

MATH CALCULUS CHANGES

Rationale: MATH is restructuring second year calculus. MATH200 and MATH204 will be discontinued. The new courses are:

- MATH 200A: Multivariable Calculus A
- MATH 200B: Multivariable Calculus B
- MATH 201: Introduction to Ordinary Differential Equations

SEOS needs to update all programs and course pre-reqs that have MATH 200 and MATH 204. These changes were approved at undergraduate committee on June 2 and are now up for a department meeting vote on June 23. Use the following links to jump to specific proposals:

Course links:

[EOS325](#)
[EOS340](#)
[EOS431](#)
[EOS440](#)

Program links:

- The following require *MATH 202*:
 - Earth Science
 - Physical Geography and Earth and Ocean Sciences
 - Chemistry and Earth Sciences
 - Biology and Earth Sciences
 - Chemistry and Ocean Sciences
- The following require *MATH 200A* or *MATH 200B* (multivariable calculus) and *MATH 201* (ordinary differential equations):
 - Climate Science - Physical Climate Science Stream
 - Physics and Earth Sciences (Geophysics)
 - Physics and Ocean-Atmosphere Sciences

EOS325: EARTH SYSTEM MODELLING ATLAS

CURRENT:

- Complete all of the following:
 - Complete 1 of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete 1 of:
 - **PHYS102B** - General Physics II (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - **PHYS130** - Physics II (1.5)
 - Complete 1 of the following:
 - Complete 1 of:
 - **EOS210** - Introductory Geophysics (1.5)
 - **EOS230** - Introduction to Environmental Data Analysis (1.5)
 - **EOS261** - The Climate System (1.5)
 - **EOS314** - Descriptive Physical Oceanography (1.5)
 - **CSC110** - Fundamentals of Programming I (1.5)
 - **CSC111** - Fundamentals of Programming with Engineering Applications (1.5)
 - **GEOG230** - Introduction to Environmental Data Analysis (1.5)
 - **PHYS210** - Introductory Geophysics (1.5)
 - or permission of the school.

PROPOSED:

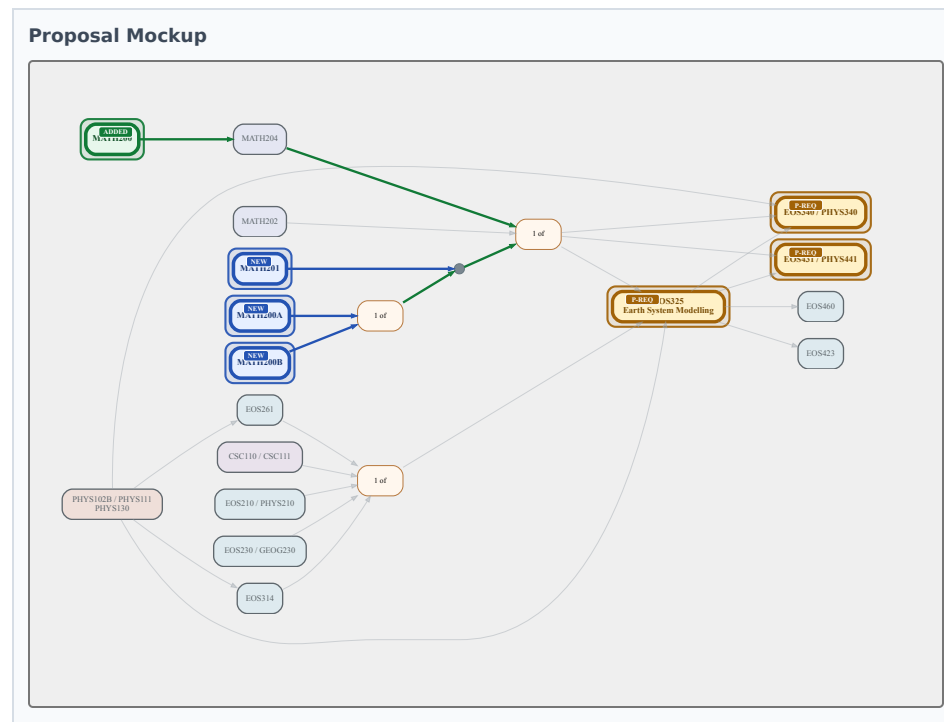
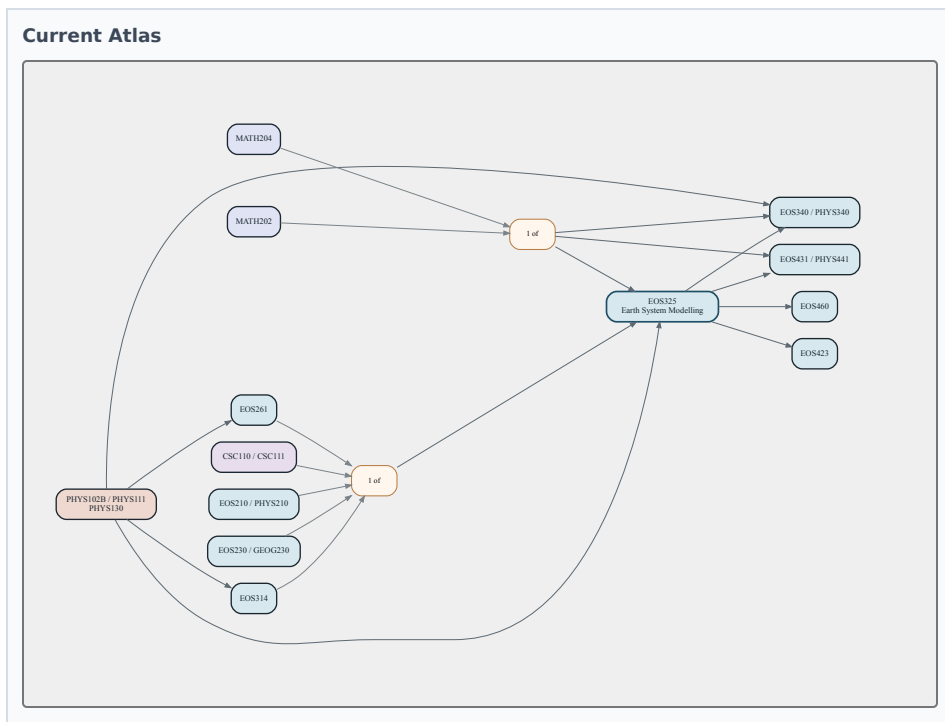
- Complete all of the following:
 - Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete all of:
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete 1 of:
 - **PHYS102B** - General Physics II (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - **PHYS130** - Physics II (1.5)
 - Complete 1 of the following:
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 - **GEOG230** - Introduction to Environmental Data Analysis (1.5)
 - **PHYS210** - Introductory Geophysics (1.5)
 - or permission of the school.

Note: MATH200 was previously implied by MATH204; it is now stated explicitly for clarity and consistency with the other math prerequisites.

See next slide for graphical view.

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EOS325: PREREQUISITE GRAPH ATLAS



Proposal mockup splits the calculus requirement into three options: MATH200 plus MATH204, one of MATH200A or MATH200B plus MATH201, or MATH202.

