

Economics

A Co-operative Education option is available in conjunction with B.A. Honours programs in Economics or Applied Economics. Consult the Co-operative Education (<http://www.carleton.ca/calendars/2012-13/undergrad/regulations/co-operativeeducation>) section of this Calendar for details.

Graduation Requirements

In addition to the requirements listed below, students must satisfy:

1. the University regulations including the process of Academic Performance Evaluation (see the *Academic Regulations of the University* section of this Calendar);
2. the common regulations applying to all B.A. students including those relating to First-Year Seminars and Breadth requirements (see the *Academic Regulations for the Bachelor of Arts Degree*).

Students should consult with the Department when planning their program and selecting courses.

Access to Economics Courses

To meet the prerequisite requirements for most 2000-level economics courses, students must have obtained a grade of C- or higher in ECON 1401 and a grade of C- or higher in FYSM 1003 [1.0] or ECON 1000 [1.0] or, equivalently, an average grade of C- or higher in ECON 1001 and ECON 1002, one or both of which have been transferred from another university.

Certain 3000- and 4000-level economics courses also have prerequisites with minimum grade requirements. These requirements are specified with the course descriptions.

0000-Level Courses

Students in the Bachelor of Arts Economics programs may not count any 0000-level Mathematics courses for credit toward their degree. Such students may, however, be required to take one or more of these courses to replace missing program prerequisites in which case the courses will be set aside as “no credit for degree” (NCD).

Program Requirements for

B.A. Honours

Economics

B.A. Honours (20.0 credits)

41

A. Credits Included in the Major CGPA (10.0 credits)

1. 1.0 credit from:	1.0
ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics
2. 7.0 credits in:	7.0
ECON 1401 [0.5]	Elementary Mathematics for Economics I
ECON 1402 [0.5]	Elementary Mathematics for Economics II

ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium
ECON 2102 [0.5]	Intermediate Macroeconomics I
ECON 2103 [0.5]	Intermediate Macroeconomics II
ECON 2201 [0.5]	Statistical Methods in Economics and Business I
ECON 2202 [0.5]	Statistical Methods in Economics and Business II
ECON 2400 [0.5]	Mathematical Methods of Economics
ECON 4001 [0.5]	Mathematical Analysis in Economics
ECON 4002 [0.5]	Statistical Analysis in Economics
ECON 4020 [0.5]	Advanced Microeconomic Theory
ECON 4021 [0.5]	Advanced Macroeconomic Theory
ECON 4706 [0.5]	Econometrics I
3. 0.5 credit in ECON at the 3000 level	0.5
4. 1.0 credit from:	1.0
ECON 4901 [0.5]	Honours Seminar: Microeconomics & ECON 4902 [0.5]
	and Honours Seminar: Macroeconomics
or	
ECON 4908 [1.0]	Honours Essay (see Note below)
5. 0.5 credit in ECON at the 4000 level	0.5
B. Credits Not Included in the Major CGPA (10.0 credits)	
6. 7.0 credits in electives not in ECON	7.0
7. 3.0 credits in free electives.	3.0
Total Credits	20.0

Note:

An Honours essay, ECON 4908 [1.0], with a grade of B- or higher may be written by students with Overall and Major CGPAs of 7.50 or higher to earn 1.0 credit at the 4000-level or to replace the ECON 4901 and ECON 4902 requirement. Qualified students who choose to pursue the Honours Essay option must first complete an Honours essay prospectus to the satisfaction of both their advisor and the Undergraduate Supervisor.

Applied Economics

B.A. Honours (20.0 credits)

41A

A. Credits Included in the Major CGPA (10.0 credits)

1. 1.0 credit from:	1.0
ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics
2. 5.0 credits in:	5.0
ECON 1401 [0.5]	Elementary Mathematics for Economics I
ECON 1402 [0.5]	Elementary Mathematics for Economics II
ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium

ECON 2102 [0.5]	Intermediate Macroeconomics I	
ECON 2103 [0.5]	Intermediate Macroeconomics II	
ECON 2201 [0.5]	Statistical Methods in Economics and Business I	
ECON 2202 [0.5]	Statistical Methods in Economics and Business II	
ECON 3706 [0.5]	Applied Econometrics	
ECON 4890 [0.5]	Applied Honours Seminar	
3. 2.0 credits from:		2.0
ECON 2400 [0.5]	Mathematical Methods of Economics	
ECON at the 3000 level		
4. 2.0 credits in ECON at the 4000 level		2.0
B. Credits Not Included in the Major CGPA (10.0 credits)		
5. 7.0 credits in electives not in ECON		7.0
6. 3.0 credits in free electives		3.0
Total Credits		20.0

Program Requirements for Concentrations and Specializations

Economics

B.A. Honours

with Concentration (20.0 credits)

A. Credits Included in the Major CGPA (12.0 credits)

1. 1.0 credit from:		1.0
ECON 1000 [1.0]	Introduction to Economics	
FYSM 1003 [1.0]	Introduction to Economics	
2. 6.0 credits in:		6.0
ECON 1401 [0.5]	Elementary Mathematics for Economics I	
ECON 1402 [0.5]	Elementary Mathematics for Economics II	
ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure	
ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium	
ECON 2102 [0.5]	Intermediate Macroeconomics I	
ECON 2103 [0.5]	Intermediate Macroeconomics II	
ECON 2201 [0.5]	Statistical Methods in Economics and Business I	
ECON 2202 [0.5]	Statistical Methods in Economics and Business II	
ECON 2400 [0.5]	Mathematical Methods of Economics	
ECON 4020 [0.5]	Advanced Microeconomic Theory	
ECON 4021 [0.5]	Advanced Macroeconomic Theory	
ECON 4706 [0.5]	Econometrics I	
3. 1.0 credit from:		1.0
ECON 4901 [0.5]	Honours Seminar: Microeconomics & ECON 4902 [0.5] and Honours Seminar: Macroeconomics	
or		
ECON 4908 [1.0]	Honours Essay (See Note below)	
4. One of the following concentrations, described after the Applied Economics B.A. Honours with Concentration program below, also included in the Major CGPA		4.0
B. Credits Not Included in the Major CGPA (8.0 credits)		

5. 7.0 credits in electives not in ECON	7.0
6. 1.0 credit in free electives.	1.0
Total Credits	20.0

Note:

An Honours essay ECON 4908 [1.0] with a grade of B- or higher may be written by students with Overall and Major CGPAs of 7.50 or higher to earn 1.0 credit at the 4000-level or to replace the ECON 4901 and ECON 4902 requirement. Qualified students who choose to pursue the Honours Essay option must first complete an Honours essay prospectus to the satisfaction of both their advisor and the Undergraduate Supervisor.

