

CONTENT REQUIREMENTS FOR LIFE SCIENCE, EARTH SCIENCE, PHYSICAL SCIENCE, PHYSICS, CHEMISTRY, AND INTEGRATED SCIENCE

The following courses cover the state-mandated competencies for adolescence and young adult licensure in life science, earth science, physical science, physics, chemistry and integrated science (grades 7-12) and should be completed at the undergraduate level prior to beginning the Master of Education (M.Ed.) teacher preparation program. A minimum 2.7 GPA is required in each area. Any substitutions require written faculty approval based on a review of syllabi or detailed course descriptions.

EARTH SCIENCES

EARTH SCIENCE

Astron 161 or 162	Astronomy	5 _____
EEOB 400	Evolution	5 _____
Geog 520	Climatology	5 _____
Geol Sci 121	The Dynamic Earth	5 _____
Geol Sci 122	Earth Through Time	5 _____
Geol Sci 203 or 210	Environmental Geol Sci	5 _____
Geol Sci 206 or Geol 584	Oceanography Oceanography for Edu	3-5 _____
Geol Sci 212	Intro to Earth Materials	3 _____
Geol Sci 550	Geomorphology	5 _____
Geol Sci 580 or 583	Field Geology Field Geol for Edu	3-5 _____
ENR 201(100)	Intro Environmental Sci	5 _____

OTHER REQUIRED COURSES

Biol 113	Energy Transfer & Dev	5 _____
Biol 114	Form, Fnct, Div, & Ecol	5 _____
Chem 121	General Chemistry	5 _____
Chem 122	General Chemistry	5 _____
Phys 111 or 131	Mechanics & Heat	5 _____
Phys 112 or 132	Electricity & Magnetism	5 _____

EARTH/CHEMISTRY SCIENCES

EARTH SCIENCE (minimum 30 quarter hours)

Astron 161 or 162	Astronomy	5 _____
EEOB 400	Evolution	5 _____
Geog 520	Climatology	5 _____
Geol Sci 121	The Dynamic Earth	5 _____
Geol Sci 122	Earth Through Time	5 _____
Geol Sci 206 or Geol Sci 584	Oceanography Oceanography for Edu	3-5 _____
Geol Sci 580 or Geol Sci 583	Field Geology Field Geol for Sci Edu	3-5 _____
ENR 201(100)	Intro Environmental Sci	5 _____

CHEMISTRY (minimum 30 quarter hours)

Chem 121	General Chemistry	5 _____
Chem 122	General Chemistry	5 _____
Chem 123	General Chemistry	5 _____
Chem 221	Analytical Chemistry I	5 _____
Chem 231 or 251	Organic Chemistry	3 _____
Chem 520 or 530	Physical Chemistry	3 _____
Biochem 511	Intro Biological Chem	5 _____
Chem 254 or Biochem 521	Organic Chem Lab I Biochemistry Lab	3-5 _____

OTHER REQUIRED COURSES

Biol 113	Energy Transfer & Dev	5 _____
Biol 114	Frm, Fnct, Div, & Ecol	5 _____
Phys 131	Mechanics & Heat	5 _____
Phys 132	Electricity & Magnetism	5 _____

EARTH/PHYSICS SCIENCES

EARTH SCIENCES (minimum 30 quarter hours)

Astron 161 or 162	Astronomy	5 _____
EEOB 400	Evolution	5 _____
Geog 520	Climatology	5 _____
Geol Sci 121	The Dynamic Earth	5 _____
Geol Sci 122	Earth Through Time	5 _____
Geol Sci 206 or Geol 584	Oceanography Oceanography for Edu	3-5 _____
Geol Sci 580 or Geol 583	Field Geology Field Geol for Edu	3-5 _____
ENR 201(100)	Intro Environmental Sci	5 _____

PHYSICS (minimum 30 quarter hours)

Phys 131	Particles & Motion	5 _____
Phys 132	Electricity & Magnetism	5 _____
Phys 133	Thrm, Waves, Quantum	5 _____
Phys 261	Dyn of Part & Waves I	4 _____
Phys 262	Dyn of Part & Waves II	4 _____
Phys 516	Intermediate Physics Lab	4 _____

Approved physics elective:

	3 _____
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OTHER REQUIRED COURSES

Biol 113	Energy Transfer & Dev	5 _____
Biol 114	Form, Fnct, Div, & Ecol	5 _____
Chem 121	General Chemistry	5 _____
Chem 122	General Chemistry	5 _____
Chem 231 or 251	Organic Chemistry	3 _____

