

III. Computing, Mathematics, and Physics

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Students with Advanced Placement credit:

Requirements for the following courses can be met through Advanced Placement exam credit. The College awards the following credit for AP scores:

AP Subject	AP Exam Score	Hrs Credit	Messiah University Courses Credited
Computer Science A	3,4,5	3	CIS 181
Math: Calculus AB	3	3	MATH 108
	4, 5	4	MATH 111 (enroll in 112)
Math: Calculus BC	3 with AB subscore 3	3	MATH 108
	3 with AB subscore 4,5	4	MATH 111 (enroll in 112)
	4,5	8	MATH 111, 112 (enroll in 211)
Physics 1	3, 4, 5	4	PHYS 201* (enroll in 202)
Physics 2	3, 4, 5	4	PHYS 202*
Physics C: Mechanics	3,4,5	4	PHYS 211 (enroll in PHYS 212)
Physics C: Electricity & Magnetism	3,4,5	4	PHYS 212
Statistics	3,4,5	3	STAT 269 (enroll in STAT 291)** or STAT 281

* Mathematics majors are required to take the PHYS 211/212 sequence rather than PHYS 201/202. However, if a student in the mathematics major receives AP credit for both PHYS 201 and 202, the 211/212 requirements are waived.

** AP Statistics is not a calculus-based course or exam. Mathematics majors who receive AP credit for Statistics are still required to take STAT 291 for the major requirement.

8-semester Plans

Actuarial Science (B.S.)

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year - Spring		
COMM 105	Fundamentals of Oral Communication*	3	MATH 112	Calculus II with lab	4
MATH 111	Calculus I with lab	4	MATH 198	Introduction to Mathematical Proof	2
MATH 196	Mathematics Seminar	2	ACCT 131	Survey of Accounting	3
IDFY 101	First-Year Seminar*	3	Varies	2 nd semester of language*	3
Varies	1 st semester of language*	3	IDCR 151	Created and Called for Community*	3
			ECON 120	Principles of Macroeconomics	3
		TOTAL			TOTAL
		15			18
Sophomore –Fall			Sophomore – Spring		
MATH 211	Calculus III with lab	4	MATH 261	Linear Algebra	3
STAT 291	Probability and Statistics	3	Varies	3 rd semester of language or cross-cultural*	3
ENGL 1xx	QuEST Literature *	3	Varies	Philosophy or Religion meeting QuEST*	3
ECON 220	Principles of Microeconomics	3	STAT 292	Inferential Statistics	3
BIBL 20x	Knowledge of the Bible*	3	CIS 181	Computer Programming I	3
		TOTAL			TOTAL
		16			15
Junior – Fall			Junior – Spring		
FINA 305	Financial Management	3	THEO 205-238	Christian Beliefs*	3
HIST 1xx	QuEST History meeting QuEST*	3	INTE 391	Internship	3
MATH 350 or STAT 417	Mathematics of Finance OR Mathematical Statistics**	3	STAT 324	Advanced Statistical Methods**	3
PHYS 211	General Physics I with lab	4	Varies	Art, Music, Theatre or Dance meeting QuEST*	3
Varies	Free elective	3	Varies	Free elective	3
		TOTAL			TOTAL
		16			15
Senior – Fall			Senior – Spring		
MATH 350 or STAT 417	Mathematics of Finance I OR Mathematical Statistics**	3	STAT 324	Advanced Statistical Methods**	3
IDNW 2xx	Non-western Studies*	2-3	MATH 496	Mathematical Capstone	2
WELL 1xx	Wellness*	1	Varies	Ethics/WV/Pluralism*	3
MATH 362	Algebraic Structures	3	MATH 412	Real Analysis	3
FINA 307/351/405	Upper Level Finance Elective	3	Varies	Free elective	3
Varies	Free elective	3			
		TOTAL			TOTAL
		15-16			14

* QuEST requirement

** These pairs of courses are offered in alternate years. MATH 350 should be taken Fall even years and STAT 417/345 should be taken Fall odd years/Spring even years.

NOTE: The major includes 13-14 free elective credits. These should be used to fill the lower credit semesters. Also, the Department suggests that student in this major could consider a minor in a related area to make best use of the elective credits and additional space in this plan.