Applied Economics

B.A. Honours

with Concentration (20.0 credits)

A. Credits Included in the Major CGPA (12.0 credits)

1. 1.0 credit from:		1.0
ECON 1000 [1.0]	Introduction to Economics	
FYSM 1003 [1.0]	Introduction to Economics	
2. 5.0 credits in:		5.0
ECON 1401 [0.5]	Elementary Mathematics for Economics I	
ECON 1402 [0.5]	Elementary Mathematics for Economics II	
ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure	
ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium	
ECON 2102 [0.5]	Intermediate Macroeconomics I	
ECON 2103 [0.5]	Intermediate Macroeconomics II	
ECON 2201 [0.5]	Statistical Methods in Economics and Business I	
ECON 2202 [0.5]	Statistical Methods in Economics and Business II	
ECON 3706 [0.5]	Applied Econometrics	
ECON 4890 [0.5]	Applied Honours Seminar	
3. 1.0 credit from:		1.0
ECON 2400 [0.5]	Mathematical Methods of Economics	
ECON at the 3000 level		
4. One of the following concentrations described below, also included in the Major CGPA		4.0
5. 1.0 credit in ECON at the 4000 level		1.0
B. Credits Not Included in the Major CGPA (8.0 credits)		
6. 7.0 credits in electives not in ECON		7.0
7. 1.0 credit in free electives.		1.0
Total Credits		20.0
Concentration in Financial Economics		
4a. 1.0 credit in:		1.0
BUSI 1001 [0.5]	Principles of Financial Accounting	
BUSI 1002 [0.5]	Management Accounting	
(See Note 1 below)		
4b. 1.5 credits from:		1.5
ECON 3050 [0.5]	Introduction to Financial Economics	
ECON 4051 [0.5]	Financial Asset Pricing	
ECON 4052 [0.5]	Corporate Financial Economics	

or		
BUSI 3500 [0.5]	Applied Corporate Finance	
BUSI 3502 [0.5]	Investments	
BUSI 3512 [0.5]	Derivatives	
4c. 1.5 credits from:		1.5
ECON 3602 [0.5]	International Monetary Problems	
or ECON 4602 [0.5]	International Monetary Theory and Policy	
ECON 3607 [0.5]	Monetary and Financial Institutions	
ECON 4053 [0.5]	Financial Market Modeling	
ECON 4056 [0.5]	Insurance Economics	
ECON 4057 [0.5]	Behavioural Financial Economics	
BUSI 2504 [0.5] & BUSI 2505 [0.5] and one of: BUSI 4500 [0.5], BUSI 4502 [0.5] (see Note 2 below)		
Total Credits		4.0

Concentration in International Political Economy

4a. 2.0 credits in:		2.0
ECON 4601 [0.5]	International Trade Theory and Policy	
ECON 4602 [0.5]	International Monetary Theory and Policy	
PSCI 2602 [0.5]	International Relations: Global Political Economy	
PSCI 4603 [0.5]	Analysis of International Political Economy	
4b. 1.0 credit from:		1.0
ECON 3807 [0.5]	European Economic Integration	
or PSCI 3207 [0.5]	The Government and Politics of European Integration	
PSCI 3204 [0.5]	Politics of Latin America	
or PSCI 3205 [0.5]	Mexican Politics	
PSCI 3600 [0.5]	International Institutions	
PSCI 3703 [0.5]	Governing in the Global Economy	
PSCI 3802 [0.5]	Globalization and Human Rights	
or ANTH 3027 [0.5]	Studies in Globalization and Human Rights	
or SOCI 3027 [0.5]	Globalization and Human Rights	
4c. 1.0 credit from:		1.0
ECON 4508 [0.5]	International Aspects of Economic Development	
INAF 4103 [0.5]	Special Topics in International Political Economy and International Affairs	
or PSCI 4604 [0.5]	Selected Problems in International Political Economy	
PSCI 4207 [0.5]	Globalization, Adjustment and Democracy in Africa	
PSCI 4500 [0.5]	Gender and Globalization	
PSCI 4805 [0.5]	Political Economy of Global Finance	
Total Credits		4.0

Concentration in Development

4a. 3.0 credits in:		3.0
ECON 3508 [0.5]	Introduction to Economic Development	
ECON 3509 [0.5]	Development Planning and Project Evaluation	
ECON 4507 [0.5]	The Economics of Development	

ECON 4508 [0.5]	International Aspects of Economic Development	
PSCI 2102 [0.5]	Comparative Politics of the Global South	
PSCI 4104 [0.5]	Theory and Practice in Third World Development	
4b. 1.0 credit from:		1.0
ECON 3510 [0.5]	African Economic Development	
ECON 3520 [0.5]	Canadian Economic Development	
ECON 3808 [0.5]	The Economics of Transition	
ECON 3870 [0.5]	Comparative Economic Systems	
INAF 4102 [0.5]	Special Topics in Development and International Affairs	
PSCI 4105 [0.5]	Selected Problems in Third World Development	
PSCI 4409 [0.5]	Issues in Development Management	
or INAF 4202 [0.5]	Issues in Development Management	
Total Credits		4.0

Concentration in Natural Resources, Environment, and Economy

4a. 3.0 credits in:		3.0
ECON 3803 [0.5]	The Economics of Natural Resources	
ECON 3804 [0.5]	Environmental Economics	
GEOG 2200 [0.5]	Global Connections	
GEOG 2300 [0.5]	Space, Place and Identity	
GEOG 3022 [0.5]	Environmental and Natural Resources	
PSCI 3801 [0.5]	Environmental Politics	
4b. 0.5 credit from:		0.5
ECON 4407 [0.5]	Project Evaluation	
GEOG 4004 [0.5]	Environmental Impact Assessment	
TSES 4001 [0.5]	Technology and Society: Risk	
4c. 0.5 credit from:		0.5
ERTH 4303 [0.5]	Resources of the Earth	
EURR 4005 [0.5]	Environmental Problems and Politics in East/Central Europe and Eurasia	
GEOG 3209 [0.5]	Sustainability and Environment in the South	
GEOG 4022 [0.5]	Seminar in People, Resources and Environmental Change	
PSCI 4808 [0.5]	Global Environmental Politics	
TSES 3002 [0.5]	Energy and Sustainability	
Total Credits		4.0

Notes:

1. For Item 4 a) of the Concentration in Financial Economics above, BUSI 1004 may replace BUSI 1001 and BUSI 1005 may replace BUSI 1002.
2. For Item 4 c) of the Concentration in Financial Economics above, BUSI 2504 and BUSI 2505 may not count for credit inside the major without also including either BUSI 4500 or BUSI 4502.

Economics with Specialization in Quantitative and Mathematical Economics

B.A. Honours (20.0 credits)

41Q

A. Credits Included in the Major CGPA (15.0 credits)

1. 1.0 credit from:	1.0
ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics
2. 1.0 credit from:	1.0
MATH 1002 [1.0]	Calculus and Introductory Analysis I
or	
MATH 1007 [0.5]	Elementary Calculus I
& MATH 2007 [0.5]	and Elementary Calculus II
3. 1.0 credit from:	1.0
MATH 1102 [1.0]	Algebra I
or	
MATH 1107 [0.5]	Linear Algebra I
& MATH 2107 [0.5]	and Linear Algebra II
4. 4.0 credits in:	4.0
MATH 2000 [1.0]	Calculus and Introductory Analysis II (Honours)
MATH 2454 [0.5]	Ordinary Differential Equations (Honours)
MATH 3001 [0.5]	Real Analysis (Honours)
MATH 3107 [0.5]	Linear Algebra III
STAT 2655 [0.5]	Introduction to Probability with Applications (Honours)
STAT 2559 [0.5]	Basics of Statistical Modeling (Honours)
STAT 3506 [0.5]	Stochastic Processes and Applications (Honours)
5. 5.5 credits in:	5.5
ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium
ECON 2102 [0.5]	Intermediate Macroeconomics I
ECON 2103 [0.5]	Intermediate Macroeconomics II
ECON 2400 [0.5]	Mathematical Methods of Economics
ECON 4001 [0.5]	Mathematical Analysis in Economics
ECON 4002 [0.5]	Statistical Analysis in Economics
ECON 4020 [0.5]	Advanced Microeconomic Theory
ECON 4021 [0.5]	Advanced Macroeconomic Theory
ECON 4706 [0.5]	Econometrics I
ECON 4707 [0.5]	Econometrics II
6. 1.5 credits in ECON at the 4000 level including at least 0.5 credit from:	1.5
ECON 4004 [0.5]	Operations Research I
ECON 4005 [0.5]	Operations Research II
ECON 4700 [0.5]	Measurement Economics
ECON 4713 [0.5]	Time-Series Econometrics
ECON 4714 [0.5]	Advanced Topics in Applied Econometrics
7. 1.0 credit from:	1.0

