

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: GENERIC SPECIALIZATION

Major Prerequisites (13-26 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** must be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU
Specialization-specific prereqs	(See data-analytics.osu.edu for specific prereqs)	0-13	AU/SP/SU

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Term
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
	CSE 5544 or ISE 5760 – Data Visualization	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Data Analytics Specialization (14-19 hours)

Specialization electives (See data-analytics.osu.edu for specialization specific requirements)	10-13
CSE 59xx/STAT 5xxx – Capstone in Data Analytics (Senior year)	4-6

GENERAL EDUCATION

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> for a list of your GE curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: SAMPLE FOUR-YEAR DEGREE PLAN

This should be used as a **guide** only. Semester offerings are subject to change. Students should meet with the Data Analytics academic advisor every semester to ensure an on time graduation.

Year	Autumn		Spring	
	Course	Hrs.	Course	Hrs.
1	ASC 1100.xx	1	Math 1152 or 2162 or 1172 or 2182H**	5
	Math 1151 or 1161 or 1181H	5	CSE 2221	4
	CSE 1223 or equiv	3	GE Foreign Language 2	4
	GE Foreign Language 1	4	GE Open Option*	3
	GE Writing Level I	3		
	Total:	16	Total:	16
2	CSE 2231	4	Math 2568	3
	CSE 2321	3	CSE 2421 or 3430	4
	Stat 3201	3	Stat 3202	4
	GE Foreign Language 3	4	GE Writing Level 2	3
	GE Social Science	3	GE Cultures & Ideas	3
	Total:	17	Total:	17
3	ISE 3230	3	CSE 5544 or ISE 5760	3
	CSE 3241	3	Stat 3302	3
	Stat 3301	3	Specialization Elective***	4
	GE Natural Science	3	GE Historical Study	3
	GE Visual and Performing Arts	3	GE Biological Science (lab)	4
	Total:	15	Total:	17
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	Specialization Elective***	3	Specialization Elective***	3
	Specialization Elective***	3	CSE 59xx/Stat 5xxx Capstone course	4
	GE Social Science	3	GE Literature	3
	GE Physical Science (lab)	4		
	Total:	18	Total:	16

*Stat 2450 can be utilized as a GE Open Option course for students who do not have previous experience in Statistics; however, this course is not required. If a student has EM or dual enrollment K credit for Math 1151, it is required for them to enroll in STAT 2450 during their first semester.

**Math courses above the 1151 and 1161 levels complete one of the two GE Open Option courses for a B.S. degree in the College of the Arts and Sciences. Data Analytics students must take Math 1152 or 1172 or 2162 or 2182H as a prerequisite to Math 2568.

*** From approved list of major specialization elective courses

****This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 132

BACHELOR OF SCIENCE (BS) DATA ANALYTICS:

Major Prerequisites (26 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** should be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term Offered
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU
Chemistry	CHEM 1110/1210/1250/1610 – Chemistry I	5	AU/SP/SU
Biology	BIO 1113 – Energy Transfer and Development	4	AU/SP/SU
	BIO 1114 – Form, Function, Diversity, and Ecology	4	AU/SP/SU

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Terms Offered
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
	CSE 5544 or ISE 5760 – Data Visualization	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Biomedical Informatics Specialization (21 hours)

MOLGEN 5660 – Molecular and Cellular Biology (MOLGEN 5650 & 4500 approved as alternates)	5
BMI 5710 – Intro to Biomedical Informatics	3
BMI 5720 – Intro to Imaging Informatics (any BMI 5000-level approved as alternate)	3
BMI 5730 – Intro to Bioinformatics	3
BMI 5740 – Intro to Research Informatics	3
STAT 4911 – Capstone in Data Analytics (SP Senior year)	4

GENERAL EDUCATION

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> for a list of your General Education curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: BIOMEDICAL INFORMATICS SPECIALIZATION

Suggested Curriculum – 4 Year Degree Plan

This should be used as a **guide** only. Semester offerings are subject to change. Students should meet with the Data Analytics academic advisor every semester to ensure an on time graduation.