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EOS340: ATMOSPHERIC PHYSICS ATLAS

CURRENT:

PREREQUISITES

- Complete 1 of the following:
 - Complete all of:
 - **PHYS102A** - General Physics I (1.5)
 - **PHYS102B** - General Physics II (1.5)
 - Complete all of:
 - **PHYS110** - Introductory Physics I (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - Complete all of:
 - **PHYS120** - Physics I (1.5)
 - **PHYS130** - Physics II (1.5)

PRE- OR COREQUISITES

- Completed or concurrently enrolled in 1 of:
 - **EOS325** - Earth System Modelling (1.5)
 - **MATH204** - Calculus IV (1.5)

PROPOSED:

PREREQUISITES

- Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete all of:
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
- Complete 1 of:
 - **PHYS102B** - General Physics II (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - **PHYS130** - Physics II (1.5)

PRE- OR COREQUISITES

- Completed or concurrently enrolled in 1 of:
 - **EOS325** - Earth System Modelling (1.5)
 - **PHYS248** - Computer Assisted Physics (1.5)
 - **MATH248** - Computer Assisted Mathematics (1.5)

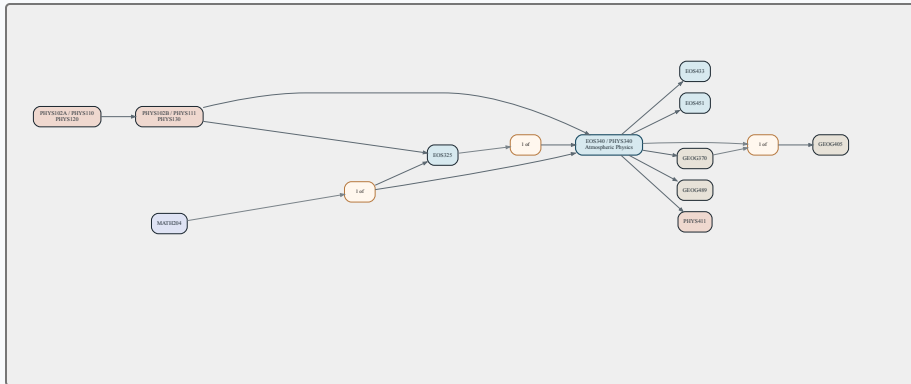
Note: MATH200 was previously implied by MATH204; it is now stated explicitly for clarity and consistency with the other math prerequisites.

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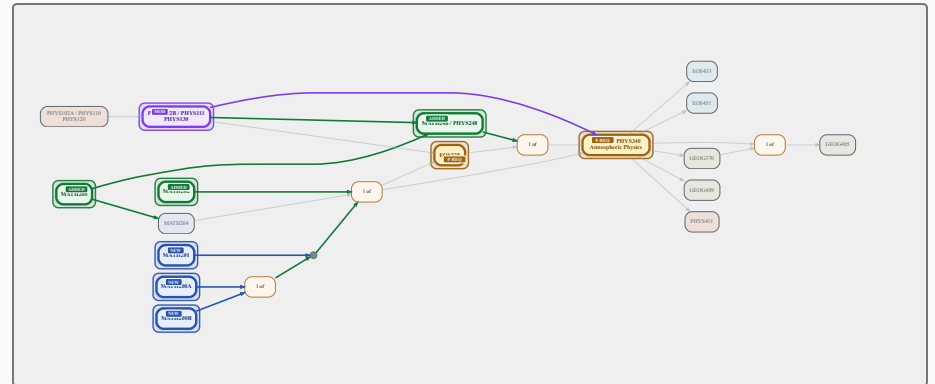
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EOS340: PREREQUISITE GRAPH ATLAS

Current Atlas



Proposal Mockup



Proposal mockup simplifies the physics prerequisite to one of PHYS102B, PHYS111, or PHYS130, keeps EOS325, PHYS248, or MATH248 as the pre- or co-requisite, and lists the calculus paths as prerequisites.

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EOS431: PHYSICAL OCEANOGRAPHY ATLAS

CURRENT:

PREREQUISITES

- Complete all of the following:
 - Complete 1 of:
 - **EOS325** - Earth System Modelling (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete 1 of the following:
 - Complete all of:
 - **PHYS102A** - General Physics I (1.5)
 - **PHYS102B** - General Physics II (1.5)
 - Complete all of:
 - **PHYS110** - Introductory Physics I (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - Complete all of:
 - **PHYS120** - Physics I (1.5)
 - **PHYS130** - Physics II (1.5)
- or permission of the school.

PROPOSED:

PREREQUISITES

- Complete all of the following:
 - Complete all of the following:
 - Complete 1 of:
 - **EOS325** - Earth System Modelling (1.5)
 - **PHYS248** - Computer Assisted Physics (1.5)
 - **MATH248** - Computer Assisted Mathematics (1.5)
 - Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete all of:
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete 1 of:
 - **PHYS102B** - General Physics II (1.5)
 - **PHYS111** - Introductory Physics II (1.5)
 - **PHYS130** - Physics II (1.5)
- or permission of the school.

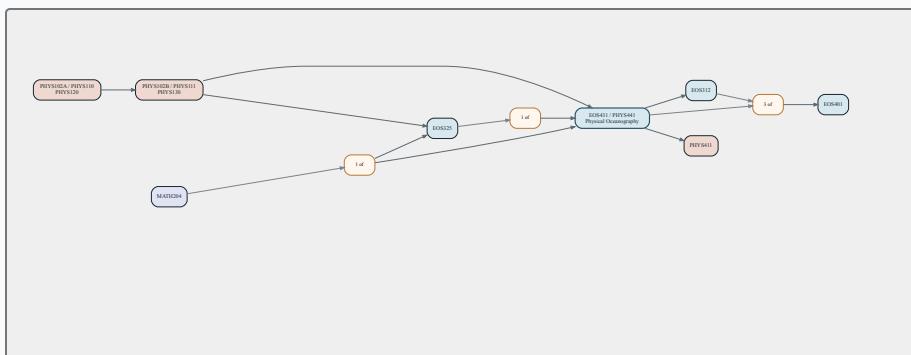
Note: MATH200 was previously implied by MATH204; it is now stated explicitly for clarity and consistency with the other math prerequisites.

See next slide for graphical view.