ECON 4901 [0.5] Honours Seminar: Microeconomics & ECON 4902 [0.5] and Honours Seminar: Macroeconomics

or

ECON 4908 [1.0] Honours Essay (see Note below)

B. Credits Not Included in the Major CGPA (5.0 credits)

8. 4.0 credits in electives not in economics, mathematics, or statistics: 4.0

The following are recommended for 2.0 credits:

COMP 1005 [0.5] Introduction to Computer Science I

COMP 1006 [0.5] Introduction to Computer Science II

PHIL 2001 [0.5] Introduction to Logic

PHIL 3306 [0.5] Symbolic Logic

9. 1.0 credit in free electives. One of the following is recommended for 0.5 credit: 1.0

ECON 4025 [0.5] Game Theory and Economics

MATH 4807 [0.5] Game Theory (Honours)

Total Credits 20.0

Note:

An Honours Essay, ECON 4908 [1.0], with a grade of B- or higher may be written by students with Overall and Major CGPAs of 7.50 or higher to earn 1.0 credit at the 4000-level or to replace the ECON 4901 and ECON 4902 requirement. Qualified students who choose to pursue the Honours Essay option must first complete an Honours essay prospectus to the satisfaction of both their advisor and the Undergraduate Supervisor.

Program Requirements for B.A., B.Hum., and B.J. Combined Honours

Students may apply for Combined Honours in Economics or Applied Economics and one of the following disciplines with the requirements described below:

African Studies, Anthropology, Applied Linguistics and Discourse Studies, Art History, Biology, Canadian Studies, Communication Studies, English, European and Russian Studies, Film Studies, French, Geography, Global Politics, Greek and Roman Studies, History, Human Rights, Human Rights and Law with Concentration in Transnational Law and Human Rights, Humanities, Journalism, Law, Law with Concentration in Business Law, Law with Concentration in Law, Policy and Government, Law with Concentration in Transnational Law and Human Rights, Linguistics, Linguistics and Discourse Studies, Music, Philosophy, Political Science, Psychology, Religion, Sociology, Women's and Gender Studies

The (B.Hum.) Combined Honours programs in Economics or Applied Economics and Humanities are available only to students already admitted to the B.Hum.

The (B.A. and B.J.) Combined Honours programs in Economics or Applied Economics and Journalism are available only to students registered in Journalism.

Note that it may be difficult or impossible to meet the requirements of certain Combined Honours programs within the 20.0 credits required for the degree.

Note also that certain Combined Honours programs specify pairs of courses that preclude one another; e.g.,

ECON 2201 and PSCI 2702 in the case of Economics and Political Science. Students in such programs are strongly advised to consult with the Department upon admission, or as soon as possible thereafter, to ensure that their program requirements are adjusted appropriately.

Economics

B.A. Combined Honours (20.0 credits)

41+

A. Credits Included in the Economics Major CGPA (8.0 credits)

1. 1.0 credit from: 1.0

ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics

2. 5.5 credits in: 5.5

ECON 1401 [0.5]	Elementary Mathematics for Economics I
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ECON 1402 [0.5]	Elementary Mathematics for Economics II
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ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
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ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium
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ECON 2102 [0.5]	Intermediate Macroeconomics I
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ECON 2103 [0.5]	Intermediate Macroeconomics II
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ECON 2201 [0.5]	Statistical Methods in Economics and Business I
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ECON 2202 [0.5]	Statistical Methods in Economics and Business II
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ECON 2400 [0.5]	Mathematical Methods of Economics
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ECON 4020 [0.5]	Advanced Microeconomic Theory
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ECON 4021 [0.5]	Advanced Macroeconomic Theory
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3. 1.5 credits from: 1.5

ECON 4706 [0.5]	Econometrics I
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ECON 4901 [0.5]	Honours Seminar: Microeconomics
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ECON 4902 [0.5]	Honours Seminar: Macroeconomics
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or

ECON 4908 [1.0]	Honours Essay (see Note below) and 0.5 credit in ECON at the 4000 level
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B. Additional Requirements (12.0 credits) 12.0

4. The requirements for Combined Honours in the other discipline must be satisfied

5. At least 4.0 credits in electives not in ECON or the other discipline

6. Sufficient credits in free electives to make 20.0 credits for the degree.

Total Credits 20.0

Note:

An Honours essay, ECON 4908 [1.0], with a grade of B- or higher may be written by students with Overall and Major CGPAs of 7.50 or higher to earn 1.0 credit at the 4000-level or to replace the ECON 4901 and ECON 4902 requirement. Qualified students who choose to pursue the Honours essay option must first complete an Honours essay prospectus to the satisfaction of both their advisor and the Undergraduate Supervisor.

Applied Economics

B.A. Combined Honours (20.0 credits)

41A+

A. Credits Included in the Applied Economics Major CGPA (8.0 credits)

1. 1.0 credit from: 1.0

ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics

2. 5.0 credits in: 5.0

ECON 1401 [0.5]	Elementary Mathematics for Economics I
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ECON 1402 [0.5]	Elementary Mathematics for Economics II
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ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
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ECON 2030 [0.5]	Intermediate Microeconomics II: Consumers and General Equilibrium
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ECON 2102 [0.5]	Intermediate Macroeconomics I
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ECON 2103 [0.5]	Intermediate Macroeconomics II
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ECON 2201 [0.5]	Statistical Methods in Economics and Business I
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ECON 2202 [0.5]	Statistical Methods in Economics and Business II
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ECON 3706 [0.5]	Applied Econometrics
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ECON 4890 [0.5]	Applied Honours Seminar
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3. 1.0 credit from: 1.0

ECON 2400 [0.5]	Mathematical Methods of Economics
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ECON at the 3000 level

4. 1.0 credit in ECON at the 4000 level 1.0

B. Additional Requirements (12.0 credits) 12.0

5. The requirements for Combined Honours in the other discipline must be satisfied

6. At least 4.0 credits in electives not in ECON or the other discipline

7. Sufficient credits in free electives to make 20.0 credits for the degree.

Total Credits 20.0

Program Requirements for

B.A. General

Economics

B.A. General (15.0 credits)

41

A. Credits Included in the Major CGPA (7.0 credits)

1. 1.0 credit from: 1.0

ECON 1000 [1.0]	Introduction to Economics
FYSM 1003 [1.0]	Introduction to Economics

2. 2.5 credits in: 2.5

ECON 1401 [0.5]	Elementary Mathematics for Economics I
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ECON 1402 [0.5]	Elementary Mathematics for Economics II
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ECON 2020 [0.5]	Intermediate Microeconomics I: Producers and Market Structure
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ECON 2102 [0.5]	Intermediate Macroeconomics I
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ECON 2201 [0.5]	Statistical Methods in Economics and Business I
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3. 3.5 credits from:	3.5
ECON 2030 [0.5] Intermediate Microeconomics II: Consumers and General Equilibrium	
ECON 2103 [0.5] Intermediate Macroeconomics II	
ECON 2202 [0.5] Statistical Methods in Economics and Business II	
ECON 2400 [0.5] Mathematical Methods of Economics	
ECON at the 3000 or 4000 level	
B. Credits Not Included in the Major CGPA (8.0 credits)	
4. 6.0 credits in electives not in ECON	6.0
5. 2.0 credits in free electives.	2.0
Total Credits	15.0

Minors

Minor in Economics (4.0 credits)

M4

Open to all undergraduate degree students not pursuing a Major in Economics or Applied Economics.

