BSDS & Math Major Advising Webinar

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Main goals for today:

» Meet us!

» Understand your degree requirements & start thinking about a 4-year plan.

Every bachelor of science degree at USF has the same kind of course requirements:

- Core courses (44 units)

- Courses in your major (number of units depends on your major)

- Foreign language   (0—8 units)

- Electives (number of units depends on your major(s)/minor(s))
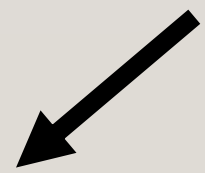
"Core" requirements for all USF majors

You must take one 4 unit course from each category

Area A: Foundations of Communications

A1: Speaking
e.g. Public Speaking, Argumentation etc.

Not Acceptable: e.g. Interpersonal Communication, Group Dynamics, Theatre

A2: Rhetoric and Composition ** MUST be completed at USF
This requirement is fulfilled by completing Rhetoric and Composition 250 at USF. Students transferring with one or two transferable English Composition courses with a minimum grade of **C-** will be placed into RHET 250 or RHET 295 Academic Writing at USF.

Area B: Mathematics and the Sciences

B1: Math or Quantitative Science
e.g. Statistics or Pre-calculus and higher

Not Acceptable: e.g. College Algebra, Intermediate Algebra, courses below Pre-calculus

← This can be satisfied by Math 109: Calculus I

B2: Applied or Laboratory Science
e.g. Biology, Chemistry, Physics, Astronomy, Environmental Science etc. **MUST have a Lab**

Not Acceptable: e.g. Nutrition, any science course without an applied lab component

Area C: Humanities

C1: Literature
e.g. World, American or English Literature etc.

Not Acceptable: e.g. English Composition, Critical Thinking & Writing

C2: History
e.g. U.S./ World History, Western Civilizations, History of Native / African /Asian Americans, History of Women etc.

Not Acceptable: e.g. American Government, History of California / Science

11 categories x 4 units/category = 44 units

Area D: Philosophy, Theology and Ethics

D1: Philosophy
e.g. Introduction to Philosophy, History of Philosophy etc.

Not Acceptable: e.g. Critical Thinking, Logic, Moral Philosophy

D2: Theology
e.g. World or Comparative Religions etc.

Not Acceptable: e.g. Bible as Literature, Witchcraft & Magic

D3: Ethics
e.g. Ethics, Moral Problems, Business Ethics etc.

Not Acceptable: e.g. Business Law

Area E: Social Sciences
e.g. Intro to Sociology, Psychology, Political Science, Economics, Anthropology etc.

Not Acceptable: Intro to Business; Intro to Human Services; Intro to Social Work

Area F: Visual and Performing Arts
e.g. Art History/Appreciation, Music Appreciation, Introduction to Theater etc. (critical analysis, history or appreciation of the arts)

Not Acceptable: Painting, Drawing, Guitar, Music Theory, Acting (any activity based course)

If you plan your courses well, the core classes you take will also knock out these requirements

Service Learning & Cultural Diversity ** (May Double Count with a major or core requirement)

SL Service Learning – ** MUST be completed at USF

CD Cultural Diversity may transfer, subject to review
e.g. Intro to African/Asian American Studies, Music of Multicultural America.

Math major requirements

A breakdown of the credits required for the Math degree

Major requirements: 50 units ← These are Math / CS courses

Core requirements: 44 units ← 4 of these units can be satisfied by a math course

Language requirements: 8 units ← It's possible to test out of this

Total: 50 + 40 + 8 = 98 units

Total number of units required for degree: 128 (= 16 x 8)

CS and STEM fields have a lot of overlap with math

This leaves 30 units for electives or to do a minor, or even a second major!

Major Requirements (50 units)

All courses require a 'C-' or better

REQUIRED COURSES (20 UNITS)

- MATH 109 - Calculus & Analytic Geom I
- MATH 110 - Calculus & Analytic Geom II
- MATH 211 - Calculus & Analytic Geom III
- MATH 230 - Elementary Linear Algebra
- MATH 235 - Introduction to Formal Methods
- MATH 435 - Modern Algebra
- MATH 453 - Real Analysis

MATH COLLOQUIUM (1 UNIT, MUST TAKE TWICE)

- MATH 350 - Math Colloquium

COMPUTATIONAL COURSE (4 UNITS)

Complete one of the following:

- CS 110 - Intro to Computer Science I
- PHYS 301 - Intro Scientific Computation

APPLIED ELECTIVE (4 UNITS)

