

# Economics (BS): Business Analytics Concentration

All economics students complete core courses in microeconomics and macroeconomics, as well as specialized elective courses in labor economics, industrial organization, game theory, international economics, econometrics and finance. Poole's undergraduate economics program gives students the quantitative tools and critical thinking skills that prepare them for post-graduate study or careers in business, finance, government, public policy and more. What sets NC State's economics major apart is the training in analytical methods, and focus on economic theory and business skills, to provide students opportunities in many career paths.

Business Analytics is the process of collecting, cleaning, analyzing, and visualizing data to inform business decisions. It is a rapidly growing field, as businesses are increasingly relying on data to drive their operations and strategies. The Business Analytics concentration at NC State University is designed to prepare students for careers in this exciting and in-demand field. Students in the concentration will learn how to use a variety of tools and techniques to collect, clean, analyze, and visualize data. They will also learn how to communicate their findings to business stakeholders in a clear and concise way.

The concentration's curriculum is designed to give students a strong foundation in the following areas: Data management and governance, Data mining, machine learning, and artificial intelligence in business, Statistical analysis, Data visualization, and Business intelligence. The concentration also offers a variety of elective courses that allow students to focus on specific areas of business analytics, such as marketing analytics, financial analytics, and operations analytics.

## Contact

### Poole College of Management

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Raleigh, NC 27695  
919.515.5565

Website (<https://poole.ncsu.edu/economics/>)

### Denis Pelletier

Department Head and Professor  
Department of Economics

## Plan Requirements

Overall GPA for all courses attempted at NC State must be 2.0 or higher; and

Overall GPA for all EC and ECG courses attempted at NC State must be 2.0 or higher.

Code	Title	Hours
<b>Requirements</b>		
EC 205	Fundamentals of Economics	3
or EC 201	Principles of Microeconomics	
or ARE 201	Introduction to Agricultural & Resource Economics	
EC 301	Intermediate Microeconomics	3

EC 302	Intermediate Macroeconomics	3
EC 351	Econometrics I	3
EC 451	Econometrics II	3
EC 490	Research Seminar in Economics	3

### Business Analytics

BUS 340	Information Systems Management	3
BUS 351	Introduction to Business Analytics	3

### Economics Electives

400/500 Level Econ Electives (p. 2)	6
300/400/500 Level EC Electives (p. 2)	6

### Humanities and Social Sciences

Acad Writing and Research (p. 3) <sup>1</sup>	4
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )	3
Select one of the following:	3

ENG 331	Communication for Engineering and Technology
ENG 332	Communication for Business and Management
ENG 333	Communication for Science and Research

GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )	6
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GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )	3
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### Mathematical and Natural Sciences

Natural Sciences Sequence (p. 3)		8
BUS/ST 350	Economics and Business Statistics	3
or ST 312	Introduction to Statistics II	
or ST 370	Probability and Statistics for Engineers	
or ST 372	Introduction to Statistical Inference and Regression	

GEP Natural Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/</a> )	7
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MA 131	Calculus for Life and Management Sciences A <sup>3</sup>	3
or MA 141	Calculus I	

MA 231	Calculus for Life and Management Sciences B	3
or MA 241	Calculus II	

MA 114	Introduction to Finite Mathematics with Applications	3
or MA 242	Calculus III	

ST 307	Introduction to Statistical Programming- SAS	1
or ST 308	Introduction to Statistical Programming - R	

### Interdisciplinary Perspectives

GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )	5
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### Physical Education

GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )	2
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### Corequisites

GEP Global Knowledge (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/>) (verify requirement)  
GEP Foundations of American Democracy (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-fad/>) (verify requirement)

World Language Proficiency (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/>) (verify requirement)

### Concentration

BUS 440	Database Management	3
BUS 458	Analytics: From Data to Decisions	3
Concentration Electives (DSA courses may count for a max of 6 units)		9
BUS 428	Financial Analytics	
BUS 429	Financial Modeling	
BUS 459	Business Analytics Practicum	
BUS 462	Marketing Research	
BUS 469	Digital Marketing Practicum <sup>5</sup>	
BUS 470	Operations Modeling and Analysis	
BUS 476	Decision Modeling and Analysis	
ACC 440	Enterprise Resource Planning Systems: Implementation, Risk, and Analytics	
ACC 411	Business Valuation	
ACC 459	Analytics in Accounting and Finance	
MIE 437	People Analytics <sup>5</sup>	
DSA 205	Data Communication	
DSA 225	Data Science for Social Good	
DSA 240	Measuring Success	
DSA 405	Data Wrangling and Web Scraping	
DSA 406	Exploratory Data Analysis for Big Data	
DSA 410	Data Internship Preparation for Social Impact	
DSA 412	Exploring Machine Learning	
DSA 295	Introductory Special Topics in Data Science <sup>6</sup>	
DSA 495	Special Topics in Data Science <sup>6</sup>	

### Free Electives

Free Electives (12 Hr S/U Lmt) <sup>2,4</sup>	15
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**Total Hours** **120**

<sup>1</sup> C- or better

<sup>2</sup> Students should consult their academic advisors to determine which courses fill this requirement.