Requirements

1. 1.0 credit from:	1.0
ECON 1000 [1.0] Introduction to Economics	
FYSM 1003 [1.0] Introduction to Economics	
2. 0.5 credit from:	0.5
ECON 2001 [0.5] Intermediate Microeconomics for Non-Mathematical Majors	
ECON 2020 [0.5] Intermediate Microeconomics I: Producers and Market Structure	
3. 0.5 credit from:	0.5
ECON 2101 [0.5] Intermediate Macroeconomics for Non-Mathematical Majors	
ECON 2102 [0.5] Intermediate Macroeconomics I	
4. 2.0 credits from:	2.0
ECON 2030 [0.5] Intermediate Microeconomics II: Consumers and General Equilibrium	
ECON 2103 [0.5] Intermediate Macroeconomics II	
ECON 2201 [0.5] Statistical Methods in Economics and Business I	
ECON 2202 [0.5] Statistical Methods in Economics and Business II	
ECON 2400 [0.5] Mathematical Methods of Economics	
ECON at the 3000 or 4000 level	
5. The remaining requirements of the major discipline(s) and degree must be satisfied.	
Total Credits	4.0

Minor in Industrial Economics (4.0 credits)

M41

Open to all B.Eng. students and other undergraduate degree students not pursuing a Major in Economics or Applied Economics who have successfully completed ECOR 3800 and SYSC 3200 while registered in a B.Eng. program.

Requirements

1. 1.0 credit in:	1.0
ECON 1000 [1.0] Introduction to Economics	
2. 1.5 credits in:	1.5
ECON 2020 [0.5] Intermediate Microeconomics I: Producers and Market Structure	
ECON 2030 [0.5] Intermediate Microeconomics II: Consumers and General Equilibrium	
ECON 4020 [0.5] Advanced Microeconomic Theory	
3. 0.5 credit from:	0.5
ECON 4005 [0.5] Operations Research II	
ECON 4301 [0.5] Market Structure and Firm Behaviour	
ECON 4309 [0.5] Applied Industrial Economics	
ECON 4407 [0.5] Project Evaluation	
4. 1.0 credit in:	1.0
ECOR 3800 [0.5] Engineering Economics	
SYSC 3200 [0.5] Industrial Engineering	
5. The remaining requirements of the major discipline(s) and degree must be satisfied.	
Total Credits	4.0

Economics (ECON) Courses

Economics

Faculty of Public Affairs

ECON 1000 [1.0 credit]

Introduction to Economics

An introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation, and international economic problems.

Precludes additional credit for ECON 1001, ECON 1002, and FYSM 1003.

Lectures three hours a week, discussion groups one hour every two weeks.

ECON 1001 [0.5 credit]

Introduction to Economics: Microeconomics

The microeconomics half of ECON 1000.

Precludes additional credit for ECON 1000 and FYSM 1003.

Prerequisite(s): normally restricted to students who have obtained transfer credit for the equivalent of the macroeconomics half of ECON 1000.

Lectures three hours a week, discussion groups one hour every two weeks.

ECON 1002 [0.5 credit]**Introduction to Economics: Macroeconomics**

The macroeconomics half of ECON 1000.

Precludes additional credit for ECON 1000 and FYSM 1003.

Prerequisite(s): normally restricted to students who have obtained transfer credit for the equivalent of the microeconomics half of ECON 1000.

Lectures three hours a week, discussion groups one hour every two weeks.

ECON 1401 [0.5 credit]**Elementary Mathematics for Economics I**

Functional relations: including functional forms and error terms. Graphing economic magnitudes: scatter diagrams, time-series graphs, and functional relationships. Applied calculus: the mechanics of differentiation and integration, elasticity, and consumer/producer surplus.

Applied algebra: solving systems of linear equations and Keynesian national-income analysis. Approaches to problem solving. This course is complementary to ECON 1000 and FYSM 1003.

Also listed as MATH 1401.

Precludes additional credit for MATH 1009 and MATH 1119.

Prerequisite(s): Ontario Grade-12 U Advanced Functions, or MATH 0005, or equivalent; and ECON 1000 or FYSM 1003, which may be taken concurrently with ECON 1401.

Lectures three hours a week, tutorials one hour a week.

ECON 1402 [0.5 credit]**Elementary Mathematics for Economics II**

Calculus: including partial differentiation, definite and indefinite integrals, techniques of integration, and unconstrained optimization. Vectors and matrices: scalar multiplication, inner product, linear dependence, matrix operations, rank, invertible matrix theorem, and determinants. Economic applications such as profit maximization, comparative statics, and the Leontief input-output model. This course is complementary to ECON 2020 and ECON 2102.

Also listed as MATH 1402.

Precludes additional credit for MATH 1009 and MATH 1119.

Prerequisite(s): ECON 1000 or FYSM 1003 with a grade of C- or higher, and ECON 1401 with a grade of C- or higher.

Lectures three hours a week, tutorials one hour a week.

ECON 2001 [0.5 credit]**Intermediate Microeconomics for Non-Mathematical Majors**

The main topics in microeconomic theory presented in a relatively non-technical manner (e.g., without the requiring knowledge of calculus) with illustrations of their applications. Not open to students in any Economics, B.Com., B.C.S., B.Eng., B.I.D., B.Math., or B.Sc. program. Precludes additional credit for ECON 2002 (no longer offered), ECON 2003 (no longer offered), ECON 2020, and ECON 2030.

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 2020 [0.5 credit]**Intermediate Microeconomics I: Producers and Market Structure**

Theory of the firm: elements of production and cost; input allocation, pricing, and firm behaviour under perfectly and imperfectly competitive market structures; the role of information; game theory and public policy, including basic competition policy.

Precludes additional credit for ECON 2001, ECON 2002 (no longer offered), and ECON 2003 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003 with a grade of C- or higher; and ECON 1402 (or equivalent), which may be taken concurrently with ECON 2020.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2030 [0.5 credit]**Intermediate Microeconomics II: Consumers and General Equilibrium**

Theory of consumer choice and demand; applications to intertemporal choice, labour supply, and/or choice under uncertainty; welfare analysis; general equilibrium theory; externalities and the role of government.

Precludes additional credit for ECON 2001, ECON 2002 (no longer offered), and ECON 2003 (no longer offered).

Prerequisite(s): ECON 2020 with a grade of C- or higher, and ECON 1402 (or equivalent) with a grade of C- or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2101 [0.5 credit]**Intermediate Macroeconomics for Non-Mathematical Majors**

The main topics in macroeconomic theory presented in a relatively non-technical manner (e.g., without the requiring knowledge of calculus) with illustrations of their application. Not open to students in any Economics, B.Com., B.C.S., B.Eng., B.I.D., B.Math., or B.Sc. program. Precludes additional credit for ECON 2102 and ECON 2103.

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 2102 [0.5 credit]**Intermediate Macroeconomics I**

An introduction to the macroeconomic modeling of output in the short and long run, and to fixed-price models of the closed and open economy over the business cycle. Policy prescriptions in relation to the business cycle are analysed.

Precludes additional credit for ECON 2101.