Complete one of the following:

- MATH 340 - Differential Equations
- MATH 345 - Mathematical Modeling
- MATH 370 - Probability with Applications
- MATH 371 - Statistics with Applications
- MATH 372 - Linear Regression
- MATH 373 - Statistical Learning
- MATH 375 - Numerical Analysis

CLASSICAL ELECTIVE (4 UNITS)

Complete one of the following:

- MATH 310 - History of Mathematics
- MATH 314 - Mathematical Circles
- MATH 355 - Complex Analysis
- MATH 367 - Number Theory
- MATH 380 - Foundations of Geometry
- MATH 422 - Combinatorics
- MATH 482 - Differential Geometry
- MATH 485 - Topology

You can google for "USFCA math major" to find this list of required courses

One applied, one classical, plus two more upper-division courses

Each course may be attempted only twice.

B.S. in Mathematics Sample Schedule

Year 1, Fall

Math 109 (Calc 1)
Core/FL/RHET/195
Core/FL/RHET/195
Core/FL/RHET/195

Year 1, Spring

Math 110 (Calc 2)
CS 110 (Intro to CS)
Core/FL/RHET/195
Core/FL/RHET/195

Year 2, Fall

Math 211 (Calc 3)
Math 230 (Linear Algebra)
Core/Elective
Core/Elective

Year 2, Spring

Math 235 (Formal Methods)
Core/Lab Sci
Core/Elective
Core/Elective

Year 3, Fall

Math 435 (Modern Algebra)
Core/Elective
Core/Elective
Core/Elective

Year 3, Spring

Math 453 (Real Analysis)
Math XXX (elective)
Core/Elective
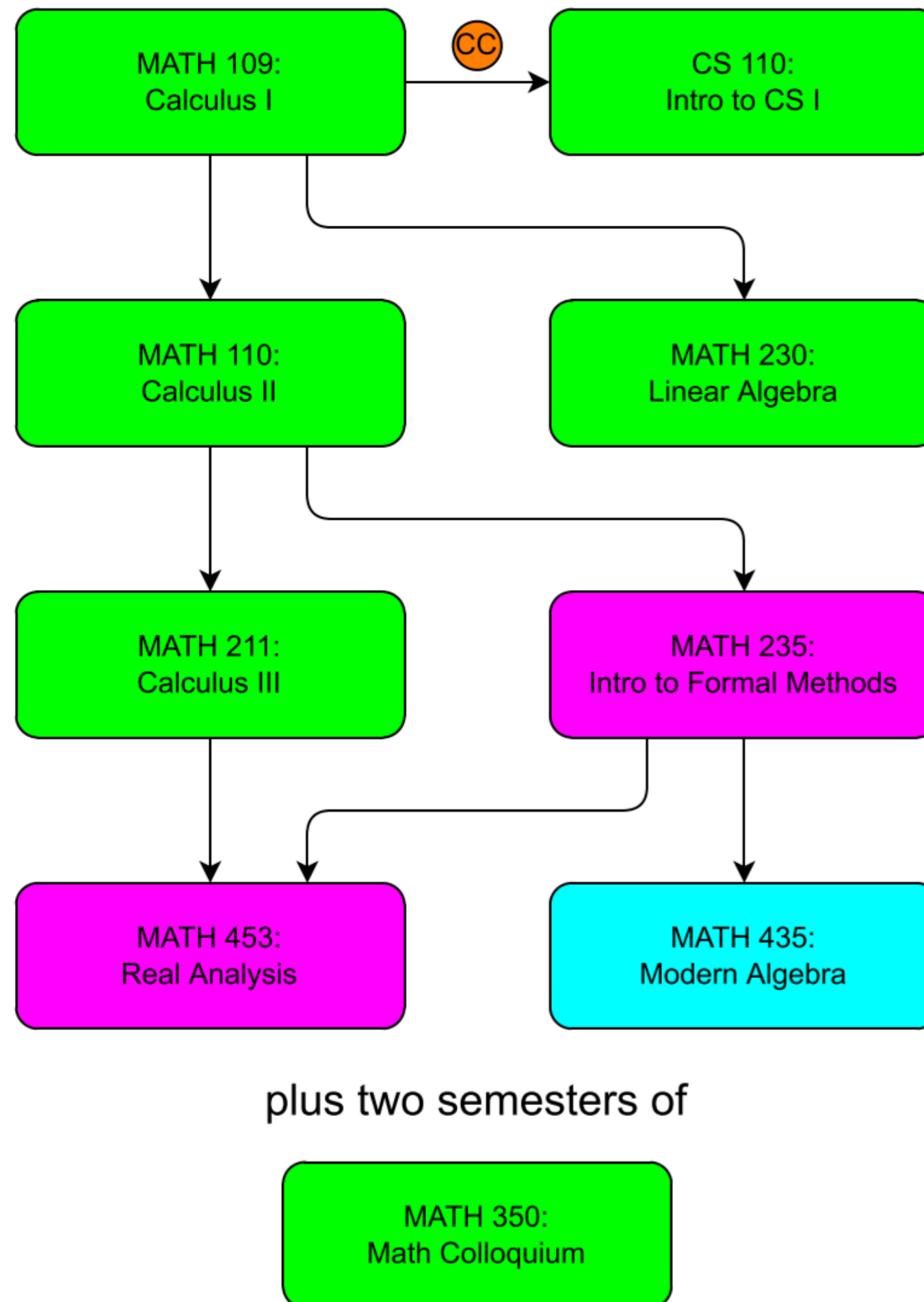Core/Elective

