III. Computing, Mathematics, and Physics

Contents

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.

Suggested 8-Semester Plans of Study:

The following pages give suggested 8-semester plans of study for the majors on the department, assuming students have no AP or transfer credits. Please note:

- Majors courses:
  - Many courses in the majors have pre-requisites, and must therefore be taken in a certain order. Therefore, be careful if deviating from these plans.
  - Some course are only offered alternating semesters or alternating years, as indicated in the plans, so plan accordingly.

Actuarial Science (B.S.)

8 Semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			**First Year – Spring**		
COMM 105	Fundamentals of Oral Communication (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
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 (QuEST)	3	ACCT 131	Survey of Accounting	3
Varies	1st semester of language (QuEST)	3	Varies	2nd semester of language (QuEST)	3
WELL 1xx	Wellness (QuEST)	1	ECON 120	Macroeconomics	3
	TOTAL	16		**TOTAL**	18
Sophomore – Fall			**Sophomore – Spring**		
MATH 211	Calculus III with lab	4	MATH 261**	Linear Algebra	3
STAT 291*	Probability and Statistics	3	Varies	3rd semester of language or cross-cultural (QuEST)	3
ENGL 1xx	Literature (QuEST)	3	Varies	Philosophy or Religion (QuEST)	3
ECON 220	Microeconomics	3	STAT 292**	Inferential Statistics	3
BIBL 201/203/204	Knowledge of the Bible (QuEST)	3	CIS 181	Computer Programming I	3
	TOTAL	16		**TOTAL**	15
Junior – Fall			**Junior – Spring**		
MATH 350* OR STAT 417*	Mathematics of Finance (even falls) OR Mathematical Statistics (odd falls)	3	MATH 412** or STAT 324**	Real Analysis (every spring) **or** Advanced Statistical Methods (even springs)	3
FINA 305	Financial Management	3	INTE 391	Internship	3
Varies	US/European History (QuEST)	3	PHYS 211	General Physics I with lab	4
Varies	Free Elective	3	THEO 205-238	Christian Beliefs (QuEST)	3
Varies	Free Elective	3	Varies	Free Elective	3
	TOTAL	15		**TOTAL**	16
Senior – Fall			**Senior – Spring**		
MATH 350* **or** STAT 417*	Mathematics of Finance (even falls) **or** Mathematical Statistics (odd falls)	3	MATH 412** **or** STAT 324**	Real Analysis (every spring) **or** Advanced Statistical Methods (even springs)	3
IDNW 2xx	Non-western Studies (QuEST)	3	MATH 496**	Mathematics Capstone	2
FINA 307/351/405	Upper-Level Finance Elective	3	Varies	Ethics/WV/Pluralism (QuEST)	3
Varies	Free Elective	3	Varies	Art, Music, Theater or Dance (QuEST)	3
			Varies	Free Elective	3
	TOTAL	12		**TOTAL**	14

* Fall-only courses

** Spring-only courses

NOTE: The major includes 13-14 free elective credits. Students should consider a minor in a related area to make best use of the elective credits and additional space in this plan. Minors require at least 18 credits (12 must be unique credits that are not required for major).

