B.S. in Physics 2019-2020: Option 1 - CWILT

FIRST YEAR			
Fall	Credits Interim	Credits Spring	Credits
BIB 101Introduction to the Bible	3 GES 125Introduction to the Creative Arts	4 GES 130 Christianity Western Culture	4
GES 160 Inquiry Seminar	3	GES 140 Introduction to Wellbeing	3
MAT 124MCalculus 1	4	MAT 125 Calculus 2	4
PHY 292	4	PHY 296	4
& PHY 292D		& PHY 297	
General Physics I and General Physics I Lab		General Physics II and General Physics II Lab	
	14	4	15
SECOND YEAR			
Fall	Credits Interim	Credits Spring	Credits
COS 205Scientific Computing	3 World cultures (U) course	3 MAT 222 Differential Equations	3
MAT 223Multivariable Calculus	3	PHY 312	4
		& PHY 313	
		Modern Physics and Modern Physics Lab	
PHY 260 Careers in Engineering and Physics Seminar	1	PHY 352	4
		& PHY 353	
		(or elective) ² Computer Methods in Physics and	
		EngineeringComputer Methods in Physics and Engineering Lab	
PHY 302	4	Second Language (S) course ¹	4
& PHY 303			
Electronics and Electronics Lab			
THE 201Christian Theology	3		
THE ZOTOHIBUAH THEOLOGY			
	14	3	15
THIRD YEAR		3	15
-			15 Credits
THIRD YEAR Fall	14	Credits Spring	
THIRD YEAR	14 Credits Interim	Credits Spring 3 PHY 332	
THIRD YEAR Fall	14 Credits Interim	Credits Spring 3 PHY 332 & PHY 333	
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering	14 Credits Interim	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab	
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics	Credits Interim 4 Science, Technology and Society (K) course	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar	Credits 4
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism	Credits Interim 4 Science, Technology and Society (K) course 4	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course	Credits 4
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 4 3	Credits Spring 3 PHY 332 8 PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives	1 3 6
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course	Credits Interim 4 Science, Technology and Society (K) course 4	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course	Credits 4
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 3 15	Credits Spring 3 PHY 332 & PHY 333 (or elective) *OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives	1 3 6 14
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 3 3 15 Credits Interim	Credits Spring 3 PHY 332 8 PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring	1 3 6
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods	Credits Interim Science, Technology and Society (K) course 4 4 3 15 Credits Interim 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics	1 3 6 14
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 3 3 15 Credits Interim	Credits Spring 3 PHY 332 & PHY 333 (or elective) *OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432	1 3 6 14
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods	Credits Interim Science, Technology and Society (K) course 4 4 3 15 Credits Interim 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) *OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433	1 3 6 14
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods	Credits Interim Science, Technology and Society (K) course 4 4 3 15 Credits Interim 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) *OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective) *Topics in Contemporary OpticsTopics in	1 3 6 14
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective) 2 Numerical Methods PHY 440Quantum Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 3 3 15 Credits Interim 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) **OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective) **Topics in Contemporary OpticsTopics in Contemporary Optics Lab	1 3 6 14 Credits 4
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods PHY 440Quantum Mechanics PHY 490Research	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 4 3 3 15 Credits Interim Interim Off 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) **OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective) **Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course	Credits 4 1 3 6 14 Credits 4 0-3
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods PHY 440Quantum Mechanics PHY 490Research Interpreting Biblical themes (J) course	Credits Science, Technology and Society (K) course 4 4 4 3 15 Credits Interim Interim Interim Off 3 3 3 3	Credits Spring 3 PHY 332 & PHY 333 (or elective) *OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective) * Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course Contemporary Christian Issues (P) course	Credits 4 Credits Credits 4 Credits 4 0-3
THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 340Mechanics PHY 400Electricity and Magnetism Contemporary Western Life and thought (L) course FOURTH YEAR Fall MAT 344 (or elective)2Numerical Methods PHY 440Quantum Mechanics PHY 490Research	Credits Interim 4 Science, Technology and Society (K) course 4 4 4 4 3 3 15 Credits Interim Interim Off 3 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective) **OpticsOptics Lab PHY 365 Physics Research Seminar Comparative Systems (G) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective) **Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course	Credits 4 1 3 6 14 Credits 4 0-3

- 1. Students must complete through the second semester of a first year language course or equivalent.
- 2. Choose from MAT344 or PHY352/353
- 3. Choose from PHY332/333 or PHY432/433

This program assumes a student will use MAT124M and PHY292/292D to meet the general education Mathematics and Laboratory Science requirements.

