## B.S. in Electrical Engineering 2020-2021: Option 1 - CWILT

FIRST YEAR		lea :		lo :	
Fall		Interim	Credits		Credits
GES 125 Introduction to the Creative Arts	4	GES 160 Inquiry Seminar	3	BIB 101 Introduction to the Bible	3
GES 140 Introduction to Wellbeing	3			GES 130 Christianity Western Culture	4
MAT 124M Calculus 1	4			MAT 125 Calculus 2	4
PHY 292	4			PHY 296	4
<u>&amp; PHY 292D</u>				<u>&amp; PHY 297</u>	
General Physics I and General Physics I Lab				General Physics II and General Physics II Lab	
				Artistic Experience (A) course	0-3
	15		3		15-18
SECOND YEAR	0 17	le contraction of the contractio	0 114	lo :	0 17
Fall		Interim	Credits		Credits
COS 205 Scientific Computing	3	ENR 160 Introduction to Engineering	3	ENR 306	4
				<u>&amp; ENR 307</u>	
				Digital Logic and Design and Digital Logic and Design Lab	
ENR 260 Careers in Engineering and Physics Seminar	1			MAT 223 Multivariable Calculus	3
MAT 224 Differential Equations with Linear Algebra	4			PHY 312	4
				& PHY 313	
Day and	4			Modern Physics and Modern Physics Lab Science, Technology, and Society (K) course	
PHY 302 & PHY 303	4			Science, Technology, and Society (K) course	
& PHY 303 Electronics and Electronics Lab					
Contemporary Western Life and Thought (L) course	3			Cross-cultural Experience (Z) Course	0-3
Contemporary Western Life and Thought (L) course	15				14-17
	15		3		14-17
THIRD YEAR	0 17	lea :	0 114	lo :	0 17
Fall		Interim World Cultures (U) course	Credits		Credits
ENR 320 Mathematical Methods in Physics and Engineering ENR 336 Signals and Systems			3	ENR 326 Circuit Analysis Simulations	
ENR 336 Signals and Systems	1			ENR 352 & ENR 353	"
				Computer Methods in Physics and Engineering and Computer Methods in	
				Physics and Engineering Lab	
ENR 424	4			Physics and Engineering Lab  ENR 446	4
<u>&amp; ENR 425</u>	4			ENR 446 & ENR 447	4
	4			ENR 446	4
<u>&amp; ENR 425</u>	4			ENR 446 & ENR 447	2
& ENR 425 Electronic Materials and Devices and Electronic Materials and Devices				ENR 446  & ENR 447  Control Systems and Control Systems Lab	
& ENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436	4			ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology	3
& ENR 425     Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     & ENR 437     Microprocessors and Microprocessors Lab			3	ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology	
& ENR 425     Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     & ENR 437     Microprocessors and Microprocessors Lab  FOURTH YEAR	16			ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology	3
& ENR 425 Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     & ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall	16 Credits	Interim	3 Credits	ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring	15 Credits
ENR 425 Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems	16 Credits	Interim Interim Off		ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring  ENR 490 Engineering Design Project	15 Credits
& ENR 425     Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     & ENR 437     Microprocessors and Microprocessors Lab  FOURTH YEAR Fall     ENR 336 Signals and Systems     ENR 424	16 Credits	Interim Interim Off		ENR 446  & ENR 447 Control Systems and Control Systems Lab THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332	15 Credits
EIRR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 ENR 437 Microprocessors and Microprocessors Lab  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 & ENR 425	16 Credits	Interim Interim Off		ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring  ENR 490 Engineering Design Project PHY 332  & PHY 333	15 Credits
RENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 RENR 437 Microorocessors and Microorocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 RENR 425 Electronic Materials and Devices and Electronic Materials and Devices	16 Credits	Interim Interim Off		ENR 446  & ENR 447 Control Systems and Control Systems Lab THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332	15 Credits
& ENR 425     Electronic Materials and Devices and Electronic Materials and Devices     ENR 436     & ENR 437     Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall     ENR 336 Signals and Systems     ENR 424     & ENR 425     Electronic Materials and Devices and Electronic Materials and Devices     Laboratory	16 Credits	Interim Interim Off		ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring  ENR 490 Engineering Design Project PHY 332  & PHY 333	15 Credits
RENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 RENR 437 Microorocessors and Microorocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 RENR 425 Electronic Materials and Devices and Electronic Materials and Devices	16 Credits	Interim Interim Off		ENR 446  & ENR 447 Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332 & PHY 333 Optics and Optics Lab	Credits
EINR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 EENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 EENR 425 Electronic Materials and Devices and Electronic Materials and Devices Laboratory ENR 436	16 Credits	Interim Interim Off		ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring  ENR 490 Engineering Design Project  PHY 332  & PHY 333  Optics and Optics Lab  Interpreting Biblical Themes (J) course	Credits
8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices Laboratory ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab ENR 465 Engineering Design Seminar	16 Credits	Interim Interim Off		ENR 446  & ENR 447 Control Systems and Control Systems Lab THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332 & PHY 333 Optics and Optics Lab Interpreting Biblical Themes (J) course  Contemporary Christian Issues (P) course	18 Credits
8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 425 Electronic Materials and Devices and Electronic Materials and Devices Laboratory ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab	Credits 4	Interim Interim Off		ENR 446  & ENR 447  Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring  ENR 490 Engineering Design Project  PHY 332  & PHY 333  Optics and Optics Lab  Interpreting Biblical Themes (J) course  Contemporary Christian Issues (P) course  Leisure and Lifetime Sport (Q) course	Credits
8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices Laboratory ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab ENR 465 Engineering Design Seminar	Credits 4 4 4	Interim Interim Off	Credits	ENR 446  & ENR 447 Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332  & PHY 333 Optics and Optics Lab Interpreting Biblical Themes (J) course  Contemporary Christian Issues (P) course Leisure and Lifetime Sport (Q) course  Second Language (S) course *1	Credits
8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab.  FOURTH YEAR Fall ENR 336 Signals and Systems ENR 424 8. ENR 425 Electronic Materials and Devices and Electronic Materials and Devices Laboratory ENR 436 8. ENR 437 Microprocessors and Microprocessors Lab ENR 465 Engineering Design Seminar	Credits  4	Interim Interim Off		ENR 446  & ENR 447 Control Systems and Control Systems Lab  THE 201 Christian Theology  Spring ENR 490 Engineering Design Project PHY 332  & PHY 333 Optics and Optics Lab Interpreting Biblical Themes (J) course  Contemporary Christian Issues (P) course Leisure and Lifetime Sport (Q) course  Second Language (S) course *1	Credits