Year	Autumn		Spring	
	Course	Hrs.	Course	Hrs.
1	ASC 1100.xx	1	Math 1152 or 2162 or 1172 or 2182H**	5
	Math 1151 or 1161 or 1181H	5	CSE 2221	4
	CSE 1223 or equiv	3	GE Foreign Language 1	4
	Chemistry 1110 or 1210 (GE Phys Sci)	5	Biology 1113 (GE Bio Sci)	4
	GE Writing Level I	3		
	Total:	17	Total:	17
2	CSE 2231	4	Math 2568	3
	CSE 2321	3	CSE 2421 or 3430	4
	Stat 3201	3	Stat 3202	4
	GE Foreign Language 2	4	GE Writing Level 2	3
	Biology 1114 (GE Bio Sci)	4	GE Foreign Language 3	4
	Total:	18	Total:	18
3	ISE 3230	3	CSE 5544 or ISE 5760	3
	CSE 3241	3	Stat 3302	3
	Stat 3301	3	BMI 5730***	3
	BMI 5710***	3	GE Open Option*	3
	BMI 5720***	3	GE Visual and Performing Arts	3
	GE Historical Study	3	GE Literature	3
	Total:	18	Total:	18
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	MOLGEN 5660***	5	BMI 5740***	3
	GE Cult. & Ideas or 2nd Historical Study	3	STAT 4911 Capstone	4
	GE Social Science	3	GE Social Science	3
	Total:	16	Total:	16

*Stat 2450 can be utilized as a GE Open Option course for students who do not have previous experience in Statistics; however, this course is not required. If a student has EM or dual enrollment K credit for Math 1151, it is required for them to enroll in STAT 2450 during their first semester.

**Math courses above the 1151 and 1161 levels complete one of the two GE Open Option courses for a B.S. degree in the College of the Arts and Sciences. Data Analytics students must take Math 1152 or 1172 or 2162 or 2182H as a prerequisite to Math 2568.

*** Most BMI specialization courses are offered only one semester per year. Careful planning is needed.

****This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 138

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: BUSINESS ANALYTICS SPECIALIZATION

Major Prerequisites (19 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** should be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term Offered
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU
Economics	ECON 2001.xx – Principles of Microeconomics	3	AU/SP/SU
	ECON 2002.xx – Principles of Macroeconomics	3	AU/SP/SU

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Terms Offered
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
	CSE 5544 or ISE 5760 – Data Visualization	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Business Analytics Specialization (15 hours)

BUSADM 3630.05 – Business Analytics Immersion Course (Taken AU of Junior year)	3
BUSADM 3632.05 – Business Analytics Immersion Project Experience (Taken SP of Junior year)	3
Business electives – Choose 9 hours from back of sheet	9

GENERAL EDUCATION

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> for a list of your General Education curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: BUSINESS ANALYTICS SPECIALIZATION

Students in the Business Analytics Track must take an **additional 9 credit hours** of coursework from the electives listed below. Courses are grouped to show possible focus areas, but students may select any combination of courses to meet the 9 credit hour requirement. Some courses require extensive pre-requisites for enrollment. **The prerequisite structure for the Data Analytics Major is strictly enforced.**

ELECTIVES: FINANCE FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
BUSFIN 3120	Foundations of Finance	3	ACCT 2000 & ECON 2001 & MATH 1130 or higher & CSE 1100 or higher; not open to students with credit for 3220
BUSFIN 3220	Business Finance	3	ECON 2001 & 2002 & ACCT 2300 (prereq or concur); not open to students with credit for 3120
BUSFIN 3222	Foundations of Investments	3	BUSFIN 3120 or 3220 & ACCT 2000
BUSFIN 3250	International Finance	3	BUSFIN 3120 or 3220 & ACCT 2000
BUSFIN 4201	Financial Data	1.5	BUSFIN 3220 & ACCT 2300 & STAT 3201 & 3202