**Computer and Information Science (B.S.) Business Information Systems
Concentration
8-semester Plan**

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year – Spring		
CIS 180	Introduction to CIS	3	CIS 190	Strategic Use of Info Technology	3
CIS 181	Computer Programming I	3	COMM 105	Oral Communication*	3
IDFY 101	First Year Seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of language*	3	Varies	2 nd semester of language*	3
Varies	QuEST Philosophy or Religion*	3	LAB xxx	Lab Science*	3-4
TOTAL		15	TOTAL		15-16
Sophomore – Fall			Sophomore – Spring		
BUSA 360	Operations Management §	3	BUSA 120	Principles of Management	3
ACCT 141	Financial Accounting	3	MATH 107	Applied Mathematics for Management §	3
ECON 120	Macroeconomics	3	MRKT 130	Marketing Principles	3
Varies	3 rd semester of language or cross-cultural*	Varies	BIBL 20x	Knowledge of the Bible*	3
CIS 284	Computer Programming II §	3	Varies	1 st QuEST social science/history*	3
TOTAL		15	TOTAL		15
Junior – Fall			Junior – Spring		
CIS 332	Database Concepts	3	CIS 381	Information Systems and Managers	3
STAT 281	Applied Statistics for Managers	3	CIS xxx	CIS Elective (excluding CIS 171) 2 of 3	3
CIS xxx	CIS Elective (excluding CIS 171) 1 of 3	3	Varies	QuEST Literature *	3
Varies	2 nd QuEST social science/history*	3	THEO 2xx	Christian Beliefs*	3
Varies	Art, Music, or Theatre meeting QuEST*	3	WELL 1xx	Wellness*	1
IDNW xxx	Non-Western Studies*	2-3		Free elective 1 of 5	3
TOTAL		17-18	TOTAL		16
Senior – Fall			Senior – Spring		
CIS 411	Systems Analysis and Design Concepts	3	IDS xxx	Ethics / Pluralism / World Views*	3
CIS xxx	CIS elective (excluding CIS 171) 3 of 3	3	CIS 472	Application Development II	3
INTE 394	Internship	4		Free elective 3 of 5	3
CIS 471	Application Development I	3		Free elective 4 of 5	3
	Free elective 2 of 5	3		Free elective 5 of 5	3
TOTAL		16	TOTAL		15

*QuEST requirement

†Offered alternate years as indicated

§ Concentration choice option: other courses in other semesters may fulfill this same requirement

Computer and Information Science (B.S.) Computer Science Concentration
8-semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year – Spring		
CIS 180	Introduction to CIS	3	CIS 284	Computer Programming II	3
CIS 181	Computer Programming I	3	IDCR 151	Created and Called for Community*	3
IDFY 101	First Year Seminar*	3	COMM 105	Oral Communication*	3
Varies	1 st semester of language*	3	Varies	2 nd semester of language*	3
Varies	QuEST Philosophy or Religion*	3	Varies	1 st QuEST social science/history*	3-4
TOTAL		15	TOTAL		15-16
Sophomore – Fall			Sophomore – Spring		
CIS 385	Data Structures and Algorithms	3	MATH 180	Discrete Math	3
MATH 111	Calculus I	3	CIS 381	Information Systems and Managers	3
Varies	3 rd semester of language or cross-cultural*	3	PHYS 202	Introductory Physics II §	3
ENGL 1xx	QuEST Literature *	3	Varies	2 nd QuEST social science/history*	3
BIBL 20x	Knowledge of the Bible*	3	THEO 2xx	Christian Beliefs*	3
TOTAL		15	TOTAL		15
Junior – Fall			Junior – Spring		
CIS 332	Database Concepts	3	CIS 411	Systems Analysis and Design Concepts	
CIS 384	Elements of Computer Systems	3	CIS 482	Organization of Programming Languages	3
CIS 418	Artificial Intelligence † § (even fall) or Free elective	3	Varies	Art, Music, or Theatre meeting QuEST*	3
STAT 291	Statistics for Math Sciences §	3	IDNW xxx	Non-Western Studies	3
varies	Free Elective 1 of 6	3	WELL 1xx	Wellness*	1
			varies	Free elective 2 of 6	3
TOTAL		15	TOTAL		13
Senior – Fall			Senior – Spring		
CIS 471	Application Development I	3	CIS 416	OS & Comp Architecture † (odd spring)	3
INTE 394	Internship	4	CIS 472	Application Development II	3
varies	Free elective 3 of 6	3	IDS xxx	Ethics / Pluralism / World Views*	3
varies	Free elective 4 of 6	3	varies	Free elective 5 of 6	3
			varies	Free elective 6 of 6	3
TOTAL		13	TOTAL		15

*QuEST requirement

†Offered alternate years as indicated

§ Concentration choice option: other courses in other semesters may fulfill this same requirement