<sup>3</sup> The calculus requirement may be met by either of two sequences: MA 131 and MA 231 or MA 141 and 241. The MA 141 and 241 sequence is encouraged for students who qualify and aspire to take additional math. Students who choose the MA 141 and 241 sequence are strongly encouraged to take MA 242, which may substitute for MA 114.

<sup>4</sup> Some courses will not count as free electives, such as WL 101, or 105 (in the language in which proficiency requirement is met), or MA 101, 103, 105. (12 hours of free electives may be taken for credit only.)

<sup>5</sup> Course project must be approved by concentration contact for the course to count.

<sup>6</sup> DSA 295 and 495 classes require permission from the concentration contact to fulfill this requirement.

## 400/500 Level Econ Electives

Code	Title	Hours
ECG 515	Environmental and Resource Policy	3
ECG 528	Options and Derivatives Pricing	3
ECG 530	Topics in Labor Economics	3
ECG 537	Health Economics	3

ECG 540	Economic Development	3
ECG 548	International Economics	3
ECG 561	Applied Econometrics I	3
ECG 562	Applied Econometrics II	3
ECG 563	Applied Microeconometrics	3
ECG 590	Special Economics Topics	1-6
FIM 528	Options and Derivatives Pricing	3
MA 528	Options and Derivatives Pricing	3
MBA 528	Options and Derivatives Pricing	3
ST 561	Applied Econometrics I	3

### Econ Electives II A

EC 404	Money, Financial Markets, and the Economy	3
EC 410	Public Finance	3
EC 413	Industrial Organization	3
EC 431	Labor Economics	3
EC 437	Health Economics	3
EC 449	International Finance	3
EC 451	Econometrics II	3
EC 468	Game Theory	3
EC 474	Economics of Financial Institutions and Markets	3
EC 490	Research Seminar in Economics	3
EC 495	Special Topics in Economics	1-6
EC 498	Independent Study in Economics	1-6

## 300/400/500 Level EC Electives

Code	Title	Hours
<b>Econ Electives I</b>		
ARE 336	Introduction to Resource and Environmental Economics	3
EC 336	Introduction to Resource and Environmental Economics	3

<b>Econ Electives I A</b>		
ARE 336	Introduction to Resource and Environmental Economics	3
EC 305	A Closer Look at Capitalism	3
EC 336	Introduction to Resource and Environmental Economics	3
EC 348	Introduction to International Economics	3
EC 351	Econometrics I	3

<b>Econ Electives II</b>		
ECG 515	Environmental and Resource Policy	3
ECG 528	Options and Derivatives Pricing	3
ECG 530	Topics in Labor Economics	3
ECG 537	Health Economics	3
ECG 540	Economic Development	3
ECG 548	International Economics	3
ECG 561	Applied Econometrics I	3
ECG 562	Applied Econometrics II	3
ECG 563	Applied Microeconometrics	3
ECG 590	Special Economics Topics	1-6
FIM 528	Options and Derivatives Pricing	3
MA 528	Options and Derivatives Pricing	3
MBA 528	Options and Derivatives Pricing	3

ST 561	Applied Econometrics I	3
<b>Econ Electives II A</b>		
EC 404	Money, Financial Markets, and the Economy	3
EC 410	Public Finance	3
EC 413	Industrial Organization	3
EC 431	Labor Economics	3
EC 437	Health Economics	3
EC 449	International Finance	3
EC 451	Econometrics II	3
EC 468	Game Theory	3
EC 474	Economics of Financial Institutions and Markets	3
EC 490	Research Seminar in Economics	3
EC 495	Special Topics in Economics	1-6
EC 498	Independent Study in Economics	1-6

## Acad Writing and Research

Code	Title	Hours
<b>Acad Writing Research</b>		
ENG 101	Academic Writing and Research	4
WLEN 101	Academic Writing and Research	4
<b>Transfer Sequence</b>		
ENG 202	Disciplinary Perspectives in Writing	3
ENG 1GEP	Course ENG 1GEP Not Found	3

## Natural Science Sequence

Code	Title	Hours
<b>Chemistry Sequence</b>		
CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
CH 201	Chemistry - A Quantitative Science	3
CH 202	Quantitative Chemistry Laboratory	1
<b>Geology Sequence</b>		
MEA 101	Geology I: Physical	3
MEA 110	Geology I Laboratory	1
MEA 202	Geology II: Historical	3
MEA 211	Geology II Laboratory	1
<b>Physics I Sequence</b>		
PY 201	University Physics I	4
PY 202	University Physics II	4
<b>Physics II Sequence</b>		
PY 205	Physics for Engineers and Scientists I	4
PY 206	Physics for Engineers and Scientists I Laboratory	1
PY 208	Physics for Engineers and Scientists II	4
PY 209	Physics for Engineers and Scientists II Laboratory	1
<b>Physics III Sequence</b>		
PY 211	College Physics I	4
PY 212	College Physics II	4
<b>Zoology Sequence</b>		
<b>Biology Sequence</b>		
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4