<sup>\*1.</sup> Students must complete through the second semester of a first year language course or equivalent.

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

## B.S. in Electrical Engineering 2020-2021: Option 2 - Humanities

Section   Content   Spring	FIRST YEAR		0 0 1			
Company   Comp	Fall	Credits	Interim	Credits	Spring	Credits
SEA 154 Immunities If Greece Recover through Middle Ages   4	GES 140 Introduction to Wellbeing	3	GES 147 Humanities II: Renaissance and Reformation	4	BIB 101 Introduction to the Bible	3
Mail 124M Calculus 1			_			4
PRY 292						
Annual Property of the Common Common Physical Lab  Common and Liferina Sport (2) course  1 1  SECOND VECR  10  10  SECOND VECR  10  SECOND VEC	MAT 124M Calculus 1	4				4
Re PMY 2012  Lettiure and a General Physics II Lab  Lettiure and Lettiure (Lettiure Sport (C) course  16  16  16  16  16  16  17  18  18  18  18  18  18  18  18  18	PHY 292	4			PHY 296	4
Comment Physics I and General Physics II and General Physics II Lub    Comment   Comme	& PHY 292D				& PHY 297	
SECOND YEAR Fail Control Spring Condition Service Computing Condition Spring Condition Spri	General Physics I and General Physics I Lab					
SECOND YEAR  Oredits   Spring   Oredits   Oredits   Spring   Oredits   Oredits   Spring   Oredits   Oredits   Oredits   Spring   Oredits   Or	Leisure and Lifetime Sport (Q) course	1				
Mark 72 24 Offerential Equations with Linear Algebra  AND 72 24 Offerential Equations with Linear Algebra  AND 72 24 Offerential Equations with Linear Algebra  A PMY 302  A PMY 303  A PMY		16		4		15
MAY 224 Differential Equations with Linear Algebra 4 RNR 160 Introduction to Engineering 3 COS 205 Scientific Computing ENR 306 RNR 307 Digital Logic and Design and Digital Logic and Design Line Control Experiments In Control In Control Experiments In	SECOND YEAR					
PRY 302 R PRY 303 R PRY 304 R PRY 304 R PRY 305 R PRY 30	Fall	Credits	Interim	Credits	Spring	Credits
PRY 302 R PRY 303 R PRY 304 R PRY 304 R PRY 305 R PRY 30	MAT 224 Differential Equations with Linear Algebra	4	FNR 160 Introduction to Engineering	3	COS 205 Scientific Computing	3
R HY 303 Beterrors and Electronics Lab GES 246 Humanities IV. Modern and Contemporary Western Culture  World Cultures (U) course  World Cultures (U) course  World Cultures (U) course  13					· · · · · ·	4
Deptit Logic and Design and Design Logic and Design and Design Logic and Logic and Design Logic and Logic and Design Logic and Logic a						
MAT 223 Multivariable Calculus  World Columes (U) course    Pif 313						
Mode Cultures (U) course  3		4				3
Bending   Bend	025 240 Humanities IV. Wodern and contemporary Western culture				WAT 225 Width and Calculus	
Representation of the projects and Modern Physics Lab Physics Lab Mode	World Cultures (U) course	3			PHY 312	4
THIRD YEAR Fall Credits   Interim Credits   Interim Credits   Spring						
THIRD YEAR  Fall Credits Interim Credits Spring Credits Analysis Simulations Credits Spring Cred					Modern Physics and Modern Physics Lab	
THIRD YEAR  Fall  Credits Interim  Credits Spring  ENR 326 Circuit Analysis Simulations  ENR 326 Signals and Systems  ENR 326 ENR 427  Control Systems and Control Systems Lab  ENR 422  ENR 423  ENR 425  ENR 425  ENR 425  ENR 425  ENR 426  ENR 426  ENR 427  Control Systems Lab  ENR 326  ENR 427  Computer Methods in Physics and Engineering and Computer Methods in above the spring and Computer Methods in above					Cross-cultural Experience (Z) course	0-3
Fall Credits Interim Credits I		15		3		14-17
ENR 320 Mathematical Methods in Physics and Engineering  A Comparative Systems (G) course  ENR 346 Signals and Systems  ENR 424  & RNR 425  ENR 425  ENR 425  ENR 426  & ENR 427  Control Systems and Control Systems Lab  ENR 352  & ENR 352  & ENR 352  Computer Methods in Physics and Engineering and Computer Methods in Physics and Engineering Lab  ENR 436  & ENR 437  Microprocessors and Microprocessors Lab   THE 201 Christian Theology  FOURTH YEAR  Fall  Credits Interim  Credits Syring  Credi	THIRD YEAR					
ENR 336 Signals and Systems  4  ENR 424  ENR 425  ENR 426  ENR 436  ENR 352  ENR 352  ENR 353  Computer Methods in Physics and Engineering and Engineering and Computer Methods in Physics and Engineering and	Fall	Credits	Interim	Credits	Spring	Credits
ENR 424  & ENR 325  & ENR 325  & ENR 335  Computer Methods in Physics and Engineering and Computer Methods in Physics and Engineering Lab	ENR 320 Mathematical Methods in Physics and Engineering	4	Comparative Systems (G) course	3	ENR 326 Circuit Analysis Simulations	4
Control Systems and Control Systems Lab  ENR 352 8. ENR 255 1. Electronic Materials and Devices and Engineering Lab  ENR 436 8. ENR 437 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 437 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 438 8. ENR 437 8. ENR 437 8. ENR 438 8. ENR 43	ENR 336 Signals and Systems	4			ENR 446	4
ENR 424 8 ENR 425 8 ENR 425 8 ENR 426 Electronic Materials and Devices and Electronic Materials and Devices Laboratory  ENR 436 8 ENR 437 Microprocessors and Microprocessors Lab  16 17 18 18 18 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10						