ELECTIVES: ACCOUNTING FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
ACCTMIS 2000	Foundations of Accounting	3	None
ACCTMIS 3600	Intro to Accounting Information Systems	3	ACCT 3200 (Which requires ECON 2001 & ACCT 2300 & STAT 3201 & 3202)
ACCTMIS 4210	Financial Accounting	3	ACCT 3201 (Which requires ACCT 3200)
ACCTMIS 4310	Management Accounting	3	ACCT 3300 (Which requires ECON 2001 & ACCT 2300 & STAT 3201 & 3202)
ACCTMIS 4650	Decision Support and Expert Systems	3	CSE 3232 & STAT 3201 & 3202
ACCTMIS 5000	Accounting and Cost Analysis	3	ISE 2000 & 2040

ELECTIVES: CUSTOMER INSIGHT FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
BUSML 3150	Foundations of Marketing	3	ECON 2001; not open to students with credit for 3250
BUSML 3250	Principles of Marketing	3	ECON 2001 & 2002; not open to students with credit for 3150
BUSML 4202	Marketing Research	3	BUSML 3250 & STAT 3201 & 3202
BUSML 4210	Advanced Market Research	1.5	BUSML 4201 & 4202
BUSML 4211	Market Analysis, Development, and Forecasting	1.5	BUSML 4201 & 4202
BUSML 4212	Customer Relationship Mgmt	1.5	BUSML 4201 & 4202

ELECTIVES: OPERATIONS MANAGEMENT AND LOGISTICS FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
BUSMGT 3230	Intro to Operations Mgmt	3	ECON 2001 & 2002 & STAT 1430 or higher
BUSMGT 4250	Six Sigma Principles	3	ACCT 2000 & BUSMGT 3230 & STAT 3201 & 3202
BUSMGT 4251	Six Sigma Projects	3	BUSMGT 4250
BUSML 3380	Logistics Management	1.5	ECON 2001 & 2002
BUSML 4382	Logistics Analytics	3	BUSML 4380 & STAT 3201 & 3202
BUSML 4386	Logistics Tech and Application	1.5	BUSML 3380 & STAT 3201 & 3202

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: BUSINESS ANALYTICS SPECIALIZATION

Suggested Curriculum – 4 Year Degree Plan

This should be used as a **guide** only. Semester offerings are subject to change. Students should meet with the Data Analytics academic advisor every semester to ensure an on time graduation.

Year	Autumn		Spring	
	Course	Hrs.	Course	Hrs.
1	ASC 1100.xx	1	Math 1152 or 2162 or 1172 or 2182H**	5
	Math 1151 or 1161 or 1181H	5	CSE 2221	4
	CSE 1223 or equiv	3	GE Foreign Language 2	4
	GE Foreign Language 1	4	GE Open Option*	3
	GE Writing Level I	3		
	Total:	16	Total:	16
2	CSE 2231	4	Math 2568	3
	CSE 2321	3	CSE 2421 or 3430	4
	Stat 3201	3	Stat 3202	4
	GE Foreign Language 3	4	GE Writing Level 2	3
	Econ 2001.xx (GE Social Science)	3	Econ 2002.xx (GE Social Science)	3
	Total:	17	Total:	17
3	ISE 3230	3	CSE 5544 or ISE 5760	3
	CSE 3241	3	Stat 3302	3
	Stat 3301	3	BUSADM 3632.05	3
	BUSADM 3630.05	3	Business Analytics Elective***	3
	GE Historical Study	3	GE Biological Science (lab)	4
	GE Visual and Performing Arts	3		
	Total:	18	Total:	16
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	Business Analytics Elective***	3	Business Analytics Elective***	3
	GE Cult. & Ideas or 2nd Historical Study	3	GE Literature	3
	GE Physical Science (lab)	4	GE Natural Science	3
	Total:	15	Total:	15

*Stat 2450 can be utilized as a GE Open Option course for students who do not have previous experience in Statistics; however, this course is not required. If a student has EM or dual enrollment K credit for Math 1151, it is required for them to enroll in STAT 2450 during their first semester.