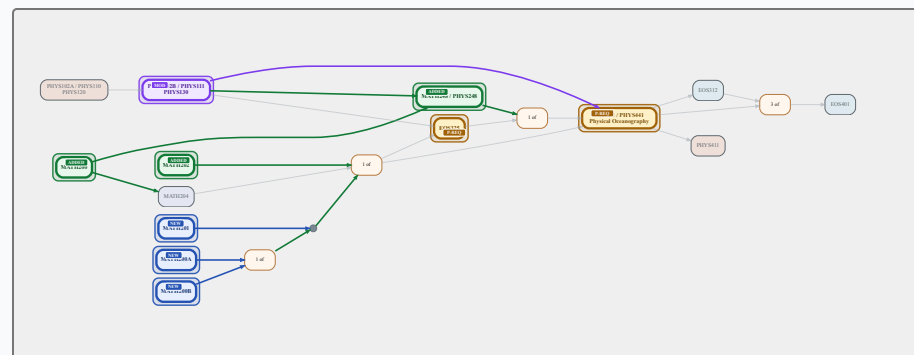
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EOS431: PREREQUISITE GRAPH ATLAS

Current Atlas



Proposal Mockup



Proposal mockup adds MATH248 alongside EOS325 and PHYS248, simplifies the physics prerequisite to one of PHYS102B, PHYS111, or PHYS130, and sets the math prerequisite as one of MATH200 plus MATH204, one of MATH200A or MATH200B plus MATH201, or MATH202.

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EOS440: HYDROGEOLOGY ATLAS

CURRENT:

PREREQUISITES

- Complete all of the following
 - Complete all of:
 - **EOS240** - Geochemistry (1.5)
 - Complete 1 of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - **MATH204** - Calculus IV (1.5)
- or permission of the school.

PROPOSED:

PREREQUISITES

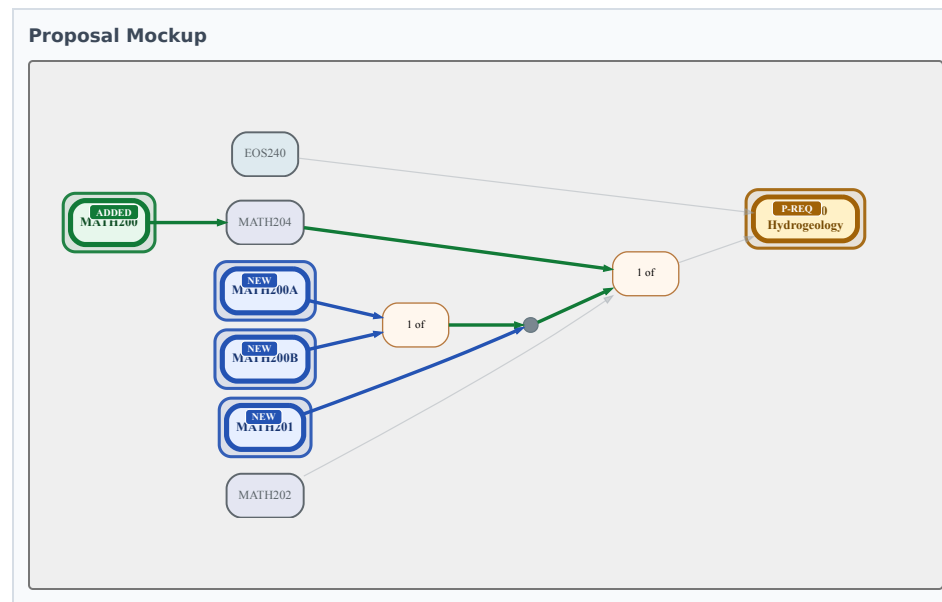
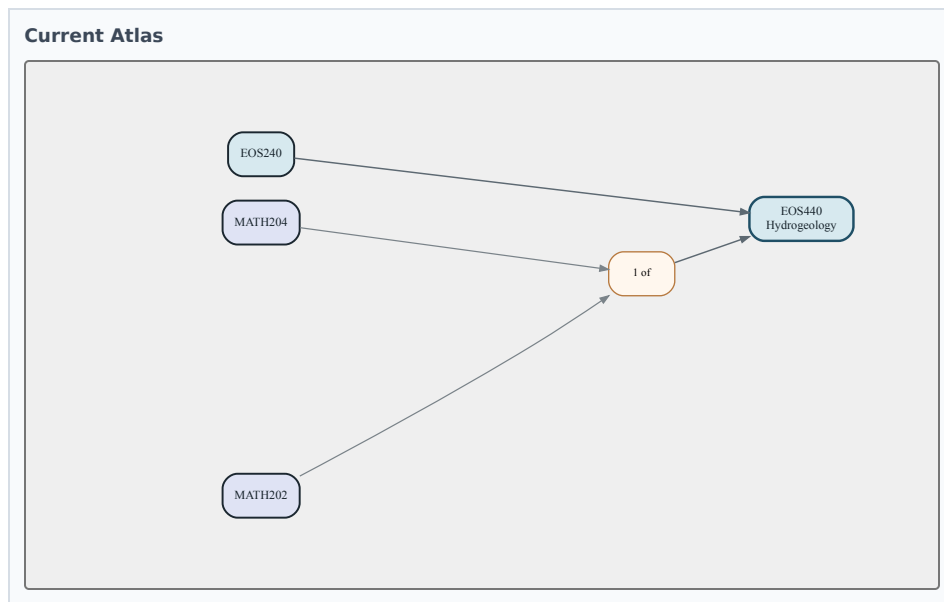
- Complete all of the following
 - Complete all of:
 - **EOS240** - Geochemistry (1.5)
 - Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)
 - Complete all of:
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
- or permission of the school.

Note: MATH200 was previously implied by MATH204; it is now stated explicitly for clarity and consistency with the other math prerequisites.

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EOS440: PREREQUISITE GRAPH ATLAS



Proposal mockup splits the calculus requirement into three options: MATH200 plus MATH204, one of MATH200A or MATH200B plus MATH201, or MATH202.

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EARTH SCIENCES (BACHELOR OF SCIENCE - MAJOR, HONOURS, AND GEOLOGY OPTION) ATLAS

CURRENT YEAR 2 MATH:

- Complete 1 of the following
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