Most financial aid packages stipulate 12 credits/semester; Minnesota state grants are reduced when credit falls below 15 credits/semester. (Interim may be split between fall and spring for the state grant purposes only.)

B.S. in Physics 2019-2020: Option 2 - Humanities

FIRST YEAR			
Fall	Credits Interim	Credits Spring	Credits
GES 140Introduction to Wellbeing	3 GES 147Humanities II: Renaissance and Reformation	4 BIB 101Introduction to the Bible	
GES 145Humanities I: Greco-Roman through Middle Ages	4	GES 244Humanities III: European Enlightenment and American	
		Culture to 1877	
MAT 124MCalculus 1	4	MAT 125 Calculus 2	
<u>PHY 292</u>	4	PHY 296	
<u>& PHY 292D</u>		<u>& PHY 297</u>	
General Physics I and General Physics I Lab		General Physics II and General Physics II Lab	
	15	4	1
SECOND YEAR			
Fall	Credits Interim	Credits Spring	Credit
COS 205Scientific Computing	3 World Cultures (U) course	3 MAT 222Differential Equations	
GES 246Humanities IV: Modern and Contemporary Western Culture	4	PHY 312	4
		<u>& PHY 313</u>	
		Modern Physics and Modern Physics Lab	
MAT 223Multivariable Calculus	3	PHY 352	4
		<u>& PHY 353</u>	
		² Computer Methods in Physics and Engineering and Computer	
		Methods in Physics and Engineering Lab	
PHY 260 Careers in Engineering and Physics Seminar	1	Second Language (S) course	
<u>PHY 302</u>	4		
<u>& PHY 303</u>			
Electronics and Electronics Lab			
Electronics and Electronics Lab	15	3	15
Electronics and Electronics Lab THIRD YEAR			
Electronics and Electronics Lab THIRD YEAR Fall	Credits Interim	Credits Spring	15 Credits
Electronics and Electronics Lab THIRD YEAR		Credits Spring 3 PHY 332	
Electronics and Electronics Lab THIRD YEAR Fall	Credits Interim	Credits Spring 3 PHY 332 & PHY 333	
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering	Credits Interim 4 Science, Technology and Society (K) course	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism	Credits Interim 4 Science, Technology and Society (K) course	Credits Spring 3 PHY 332 8 PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course	Credits Interim 4 Science, Technology and Society (K) course 4 3	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course	Credits Interim 4 Science, Technology and Society (K) course 4 3 1	Credits Spring 3 PHY 332 8 PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 1 3	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives	Credit
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective	Credits Interim 4 Science, Technology and Society (K) course 4 3 1	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 3 1 5	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 3 15 Credits Interim	Credits Spring 3 PHY 332 & PHY 333 (or elective) OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 11 3 15 Credits Interim 4 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 3 15 Credits Interim	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 11 3 15 Credits Interim 4 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433	Credit:
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 11 3 15 Credits Interim 4 Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective)³Topics in Contemporary OpticsTopics in	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics PHY 440Quantum Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 1 3 15 Credits Interim Interim Off	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective)³Topics in Contemporary OpticsTopics in Contemporary Optics Lab	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics PHY 440Quantum Mechanics PHY 440Quantum Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 1 3 15 Credits Interim Interim Off 4 3	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective)³Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course	Credits
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics PHY 440Quantum Mechanics PHY 440Quantum Mechanics PHY 490Research Cross Cultural Experience (Z) course	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 1 3 15 Credits Interim 4 Interim Off 4 3 0-3	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective)³Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course Contemporary Christian Issues (P) course	Credit:
Electronics and Electronics Lab THIRD YEAR Fall PHY 320Mathematical Methods in Physics and Engineering PHY 400Electricity and Magnetism Comparative Systems (G) course Leisure and Lifetime Sports (Q) course Elective FOURTH YEAR Fall PHY 340Mechanics PHY 440Quantum Mechanics PHY 440Quantum Mechanics	Credits Interim 4 Science, Technology and Society (K) course 4 3 1 1 3 15 Credits Interim Interim Off 4 3	Credits Spring 3 PHY 332 & PHY 333 (or elective)³OpticsOptics Lab PHY 365 Physics Research Seminar Interpreting Biblical Themes (J) course Electives 3 Credits Spring PHY 410Thermodynamics PHY 432 & PHY 433 (or elective)³Topics in Contemporary OpticsTopics in Contemporary Optics Lab Artistic Experience (A) course	Credits

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