**Math courses above the 1151 and 1161 levels complete one of the two GE Open Option courses for a B.S. degree in the College of the Arts and Sciences. Data Analytics students must take Math 1152 or 1172 or 2162 or 2182H as a prerequisite to Math 2568.

*** From approved list of business elective courses

****This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 130

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: COMPUTATIONAL ANALYTICS SPECIALIZATION

Major Prerequisites (16 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** should be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term Offered
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU
Linguistics	**LING 2000 – Intro to Language in the Humanities	3	AU/SP

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

*LING 2000 is only required for students pursuing the Linguistics and Text Analytics Focus, but it can fulfill the Cultures & Ideas GE for any Data Analytics major, regardless of specialization or focus.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Term Offered
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
	CSE 5544 or ISE 5760 – Data Visualization	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Computational Analytics Specialization (14 hours)

Course	Hours	Term Offered
CSE and LING Electives – Choose 10 hours from back of sheet	10	varies
CSE 59xx/STAT 4911 – Capstone in CSE or Data Analytics (Senior year)	4	AU/SP

General Education

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> to download a PDF document of your General Education curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: COMPUTATIONAL ANALYTICS SPECIALIZATION

Students majoring in Computational Analytics must take **10 credit hours** of coursework from the electives listed below. Courses are grouped to show possible focus areas but **students may select any combination of courses** (assuming pre-requisites have been met).

ELECTIVES: CYBER-SECURITY FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
CSE 3461	Computer Networking and Internet Technologies	3	CSE 2421. Concur: CSE 2431
CSE 4471	Information Security	3	CSE 2231 & 2321
CSE 5472 OR 5473	Info Security Projects OR Network Security	3	CSE 3901 or 3902 or 3903 OR 3461

ELECTIVES: MACHINE INTELLIGENCE FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
CSE 2331	Foundations II	3	CSE 2231 & 2321 & STAT 3202
CSE 3521	Survey of Artificial Intelligence I	3	CSE 2331
Choose two of the following:			
CSE 5245	Intro to Network Science	3	CSE 2331
CSE 5523	Machine Learning and Statistical Pattern Recognition	3	CSE 3521 & STAT 3202
CSE 5524	Computer Vision for Human-Computer Interaction	3	CSE 2331
CSE 5526	Intro to Neural Networks	3	CSE 3521 or 5521

ELECTIVES: CORE (SYSTEMS OR THEORY) FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
CSE 2331	Foundations II: Structures & Algorithms	3	CSE 2231 & 2321 & STAT 3202
CSE 2431	Systems II: Operating Systems	3	CSE 2421
CSE 3901/3902/3903	CSE Junior Project Choice	4	CSE 2231 & 2321 & 2421 or 3430
Choose one of the following:			
CSE 5245	Intro to Network Science	3	CSE 2331
CSE 5361	Numerical Methods	3	CSE 2231 & MATH 2568
CSE 5441	Intro to Parallel Computing	3	CSE 2231 & 2321 & 2421 or 3430 & MATH 2568

ELECTIVES: LINGUISTICS AND TEXT ANALYTICS FOCUS			
COURSE	TITLE	HOURS	PREREQUISITES
LING 5801	Computational Linguistics I	3	LING 3802 & 5000 & CSE 3321 & 3521 or 5052
LING 5802	Computational Linguistics II	3	LING 5801
CSE 5525	Foundations of Speech and Language Processing	3	CSE 3521 & STAT 3202
Choose one of the following:			
LING 4100	Phonetics	3	LING 2000
LING 4200	Syntax	3	LING 2000
LING 4300	Phonology	3	LING 2000
LING 4400	Linguistic Meaning	3	LING 2000

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: COMPUTATIONAL ANALYTICS SPECIALIZATION

Suggested Curriculum – 4 Year Degree Plan

This should be used as a **guide** only. Semester offerings are subject to change. Students should meet with the Data Analytics academic advisor every semester to ensure an on time graduation.