Prerequisite(s): ECON 1000 or FYSM 1003 with a grade of C- or higher; and ECON 1402 (or equivalent), which may be taken concurrently with ECON 2102.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2103 [0.5 credit]**Intermediate Macroeconomics II**

An extension of macroeconomic modeling to the dynamics of wage-price adjustment in the intermediate and long run, to the theoretical foundations of basic macroeconomic relationships, and to contemporary policy issues arising in relation to the business cycle and long-run growth.

Precludes additional credit for ECON 2101.

Prerequisite(s): ECON 2102 with a grade of C- or higher, and ECON 1402 (or equivalent) with a grade of C- or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2201 [0.5 credit]**Statistical Methods in Economics and Business I**

An introduction to statistical inference. Topics covered include descriptive statistics, probability theory, sampling distributions, estimation and hypothesis testing with a single population.

Precludes additional credit for BIT 2000, BIT 2100, ECON 2200 (no longer offered), GEOG 2006, PSCI 2702, PSYC 2002, STAT 2507, STAT 2606, and STAT 3502.

Prerequisite(s): ECON 1402 (or equivalent), which may be taken concurrently with ECON 2201.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2202 [0.5 credit]**Statistical Methods in Economics and Business II**

A continuation of ECON 2201. Topics include estimation and hypothesis testing with two populations, correlation, simple and multiple linear regression, analysis of variance, tests of goodness of fit and independence, and introduction to statistical computing.

Precludes additional credit for ECON 2200 (no longer offered), STAT 2509, STAT 2559, and STAT 2607.

Prerequisite(s): ECON 2201 (or equivalent) with a grade of C- or higher, and ECON 1402 (or equivalent) with a grade of C- or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 2400 [0.5 credit]**Mathematical Methods of Economics**

Constrained optimization via Lagrange and Kuhn-Tucker conditions; implicit functions and implicit differentiation; comparative static methods applied to models such as utility maximization and least-cost production; homogeneous functions; concave and convex functions; compounding and exponential functions; economic models involving integration; differential equations.

Prerequisite(s): ECON 1000 or FYSM 1003 with a grade of C- or higher, and ECON 1401 and ECON 1402 (or equivalent) with an average grade of C+ or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 3050 [0.5 credit]**Introduction to Financial Economics**

The major theories and basic tools used to address modern financial economic issues. Topics may include time value of money, bond and stock valuation, investment criteria, capital budgeting, the risk-return tradeoff, options and option valuation, cost of capital, and the fundamentals of international corporate finance.

Precludes additional credit for BUSI 2504, ECON 2504 (no longer offered), BUSI 2505, ECON 2505 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003 with a grade of C- or higher, ECON 1402 (or equivalent) with a grade of C- or higher, and BUSI 1002 or BUSI 1005 with a grade of C- or higher.

Lectures three hours a week.

ECON 3201 [0.5 credit]**Economic Thought and Policy in Canada**

An account of the interrelationship between economic theories expounded in Canada and their issue in national policy.

Precludes additional credit for ECON 3404 (no longer offered).

Prerequisite(s): an introductory course in one of the social sciences or Canadian history.

Lectures three hours a week.

ECON 3202 [0.5 credit]**Canadian Economic History to 1914**

A survey of Canadian economic history from the sixteenth century to the advent of industrial capitalism.

Also listed as HIST 3203.

Precludes additional credit for ECON 2305 or HIST 2305 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 3207 [0.5 credit]**Canadian Economic History since 1914**

A survey of Canadian economic history from the First World War to the present.

Also listed as HIST 3204.

Precludes additional credit for ECON 2305 or HIST 2305 (no longer offered) and ECON 3203 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 3230 [0.5 credit]**Selected Topics in Economic History**

Examination of the economic development of North America or Europe or other possible selected sets of countries. Countries examined vary from year to year.

Precludes additional credit for ECON 3005 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 3300 [0.5 credit]**Public Policy Toward Business**

The interaction of government and business in the Canadian economy. Reasons for government involvement in selected public policy areas. Topics covered may include competition policy, regulation of firms by boards and commissions, environmental regulation, and public enterprise.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3360 [0.5 credit]**Introduction to Labour Economics**

Basic principles of labour economics including market, institutional, and sociological forces. Technology and labour demand, wage systems, human capital, internal wage structure, market discrimination, female labour-force entry, wage-price spiral, household labour supply, and wage determination.

Preclusion: credit will not be given if taken concurrently with or after ECON 4305 (no longer offered) or ECON 4306 (no longer offered) or ECON 4360. Precludes additional credit for ECON 3506 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3365 [0.5 credit]**Introduction to Industrial Relations**

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada, and Canadian public policy in industrial relations.

Preclusion: credit will not be given if taken concurrently with or after ECON 4365 or ECON 4605 (no longer offered). Precludes additional credit for BUSI 3107 (no longer offered) and ECON 3507 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3380 [0.5 credit]**The Economics of Gender and Ethnicity**

The impact of gender and ethnicity on labour-market outcomes. Topics may include: employment, work, earnings, and poverty; discrimination and policy responses; immigration; the economics of the household; gender and development; micro-credit; labour standards.

Precludes additional credit for ECON 3100 (no longer offered) and ECON 3810 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3403 [0.5 credit]**Introduction to Public Economics: Expenditures**

The role and nature of the government sector in the economy, the theory of public goods, the equity and efficiency effects of public expenditures, voting rules and fiscal politics, techniques of public expenditure analysis, and intergovernmental fiscal relations.

Preclusion: credit will not be given if taken concurrently with or after ECON 4402 (no longer offered) or ECON 4403. Precludes additional credit for ECON 3003 (no longer offered) and ECON 3408 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3405 [0.5 credit]**Introduction to Public Economics: Taxation**

The role and nature of the government sector in the economy, principles of taxation, tax equity, incidence and excess burden of taxes, structure of taxes in the economy, role of personal, corporate, sales and wealth taxes, fiscal stabilization policy, and the economics of public debt.

Preclusion: credit will not be given if taken concurrently with or after ECON 4401 (no longer offered) or ECON 4404. Precludes additional credit for ECON 3003 (no longer offered) and ECON 3407 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3420 [0.5 credit]**Economic Theories of Federalism**

Economic dimensions of federalism, with reference to Canadian experience. Issues include: fiscal federalism; impact of federal economic policies on provincial economies; decentralization possibilities for fiscal and economic development policies; and consequences of policies such as provincial trade barriers and impediments to factor flows.

Precludes additional credit for ECON 3206 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3450 [0.5 credit]**Political Economy in the Modern State**

An examination of the role of government in the economy, with emphasis on alternate forms of social coordination and the advantages and disadvantages of each form in the Canadian system.

Precludes additional credit for ECON 3305 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3508 [0.5 credit]**Introduction to Economic Development**

A discussion of the principles of economic development.

Application to the problems of the developing countries.

Preclusion: credit will not be given if taken concurrently with or after ECON 4507. Precludes additional credit for ECON 3603 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3509 [0.5 credit]**Development Planning and Project Evaluation**

An introduction to the tools used in the planning and evaluation of development projects. Topics include the theory, application, strengths and limitations of cost-benefit analysis and competing approaches, and an examination of project evaluation techniques.

Precludes additional credit for ECON 3604 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3510 [0.5 credit]**African Economic Development**

Domestic and international aspects of development problems and policies in the African context. Topics may include human resource development, growth and poverty reduction, domestic resource mobilization, the implications of ethnic diversity, governance, and institutions, and issues of trade, investment, aid, migration, and health.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3520 [0.5 credit]**Canadian Economic Development**

An analysis of the impacts of the endowment of natural resources, changing market conditions and technology, and public policy on the growth and development of the Canadian economy.