BIO 183	Introductory Biology: Cellular and Molecular Biology	4
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### First Year

Fall Semester		Hours
ENG 101	Academic Writing and Research <sup>1</sup>	4
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )		3
MA 131 or MA 141	Calculus for Life and Management Sciences A <sup>2</sup> or Calculus I	3
GEP Natural Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/</a> ) (Sequence)		4
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )		1
FL Proficiency		0
<b>Hours</b>		<b>15</b>

### Spring Semester

EC 205 or EC 201 or ARE 201	Fundamentals of Economics or Principles of Microeconomics or Introduction to Agricultural & Resource Economics	3
GEP Natural Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/</a> ) (Sequence)		4
GEP Humanities ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/</a> )		3
MA 231 or MA 241	Calculus for Life and Management Sciences B <sup>2</sup> or Calculus II	3
GEP Health and Exercise Studies ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/</a> )		1
Global Knowledge		0
<b>Hours</b>		<b>14</b>

### Second Year

Fall Semester		Hours
EC 301	Intermediate Microeconomics	3
BUS 340	Information Systems Management	3
MA 114 or MA 242	Introduction to Finite Mathematics with Applications or Calculus III	3
GEP Natural Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/</a> )		4
GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )		3
<b>Hours</b>		<b>16</b>
Spring Semester		Hours
ST/BUS 350	Economics and Business Statistics	3
EC 302	Intermediate Macroeconomics	3
BUS 351	Introduction to Business Analytics	3
GEP Elective ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/</a> )		3
Free Electives		4
<b>Hours</b>		<b>16</b>

**Third Year****Fall Semester**

EC 351	Econometrics I	3
BUS 440	Database Management	3
Select one of the following:		3
ENG 331	Communication for Engineering and Technology	
ENG 332	Communication for Business and Management	
ENG 333	Communication for Science and Research	
Economics Elective (p. 1)		3
GEP Interdisciplinary Perspectives ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/</a> )		2
ST 307 or ST 308	Introduction to Statistical Programming-SAS or Introduction to Statistical Programming - R	1
<b>Hours</b>		<b>15</b>

**Spring Semester**

EC 451	Econometrics II	3
BUS 458	Analytics: From Data to Decisions	3
Economics Elective (p. 1)		3
Free Electives		6
<b>Hours</b>		<b>15</b>

**Fourth Year****Fall Semester**

Economics Electives (p. 1)		6
Concentration Elective		3
GEP Social Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/</a> )		3
GEP Natural Sciences ( <a href="http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/">http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-natural-sciences/</a> )		3
<b>Hours</b>		<b>15</b>

**Spring Semester**

EC 490	Research Seminar in Economics	3
Concentration Electives		6
Free Electives		5
<b>Hours</b>		<b>14</b>
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> Must be completed with "C-" or better.

<sup>2</sup> The calculus requirement may be met by either of two sequences: MA 131 and MA 231 or MA 141 and 241. The MA 141 and 241 sequence is encouraged for students who qualify and aspire to take additional math. Students who choose the MA 141 and 241 sequence are strongly encouraged to take MA 242, which may substitute for MA 114.

**GPA Graduation Requirements**

- Overall GPA for *all courses* attempted at NC State must be 2.0 or higher; and
- Overall GPA for *all EC and ECG* courses attempted at NC State must be 2.0 or higher

**Career Opportunities**

An undergraduate degree in economics has long served as the foundation for advanced professional degrees in law and business, graduate study in economics, as well as jobs in business, industry and government.

**Career Titles**

- Actuary
- Administrative Service Manager
- Business Professor
- Community Outreach Manager
- Compensation Administrator
- Compensation Specialist
- Customer Service Supervisor
- Economics Professor
- Economist
- Employment Administrator
- Environmental Economists
- Environmental Research Analyst
- Equal Opportunity Representative
- Event / Convention Planner
- Financial Analyst
- Financial Examiner
- Financial Planner
- Fundraising Manager
- Government Budget Analyst
- Government Service Executives
- Insurance Claim Examiner
- Intelligence Specialist (Government)
- Internal Auditor
- Investment Fund Managers
- Management Analyst
- Market Research Analyst
- Marketing Managers
- Occupational Analyst
- Operations Research Analyst
- Personnel Administrator
- Product Planner
- Public Relations Manager
- Public Relations Specialist
- Retail Buyer
- Retail Sales Department Supervisor
- Social and Community Service Managers
- Sociologist
- Survey Researchers
- Tax Assessor
- Transportation Planners
- Urban and Regional Planner

**Learn More About Careers**

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required)

This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

American Economic Association (<https://www.aeaweb.org/students/Careers.php>)