Year	Autumn		Spring	
	Course	Hrs.	Course	Hrs.
1	ASC 1100.xx	1	Math 1152 or 2162 or 1172 or 2182H**	5
	Math 1151 or 1161 or 1181H	5	CSE 2221	4
	CSE 1223 or equiv	3	GE Foreign Language 2	4
	GE Foreign Language 1	4	GE Open Option*	3
	GE Writing Level I	3		
	Total:	16	Total:	16
2	CSE 2231	4	Math 2568	3
	CSE 2321	3	CSE 2421 or 3430	4
	Stat 3201	3	Stat 3202	4
	GE Foreign Language 3	4	GE Writing Level 2	3
	GE Social Science	3	Linguistics 2000 (GE Cultures & Ideas)	3
	Total:	17	Total:	17
3	ISE 3230	3	CSE 5544 or ISE 5760	3
	CSE 3241	3	Stat 3302	3
	Stat 3301	3	Computational Elective***	4
	GE Natural Science	3	GE Historical Study	3
	GE Visual and Performing Arts	3	GE Biological Science (lab)	4
	Total:	15	Total:	17
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	Computational Elective***	3	Computational Elective***	3
	GE Social Science	3	CSE 59xx/Stat 4911 Capstone	4
	GE Physical Science (lab)	4	GE Literature	3
	Total:	15	Total:	16

*Stat 2450 can be utilized as a GE Open Option course for students who do not have previous experience in Statistics; however, this course is not required. If a student has EM or dual enrollment K credit for Math 1151, it is required for them to enroll in STAT 2450 during their first semester.

**Math courses above the 1151 and 1161 levels complete one of the two GE Open Option courses for a B.S. degree in the College of the Arts and Sciences. Data Analytics students must take Math 1152 or 1172 or 2162 or 2182H as a prerequisite to Math 2568.

*** From approved list of computational analytics elective courses

****This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 129

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: DATA VISUALIZATION SPECIALIZATION

Major Prerequisites (13 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** should be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term Offered
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Terms Offered
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
	ISE 5760 – Data Visualization	3	SP
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Data Visualization Specialization (15 hours)

DESIGN 5505 – Information Design	3	AU
CSE 5544 – Introduction to Data Visualization	3	AU/SP
ACCAD 5141 – Interactive Arts Media	3	SP
ACCAD 5150 – Emerging Trends in Data Visualization	3	SP
STAT 4911 – Capstone in Data Analytics	3	SP

GENERAL EDUCATION

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> for a list of your General Education curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: DATA VISUALIZATION SPECIALIZATION

Suggested Curriculum – 4 Year Degree Plan

This should be used as a **guide** only. Semester offerings are subject to change. Students should meet with the Data Analytics academic advisor every semester to ensure an on time graduation.

Year	Autumn		Spring	
	Course	Hrs.	Course	Hrs.
1	ASC 1100.xx	1	Math 1152 or 2162 or 1172 or 2182H**	5
	Math 1151 or 1161 or 1181H	5	CSE 2221	4
	CSE 1223 or equiv	3	GE Foreign Language 2	4
	GE Foreign Language 1	4	GE Open Option*	3
	GE Writing Level I	3		
	Total:	16	Total:	16
2	CSE 2231	4	Math 2568	3
	CSE 2321	3	CSE 2421 or 3430	4
	Stat 3201	3	Stat 3202	4
	GE Foreign Language 3	4	GE Writing Level 2	3
	GE Social Science	3	GE Cult. & Ideas or Hist. Study	3
	Total:	17	Total:	17
3	ISE 3230	3	ISE 5760	3
	CSE 3241	3	ACCAD 5141	3
	Stat 3301	3	Stat 3302	3
	DESIGN 5505	3	GE Historical Study	3
	GE Natural Science	3	GE Biological Science (lab)	4
	GE Visual and Performing Arts	3		
	Total:	18	Total:	16
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	CSE 5544	3	ACCAD 5150	3
	GE Social Science	3	STAT 4911 Capstone	4
	GE Physical Science (lab)	4	GE Literature	3
	Total:	15	Total:	16