Year 4, Fall

Math XXX (elective)
Math XXX (elective)
Core/Elective
Core/Elective
Math 350 (Colloquium, 1 credit)

Year 4, Spring

Math XXX (elective)
Core/Elective
Core/Elective
Core/Elective
Math 350 (Colloquium, 1 credit)

Notes: The four math electives (Math XXX), must be 300—400 level courses, and one must be designated *classical* and one designated *applied*.
Math 235 and 201 cannot both be applied to major or minor credit totals, similarly, Math 230 and 202 cannot both apply to major or minor credit totals.

Math Major Requirements

Required Courses

MATH 109: Calculus I → (CC) → CS 110: Intro to CS I

MATH 109: Calculus I → MATH 110: Calculus II

CS 110 / MATH 109 → MATH 230: Linear Algebra

MATH 110: Calculus II → MATH 211: Calculus III

MATH 230: Linear Algebra → MATH 235: Intro to Formal Methods

MATH 211: Calculus III → MATH 453: Real Analysis

MATH 235: Intro to Formal Methods → MATH 435: Modern Algebra

plus two semesters of

MATH 350: Math Colloquium

Note: PHYS 301 may be taken in place of CS 110.

Elective Courses

Take four elective courses, including at least one classical elective and at least one applied elective.

Classical Electives

Course	Prerequisites
MATH 310: History of Mathematics	MATH 110
MATH 314: Mathematical Circles	MATH 110
MATH 355: Complex Analysis	MATH 211 (CC), 230
MATH 367: Number Theory	MATH 235
MATH 380: Foundations of Geometry	MATH 110
MATH 422: Combinatorics	MATH 235
MATH 482: Differential Geometry	MATH 211, 235
MATH 485: Topology	MATH 235

Applied Electives

Course	Prerequisites
MATH 340: Differential Equations	MATH 211 (CC), 230
MATH 345: Mathematical Modeling	MATH 110, 230
MATH 360: Probability & Statistics	MATH 110, CS 110
MATH 370: Probability with Applications	MATH 211 (CC)
MATH 371: Statistics with Applications	MATH 370
MATH 372: Linear Regression	MATH 230, 371
MATH 373: Statistical Learning	MATH 230, 370
MATH 375: Numerical Analysis	MATH 110, 230, CS 110

Note: Due to overlap in course topics, you cannot receive major credit for both MATH 360 and MATH 370, or for both MATH 360 and MATH 371.

MATH www: Course is offered every fall and spring
MATH xxx: Course is offered every fall
MATH yyy: Course is offered every spring
MATH zzz: Course is offered in alternate years (or more rarely)

(CC) : Prerequisite course may be taken beforehand or concurrently

Data Science (BSDS)
major requirements

A breakdown of the credits required for the BSDS degree

Major requirements: 56 units ← These are Math / CS / BSDS courses

Core requirements: 44 units ← 4 of these units can be satisfied by a math course

Language requirements: 8 units ← It's possible to test out of this

Total: 56 + 40 + 8 = 104 units

Note that data science majors can't double major or minor in math or CS

Total number of units required for degree: 128 (= 16 x 8)

Business Analytics is one minor that goes well with the BSDS major

This leaves 24 units for electives or to do a minor (possibly more if you test out of the language requirement)

Required courses for the data science major

You can google for "USFCA BSDS major" to find this list of required courses

Your major GPA must be 2.0 or higher in order to graduate

Major Requirements (56 Units)

All required courses must be passed with a grade of C- or better.