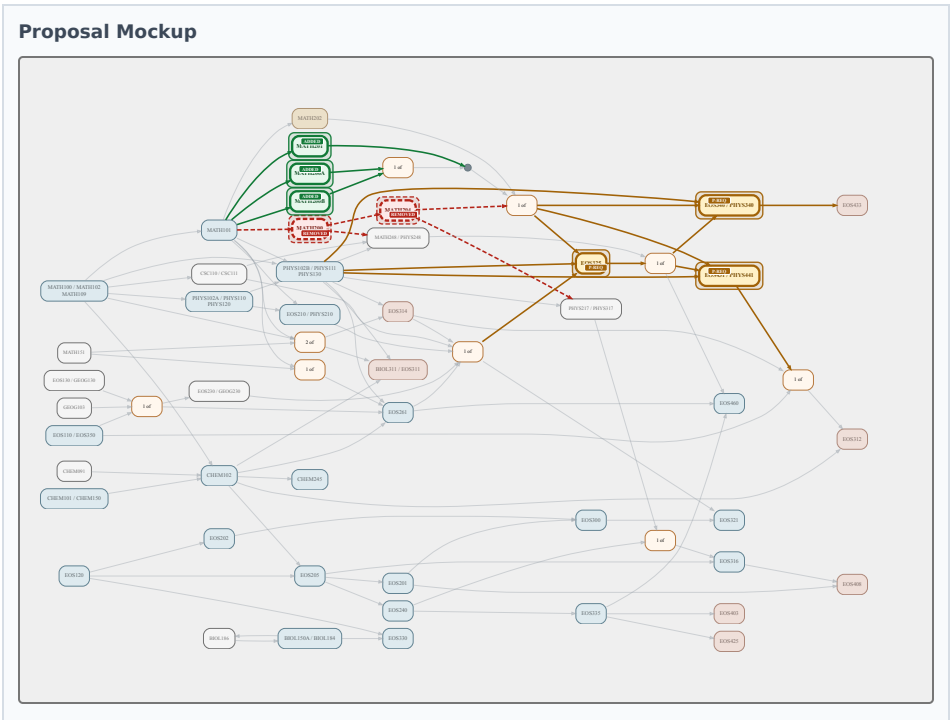
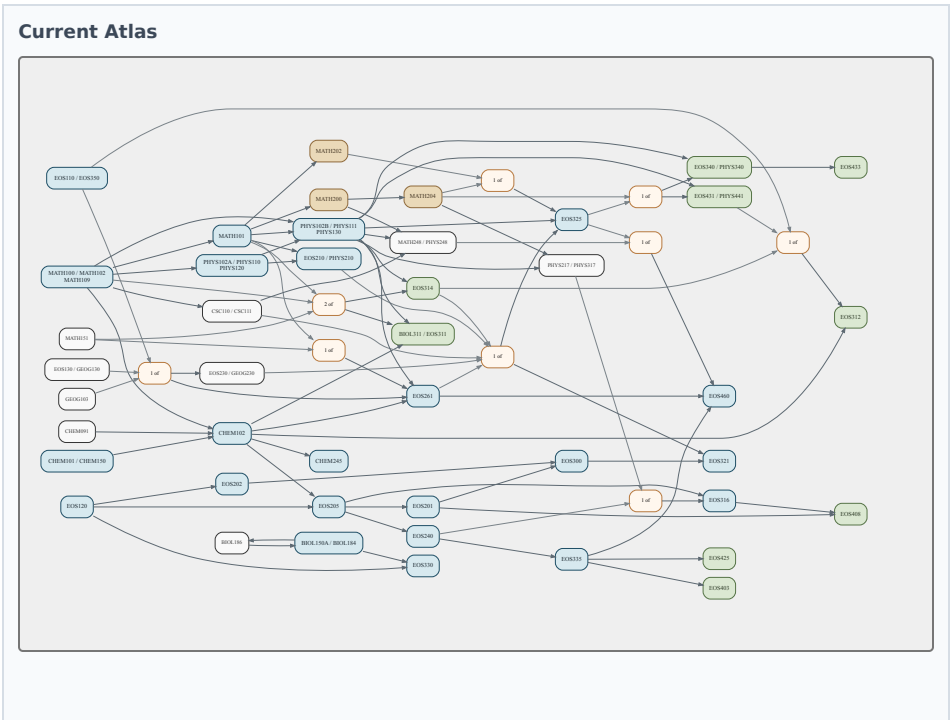
PROPOSED YEAR 2 MATH:

- Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - **MATH204** - Calculus IV (1.5)
- Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)

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EARTH SCIENCES: PROGRAM GRAPH ATLAS



Proposal mockup keeps the MATH202 route, shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201.

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CLIMATE SCIENCE (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) - PHYSICAL CLIMATE SCIENCE STREAM ATLAS

CURRENT YEAR 2 MATH:

- Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

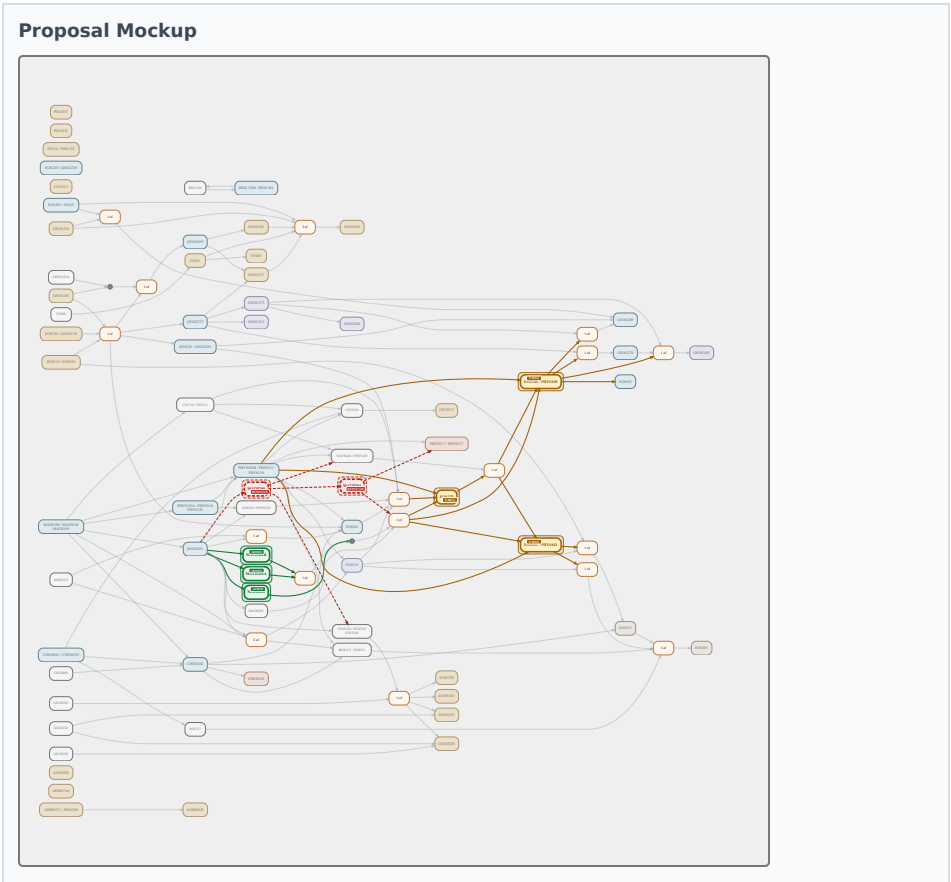
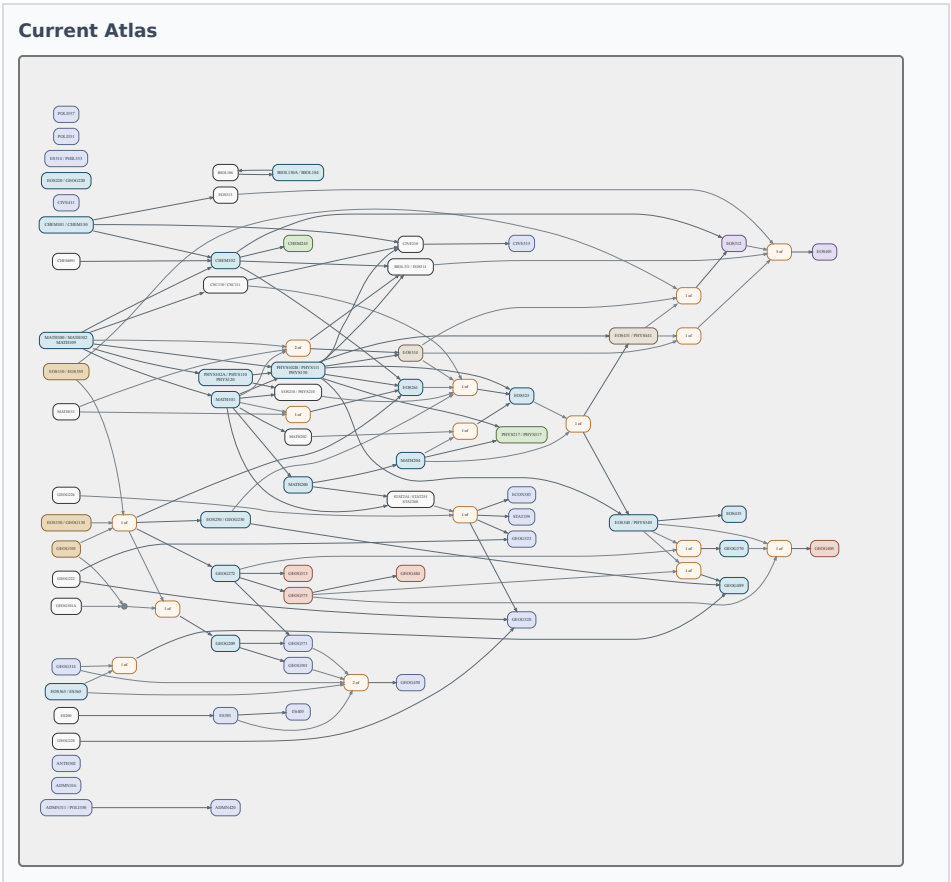
PROPOSED YEAR 2 MATH:

- Complete all of:
 - ~~MATH200~~ - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - ~~MATH204~~ - Calculus IV (1.5)

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CLIMATE SCIENCE: PROGRAM GRAPH ATLAS



Proposal mockup shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201 as separate requirements.

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BIOLOGY AND EARTH SCIENCES (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete 1 of the following
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

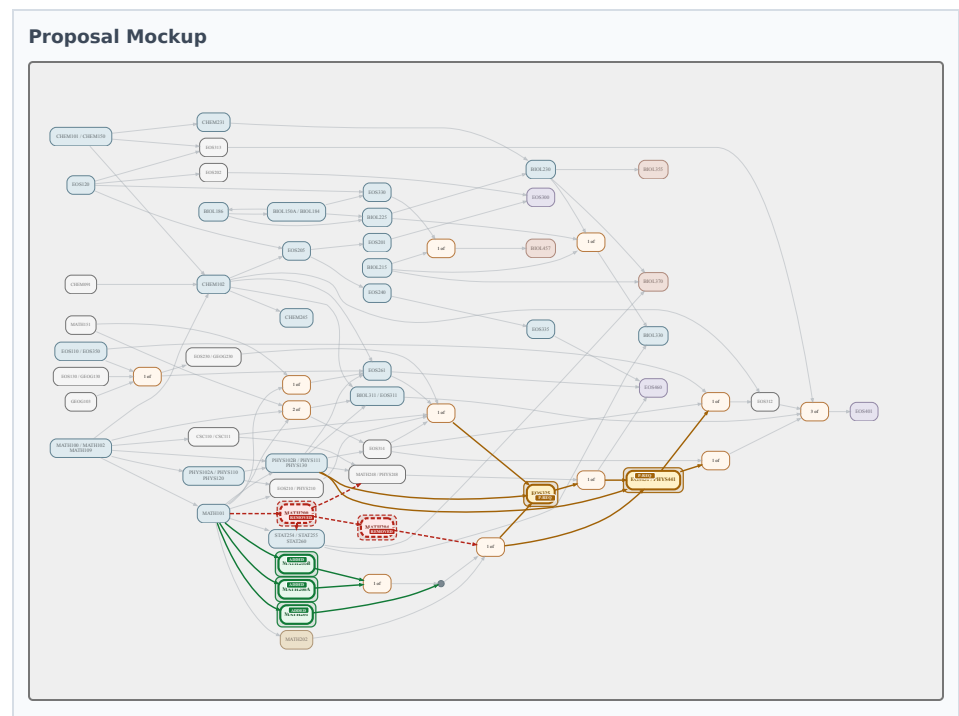
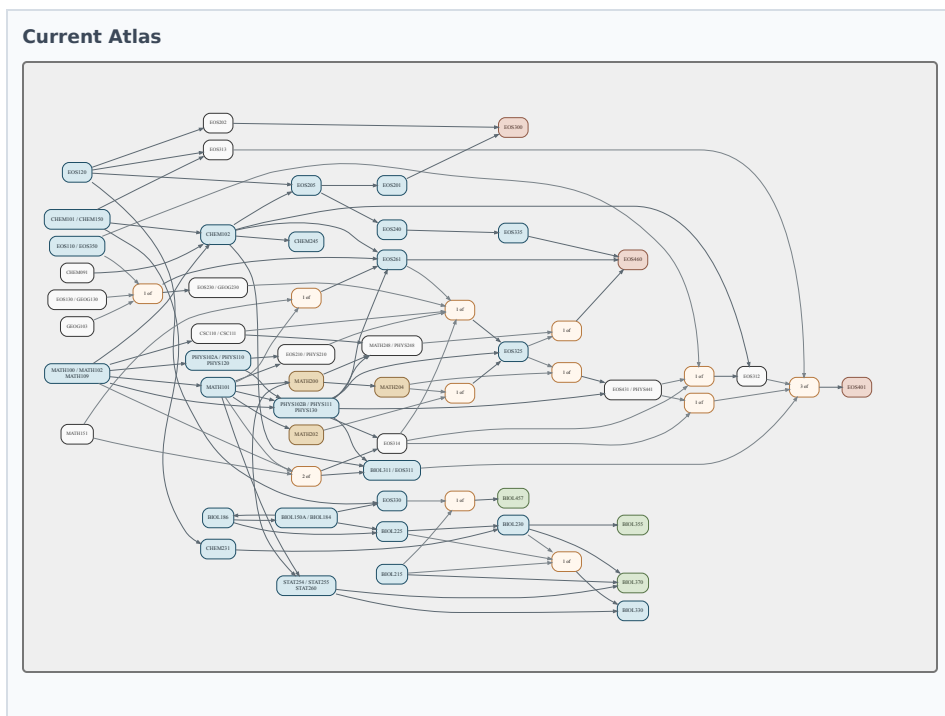
PROPOSED YEAR 2 MATH:

- Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - **MATH204** - Calculus IV (1.5)
- Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)

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BIOLOGY AND EARTH SCIENCES: PROGRAM GRAPH ATLAS



Proposal mockup keeps the MATH202 route, shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201.