Computer and Information Science (B.S.) Software Development Concentration
8-semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year – Spring		
CIS 180	Introduction to CIS	3	CIS 191	Web Development I: Client Side	3
CIS 181	Computer Programming I	3	CIS 284	Computer Programming II	3
IDFY 101	First Year Seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of language*	3	COMM 105	Oral Communication*	3
Varies	1 st QuEST social science/history*	3	Varies	2 nd semester of language*	3
TOTAL		15	TOTAL		15
Sophomore – Fall			Sophomore – Spring		
CIS 283	Business Systems Applications † (odd fall)	3	CIS 381	Information Systems and Managers	3
CIS 291	Web Development II: Server Side	3	MATH 111	Calculus I §	4
CIS 385	Data Structures and Algorithms	3	MATH 180	Discrete Math	3
Varies	3 rd semester of language or cross-cultural*	3	LAB xxx	Lab Science*	3
ENGL 1xx	QuEST Literature *	3	Varies	QuEST Philosophy or Religion*	3
WELL 1xx	Wellness*	1			
TOTAL		16	TOTAL		16
Junior – Fall			Junior – Spring		
CIS 332	Database Concepts	3	CIS 482	Organization of Programming Languages	3
CIS 384	Elements of Computer Systems§	3	Varies	2 nd QuEST social science/history*	4
CIS 335	Software Engineering † (even fall)	4	THEO 2xx	Christian Beliefs*	3
CIS 418	Artificial Intelligence † § (even fall)	3	varies	Arts*	3
	Free Elective 1 of 6	3	CIS 411	Systems Analysis and Design Concepts	3
TOTAL		16	TOTAL		16
Senior – Fall			Senior – Spring		
CIS 471	Application Development I	3	IDS xxx	Ethics / Pluralism / World Views*	3
INTE 394	Internship	3		Free elective 4 of 6	3
IDNW xxx	Non-Western Studies*	2-3		Free elective 5 of 6	3
BIBL 20x	Knowledge of the Bible*	3		Free elective 6 of 6	3
	Free elective 2 of 6	3	CIS 472	Application Development II	3
	Free elective 3 of 6	3			
TOTAL		17-18	TOTAL		15

*QuEST requirement

†Offered alternate years as indicated

§ Concentration choice option: other courses in other semesters may fulfill this same requirement

Computer and Information Science (B.S.) Web Development Concentration

8-semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year – Spring		
CIS 180	Introduction to CIS	3	CIS 191	Web Development I: Client Side	3
CIS 181	Computer Programming I	3	IDCR 151	Created and Called for Community*	3
IDFY 101	First Year Seminar*	3	COMM 105	Oral Communication*	3
varies	1 st semester of language*	3	varies	2 nd semester of language	3
Varies	1 st QuEST social science/history*	3	ENGL 1xx	QuEST Literature *	3
			MATH 107§	Applied Mathematics for Management	3
TOTAL		15	TOTAL		18
Sophomore – Fall			Sophomore – Spring		
CIS 291	Web Development II: Server Side	3	ART xxx	Art course approved for concentration^	3
BUSA 120	Principles of Management	3	MRKT 130	Marketing Principles	3
varies	3 rd semester of language or cross-cultural*	3	LAB xxx	Lab Science*	3
varies	2 nd QuEST social science/history*	3	Varies	QuEST Philosophy or Religion*	3
BIBL 20x	Knowledge of the Bible*	3	CIS 150**	Introduction to Cybersecurity	3
CIS 255	NIX System Administration and Security	3			
TOTAL		18	TOTAL		15
Junior – Fall			Junior – Spring		
CIS 283§	Business Systems Applications † (odd fall)	3	CIS 381	Information Systems and Managers	3
CIS 332	Database Concepts	3	CIS 343	E-Commerce † (odd spring)	3
ART xxx	Art course approved for concentration^	3	THEO 2xx	Christian Beliefs*	3
IDNW xxx	Non-Western Studies*	2-3	WELL 1xx	Wellness*	1
CIS 257**	Information Assurance	3	CIS 411	Systems Analysis and Design Concepts	3
TOTAL		17-18	TOTAL		13
Senior – Fall			Senior – Spring		
CIS 471	Application Development I	3	CIS 472	Application Development II	3
INTE 394	Internship	3	IDS xxx	Ethics / Pluralism / World Views*	3
varies	Free elective 1 of 6	3	varies	Free elective 4 of 6	3
varies	Free elective 2 of 6	3	varies	Free elective 5 of 6	3
varies	Free elective 3 of 6	3	varies	Free elective 6 of 6	3
TOTAL		16	TOTAL		15

*QuEST requirement

†Offered alternate years as indicated

^ART 112, 237, 312, 336 337 fulfill concentration requirements

§ Concentration choice option: other courses in other semesters may fulfill this same requirement