INTRO TO DATA SCIENCE (4 UNITS):

- BSDS 100 - Intro to Data Science with R

MATH AND STATS COURSES (32 UNITS):

- MATH 109 - Calculus & Analytic Geom I
- MATH 110 - Calculus & Analytic Geom II
- MATH 230 - Elementary Linear Algebra
- MATH 370 - Probability with Applications
- MATH 371 - Statistics with Applications
- MATH 372 - Linear Regression
- MATH 373 - Statistical Learning

- MATH 201 - Discrete Mathematics
  or
- MATH 235 - Introduction to Formal Methods

CS COURSES (16 UNITS):

- CS 110 - Intro to Computer Science I
- CS 112 - Intro to Computer Science II
- CS 245 - Data Struct & Algorithms
- CS 333 - Intro to Database Systems

also Math 211: Calculus III

This is a four semester sequence!

or BSDS 200: Applied Data Science Methods (intro to SQL)

A typical four year plan to complete the BSDS degree requirements

Freshman year:

Fall

- Math 109: Calculus I
- CS 110: Intro to Computer Science I (Python)
- Core / Foreign language
- Core / Elective

➢ Consider taking a freshman/transfer seminar

Spring

- Math 110: Calculus II
- CS 112: Intro to Computer Science II (Java)
- Core / Foreign language
- Core / Elective

I recommend fulfilling language requirements freshman year

➢ Consider taking a freshman/transfer seminar

Sophomore year:

Fall

- Math 211: Calculus III
- BSDS 100: Intro to Data Science with R
- Core / Elective
- Core / Elective

Spring

- Math 230: Linear Algebra
- BSDS 200: Applied Data Science Methods
- Core / Elective
- Core / Elective

You should make your own four year plan similar to this one

Check carefully that all degree requirements are satisfied

A typical four year plan to complete the BSDS degree requirements

Junior year:

Fall

- Math 370: Probability
- Math 201: Discrete Math
- Core / Elective
- Core / Elective

Spring

- Math 371: Statistics
- CS 245: Data Structures and Algorithms
- Core / Elective
- Core / Elective

Senior year:

Fall

- Math 372: Linear Regression
- Core / Elective
- Core / Elective
- Core / Elective

← I recommend some math or CS electives here

Spring

- Math 373: Statistical Learning
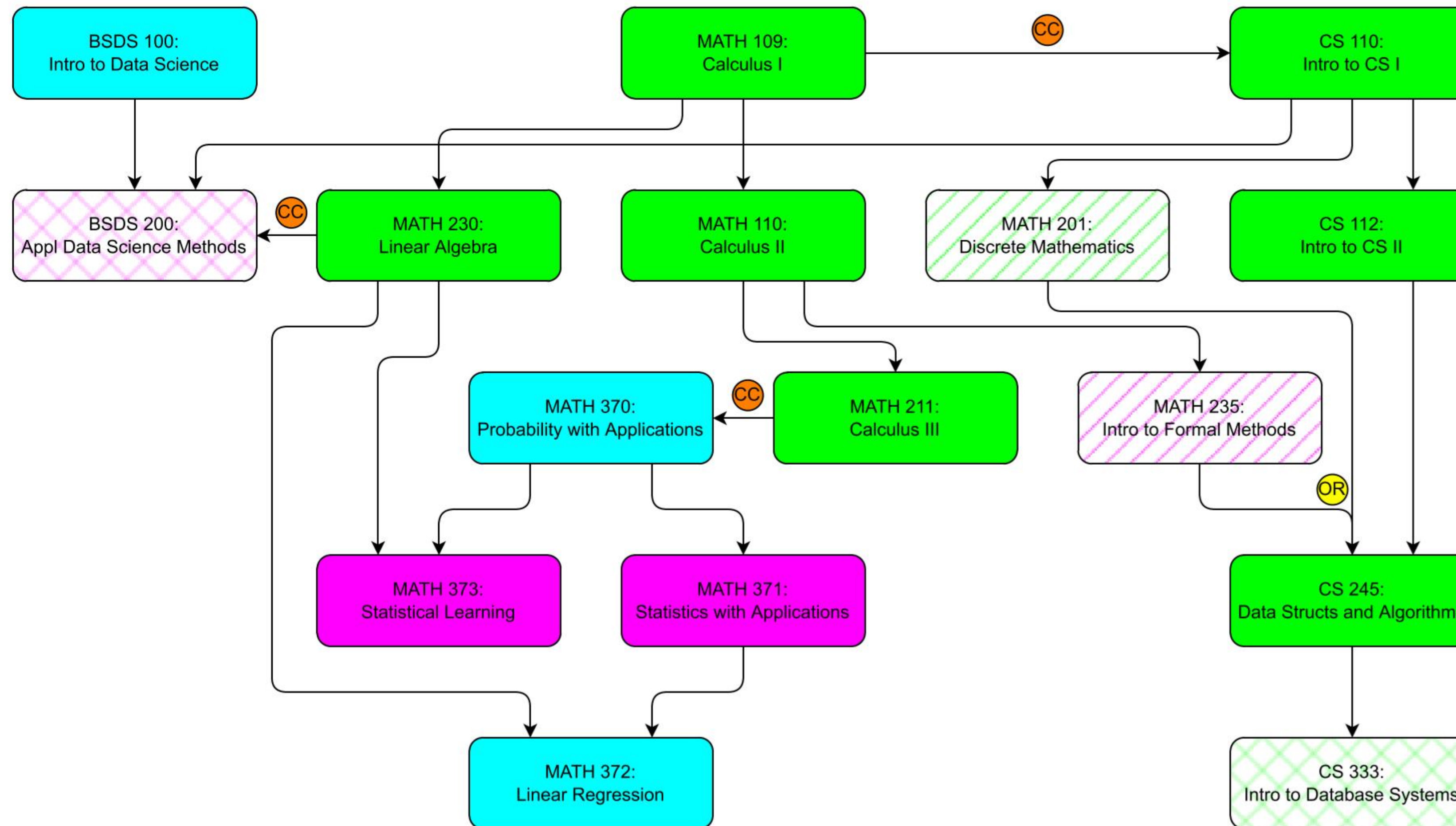- Core / Elective
- Core / Elective
- Core / Elective