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CHEMISTRY AND EARTH SCIENCES (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete 1 of the following
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

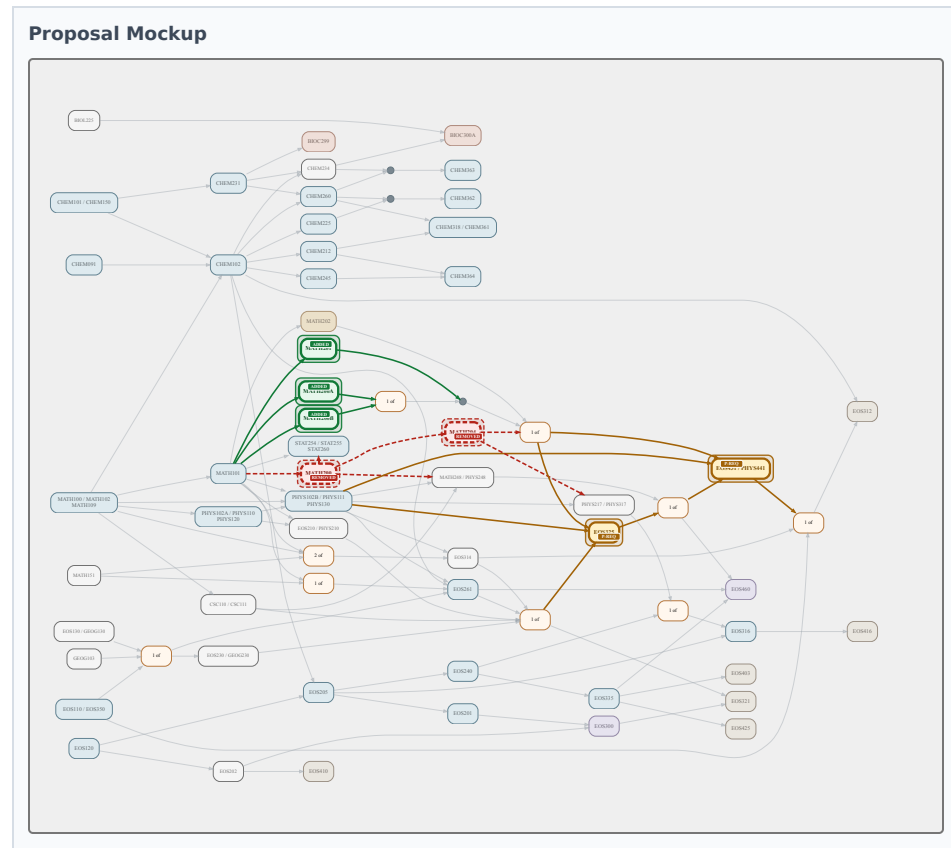
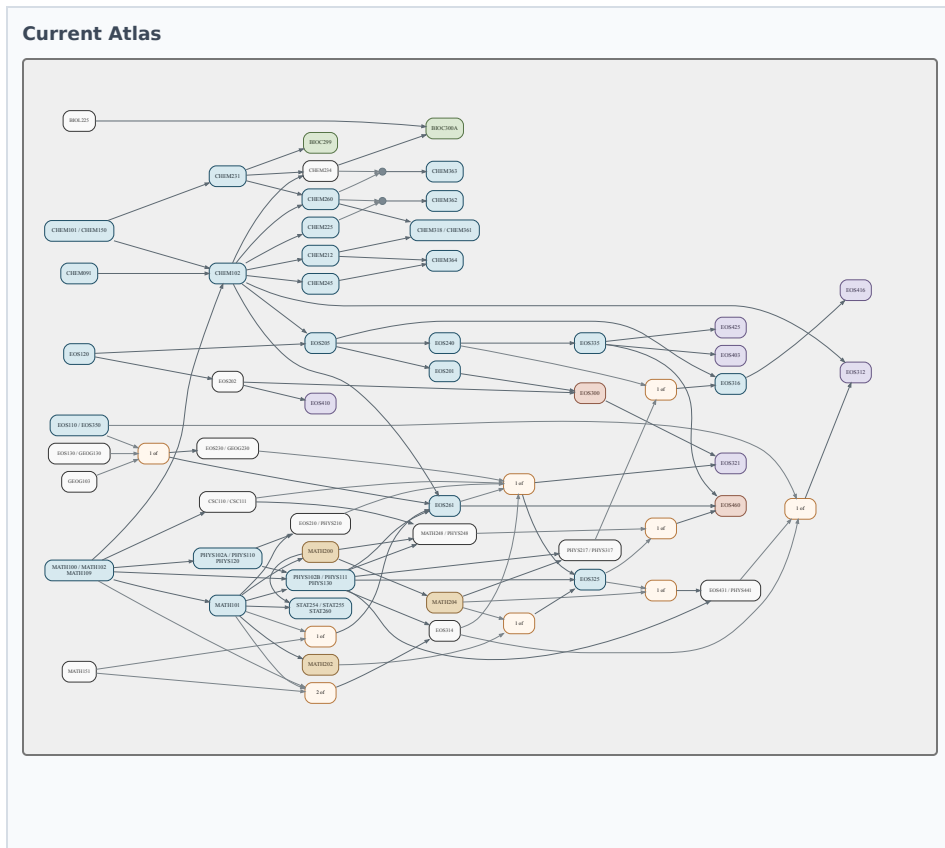
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- Complete 1 of the following:
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 - Complete 1 of:
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 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - **MATH204** - Calculus IV (1.5)
- Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)

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CHEMISTRY AND EARTH SCIENCES: PROGRAM GRAPH ATLAS



Proposal mockup keeps the MATH202 route, shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201.

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PHYSICAL GEOGRAPHY AND EARTH AND OCEAN SCIENCES (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete 1 of the following
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

PROPOSED YEAR 2 MATH:

- Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - **MATH204** - Calculus IV (1.5)
- Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)

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PHYSICS AND OCEAN-ATMOSPHERE SCIENCES (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