Precludes additional credit for ECON 3205 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 3600 [0.5 credit]**Introduction to International Economics**

A discussion of theory and policy in international trade and finance. Intended for students planning to take only 0.5 credit in international economics at the 3000-level.

Preclusion: credit will not be given if taken concurrently with or after ECON 4601 or ECON 4602. Precludes additional credit for ECON 3601 and ECON 3602.

Prerequisite(s): ECON 1000 or FYSM 1003, or permission of the Department.

Lectures three hours a week.

ECON 3601 [0.5 credit]**Introduction to International Trade**

An extension of the basic principles of economics to international trade. Topics covered include the theory of international specialization, tariffs and other barriers to trade, trade liberalization and economic integration, international movements of labour and capital, trade and development.

Preclusion: credit will not be given if taken concurrently with or after ECON 4601. Precludes additional credit for ECON 3600.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3602 [0.5 credit]**International Monetary Problems**

A discussion of the theory and institutions of the international monetary system, and the related balance of payments problems of nation states.

Preclusion: credit will not be given if taken concurrently with or after ECON 4602. Precludes additional credit for ECON 3600.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3607 [0.5 credit]**Monetary and Financial Institutions**

The behaviour of financial intermediaries and institutions such as the Bank of Canada, banks and trust companies, and regulatory bodies such as the Canada Deposit Insurance Corporation and the Superintendent of Financial Institutions.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3706 [0.5 credit]**Applied Econometrics**

Introduction to applied econometric methods with emphasis on the use of the regression model for empirical research. Real-world examples are used extensively to illustrate key concepts. Hands-on computer exercises are an integral part of the course.

Precludes additional credit for ECON 4706.

Prerequisite(s): ECON 1000 or FYSM 1003, ECON 2201 (or equivalent) with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C+ or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 3801 [0.5 credit]**Regional Economics**

Unequal distribution of economic activity between spatially defined regions. The pattern in Canada since World War II and the outlook for the future is evaluated, considering "natural" adjustment mechanisms and policy tools.

Precludes additional credit for ECON 3401 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3803 [0.5 credit]**The Economics of Natural Resources**

The application of economic analysis to questions concerning natural-resource use, management and conservation, as well as market failures and environmental effects. Policy problems relating to natural resources are discussed.

Precludes additional credit for ECON 3805 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3804 [0.5 credit]**Environmental Economics**

Microeconomic analysis of environmental issues. Frameworks for measuring environmental costs and benefits. The efficiency of alternative pollution control policies. Applications include air and water pollution and global environmental problems such as ozone depletion and global warming.

Precludes additional credit for ECON 3806 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3807 [0.5 credit]**European Economic Integration**

A discussion of the theories of free trade areas and customs, monetary, and economic unions, and the related historical experience of Europe. Topics include: currency area and the euro, coordination of fiscal policy and the EU budget, common agricultural policy, labour mobility, and regional policy.

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3808 [0.5 credit]**The Economics of Transition**

The transition from state ownership and central planning to mixed ownership structure with resource allocation by market mechanisms. "Classical socialism" is criticized and the processes of transition in countries of Central and Eastern Europe, the former Soviet Union, and Asia are compared.

Precludes additional credit for ECON 3700 (no longer offered), ECON 3701 (no longer offered), and ECON 3702 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3820 [0.5 credit]**Topics in Canadian Economic Policy**

Economic analysis applied to selected policy areas, issues or institutions. One or more of the following topics may be dealt with: decision-making by bureaucratic institutions, policy problems arising from poverty, the economics of natural resources and pollution, urban economics.

Precludes additional credit for ECON 3800 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3840 [0.5 credit]**An Economic Analysis of Law**

An introduction to the application of economic principles and methodology to a variety of legal problems with emphasis on the theory of property rights and the allocation of resources.

Precludes additional credit for ECON 3204 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3850 [0.5 credit]**Economics of Information and the Media**

An introduction to the economics of information and the media, with a focus on the analysis of production and distribution of information, the application of theory to selected communications-media industries in Canada, and the analysis of existing Canadian policies.

Preclusion: credit will not be given if taken concurrently with or after ECON 4205 (no longer offered) or ECON 4850. Precludes additional credit for ECON 3200 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3860 [0.5 credit]**Agricultural Economics**

An examination of the agricultural industry in the national economy and in low-income societies, with emphasis on the working out of the basic forces that determine supply and demand for the industry, and the functional distribution of income among the factors of production.

Precludes additional credit for ECON 3406 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3870 [0.5 credit]**Comparative Economic Systems**

Analysis of the structure, institutions, and performance of alternative economic systems, including capitalism, socialism, and communism. Selected countries are studied as examples of these systems.

Precludes additional credit for ECON 4806 (no longer offered) and ECON 4807 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures three hours a week.

ECON 3880 [0.5 credit]**Special Studies in Economics**

Content may vary from year to year and is announced in advance of the registration period.

Precludes additional credit for ECON 3402 (no longer offered).

Prerequisite(s): ECON 1000 or FYSM 1003.

Lectures and/or seminars three hours a week.

ECON 3999 [0.0 credit]**Co-operative Work Term**

Graded Sat/Uns.

Prerequisite(s): registration in the Honours Economics or Applied Economics Co-operative Education option, satisfactory completion of the Co-op preparation classes offered by the Co-operative Education Office, and permission of the Department.

ECON 4001 [0.5 credit]**Mathematical Analysis in Economics**

Analysis and algebra: including set theory, sequences and series, quadratic forms, separation and fixed-point theorems. Static optimization: including the Weierstrass, Lagrange, and Kuhn-Tucker theorems; convexity and quasi-convexity; and the envelope theorem. Dynamic optimization: including the Maximum Principle and Bellman's equation. Applications of these tools to economic theory are presented.

Prerequisite(s): ECON 2400 with a grade of C+ or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 4002 [0.5 credit]**Statistical Analysis in Economics**

Probability: including conditional probability, random variables and distributions, unconditional and conditional expectations. Distributions: including special distributions and their properties, and sampling distributions of estimators. Nonparametric methods and limit theorems; stochastic processes; simulation and bootstrap methods. Applications of these tools to economic theory are presented.

Precludes additional credit for STAT 3500 (no longer offered), STAT 3508, and STAT 3558.

Prerequisite(s): ECON 2201 (or equivalent) with a grade of C+ or higher, and ECON 2202 (or equivalent) with a grade of C+ or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 4004 [0.5 credit]**Operations Research I**

Linear programming, duality, sensitivity analysis, transportation and network problems. Both theory and a wide range of applications are studied.

Precludes additional credit for BUSI 2300 (no longer offered), MATH 3801, and SYSC 3200.

Prerequisite(s): ECON 1402 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4005 [0.5 credit]**Operations Research II**

Dynamic programming, inventory models, queuing, simulation, and non-linear programming.

Prerequisite(s): ECON 4004 or BUSI 2300 (no longer offered) or MATH 3801 or SYSC 3200; and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502) with a grade of C- or higher.

Lectures three hours a week.

ECON 4020 [0.5 credit]**Advanced Microeconomic Theory**

Advanced theory of individual economic behaviour in production, consumption, and general equilibrium. Elementary tools of mathematics are employed in the exposition of most topics.

Precludes additional credit for ECON 4200 (no longer offered).

Prerequisite(s): ECON 2020 and ECON 2030 each with a grade of C+ or higher or ECON 2002 (no longer offered) and ECON 2003 (no longer offered) each with a grade of C+ or higher; ECON 2400 (or MATH 2000 or MATH 2004) with a grade of C+ or higher; and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502), which may be taken concurrently with ECON 4020.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 4021 [0.5 credit]**Advanced Macroeconomic Theory**

An introduction to advanced macroeconomic models. Topics may include analysis of business cycles, inflation, unemployment, economic growth, fiscal and monetary policy, consumption decisions of households, and investment decisions of firms.