**Option 1 of 3: Other course combinations may fulfill this same requirement

Computer Science with Teaching Certification (B.A.) 8-Semester Plan

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall			First Year – Spring		
IDFY 101	First year seminar [^]	3	IDCR 151	Created and Called for Community [^]	3
Varies	1 st language requirement*	3	Varies	2 nd semester of language [^]	3
COMM 105	Foundations of Oral Communication [^]	3	WELL 1xx	Wellness [^]	1
CIS 180	Introduction to Computer Information Science [^]	3	CIS 150***	Introduction to Cybersecurity	2
CIS 181	Programming I	3	CIS 191	Web Development: Client Side	3
			CIS 284	Programming II	3
			<i>Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.</i>		
Total		15	Total		15
Sophomore – Fall			Sophomore – Spring		
BIBL 20x	Knowledge of the Bible [^]	3	Varies	3 rd semester of language or cross-cultural [^] or Philosophy or Religion [^]	3
CIS 251**	Hardware & Software (odd Falls)	3	Varies	Art, Music, or Theatre meeting QuEST [^]	3
CIS 291**	Web Development: Server Side	3	ENGL 1xx	QuEST Literature [^]	3
CIS 283**	Business Systems Applications	3	EDUC 203*	Educational Psychology* [^]	3
STAT 269	Introductory Statistics	3	EDUC 208	Teaching English Language Learners	3
			EDSP 207*	Introduction to Special Education	3
			TEP 210*	Sophomore Field Experience	0
			<i>Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.</i>		
Total		15	Total		18
Junior – Fall			Junior – Spring		
EDUC 346	Socio-Cultural Perspectives on Education [^]	3	EDUC 331*	Instruct. Design & Assessment	3
Varies	3 rd semester of language or cross-cultural [^] or Philosophy or Religion [^]	3	EDSP 307*	Inclusion Practices	3
HDFS 311	Adolescent Development	3	TEP 310*	Junior Field Experience	0
CIS 332**	Database Concepts	3	CIS 411***	Systems Analysis & Design Concepts	3
CIS 384**	Elements of Computer Systems	3	MATH 180***	Discrete Mathematics	3
CIS 415**	Data Communication & Networking (even Fall)	3	MATH 307***	Secondary Math Instruction	2
			Varies	Laboratory Science meeting QuEST [^]	3-4
			<i>Submit Professional Semester application electronically by 1/15.</i>		
Total		18	Total		17-18
Senior – Fall			Senior – Spring		
	<i>Professional Semester****</i>		CIS 381	Information Systems and Managers	3
TEP 410*	Secondary Pre-Student Teaching	0	CIS 385	Data Structure and Algorithms	3
TEP 435*	Student Teaching	9	Varies	Christian Beliefs [^]	3
EDUC 420*	Professional Issues in Education	2	Varies	Non-Western Studies [^]	2-3
TEP 407*	Student Teaching Seminar	1	Varies	2 nd QuEST social science/history [^]	3
Total		12	Total		14-15

*Block of courses must be taken concurrently; can be taken in fall or spring.

**Fall-only courses

***Spring-only courses

**** No other courses may be taken in this semester.

[^]Course fulfilling QuEST requirement

Cybersecurity (B.S.) (Odd year start)
8 Semester Plan

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall - Odd			First Year – Spring - Even		
CIS 180	Introduction to CIS	3	CIS 150***	Introduction to Cybersecurity	3
CIS 181	Programming I	3	CIS 284	Programming II	3
IDFY 101	First Year Seminar [^]	3	IDCR 151	Created and Called for Community [^]	3
COMM 105	Foundations of Oral Communication [^]	3	Varies	2 nd semester of language [^]	3
Varies	1 st semester of language [^]	3	Varies	QuEST Philosophy or Religion [^]	3
		Total			Total
		15			15
Sophomore – Fall - Even			Sophomore – Spring - Odd		
CIS 255**	NIX System Administration & Security	3	MATH 180***	Discrete Math	3
CIS 332**	Database Concepts	3	CIS 257***	Information Assurance	3
CIS 385**	Data Structures and Algorithms	3	CIS 381	Information Systems and Managers	3
STAT 2xx	Statistics (269, 281, 291)	3	ENGL 1xx	QuEST Literature [^]	3
Varies	3 rd semester of language or cross-cultural [^]	3	BIBL 20x	Knowledge of the Bible [^]	3
		Total			Total
		15			15
Junior – Fall - Odd			Junior – Spring - Even		
CIS 371**	Database Security (odd Falls)	3	CIS 411***	System Analysis & Design Concepts	3
CIS 484**	Ethical Hacking (odd Falls)	3	CIS 474***	Digital Forensics (even Springs)	3
Varies	QuEST Laboratory Science [^]	3	Varies	Internship* or free elective	2-6
Varies	Internship* or free elective	2-6	Varies	1 st QuEST social science/history [^]	3
WELL xxx	Wellness [^]	1	Varies	2 nd QuEST social science/history [^]	3
		Total			Total
		12-16			14-18
Senior – Fall - Even			Senior – Spring - Odd		
CIS 335**	Software Engineering (even Falls)	3	CIS 455***	Network Security (odd Springs)	3
CIS 415**	Data Communications and Networking (even Falls)	3	Varies	Internship* or free elective	2-6
Varies	Internship* or free elective	2-6	Varies	Ethics/World Views/Pluralism [^]	3
Varies	Christian Beliefs [^]	3	Varies	Art, Music, or Theatre meeting QuEST [^]	3
Varies	Free Elective	3	Varies	Free Elective	3
		Total			Total
		14-18			14-18