← I recommend some math or CS electives here

You should make your own four year plan similar to this one

Check carefully that all degree requirements are satisfied

Data Science Major: Flowchart of Required Courses

Thank you for listening… 😊

Now it's time for your questions!

Core stuff

Look at your "degree evaluation" frequently!

✅ **Major Requirements**		
☐ **File Graduation Application**	Still Needed:	Click to Apply - Requirement Unchecks When Degree is Awarded.
☐ **Graduation Status**	Still Needed:	When degree is awarded, status will change to complete.

⊟ Core Requirements		
✅ **AREA A: FOUNDATIONS OF COMMUNICATION**		
✅ C-A1 Public Speaking	RHET 103	Public Speaking
✅ C-A2 Rhetoric and Composition (Min C-, Must be completed at USF)	RHET 120	Written Communication II
⊟ **AREA B: MATH AND THE SCIENCES**		
✅ C-B1 Math or Quantitative Science	MATH 1XX Satisfied by	IB Math HL MATH1 - IB Math HL - International Baccalaureate
⊟ C-B2 Applied or Laboratory Science	PHYS 100	Introductory Physics I
⊟ **AREA C: HUMANITIES**		
⊟ C-C1 Literature	THTR 301	Classical Dramatic Literature
✅ C-C2 History	HIST 135	Indian Civilizations
⊟ **AREA D: PHILOSOPHY, THEOLOGY, AND ETHICS**		
✅ C-D1 Philosophy	PHIL 110	Great Philosophical Questions
✅ C-D2 Theology	THRS 201	Catholic Thought
⊟ C-D3 Ethics	PHIL 240	Ethics
✅ C-E AREA E: SOCIAL SCIENCES	ECON 112 Satisfied by	Principles of Macroeconomics ECON1 - IB Economics HL - International Baccalaureate
✅ C-F AREA F: VISUAL AND PERFORMING ARTS	HONC 206	GTWY: Humans, Nature, & Art
Additional core courses are not required, but can be used to meet the overall 44 core credits required if the student falls short.		
✅ Additional courses taken in Areas A-F	CS 110 ECON 111 Satisfied by MATH 109	Intro to Computer Science I Principles of Microeconomics ECON1 - IB Economics HL - International Baccalaureate Calculus & Analytic Geom I

☐ Community-Engaged/Service Learning & Diversity Req		
☐ **SL/CEL & CD REQUIREMENT**		
☐ Service Learning/Community-Engaged Learning (Must be completed at USF)	Still Needed:	1 Class in @ @ with Attribute SL with Attribute CEL
✅ Cultural Diversity	HIST 135	Indian Civilizations

It tells you which degree requirements you have not yet satisfied

Be sure that you are on track to graduate on time

Look at your "degree evaluation" frequently!

