

Sample Course Selections

June 16, 2016

Formal program requirements (<http://econ.duke.edu/msec/program-requirements>) are quite flexible — in part because at Duke we encourage students to tailor programs to meet their specific needs, and in part because the MSEC student body is inherently heterogeneous in terms of background and specific interests. However, it is useful to outline possible **illustrative** course sequences that will be appropriate for incoming students with different backgrounds.

Please note that:

- The conventional load is three graduate-level courses, or three to four undergraduate and graduate courses per semester. Non-native English speakers also should allow time for required English language courses.
- Each student will choose a particular set of courses: There is no specified path, as interests will differ; however, we do ask that you run your plans by both your Economics and Computer Science academic advisers.
- The MSEC degree requirement is 30 credits (10 full courses), of which 24 must be graduate credits (at the 500-level or higher) and no more than 6 credit hours can be for thesis research (independent study) if you choose to go that route. At least 12 credits must be in Economics and at least 12 must be in Computer Science.
- English language courses do not count toward the MSEC degree requirements; however, nearly everyone will easily exceed this minimum and few constraints will prove binding.
- Most MSEC students will wish to work as Research or Teaching Assistants. While you should register with the Social Sciences Research Institute (contact Alexandra Cooper), Economics, and/or Computer Science, we encourage you not to take on additional duties in your first semester in residence. It is not difficult to find RA/TA positions if you are doing satisfactory academic work; consequently, you should be selective.
- A maximum of 6 credits (two courses) may be undergraduate courses at the 200-level or higher (200-499), subject to academic advisor approval. Students must receive a grade of B- or better to have such courses counted as part of their earned graduate credit.

Course Number Guide	
COMPSCI	
200-499	Undergraduate
500+	M.S./Ph.D.
ECON	
200-499	Undergraduate
500-699	M.A./M.S.
700+	Ph.D.
MATH	
200-499*	Undergraduate
500+**	(M.S.)/Ph.D.
STAT	
200-499	Undergraduate
500-599	M.S.
600+	Ph.D.

**UG-level courses are numbered such that they are progressively challenging (200+, 300+, 400+).*

***Please note any prerequisites before deciding to enroll.*

Example 1: Good Economics background; limited Computer Science background

Fall 1		Spring 1 (plus Summer 2017 if relevant)		Fall 2		Spring 2	
Course Number	Course Title	Course Number	Course Title	Course Number	Course Title	Course Number	Course Title
ECON 601/	Microeconomics	ECON 605/620	Advanced Microeconomic Analysis/Game Theory with Applications of Economics and Other Social Sciences	ECON 690	Special Topics in Economics: Financial Econometrics	COMPSCI 516	Data Intensive Comp Systems
ECON 608	Intro. to Econometrics	COMPSCI 590 (ECON 690)	Selected Topics in Economics: Computational Microeconomics	ECON 690	Special Topics in Economics: Structural Modeling and Computational Techniques	COMPSCI 590	Advanced Topics in Computer Science: Computational Microeconomics
COMPSCI 201/531	Data Structures and Algorithms/Introduction to Algorithms	COMPSCI 316	Intro. to Database Systems	COMPSCI 532	Design & Analysis of Algorithms	COMPSCI 571	Machine Learning
				COMPSCI 570	Artificial Intelligence		
Likely Electives							
STA 611	Intro. to Mathematical Statistics	STA 601	Bayesian Statistics	ECON 601/ECON 602	Microeconomics/ Macroeconomic Theory	ECON 705	Microeconomic Analysis II
MATH 431	Adv. Calculus I (Intro. to Real Analysis)	ECON 612	Time Series Econometrics	ECON 612	Time Series Econometrics	ECON 706	Macroeconomic Analysis II
COMPSCI 310	Operating Systems	ECON 613	Applied Econometrics	ECON 701	Microeconomic Analysis I	ECON 707	Econometrics II
COMPSCI 3230	Discrete Math for Compsci	BA 950+	Ph.D. Finance courses at Fuqua	ECON 702	Macroeconomic Analysis II	ECON 881*	Special Topics in Applied Microeconomics
				ECON 703	Econometrics I	ECON 882*	Special Topics in Macro International Finance

*Topics for ECON 88X modules rotate; this may only be offered occasionally.