*4 credits of INTE 391 or INTE 394 can be taken any semester Junior or Senior year

**Fall-only courses

***Spring-only courses

[^]Fulfills QuEST requirement

Cybersecurity (B.S.) (Even Year Start)
8 Semester Plan

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall - Even			First Year – Spring - Odd		
CIS 180	Introduction to CIS [^]	3	CIS 150 ^{***}	Introduction to Cybersecurity	3
CIS 181	Programming I [^]	3	CIS 284	Programming II	3
IDFY 101	First Year Seminar [^]	3	IDCR 151	Created and Called for Community [^]	3
COMM 105	Oral Communication [^]	3	Varies	2 nd semester of language [^]	3
Varies	1 st semester of language [^]	3	Varies	QuEST Philosophy or Religion [^]	3
		Total			Total
		15			15
Sophomore – Fall - Odd			Sophomore – Spring - Even		
CIS 255 ^{**}	NIX System Administration & Security	3	MATH 180 ^{***}	Discrete Math	3
CIS 332 ^{**}	Database Concepts	3	CIS 257 ^{***}	Information Assurance	3
CIS 385 ^{**}	Data Structures and Algorithms	3	CIS 381	Information Systems and Managers	3
STAT 2xx	Statistics	3	ENGL 1xx	QuEST Literature [^]	3
Varies	3 rd semester of language or cross-cultural [^]	3	BIBL 20x	Knowledge of the Bible [^]	3
		Total			Total
		15			15
Junior – Fall - Even			Junior – Spring - Odd		
CIS 335 ^{**}	Software Engineering (even Falls)	3	CIS 455 ^{***}	Network Security (odd Springs)	3
CIS 415 ^{**}	Data Communications and Networking (even Falls)	3	Varies	Internship* or free elective	2-6
Varies	QuEST Laboratory Science [^]	3	Varies	Art, Music, or Theatre meeting QuEST [^]	3
Varies	Internship* or free elective	2-6	Varies	1 st QuEST social science/history [^]	3
WELL 1xx	Wellness [^]	1	Varies	2 nd QuEST social science/history [^]	3
		Total			Total
		12-15			14-18
Senior – Fall - Odd			Senior – Spring - Even		
CIS 371 ^{**}	Database Security (odd Falls)	3	CIS 411 ^{***}	System Analysis & Design Concepts	3
CIS 484 ^{**}	Ethical Hacking (odd Falls)	3	CIS 474 ^{***}	Digital Forensics (even Springs)	3
Varies	Internship* or free elective	2-6	Varies	Internship* or free elective	2-6
Varies	Christian Beliefs [^]	3	Varies	Ethics/World Views/Pluralism [^]	3
Varies	Free Elective	3	Varies	Free Elective	3
		Total			Total
		14-18			14-18

*4 credits of INTE 391 or INTE 394 can be taken any semester Junior or Senior year

**Fall-only courses

***Spring-only courses

[^]Fulfills QuEST requirement

Mathematics (B.A.) 8 Semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year - Spring		
COMM 105	Fundamentals of Oral Communication*	3	MATH 112	Calculus II with lab	4
MATH 111	Calculus I with lab*	4	MATH 198	Introduction to Mathematical Proof	2
MATH 196	First-Year Math Seminar	3	PHYS 211	General Physics I with lab	4
IDFY 101	First-Year Seminar*	3	Varies	2 nd semester of Language*	3
Varies	1 st semester of Language*	3	IDCR 151	Created and Called for Community*	3
TOTAL		16	TOTAL		16
Sophomore –Fall			Sophomore – Spring		
MATH 211	Calculus III with lab	4	MATH 261	Linear Algebra	3
STAT 291	Probability and Statistics	3	Varies	3 rd semester of language or cross-cultural*	3
ENGL 1xx	QuEST Literature *	3	Varies	QuEST Philosophy or Religion*	3
PHYS 212	General Physics II with lab	4	STAT 292	Inferential Statistics	3
CIS 181	Computer Programming I	3	ECON 120	Macroeconomics	3
TOTAL		17	TOTAL		15
Junior – Fall			Junior – Spring		
MATH 362	Algebraic Structures	3	Varies	3xx or 4xx Upper-level Math/Stat elective	3
MATH 308	Differential Equations	3	MATH 412	Real Analysis ^o	3
HIST 1xx	QuEST History*	3	THEO 205-238	Christian Beliefs*	3
BIBL 20x	Knowledge of the Bible*	3	Varies	Art, Music, Dance, Theatre meeting QuEST*	3
Varies	Free Elective	3	Varies	Free Elective	3
TOTAL		15	TOTAL		15
Senior – Fall			Senior – Spring		
MATH/STAT 3xx/4xx	Upper Level Math/Stat Elective	3	MATH 308/382	Differential Equations/Geometry**	3
IDNW 2xx	Non-western Studies*	3	MATH 496	Mathematical Capstone	2
Varies	Free Elective	3	Varies	Ethics/WV/Pluralism*	3
Varies	Free Elective	3	Varies	Free Elective	3
Varies	Free Elective	3	Varies	Free Elective	3
WELL 1xx	Wellness*	1			
TOTAL		16	TOTAL		15

