GRAND VIEW UNIVERSITY

Secondary Endorsement
Basic Science 5-12, Biology 5-12, Chemistry 5-12, STEM 5-8

These endorsements authorize a teacher to teach in Basic Science, Biology, Chemistry, and/or STEM. Students majoring in Secondary Education must complete the prescribed pre-education requirements, the requirements for the Secondary Education major, and at least one content endorsement. This set of endorsements includes requirements for a student's first content endorsement.

Students must earn a minimum 3.0 GPA in courses required for the major and each endorsement. The grade of B or above must be earned in designated education major pre-admission and major courses, and students must earn a grade of C or above in all other courses required for the major pre-admission courses, major, and each endorsement. Please see the university catalog for additional information.

Requirements for the Endorsement: 54-71 credits

Teaching Methods Requirements (4 credits)- Required for all options

				Essential Competencies-Outcome Skills **Transfer courses do not receive outcome Skills**						
				CI	IL	W	O	Q	IC	V
	EDUC 348	Secondary Science Teaching Methods	2							
	EDUC 411	The Nature of STEM	2							

Choose Option A and/or B from Part 1 AND choose Option C and/or D from Part 2.

Science Content Requirements, PART 1- Choose Option A and/or B

Option A – Biology Content Requirements (15-16 credits):

				CI	IL	W	O	Q	IC	V
	BIOL 101	General Biology I	4	x		x				
	BIOL 102	General Biology II	4	x	x	x				
	BIOL 256	Microbiology	4	x						
	Plus one upper division (300-level+) biology course		3-4							

Option B – Chemistry Content Requirements (16-18 credits):

				CI	IL	W	O	Q	IC	V
	CHEM 111	General Chemistry I*	4	x				x		
	CHEM 112	General Chemistry II	4							
	CHEM 321	Organic Chemistry I	5							
	Plus one upper division (300-level +) chemistry course		3-5							

*Prerequisite is MATH 121 (or concurrent enrollment).

Science Content Requirements, PART 2- Choose Option C and/or D

Option C – Basic Science Endorsement (31 credits):

				CI	IL	W	O	Q	IC	V
	BIOL 101	General Biology I (required for Biology endorsement in Part 1, Option A)	4	x		x				
	BIOL 102	General Biology II (required for Biology endorsement in Part 1, Option A)	4	x	x	x				
	CHEM 111	General Chemistry I* (required for Chemistry endorsement in Part 1, Option B)	4	x				x		
	CHEM 112	General Chemistry II (required for Chemistry endorsement in Part 1, Option B)	4							
	PHYS 131	General Physics I**	4							
	PHYS 132	General Physics II**	4							
	PHSC 101	Physical and Earth Science	4	x				x		
	EDUC 408	STEM Teaching: Earth Science	3							

*Prerequisite is MATH 121 (or concurrent enrollment).
**PHYS 241 and 242, Classical Physics I and II, may be substituted for PHYS 131 and 132 but require a higher prerequisite (completion of or concurrent enrollment in MATH 231)

Option D – STEM Endorsement (12-16 credits):
Science Content:

				CI	IL	W	O	Q	IC	V
	CHEM 107 or CHEM 111	Fundamentals of Organic and Biochemistry General Chemistry I* (required for Chemistry endorsement in Part 1, Option B)	4	x x				x x		
	BIOL 101	General Biology I (required for Biology endorsement in Part 1, Option A)	4	x		x				
	PHSC 101 or PHYS 131/241 and EDUC 408	Physical and Earth Science or General Physics I/Classical Physics I AND STEM Teaching: Earth Science	4 4 or 5 3	x (241)					x (241)	
	OR									
	A minimum of 12 credits of approved college level science coursework including content in Chemistry, Biology, Physics, and Earth Science									

Category B: Mathematics/Computer Science – 8-12 credits

Essential Competencies-Outcome Skills
****Transfer courses do not receive outcome Skills****

				CI	IL	W	O	Q	IC	V
	MATH 231 and CPSC 155 or CPSC 241 or Approved CPSC course	Calculus with Analytic Geometry I and Programming Using Visual Basic or Computer Science I or Approved computer programming course	5 and 3 Or 3 or 3							
OR Take 9 credits from:										
	MATH 121	College Algebra	3	x				x		
	MATH 122	Trigonometry	3							
	STAT 241	Principles of Statistics	4	x				x		

ANY CHANGES/SUBSTITUTIONS MUST BE APPROVED BY THE GRAND VIEW UNIVERSITY EDUCATION DEPARTMENT CHAIR.

	STAT 261	Applied Statistics						x	x	
	Other approved math course									
And take:										
	CPSC 155 or CPSC 241 or Approved CPSC course	Programming Using Visual Basic or Computer Science I or Approved CPSC course	3							

Category C: Engineering and STEM Methods– 6 credits

Essential Competencies-Outcome Skills
****Transfer courses do not receive outcome Skills****

				CI	IL	W	O	Q	IC	V
	EDUC 410	Engineering, Programming, and Design for Educators	3							
	EDUC 349	Secondary Mathematics Teaching Methods	2							
	EDUC 451	Experiential STEM	1							

*Prerequisite is MATH 121 (or concurrent enrollment).