Precludes additional credit for ECON 4201 (no longer offered).

Prerequisite(s): ECON 2102 with a grade of C+ or higher; ECON 2103 with a grade of C+ or higher; ECON 2400 (or MATH 2000 or MATH 2004) with a grade of C+ or higher; and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502), which may be taken concurrently with ECON 4021.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 4025 [0.5 credit]**Game Theory and Economics**

Analysis of strategic behaviour using non-cooperative game theory. Topics include extensive-form and strategic-form representation of games, and solution concepts for games of complete and incomplete information such as Nash equilibrium, subgame perfect equilibrium, and perfect Bayesian equilibrium. Economic applications will be presented.

Prerequisite(s): ECON 2020 and ECON 2030 each with a grade of C+ or higher or ECON 2002 (no longer offered) and ECON 2003 (no longer offered) each with a grade of C+ or higher; ECON 2400 (or MATH 2000 or MATH 2004) with a grade of C+ or higher; and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502), which may be taken concurrently with ECON 4025.

Lectures three hours a week.

ECON 4026 [0.5 credit]**Macroeconomic Dynamics**

Dynamic models as applied to topics such as economic growth, business cycles, consumption, investment, inflation, and real-financial linkages. Empirical and/or policy issues may also be discussed.

Prerequisite(s): ECON 2102 with a grade of C+ or higher; ECON 2103 with a grade of C+ or higher; ECON 2400 (or MATH 2000 or MATH 2004) with a grade of C+ or higher; and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502), which may be taken concurrently with ECON 4026.

Lectures three hours a week.

ECON 4030 [0.5 credit]**Economics of Uncertainty and Information**

Uncertainty, imperfect information, and asymmetric information in the allocation of resources and the performance of markets and alternative coordinating mechanisms.

Precludes additional credit for ECON 4006 (no longer offered) and ECON 4260 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4051 [0.5 credit]**Financial Asset Pricing**

Factors that drive security prices and models that attempt to account for aspects of security returns, including the generic arbitrage pricing model, the capital asset pricing model (CAPM), the consumption CAPM, and the intertemporal CAPM.

Precludes additional credit for BUSI 3500 (or ECON 3500, no longer offered) and BUSI 3502 (or ECON 3502, no longer offered).

Prerequisite(s): ECON 3050 with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4052 [0.5 credit]**Corporate Financial Economics**

Optimization and corporate finance. Corporate governance and managerial compensation. Capital structure and the Modigliani-Miller theorem. Agency theory and asymmetric information. The issue of equity, debt, and other securities. Dividend policy. Investment and capital budgeting, NPV, and real options.

Precludes additional credit for BUSI 3500 (or ECON 3500, no longer offered) and BUSI 3502 (or ECON 3502, no longer offered).

Prerequisite(s): ECON 3050 with a grade of C- or higher, and ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4053 [0.5 credit]**Financial Market Modeling**

The modeling of the evolution of prices in (near) efficient markets and the evaluation of functions of these prices such as guarantees, options, warrants, futures, and other types of derivatives. Arrow-Debreu state-contingent claims. Notions of complete and incomplete markets.

Precludes additional credit for ECON 4100 (no longer offered) and ECON 4504 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2400 with a grade of C- or higher.

Lectures three hours a week.

ECON 4056 [0.5 credit]**Insurance Economics**

The theory of insurance founded on probability and decision theory. The optimal design of insurance policies from a risk-sharing and an information economics perspective. Principal-agent problems including adverse selection, asymmetric information, and moral hazard with implications for insurance. The interaction between insurance and other markets.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4057 [0.5 credit]**Behavioural Financial Economics**

Market efficiency and the limits of arbitrage. Heuristics and biases identified by behavioural decision theorists and their effect on the behaviour of managers and investors. Behavioural theories of market trading volume and asset prices. Behavioural approaches to corporate financial economics problems.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 3050 with a grade of C- or higher.

Lectures three hours a week.

ECON 4209 [0.5 credit]**Selected Topics in the History of Economic Thought**

The development of economic thought through time in relation to selected economic problems.

Precludes additional credit for ECON 4105 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C+ or higher or ECON 2003 (no longer offered) with a grade of C+ or higher, and ECON 2103 with a grade of C+ or higher.

Also offered at the graduate level, with different requirements, as ECON 5209, for which additional credit is precluded.

Lectures and/or seminars three hours a week.

ECON 4301 [0.5 credit]**Market Structure and Firm Behaviour**

Various theoretical and empirical studies of firm and market organization with emphasis on the pricing, advertising, investment and locational behaviour of firms in imperfectly competitive markets.

Precludes additional credit for ECON 4300 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4302 [0.5 credit]**Competition and Regulatory Policy**

Public policies relating to competition and regulation.

Topics may include: Ramsey pricing, peak-load pricing, cross-subsidization, access pricing (ECPR), multi-part pricing and price discrimination, predatory and targeted pricing, vertical restrictions, traditional regulation (including rate-of-return regulation), incentive regulation (including price caps), and the political economy of regulation.

Precludes additional credit for ECON 4300 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4309 [0.5 credit]**Applied Industrial Economics**

The empirical application of microeconomics, with special emphasis on the Canadian economy. Topics include: consumer demand, firm production and investment, and industrial and trade structure.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502) with a grade of C- or higher.

Lectures three hours a week.

ECON 4360 [0.5 credit]**Labour Economics**

The application of price theory to the labour market. Topics include models of labour supply and labour demand, human capital and the economics of education, and unions and their impact on the labour market.

Precludes additional credit for ECON 4305 (no longer offered) and ECON 4306 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4365 [0.5 credit]**Industrial Relations**

Economic analysis of selected industrial relations and labour market policy problems. Topics include unionization, strike activity, the economics of occupational health and safety, pension policy, and the impact of new technology on the labour market.

Precludes additional credit for ECON 4605 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4403 [0.5 credit]**Public Economics: Expenditures**

A discussion of the theory of government expenditures and an examination of empirical attempts to quantify the theory. Examination of current topics such as expenditures and grants in the Canadian federation.

Precludes additional credit for ECON 4402 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4404 [0.5 credit]**Public Economics: Taxation**

A discussion of the theory of taxation and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as the redistribution of income in Canada and tax reform, are examined.

Precludes additional credit for ECON 4401 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4407 [0.5 credit]**Project Evaluation**

Techniques and problems in the evaluation of public and private projects. Examination of alternative approaches to public decision-making including cost-benefit analysis, cost-effectiveness analysis, and multiple-objective frameworks. Case studies of projects in various areas such as natural resources, the environment, human resources, public services, and transportation.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2202 (or equivalent, or STAT 2605 or STAT 3502) with a grade of C- or higher.

Lectures three hours a week.

ECON 4460 [0.5 credit]**Health Economics**

Economic analysis of the organization, financing, and utilization of health-care services. Topics include supply and demand of health care, the impact of private and social health insurance on demand, and policy issues in the provision of health care in Canada.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2202 with a grade of C- or higher.

Lectures three hours a week.

ECON 4507 [0.5 credit]**The Economics of Development**

An examination of some theoretical approaches to the economics of development, together with analysis of some economic policy issues of a largely internal character, such as intersectoral investment allocation, income distribution, unemployment, and investment in human development.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2103 with a grade of C- or higher.

Lectures three hours a week.