*Fulfills QuEST requirement

**May be taken in either the 3rd or 4th year of spring.

NOTE: The major includes 21-22 free elective credits. The CMP Department recommends a second major or minor(s) to make best use of the elective credits. If interested in a Statistics minor, take STA 291 in fall of first year (Pre-req: MATH 111).

Mathematics with Teaching Certification (B.A.)
8 Semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall 2021			First Year – Spring 2022		
MATH 111	Calculus I with lab ^	4	MATH 112	Calculus II with lab	4
MATH 196	Mathematics Seminar	2	MATH 198	Introduction to Proof	2
IDFY 101	First-Year Seminar^	3	IDCR 151	Created and Called for Community^	3
COMM 105	Fundamentals of Oral Communication ^	3	CIS 181 or 191	Comp. Prog. I or Web Dev: Client Side	3
Varies	1 st semester QuEST Language ^	3	ENGL 1xx	QuEST Literature ^	3
			Varies	2 nd semester QuEST Language^	3
			<i>Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.</i>		
TOTAL		15	TOTAL		18
Sophomore –Fall 2022			Sophomore – Spring 2023		
MATH 211	Calculus III with lab	4	MATH 261***	Linear Algebra	3
STAT 291**	Probability & Statistics	3	Varies	3 rd semester of language or cross-cultural^ or QuEST Philosophy/Religion^	3
EDUC 346	Sociocultural Perspectives on Education^	3	PHYS 211	General Physics I with lab	4
EDSP 207*	Introduction to Special Education	3	STAT 292***	Inferential Statistics	3
EDUC 203*	Educational Psychology	3	EDUC 208	Teaching English Language Learners	3
TEP 210*	Sophomore Field Experience	0			
			<i>Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.</i>		
TOTAL		16	TOTAL		16
Junior – Fall 2023			Junior – Spring 2024		
MATH 362**	Algebraic Structures	3	Varies	3 rd semester of language or cross-cultural^ or QuEST Philosophy/Religion^	3
MATH 308**	Differential Equations	3	MATH 412***	Real Analysis	3
PHYS 212**	General Physics II with lab	4	MATH 307***	Secondary Math Instruction	2
Varies	QuEST History^	3	EDUC 331*	Instruct. Design & Assessment	3
BIBL 20x	Knowledge of the Bible^	3	EDSP 307*	Inclusion Practices	3
WELL 1xx	Wellness ^	1	TEP 310*	Junior Field Experience	0
			HDFS 311	Adolescent Development	3
			<i>Submit Professional Semester application electronically by 1/15.</i>		
TOTAL		17	TOTAL		17
Senior – Fall 2024			Senior – Spring 2025		
	<i>Professional Semester****</i>		MATH 382***	Geometry (offered odd Springs)	3
TEP 410*	Secondary Pre-student Teaching	0	MATH 496***	Mathematics Capstone	2
TEP 435*	Student Teaching	9	Varies	Ethics/WV/Pluralism^	3
EDUC 420*	Professional Issues in Education	2	Varies	QuEST Non-Western^	2-3
TEP 407*	Student Teaching Seminar	1	THEO 205-238	Christian Beliefs ^	3
			Varies	Art, Music, or Theatre meeting QuEST^	3
			Take Praxis II exam.		
TOTAL		12	TOTAL		16-17

*Block of courses must be taken concurrently; can be taken in fall or spring.

Fall-only courses; *Spring-only courses

****No other course may be taken this semester

Note: If interested in a Statistics minor, take STAT 291 in fall of first year (Pre-req: MATH 111).