LIFE SCIENCES

LIFE/CHEMISTRY SCIENCES

LIFE/EARTH SCIENCES

LIFE SCIENCES

Biochem 511	Intro Biol Chem	5	_____
Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
EEOB 400	Evolution	5	_____
EEOB 405	Animal Diversity	4	_____
Microbiol 509	Basic & Practical Micro	5	_____
Mol Gen 500	General Genetics	5	_____
HCS/PCMB 300	General Plant Biology	5	_____

Select one:

Entom 500	General Entomology		
EEOB 210	Local Flora		
EEOB 232	Intro to Physiology		
EEOB 235	Intro to Anatomy		
EEOB 322	Intro to Ornithology		
EEOB 621	Ichthyology		
EEOB 625	Mammalogy	5	_____

Approved elective to complete a total of 45-quarter hours in life sciences: m

OTHER REQUIRED COURSES

Geol Sci 121	The Dynamic Earth	5	_____
Geol Sci 122	Earth through Time	5	_____
Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 231 or 251	Organic Chemistry	3	_____
Phys 111 or 131	Mechanics & Heat	5	_____
Phys 112 or 132	Electricity & Magnetism	5	_____

LIFE SCIENCE (minimum 30 quarter hours)

Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
EEOB 400	Evolution	5	_____
Microbiol 509	Basic & Practical Micro	5	_____
Mol Gen 500	General Genetics	5	_____
HCS/PCMB 300	General Plant Biology	5	_____

CHEMISTRY (minimum 30 quarter hours)

Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 123	General Chemistry	5	_____
Chem 221	Analytical Chemistry I	5	_____
Chem 231 or 251	Organic Chemistry	3	_____
Chem 520 or 530	Physical Chemistry	3	_____
Biochem 511	Intro Biol Chem	5	_____
Chem 254	Organic Chem Lab I		
or Biochem 521	Biochemistry Lab	3-5	_____

OTHER REQUIRED COURSES

Phys 131	Mechanics & Heat	5	_____
Phys 132	Electricity & Magntsm	5	_____
Geol Sci 121	The Dynamic Earth	5	_____
Geol Sci 122	Earth Through Time	5	_____

LIFE SCIENCE (minimum 30 quarter hours)

Biochem 511	Intro Biol Chem	5	_____
Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
EEOB 400	Evolution	5	_____
Microbiol 509	Basic & Practical Micro	5	_____
Mol Gen 500	General Genetics	5	_____
HCS/PCMB 300	General Plant Biology	5	_____

EARTH SCIENCE (minimum 30 quarter hours)

Astron 161 or 162	Astronomy	5	_____
Geog 520	Climatology	5	_____
Geol Sci 121	The Dynamic Earth	5	_____
Geol Sci 122	Earth through Time	5	_____
Geol Sci 206	Oceanography Edu		
or Geol Sci 584	Oceanography for Edu	3-5	_____
Geol Sci 580	Earth Science for Edu		
or Geol Sci 583	Field Geol for Edu	3-5	_____
ENR 201 (100)	Intro Environmental Sci	5	_____

Electives approved by an advisor to complete a total of 30-quarter hours in earth sciences:

OTHER REQUIRED COURSES

Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 231 or 251	Organic Chemistry	3	_____
Phys 111 or 131	Mechanics & Heat	5	_____
Phys 112 or 132	Electricity & Magntsm	5	_____

LIFE/ PHYSIC SCIENCES**LIFE SCIENCES (minimum 30 quarter hours)**

Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
Biochem 511	Intro Biol Chem	5	_____
EEOB 400	Evolution	5	_____
Microbiol 509	Basic & Practical Micro	5	_____
Mol Gen 500	General Genetics	5	_____
HCS/PCMB 300	General Plant Biology	5	_____

PHYSICS (minimum 30 quarter hours)

Phys 131	Particles & Motion	5	_____
Phys 132	Electricity & Mngtism	5	_____
Phys 133	Thrml, Waves, Quantum	5	_____
Phys 261	Dyn of Part & Waves I	4	_____
Phys 262	Dyn of Part & Waves II	4	_____
Phys 516	Intermediate Physics Lab	4	_____

*Approved physics elective:***OTHER REQUIRED COURSES**

Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 231 or 251	Organic Chemistry	3	_____
Geol Sci 121	The Dynamic Earth	5	_____
Geol Sci 122	Earth Through Time	5	_____

