus wide priority of the facility, capital outlay program priority, and projected date of occupancy.**

No additional lecture or laboratory space will be required.

**Additional library resources needed: Indicate the commitment of the campus to purchase or borrow through interlibrary loan these additional resources.**

No additional library resources will be needed.

**Additional equipment or specialized materials that will be 1) needed to implement the program and 2) needed during the first two years after initiation: Indicate source of funds and priority to secure these resource needs.**

No additional equipment or specialized materials will be needed.

**Please attach any additional files not requested above:**

MATH STAT correspondence.pdf

CSC correspondence.pdf

**Reviewer Comments:**

**Emily Wickelgren (wickelgr) (Thu, 02 Mar 2023 03:24:52 GMT):** Rollback: See email on 1/3/23 with comments.

**Emily Wickelgren (wickelgr) (Thu, 06 Apr 2023 06:12:45 GMT):** Rollback: See Email on 4/5.

**Emily Wickelgren (wickelgr) (Fri, 05 May 2023 00:46:38 GMT):** Rollback: See email on 5/4/23

Key: 550