**Physics with Teaching Certification (B.A.)
8 Semester Plan**

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year – Spring		
MATH 111	Calculus I ^	4	MATH 112	Calculus II	4
CHEM 105	General Chemistry I ^	4	PHYS 211	General Physics I	4
IDFY 101	First year seminar^	3	IDCR 151	Created and Called for Community^	3
COMM 105	Foundations of Oral Communication ^	3	Varies	2 nd semester of Language ^	3
Varies	1 st semester of Language^	3	ENGL 1xx	QuEST Literature ^	3
			<i>Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.</i>		
TOTAL		17	TOTAL		17
Sophomore –Fall			Sophomore – Spring		
MATH 211	Calculus III	4	ENGR 212	Programming For Engineers	3
PHYS 212**	General Physics II	4	PHYS 251	Modern Physics	4
EDUC 346	Sociocultural Perspectives on Education^	3	EDSP 207*	Introduction to Special Education	3
PHIL 101 or 102	QuEST Philosophy^	3	EDUC 203*	Educational Psychology^	3
Varies	3 rd semester of language or cross-cultural^	3	TEP 210*	Sophomore Field Experience	0
			MATH 270	Advanced Math for the Sciences	3
			WELL 1xx	Wellness^	1
			<i>Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.</i>		
TOTAL		17	TOTAL		17
Junior – Fall			Junior – Spring		
ENGR 371**	Thermodynamics	3	PHYS 328***	Classical Mechanics (odd Springs)	3
ENGR 367**	Electromagnetics	3	STAT 291**	Statistics I or Engineering Statistics	3
EDUC 331*	Instructional Design & Assessment	3	or ENGR 213		
EDSP 307*	Inclusion Practices	3	HDFS 311	Adolescent Development	3
TEP 310*	Junior Field Experience	0	HIST xxx	QuEST History^	3
EDUC 208	Teaching English Language Learners	3	BIBL 20x	Knowledge of the Bible^	3
SCIE 307**	Teaching Lab Sciences in Secondary Education	2	<i>Submit Professional Semester application electronically by 1/15.</i>		
TOTAL		17	TOTAL		15
Senior – Fall			Senior – Spring		
	<i>Professional Semester****</i>		PHYS 494***	Senior Physics Seminar	2
TEP 410*	Pre-student Teaching	0	CHEM 495	Senior Capstone: Natural Sciences	3
TEP 435*	Student Teaching	9	PHYS 402***	Quantum Mechanics (even Springs)	3
EDUC 420*	Professional Issues in Education	2	PHYS 317***	Optics (even Springs)	3
SCIE 407*	Secondary Science Curriculum/Instruc.	1	Varies	Art, Music, or Theatre meeting QuEST^	3
			THEO 223	Global Christian Theology^ (both Non-western and Christian Belief)	3
TOTAL		12	<i>Take Praxis II exam.</i>		
TOTAL		17	TOTAL		17

*Block of courses must be taken concurrently

**Fall-only courses

***Spring-only courses

****No other courses taken this semester.

Physics (B.S.)

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall			First Year – Spring		
IDFY 101	First year seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of language*	3	Varies	2 nd semester of language*	3
COMM 105	Foundations of Oral Communication	3	Varies	1 st QuEST social science/history*	3
MATH 111	Calculus I	4	MATH 112	Calculus II	4
CHEM 105	General Chemistry I	4	PHYS 211	General Physics I	4
		Total			17
Sophomore – Fall			Sophomore – Spring		
Varies	3 rd semester of language or cross-cultural*	3	ENGL 1xx	QuEST Literature *	3
BIBL 20x	Knowledge of the Bible*	3	PHIL 101 or 102*	QuEST Philosophy*	3
MATH 308**	Differential Equations	3	ENGR 212	Programming For Engineers	3
MATH 211	Calculus III	4	PHYS 251	Modern Physics	4
PHYS 212	General Physics II	4	MATH 261**	Linear Algebra	3
		Total			16
Junior – Fall			Junior – Spring		
Varies	2 nd QuEST social science/history*	3	WELL 1xx	Wellness*	1
Varies*	Christian Beliefs	3	ENGR 242	Experimental Methods	3
PHYS 421†††	Particle Physics	3	PHYS 328††	Classical Mechanics	3
ENGR 367	Electromagnetics	3			
CHEM393	Research Methods	1	PHYS322***	Independent Research	3
IDNW 2xx	Non-western Studies*	2-3	Varies*	Art, Music, Theatre or Dance meeting QuEST	3
		Total			15-16
Senior – Fall			Senior – Spring		
Varies*	Ethics, World View or Pluralism	3	PHYS 494	Senior Physics Seminar	2
PHYS 425†††	Solid State Physics	3	PHYS 402†	Quantum Mechanics	3
PHYS 422***	Senior Research	3	PHYS 317†	Optics	3
ENGR 371††	Thermodynamics	3	CHEM 495	Capstone Natural Sciences	3
Varies	Free elective	3	Varies	Free Elective	3
		Total			14-15
		Total			14