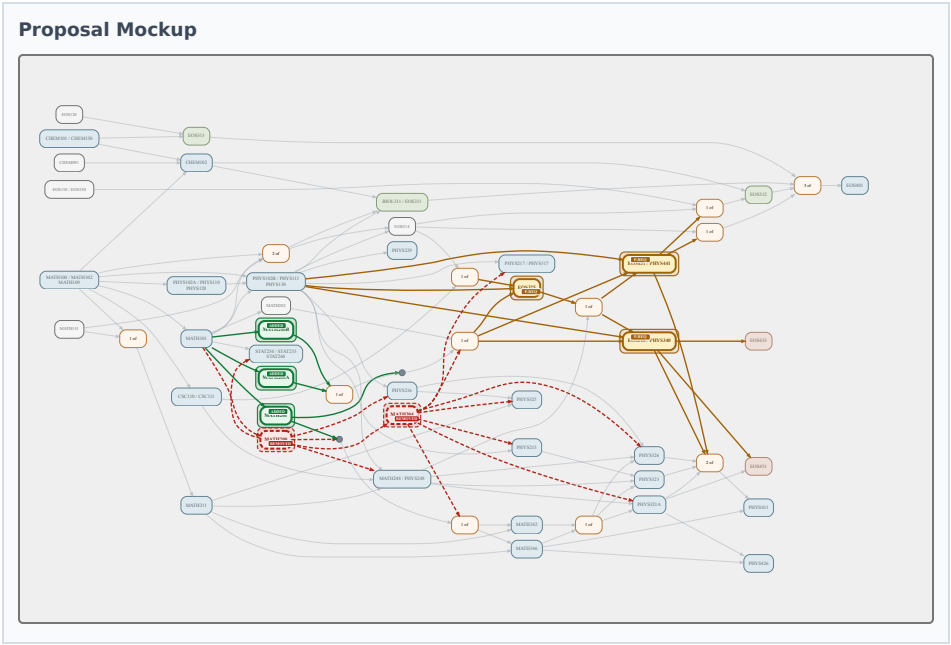
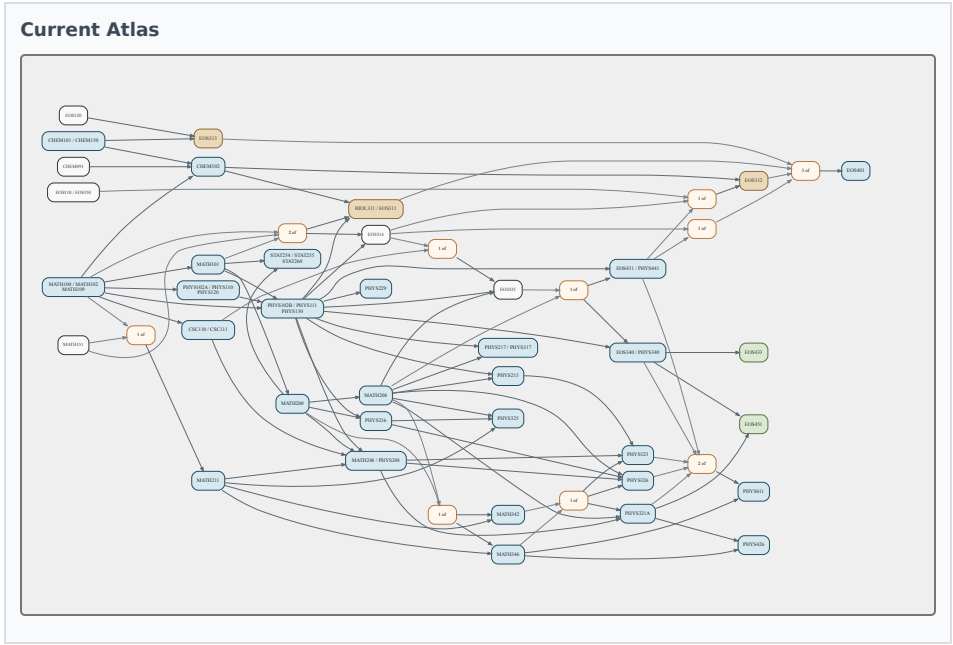
PROPOSED YEAR 2 MATH:

- Complete all of:
 - ~~**MATH200** - Calculus III (1.5)~~
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - ~~**MATH204** - Calculus IV (1.5)~~

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PHYSICS AND OCEAN-ATMOSPHERE SCIENCES: PROGRAM GRAPH ATLAS



Proposal mockup shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201 as separate requirements.

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CHEMISTRY AND OCEAN SCIENCES (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete 1 of the following
 - Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

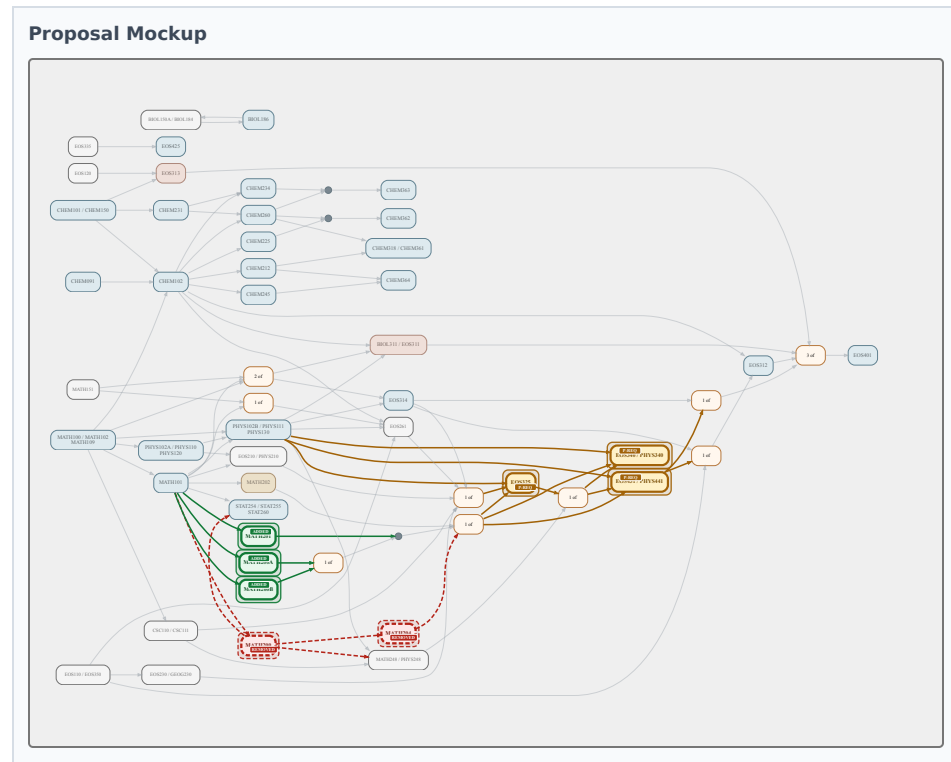
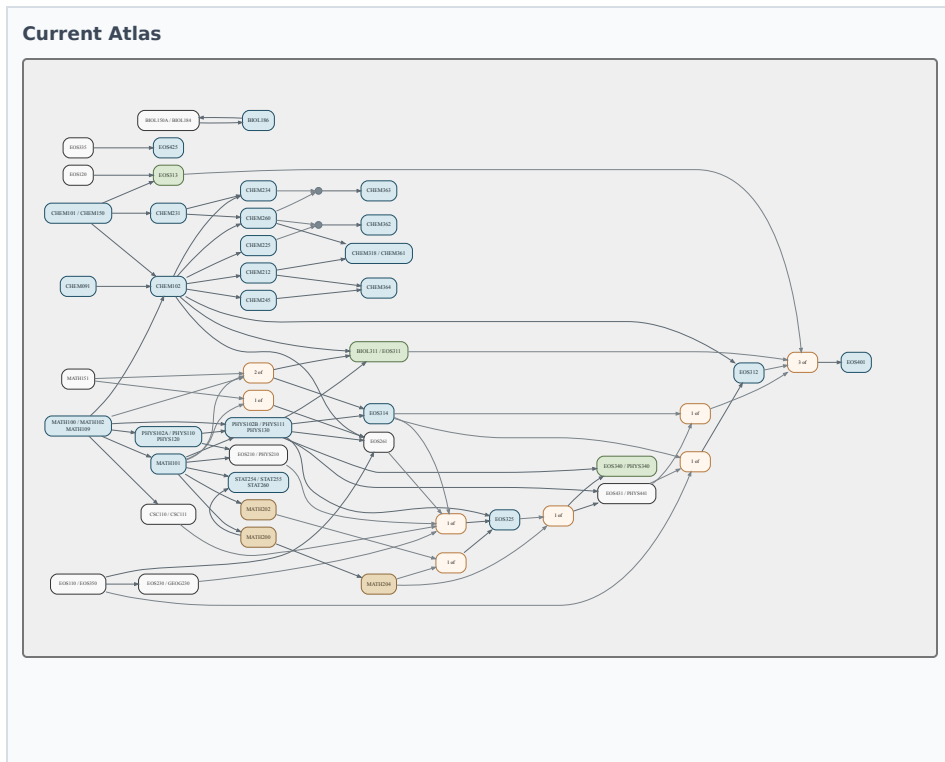
PROPOSED YEAR 2 MATH:

- Complete 1 of the following:
 - Complete all of:
 - **MATH200** - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - **MATH204** - Calculus IV (1.5)
- Complete all of:
 - **MATH202** - Intermediate Calculus for CSC and EOS (1.5)

See next slide for graphical view.

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CHEMISTRY AND OCEAN SCIENCES: PROGRAM GRAPH ATLAS



Proposal mockup keeps the MATH202 route, shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201.

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PHYSICS AND EARTH SCIENCES (GEOPHYSICS) (BACHELOR OF SCIENCE - COMBINED MAJOR AND HONOURS) ATLAS

CURRENT YEAR 2 MATH:

- Complete all of:
 - **MATH200** - Calculus III (1.5)
 - **MATH204** - Calculus IV (1.5)

PROPOSED YEAR 2 MATH:

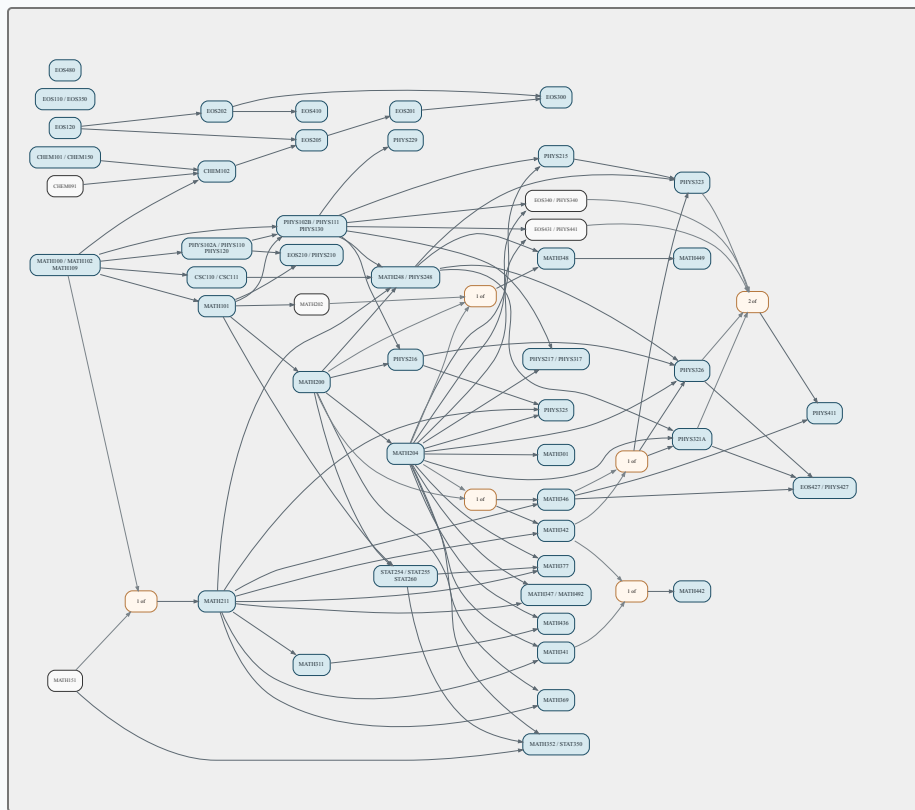
- Complete all of:
 - ~~**MATH200**~~ - Calculus III (1.5)
 - Complete 1 of:
 - **MATH200A** - Multivariable Calculus A (1.5)
 - **MATH200B** - Multivariable Calculus B (1.5)
 - **MATH201** - Introduction to Ordinary Differential Equations (1.5)
 - ~~**MATH204**~~ - Calculus IV (1.5)

See next slide for graphical view.

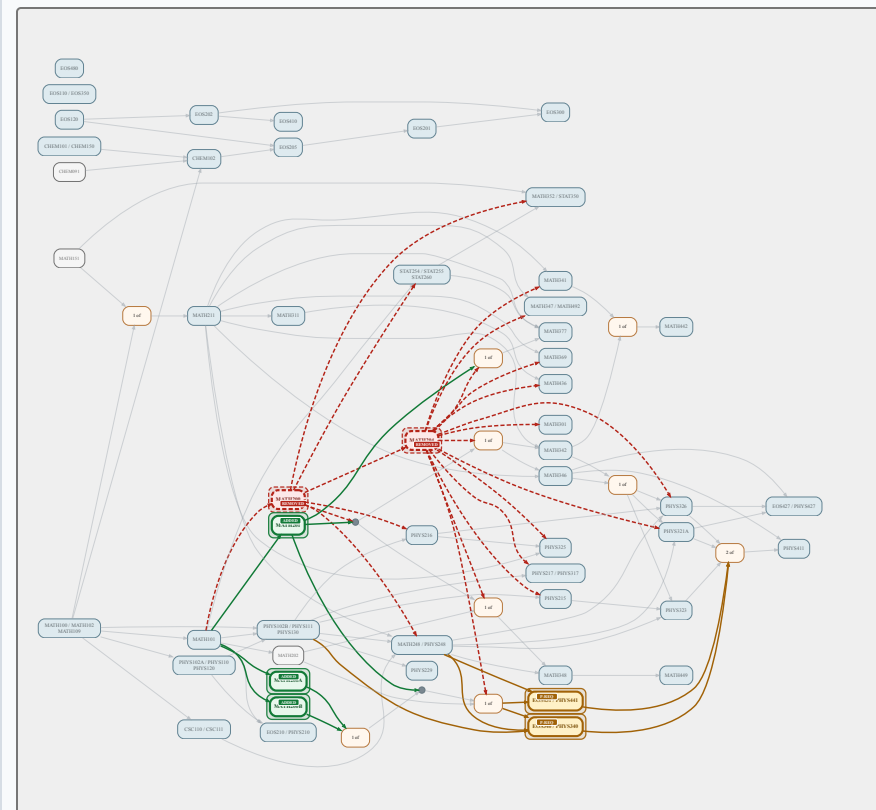
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PHYSICS AND EARTH SCIENCES: PROGRAM GRAPH ATLAS

Current Atlas



Proposal Mockup



Proposal mockup shows MATH200 and MATH204 as removed program requirements, and adds MATH200A/MATH200B plus MATH201 as separate requirements.

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