**Offered in Summer II

Example 2: Good Computer Science background; limited Economics background

Fall 1		Spring 1 (plus Summer 2017 if relevant)		Fall 2		Spring 2	
Course Number	Course Title	Course Number	Course Title	Course Number	Course Title	Course Number	Course Title
ECON 201D	Intermediate Microeconomics	ECON 205D	Intermediate Macroeconomics	ECON 601	Microeconomics	ECON 620	Advanced Microeconomic Analysis
ECON 608	Intro. to Econometrics	ECON 612	Time Series Econometrics	ECON 690	Special Topics in Economics: Structural Modeling and Computational Techniques	ECON 606	Computational Macroeconomics
COMPSCI 516	Data Intensive Comp Systems	ECON 667	Computer Modeling	COMPSCI 516	Data Intensive Comp Systems	COMPSCI 520	Numerical Analysis
COMPSCI 531	Introduction to Algorithms	COMPSCI 571	Machine Learning	COMPSCI 570	Artificial Intelligence	COMPSCI 590	Advanced Topics in Computer Science: Computational Microeconomics
Likely Electives							
STA 611	Intro. to Mathematical Statistics	STA 601	Bayesian Statistics	ECON 690	Special Topics in Economics: Financial Econometrics	ECON 707	Econometrics II
MATH 431	Adv. Calculus I (Intro. to Real Analysis)	ECON 613	Applied Econometrics	ECON 703	Econometrics I	ECON 881*	Special Topics in Applied Microeconomics

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**Offered in Summer II

Example 3: Good Computer Science and Economics background

Fall 1		Spring 1 (plus Summer 2017 if relevant)		Fall 2		Spring 2	
Course Number	Course Title	Course Number	Course Title	Course Number	Course Title	Course Number	Course Title
ECON 601	Microeconomics	ECON 605/ECON 620	Advanced Microeconomic Analysis/Game Theory with Applications of Economics and Other Social Sciences	COMPSCI 520	Numerical Analysis	ECON 620/690	Game Theory with Applications of Economics and Other Social Sciences/ Special Topics in Economics: Contract Theory
ECON 608	Intro. to Econometrics	ECON 612	Time Series Econometrics	COMPSCI 570	Artificial Intelligence	STA 601	Bayesian Statistics
COMPSCI 531/532	Introduction to Algorithms/Design and Analysis of Algorithms	COMPSCI 590 (ECON 690)	Selected Topics in Economics: Computational Microeconomics	ECON 690	Special Topics in Economics: Financial Econometrics	COMPSCI 571	Machine Learning
				ECON 690	Special Topics in Economics: Structural Modeling and Computational Techniques		
Likely Electives							
STA 611	Intro. to Mathematical Statistics	STA 601	Bayesian Statistics	ECON 601/602	Microeconomics/ Macroeconomic Theory	ECON 707	Econometrics II
MATH 431	Adv. Calculus I (Intro. to Real Analysis)	ECON 613	Applied Econometrics	ECON 612	Time Series Econometrics	ECON 881*	Special Topics in Applied Microeconomics
STA 601	Bayesian Statistics	ECON 606	Advanced Macroeconomics II	ECON 701	Microeconomic Analysis I	ECON 882*	Special Topics in Macro International Finance
ECON 703	Econometrics I	ECON 667	Computer Modeling	ECON 702	Macroeconomic Analysis II		
				ECON 703	Econometrics I		
				BA 950+	Ph.D. Finance courses at Fuqua		

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**Offered in Summer II