*Stat 2450 can be utilized as a GE Open Option course for students who do not have previous experience in Statistics; however, this course is not required. If a student has EM or dual enrollment K credit for Math 1151, it is required for them to enroll in STAT 2450 during their first semester.

**Math courses above the 1151 and 1161 levels complete one of the two GE Open Option courses for a B.S. degree in the College of the Arts and Sciences. Data Analytics students must take Math 1152 or 1172 or 2162 or 2182H as a prerequisite to Math 2568.

***This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 131

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: SOCIAL SCIENCE ANALYTICS SPECIALIZATION

Major Prerequisites (13 hours)

These courses may overlap with the General Education curriculum where appropriate. Courses in **BOLD** should be completed before submitting an application to the Data Analytics major.

Department	Course	Hours	Term Offered
Math	Math 1151 (1161 or 1181H) – Calculus I	5	AU/SP/SU
	Math 1152 (1172, 2162 or 2182H) – Calculus II	5	AU/SP/SU
Computer Science & Engineering	*CSE 1223 – Computer Programming in Java	3	AU/SP/SU

*CSE 1222 or CSE placement level A can also fulfill this prerequisite; however, 1223 is *strongly* preferred.

Core Requirements (51 hours)

The Data Analytics Core courses follow a strict pre-requisite structure. Some courses are only offered once per year. Failure to successfully enroll in and complete these courses will delay graduation.

Department	Course	Hours	Terms Offered
Math	Math 2568 – Linear Algebra	3	AU/SP/SU
Industrial & Systems Engineering	ISE 3230 – Systems Modeling and Optimization	3	AU
Computer Science & Engineering	CSE 2221 – Software I: Software Components	4	AU/SP/SU
	CSE 2231 – Software II: Development & Design	4	AU/SP/SU
	CSE 2321 – Foundations I: Discrete Structures	3	AU/SP/SU
	CSE 2421 or 3430 – Systems I: Computer Systems	4	AU/SP/SU
	CSE 3241 – Databases I: Computer Architecture	3	AU/SP/SU
	CSE 3244 or 5242 – Adv. DB& Cloud Computing	3	AU/SP
	CSE 5243 – Data Mining	3	AU/SP
	CSE 5544 or ISE 5760 – Data Visualization	3	AU/SP
Statistics	STAT 3201 – Probability for Data Analytics	3	AU/SP
	STAT 3202 – Statistical Inference for Data Analytics	4	AU/SP
	STAT 3301 – Statistical Modeling for Discovery I	3	AU
	STAT 3302 – Statistical Modeling for Discovery II	3	SP
	STAT 4620 – Statistical Learning	2	AU
	STAT 3303 – Statistical Decision Making	3	SP

Social Science Analytics Specialization (19 hours)

Overview of Research Methods – Choose one research methods course from back of sheet	3
Social Science electives – Choose 9 hours of electives from back of sheet	9
STAT 4911 – Capstone in Data Analytics (SP Senior year)	4
*Independent research in the Social Sciences – DEPT 4998/4999	3

*Meet with a Data Analytics advisor early in your third year to discuss options for fulfilling this research requirement.

GENERAL EDUCATION

Please visit <http://artsandsciences.osu.edu/academics/current-students/advising/ge> for a list of your General Education curriculum requirements.