* Fulfills QuEST requirement

** Requirement can alternatively be met in as single semester by MATH 270

*** Recommended, but not required for degree (counts as free or physics elective)

† Take spring even years

†† Take spring odd years

††† Offered in alternating years

**Physics (B.A.)
8 Semester Plan**

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall			First Year – Spring		
IDFY 101	First year seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of language*	3	Varies	2 nd semester of language*	3
COMM 105	Foundations of Oral Communication	3	Varies	1 st QuEST social science/history*	3
MATH 111	Calculus I*	4	MATH 112	Calculus II	4
CHEM 105	General Chemistry I*	4	PHYS 211	General Physics I	4
		Total			17
Sophomore – Fall			Sophomore – Spring		
Varies	3 rd semester of language or cross-cultural*	3	ENGL 1xx	QuEST Literature *	3
BIBL 20x	Knowledge of the Bible*	3	PHIL 101 or 102	QuEST Philosophy*	3
MATH 308**	Differential Equations	3	ENGR 212	Programming For Engineers	3
MATH 211	Calculus III	4	PHYS 251	Modern Physics	4
PHYS 212	General Physics II	4	MATH 261**	Linear Algebra	3
		Total			17
Junior – Fall			Junior – Spring		
Varies	2 nd QuEST social science/history*	3	WELL 1xx*	Wellness	1
Varies*	Christian Beliefs	3	ENGR 242	Experimental Methods	3
ENGR 367	Electromagnetics	3	PHYS 328††	Classical Mechanics	3
CHEM 393***	Research Methods	1	ENGR 371†	Thermodynamics	3
Varies	Free Elective	3	PHYS322***	Independent Research	3
			Varies*	Art, Music, Theatre or Dance meeting QuEST	3
		Total			15
Senior – Fall			Senior – Spring		
Varies*	Ethics, World View or Pluralism	3	PHYS 494	Senior Physics Seminar	2
PHYS 422***	Senior Research	3	PHYS 402††	Quantum Mechanics	3
IDNW 2xx	Non-western Studies*	2-3	PHYS 317†	Optics	3
Varies	Free Elective	3	CHEM 495	Capstone Natural Sciences	3
Varies	Free Elective	3	Varies	Free Elective	3
		Total			14-15

* Fulfills QuEST requirement

** Requirement can alternatively be met in as single semester by MATH 270

*** Recommended, but not required for degree (counts as free elective)

† Take spring even years

†† Take spring odd years

**Math and Physics (B.A.) double-major
8 Semester Plan**

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year - Spring		
CIS 181	Computer Programming I	3	MATH 112	Calculus II	4
ECON 120	Introduction to Macroeconomics	3	MATH 198	Introduction to Mathematical Proof	2
MATH 111	Calculus I	4	PHYS 211	General Physics I	4
MATH 196	Mathematics Seminar	2	IDCR 151	Created and Called for Community*	3
IDFY 151	First Year Seminar*	3	Varies	2 nd semester of Language*	3
Varies	First semester of language*	3			
		TOTAL			TOTAL
		18			16
Sophomore –Fall			Sophomore – Spring		
MATH 211	Calculus II	4	MATH 261	Linear Algebra	3
MATH 308	Differential Equations	3	PHYS 251	Modern Physics	4
STAT 291	Probability and Statistics	3	STAT 292	Inferential Statistics	3
PHYS 212	General Physics II	4	BIBL 20x	Knowledge of the Bible*	3
CHEM 105	General Chemistry I	4	WELL 1xx	Wellness Course*	1
		TOTAL			TOTAL
		18			18
Junior – Fall			Junior – Spring		
MATH 362	Algebraic Structures	3	PHYS 402	Quantum Mechanics	3
PHIL 101 or 102	Philosophy or Religion	3	MATH/STAT 3XX	Mathematics Course	3
ENGR 367	Electromagnetics	3	THEO 2xx	Christian Beliefs*	3
HIST xxx	QuEST History*	3	IDNW xx	Non-Western Studies*	2-3
ENGL xxx	QuEST Literature*	3	Varies	QuEST Social Science*	3
COMM 105	Fundamentals of Oral Communication*	3			
		TOTAL			TOTAL
		18			17-18
Senior – Fall			Senior – Spring		
CHEM 495	Capstone Natural Sciences	3	MATH 412	Real Analysis	3
Varies	Mathematics Course OR Linear Systems	3	MATH 494 or PHYS 494	Senior Math Seminar OR Senior Physics Seminar	2-3
IDS XXX	Ethics/Pluralism/World Views*	3	PHYS 328	Classical Mechanics	3
Varies	Art, Music, Theatre or Dance meeting QuEST*	3	Varies	Free Elective	3
ENGR 371 or CHEM 337	Thermodynamics OR Physical Chemistry I	3	Varies	Free Elective	3
		TOTAL			TOTAL
		15			14-15

*QuEST requirement