☑ **Major in Mathematics**		
☑ 16 upper-level credits in residence		
A minimum grade of C- required in all courses		
☑ MATH MAJOR REQUIREMENTS		
☑ Calculus and Analytic Geometry I	MATH 109	Calculus & Analytic Geom I
☑ Calculus and Analytic Geometry II	MATH 110	Calculus & Analytic Geom II
☑ Linear Algebra	MATH 230	Elementary Linear Algebra
☑ Calculus and Analytic Geometry III	MATH 211	Calculus & Analytic Geom III
☑ Intro Formal Methods	MATH 235	Introduction to Formal Methods
☑ Applied elective	MATH 373	Statistical Learning
☑ Classical elective	MATH 355	Complex Analysis
☑ Modern Algebra and Real Analysis	MATH 435 / MATH 453	Modern Algebra / Real Analysis
☑ Upper division courses	MATH 370 / MATH 375	Probability with Applications / Numerical Analysis
☑ Math Colloquium	MATH 350 / MATH 350	Math Colloquium / Math Colloquium
☑ Intro to Comp Sci or Computational Physics	CS 110	Intro to Computer Science I
☑ **Minor in Computer Science**		
A grade of C or higher must be earned in all courses.		
☑ COMPUTER SCIENCE MINOR REQUIRED COURSES		
☑ Computing, Mobile Apps, and the Web or CS elective	CS 360	Data Visualization
☑ Introduction to Computer Science I	CS 110	Intro to Computer Science I
☑ Introduction to Computer Science II	CS 112	Intro to Computer Science II
☑ Two courses level 200 or above, excluding CS 295, 385, 395, 495.	CS 245 / MATH 235	Data Struct & Algorithms / Introduction to Formal Methods

It tells you which degree requirements you have not yet satisfied

Be sure that you are on track to graduate on time

Be aware of various placement tests that are available

Placement Tests

Many placement tests can be taken online prior to coming to campus. Please take them before you register for classes.

Please read the following carefully to determine which exams you need to take.

Math Placement Test ⌄

Calculus Readiness Test ⌄

Foreign Language Placement Test ⌄

Chemistry Diagnostic Test ⌄

Owl Quick Prep Course ⌄

Directed Self-Placement (for Rhetoric) ⌄

These help you figure out which math class you should take first and which foreign language and rhetoric classes you should take

Strategies for completing the Core A2: Rhetoric and Composition requirement

RHETORIC COURSES AND DIRECTED SELF-PLACEMENT

When students complete the Directed Self Placement (DSP) process, they will be given advice about which writing course best suits them, and then they will select the course(s) they want to take. Ultimately, students must complete Core A2 to graduate. Some students will opt to go right into Core A2, while others will choose to take a slower path through multiple courses culminating in Core A2. Here are the various pathways students can take:

3 semester path

Complete RHET 106/N → Complete RHET 110/N → Complete Core A2 course

Strategies for completing the Core A2: Rhetoric and Composition requirement

2 semester paths

Complete Rhet 110/N → Complete Core A2 Course

Complete Rhet 130 → Complete Rhet 131 (earn Core A2 & A1)

Note: Rhet 130/131 will be offered for the last time in 2022-2023

A "two semester path" to fulfill Core A2 is the most common option!

Strategies for completing the Core A2: Rhetoric and Composition requirement

1 semester path

First-Year Students

Complete Rhet 195 (for Core A2 credit; note there are also Rhet 195 classes for Core A1 credit)

Transfer Students

Complete any of the following Core A2 courses:

Rhet 250: Academic Writing for Transfer Students

Rhet 295: Transfer-Year Writing Seminar

Rhet 203: Writing in Psychology

Rhet 206: Writing in the Sciences

Rhet 310: Business and Technical Writing

Rhet 323: Rhetoric and Popular Culture

Foreign language requirement

Foreign Language Requirement

Requirements

Requirements vary by college or school. Students must pass each language course with a minimum grade of C- to move up to the next course level.

COLLEGE OF ARTS & SCIENCES

Bachelor of Arts: three consecutive semesters of the same language

Bachelor of Science: two consecutive semesters of the same language ← Math and BSDS majors

(8 units)

It is possible to test out of the foreign language requirement