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: SOCIAL SCIENCE ANALYTICS SPECIALIZATION

In addition to coursework within the specialization, students completing the Social Science Analytics specialization will be required to complete an independent research project of their choosing under the guidance of a faculty member. In order to prepare for this independent research project, students are encouraged to complete GE courses by strategically selecting relevant coursework that meets their research interests. There are several GE courses that might be of interest to students depending on the area of research they wish to pursue. Students can strategically coordinate a number of GE courses in a way that could be helpful in preparing for their required research project. Recommended GE courses are listed at <https://data-analytics.osu.edu/social-science-specialization-gen-eds>.

OVERVIEW OF RESEARCH METHODS			
COURSE	TITLE	HOURS	PREREQUISITES
Choose one of the following:			
COMM 3160	Communications Research Methods	4	STAT 1450 or higher
POLISCI 4781	Data Analysis in Political Science I	3	MATH 1151 & one POLISCI course at 3000-level or higher
PSYCH 2300	Research Methods in Psychology	3	PSYCH 1100 or 1100H
SOCIOL 3487	Research Methods in Sociology	3	None

ELECTIVES: FOCUSED RESEARCH METHODS AND VISUALIZATION AND SPATIAL ANALYSES			
COURSE	TITLE	HOURS	PREREQUISITES
Choose three of the following:			
ANTHRO 5650	Research Design and Ethnographic Methods	3	ANTHROP 2202
ANTHRO 5651	Spatial Analysis for Anthropologists	3	GEOG 5210
COMM 3163	Communication Industry Research Methods	4	STAT 1450 or higher
ECON 4050	Experimental Economics	3	ECON 2001.xx or equiv.
ECON 5420	Econometrics II	3	ECON 5410 & 4002.xx
GEOG 5200	Cartography and Map Design	3	None
GEOG 5201	GeoVisualization	3	GEOG 5200
GEOG 5210	Fundamentals of Geographic Information Systems	3	None
GEOG 5222	GIS Algorithms & Programming	3	GEOG 5210 & 5212 & CSE 1114
GEOG 5223	Design & Implementation of GIS	3	GEOG 5222
GEOG 5225	Geographic Applications of Remote Sensing	3	None
GEOG 5226	Spatial Simulation and Modeling	3	None
POLISCI 3780	Data Literacy and Data Visualization	3	None
PSYCH 4511	Psychological Testing	3	PSYCH 2220 & 2300
SOCIOL 4650	Seminar in Social Networks	3	GE Data Analysis or GE Mathematical and Logical Analysis course
STAT 5510	Statistical Foundations of Survey Research	3	STAT 1450 or higher & MATH 1075 or higher

BACHELOR OF SCIENCE (BS) DATA ANALYTICS: SOCIAL SCIENCE ANALYTICS SPECIALIZATION

Suggested Curriculum – 4 Year Degree Plan

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	Course	Hrs.	Course	Hrs.
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	GE Foreign Language 3	4	GE Writing Level 2	3
	GE Social Science	3	GE Social Science	3
	Total:	17	Total:	17
3	ISE 3230	3	CSE 5544 or ISE 5760	3
	CSE 3241	3	Stat 3302	3
	Stat 3301	3	Research Methods Elective***	3
	Social Science Analytics Elective***	3	Social Science Analytics Elective***	3
	GE Historical Study	3	GE Biological Science (lab)	4
	GE Visual and Performing Arts	3		
	Total:	18	Total:	16
4	CSE 5243	3	CSE 3244	3
	Stat 4620	2	Stat 3303	3
	Ind. Research in the Social Sciences	3	Stat 4911 Capstone	4
	GE Cult. & Ideas or 2nd Historical Study	3	Social Science Analytics Elective***	3
	GE Physical Science (lab)	4	GE Natural Science	3
	GE Literature	3		
	Total:	18	Total:	16

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*** From approved list of social science courses

****This curriculum plan assumes overlap for the Social Diversity and Global Studies GE categories.

Total hours to complete the degree program = 134