ECON 4508 [0.5 credit]**International Aspects of Economic Development**

An analysis of the international economic policy problems of development in Asia, Africa and Latin America, focusing on international trade, direct foreign investment, technological transfer, regional integration, debt and development financing, and international migration.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, and ECON 2103 with a grade of C- or higher.

Lectures three hours a week.

ECON 4601 [0.5 credit]**International Trade Theory and Policy**

International trade theory and its implications for economic policy. Topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth and development.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4602 [0.5 credit]**International Monetary Theory and Policy**

International monetary theory and its implications for economic policy. Topics such as sources of disequilibrium and adjustment in the balance of payments under fixed versus flexible exchange rates, international capital movements, and international monetary reform.

Prerequisite(s): ECON 2103 with a grade of C- or higher.

Lectures three hours a week.

ECON 4670 [0.5 credit]**Monetary Theory and Policy**

The role of money and the monetary system in determining income, employment, and price level; techniques of monetary policy; the relationship between monetary and fiscal policy; international aspects and policies.

Precludes additional credit for ECON 4607 (no longer offered) and ECON 4608 (no longer offered).

Prerequisite(s): ECON 2103 with a grade of C- or higher, and ECON 2202 with a grade of C- or higher.

Lectures three hours a week.

ECON 4700 [0.5 credit]**Measurement Economics**

National accounting and index numbers. Topics may include: the measurement of output and income, capital and depreciation, productivity, employment and unemployment, poverty and inequality, household production, pollution and resource depletion, and the balance of payments; price indexes; standard-of-living indexes; and international comparisons.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, ECON 2103 with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4706 [0.5 credit]**Econometrics I**

An introduction to econometric theory and analysis of the classical normal regression model. Topics include estimation methods, hypothesis testing, multicollinearity, autocorrelation, and heteroscedasticity.

Precludes additional credit for ECON 3706.

Prerequisite(s): ECON 2201 (or equivalent) with a grade of C+ or higher, and ECON 2202 (or equivalent) with a grade of C+ or higher.

Lectures three hours a week, tutorials one and a half hours a week.

ECON 4707 [0.5 credit]**Econometrics II**

An extension of ECON 4706. Topics include dummy variables, qualitative and limited dependent variables, and simultaneous equation models. Optional topics include simple expectations models, errors in variables, specification tests and diagnostics checks, distributed lag models, and seemingly unrelated regression models.

Prerequisite(s): ECON 4706 with a grade of C- or higher, or STAT 3503 with a grade of C- or higher.

Lectures three hours a week.

ECON 4713 [0.5 credit]**Time-Series Econometrics**

An introduction to the basic concepts and tools of time-series econometrics. Topics include stationary and non-stationary time series, identification, estimation and forecasting, unit root testing, cointegration analysis, error-correction models and ARCH models, together with relevant economic applications.

Precludes additional credit for ECON 4803 (no longer offered) and STAT 4603.

Prerequisite(s): ECON 4706 with a grade of C- or higher, or STAT 3503 with a grade of C- or higher.

Lectures three hours a week.

ECON 4714 [0.5 credit]**Advanced Topics in Applied Econometrics**

Advanced coverage of one or more areas of current interest in applied econometrics. An empirical research project may be required.

Precludes additional credit for ECON 4804 (no longer offered).

Prerequisite(s): ECON 4706 with a grade of C+ or higher; and ECON 4707, which may be taken concurrently with ECON 4714.

Lectures three hours a week.

ECON 4800 [0.5 credit]**Spatial Economics**

Spatial dimensions of economic activity and organization. Theories of urban agglomeration effects, transport costs, forward and backward linkages, and associated spatial dynamics; empirical analysis of spatial economic clusters; effects of globalization and economic growth on the spatial structure of production and the associated policy response.

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher, ECON 2103 with a grade of C- or higher, and ECON 2202 (or equivalent) with a grade of C- or higher.

Lectures three hours a week.

ECON 4850 [0.5 credit]**Advanced Economics of Information and Media**

The economics of information production, its distribution through broadcasting, publishing or the Internet, its exchange through telephone and e-mail networks, and its use in private and public organizations. An analysis of telecommunications, broadcasting, copyright, privacy, and Internet policy.

Precludes additional credit for ECON 4205 (no longer offered).

Prerequisite(s): ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher.

Lectures three hours a week.

ECON 4880 [0.5 credit]**Special Topics in Economics**

Selected advanced topics of interest to upper-year Honours Economics and Applied Economics students. Topics may vary from year to year and are announced in advance of the registration period.

Prerequisite(s): ECON 2030 with a grade of C+ or higher or ECON 2003 (no longer offered) with a grade of C+ or higher; ECON 2103 with a grade of C+ or higher; and ECON 3706 or ECON 4706, which may be taken concurrently with ECON 4880 or may be waived by permission of the Department.

Lectures and/or seminars three hours a week.

ECON 4890 [0.5 credit]**Applied Honours Seminar**

This seminar focuses on the use of basic economic analysis in a small number of research topics to be selected by the instructor. A major research paper is required. This seminar is intended for fourth-year Applied Honours Economics students.

Precludes additional credit for ECON 4900 (no longer offered), ECON 4901, and ECON 4902.

Prerequisite(s): ECON 2030 with a grade of C+ or higher or ECON 2003 (no longer offered) with a grade of C+ or higher; ECON 2103 with a grade of C+ or higher; and ECON 3706, which may be taken concurrently with ECON 4890.

Lectures and/or seminars three hours a week.

ECON 4901 [0.5 credit]**Honours Seminar: Microeconomics**

This seminar focuses on the use of basic microeconomic analysis in a small number of research topics to be selected by the instructor. A major research paper is required.

Precludes additional credit for ECON 4890 and ECON 4900 (no longer offered).

Prerequisite(s): ECON 4020 with a grade of C- or higher; registration in an Honours Economics program; ECON 4021 and ECON 4706, which may be taken concurrently with ECON 4901.

Lectures and/or seminars three hours a week.

ECON 4902 [0.5 credit]**Honours Seminar: Macroeconomics**

This seminar focuses on the use of basic macroeconomic analysis in a small number of research topics to be selected by the instructor. A major research paper is required.

Precludes additional credit for ECON 4890 and ECON 4900 (no longer offered).

Prerequisite(s): ECON 4021 with a grade of C- or higher; registration in an Honours Economics program; ECON 4020 and ECON 4706, which may be taken concurrently with ECON 4902.

Lectures and/or seminars three hours a week.

ECON 4903 [0.5 credit]**Tutorial in Economics**

An additional tutorial in economics may be taken subsequent to, or concurrently with, ECON 4890 or ECON 4901 or ECON 4902.

Prerequisite(s): permission of the Department.

ECON 4904 [0.5 credit]**Tutorial in Economics**

An additional tutorial in economics may be taken subsequent to, or concurrently with, ECON 4890 or ECON 4901 or ECON 4902.

Prerequisite(s): permission of the Department.

ECON 4908 [1.0 credit]**Honours Essay**

Students taking Honours in Economics or Applied Economics may write an Honours essay during their final year. This essay counts for one credit. Students work under an individual faculty adviser.

Prerequisite(s): permission of the Department.

Summer session: some of the courses listed in this Calendar are offered during the summer. Hours and scheduling for summer session courses will differ significantly from those reported in the fall/winter Calendar. To determine the scheduling and hours for summer session classes, consult the class schedule at central.carleton.ca

Not all courses listed are offered in a given year. For an up-to-date statement of course offerings for the current session and to determine the term of offering, consult the class schedule at central.carleton.ca