PHYSICAL SCIENCES**CHEMISTRY (32-36 quarter hours)**

Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 123	General Chemistry	5	_____
Chem 221	Analytical Chemistry I	5	_____
Chem 251	Organic Chemistry	3	_____
Chem 254	Organic Chem Lab I		
or Biochem 521	Biochemistry Lab	3-5	_____
Chem 520 or 530	Physical Chemistry	3	_____
Biochem 511	Intro Biol Chem	5	_____

PHYSICS (minimum 30 quarter hours)

Phys 131	Particles & Motion	5	_____
Phys 132	Electricity & Magnetism	5	_____
Phys 133	Thrml, Waves, Quantum	5	_____
Phys 261	Dyn of Part & Waves I	4	_____
Phys 262	Dyn of Part & Waves II	4	_____
Phys 516	Intermediate Physics Lab	4	_____

*Approved physics elective:***OTHER REQUIRED COURSES**

Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
Geol Sci 122	Earth Through Time	5	_____
Math 153	Calc & Analyt Geom III	5	_____

INTEGRATED SCIENCES**LIFE SCIENCES**

Biol 113	Energy Transfer & Dev	5	_____
Biol 114	Form, Fnct, Div, & Ecol	5	_____
EEOB 400	Evolution	5	_____
Microbiol 509	Basic & Practical Micro	5	_____
Mol Gen 500	General Genetics	5	_____

CHEMISTRY

Biochem 511	Intro Biol Chem	5	_____
Chem 121	General Chemistry	5	_____
Chem 122	General Chemistry	5	_____
Chem 123	General Chemistry	5	_____
Chem 231 or 251	Organic Chemistry	3	_____

EARTH SCIENCE

Astron 161 or 162	Astronomy	5	_____
Geol Sci 121	The Dynamic Earth	5	_____
Geol Sci 122	Earth Through Time	5	_____
Geol Sci 206	Oceanography		
or Geol Sci 584	Oceanography for Edu	3-5	_____
ENR 201 (100)	Environmental Sci	5	_____

PHYSICS

Phys 131	Particles & Motion	5	_____
Phys 132	Electricity & Mngtism	5	_____
Phys 133	Thrml, Waves, Quantum	5	_____
Phys 261	Dyn of Part & Waves I	4	_____
Phys 262	Dyn of Part & Waves II	4	_____

Students who complete the content courses for Integrated Sciences are eligible to teach all science areas (grades 7-12)

PHYSICS

PHYSICS

Astron 291	Astrophysics	5 _____
Geog 520	Climatology	5 _____
Phys 131	Particles & Motion	5 _____
Phys 132	Electricity & Magnetism	5 _____
Phys 133	Thrm, Waves, & Quant	5 _____
Phys 261	Dyn of Part & Waves I	4 _____
Phys 262	Dyn of Part & Waves II	4 _____
Phys 263	Dyn of Part & Waves III	4 _____
Phys 517	Intro Electronics	4 _____
Phys 670 (or 108)	Physics for Teachers	3-5 _____

*Approved physics electives to complete a total of
48 hours in Physics:*

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OTHER REQUIRED COURSES

Biol 101	Introductory Biology	
or Biol 113	Energy Transfer & Devel	5 _____
Chem 121	General Chemistry	5 _____
Chem 122	General Chemistry	5 _____
Chem 123	General Chemistry	5 _____
Geol Sci 110	History of Life on Earth	
or Geol Sci 122	Earth Through Time	5 _____
Math 153	Calc & Analyt Geom III	5 _____

CHEMISTRY

CHEMISTRY

Chem 121	General Chemistry	5 _____
Chem 122	General Chemistry	5 _____
Chem 123	General Chemistry	5 _____
Chem 221	Analytical Chemistry I	5 _____
Chem 251	Organic Chemistry	3 _____
Chem 252	Organic Chemistry	3 _____
Chem 254	Organic Chem Lab I	
or Biochem 521	Biol Chem Lab	3-5 _____
Chem 520	Physical Chemistry	3 _____
Chem 521	Physical Chemistry	3 _____
Biochem 511	Intro Biol Chem	5 _____

*Approved chemistry electives to complete a total of
48 hours in Chemistry:*

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OTHER REQUIRED COURSES

Biol 101	Introductory Biology	
or Biol 113	Energy Transfer & Dev	5 _____
Geol Sci 110	History of Life on Earth	
or Geol Sci 122	Earth Through Time	5 _____
Math 153	Calc & Analyt Geom III	5 _____
Phys 131	Particles & Motion	5 _____
Phys 132	Electricity & Magnetism	5 _____
Phys 133	Thrm, Waves, & Quant	5 _____