Renal Credits Re						
Electronic Materials and Devices and Electronic Materials and Devices and Electronic Materials and Devices and Engineering and Computer Methods in Physics and Engineering And		4				4
Laboratory Physics and Engineering Lab ENR 436 & HE 201 Christian Theology  ENR 437 Microprocessors and Microprocessors Lab  16 S Spring Credits  FOURTH YEAR  Fall Credits Interim Off Credits ENR 316 & Spring Credits Spring Credits ENR 317 Analog Circuitry and Design and Analog Circuitry Design Lab ENR 465 Engineering Design Seminar  PHY 400 Electricity and Magnetism Analog Circuitry And Magnetism Analog Circuitry Design Lab  ENT 405 Engineering Design Seminar  Analog Circuitry Analog Circuitry Design Lab  ENT 406 Engineering Design Project  Analog Circuitry Analog Circuitry Design Analog Circuitry						
ENR 436 & ENR 437 Microprocessors and Microprocessors Lab  16  17						
Microprocessors and Microprocessors Lab  16  16  3  Credits  Spring  Credits  Spring  Credits  ENR 316  & ENR 316  & ENR 317  Analog Circuitry and Design and Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  1  PHY 332  & PHY 333  Optics and Optics Lab  PHY 400 Electricity and Magnetism  Interpreting Biblical Themes (J) course  3  Contemporary Christian Issues (P) course  Second Language (S) course *1  14-14	·	4				3
Microprocessors and Microprocessors Lab  16  16  17  FOURTH YEAR  Fall  Credits  ENR 316  & ENR 316  & ENR 317  Analog Circuitry and Design and Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  PHY 400 Electricity and Magnetism  Interpreting Biblical Themes (J) course  10  Second Language (S) course *1  11  12  16  17  17  18  19  19  19  19  19  19  19  19  19	& ENR 437					
FOURTH YEAR  Fall Credits Interim Credits Spring Credit ENR 316 & ENR 317 Analog Circuitry and Design and Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  1 PHY 332  8 PHY 333 Optics and Optics Lab PHY 400 Electricity and Magnetism Interpreting Biblical Themes (J) course  1 Second Language (S) course 1 Second Language (S) course 1 1 14-1	Microprocessors and Microprocessors Lab					
Fall Credits   Nerim   Credits   Spring   Credits   ENR 316 & ENR 317   Interim Off   ENR 490 Engineering Design Project   ENR 465 Engineering Design Seminar   1   PHY 332		16		3		15
Fall Credits   Nerim   Credits   Spring   Credits   ENR 316 & ENR 317   Interim Off   ENR 490 Engineering Design Project   ENR 465 Engineering Design Seminar   1   PHY 332	FOURTH YEAR					
ENR 316 & ENR 317 Analog Circuitry and Design and Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  1 PHY 332  8 PHY 333 Optics and Optics Lab Onterpreting Biblical Themes (J) course  3 Contemporary Christian Issues (P) course  10 Second Language (S) course 1 11 14-1	Fall	Credite	Interim	Credits	Spring	Credits
& ENR 465 Engineering Design Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  PHY 332  & PHY 333 Optics and Optics Lab  PHY 400 Electricity and Magnetism Interpreting Biblical Themes (J) course  Interpreting Biblical Themes (J) course  Second Language (S) course *1  14-1						2
Analog Circuitry and Design and Analog Circuitry Design Lab  ENR 465 Engineering Design Seminar  1  PHY 332  8 PHY 333 Optics and Optics Lab  PHY 400 Electricity and Magnetism Artistic Experience (A) course Octontemporary Christian Issues (P) course  Contemporary Christian Issues (P) course Second Language (S) course *1  12  0  14-1		4	Inclini On	U	EINK 490 ENGINEERING DESIGN PROJECT	3
ENR 465 Engineering Design Seminar  1  8 PHY 332 8 PHY 333 Optics and Optics Lab Optics	Analog Circuitry and Design and Analog Circuitry Design Lab					
Reprivation of the properties		1			DHV 222	4
PHY 400 Electricity and Magnetism         4         Artistic Experience (A) course         0           Interpreting Biblical Themes (J) course         3         Contemporary Christian Issues (P) course         5           Second Language (S) course *1         12         0         14-1	LINK 400 Engineering Design Seminal				1111 332	
PHY 400 Electricity and Magnetism         4         Artistic Experience (A) course         0           Interpreting Biblical Themes (J) course         3         Contemporary Christian Issues (P) course         5           Second Language (S) course *1         12         0         14-1					& PHY 333	
Contemporary Christian Issues (P) course						
Interpreting Biblical Themes (J) course   3   Contemporary Christian Issues (P) course   Second Language (S) course *1   12   0   14-1	PHY 400 Electricity and Magnetism	4			Artistic Experience (A) course	0-3
12 0 14-1	Interpreting Biblical Themes (J) course	3			Contemporary Christian Issues (P) course	3
					Second Language (S) course *1	4
Total Credits 127-133		12		0		14-17
	Total Credits 127-133		'			

<sup>\*1.</sup> Students must complete through the second semester of a first year language course or equivalent.

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