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 (QuEST)	3	CIS 190	Strategic Use of Info Technology	3
CIS 181	Computer Programming I	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
IDFY 101	First Year Seminar (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st language requirement (QuEST)	3	Varies	2nd language requirement (QuEST)	3
Varies	Philosophy and Religion (QuEST)	3	Varies	Lab Science (QuEST)	3-4
	TOTAL	15		**TOTAL**	15-16
Sophomore – Fall			**Sophomore – Spring**		
CIS 283*, CIS 284 or CIS 291*	Business Systems Applications, Computer Programming II or Web Development: Server Side	3	BUSA 120	Principles of Management	3
ACCT 141	Financial Accounting	3	MATH 107	Applied Mathematics for Management §	3
ECON 110 **or** 120	Economics of Social Issues **or** Principles of Macroeconomics	3	MRKT 130	Marketing Principles	3
Varies	3rd semester of language	3	BIBL 20x	Knowledge of the Bible (QuEST)	3
Varies	Social Science / History 1 of 2 (QuEST)	3	Varies	Social Science / History 2 of 2 (QuEST)	3
WELL xxx	Wellness (QuEST)	1			
	TOTAL	16		**TOTAL**	15
Junior – Fall			**Junior – Spring**		
CIS 332*	Database Concepts	3	CIS 381	Information Systems and Managers	3
STAT 269 **or** 281	Introductory Statistics **or** Applied Statistics for Managers	3	CIS 411	Systems Analysis and Design Concepts	3
CIS xxx	CIS Elective (excluding CIS 171) 1 of 3	3	ENGL xxx	Literature (QuEST)	3
BUSA 3xx	Business Administration Elective §	3	THEO 2xx	Christian Beliefs (QuEST)	3
IDNW xxx	Non-Western Studies (QuEST)	2-3	Varies	Free Elective	3
Varies	Free Elective	3			
	TOTAL	17-18		**TOTAL**	5
Senior – Fall			**Senior – Spring**		
CIS xxx	CIS elective (excluding CIS 171) 2 of 3	3	CIS xxx**	CIS Elective (excluding CIS 171) 3 of 3	3
INTE 394	Internship	4	CIS 472**	Application Development II	3
CIS 471*	Application Development I	3	IDS xxx	Ethics / Pluralism / World Views (QuEST)	3
Varies	Free Elective	3	Varies	Art, Music, Theater or Dance (QuEST)	3
Varies	Free Elective	3	Varies	Free Elective	3
	TOTAL	16		**TOTAL**	15

*Fall-only courses

**Spring-only course

§ 3 credits from BUSA 360, 380, 381 or 505 fulfil concentration 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 (QuEST)	3
IDFY 101	First Year Seminar (QuEST)	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
Varies	1st language requirement (QuEST)	3	Varies	2nd language requirement (QuEST)	3
Varies	Philosophy and Religion (QuEST)	3	Varies	Social Science / History 1 of 2 (QuEST)	3
	TOTAL	15		**TOTAL**	15
Sophomore – Fall			**Sophomore – Spring**		
CIS 281*	Programming for User Interaction	3	MATH 180**	Discrete Math	3
CIS 332*	Database Concepts		CIS 381	Information Systems and Managers	3
MATH 111	Calculus I	3	PHYS 202**	Introductory Physics II §	3
Varies	3rd semester of language or cross-cultural (QuEST)	3	Varies	Social Science / History 2 of 2 (QuEST)	3
BIBL 20x	Knowledge of the Bible (QuEST)	3	THEO 2xx	Christian Beliefs (QuEST)	3
WELL xxx	Wellness (QuEST)	1			
	TOTAL	16		**TOTAL**	15
Junior – Fall			**Junior – Spring**		
CIS 385*	Data Structures & Algorithsm	3	CIS 411**	Systems Analysis and Design Concepts	3
CIS 384* **or** elective	Elements of Computer Systems (even falls) **or** free elective	3	CIS 416** **or** CIS xxx	OS & Comp Architecture (odd spring) or CIS elective	3
STAT 291*	Probability and Statistics §	3	CIS 482 **or** elective	Organization of Programming Languages (odd springs) **or** free elective	
Varies	Free Elective	3	Varies	Free Elective	3
ENGL xxx	Literature (QuEST)	3	IDNW xxx	Non-Western Studies (QuEST)	3
	TOTAL	15		**TOTAL**	14-15
Senior – Fall			**Senior – Spring**		
CIS 384* **or** elective	Elements of Computer Systems (even falls) **or** free elective	3	CIS 416** **or** CIS xxx	OS & Computer Architecture (odd springs) **or** CIS elective	3
CIS 471*	Application Development I	3	CIS 472**	Application Development II	3
INTE 394	Internship	4	CIS 482** **or** CIS xxx	Organization of Programming Languages (odd spring) or CIS elective	3
Varies	Art, Music, Theater or Dance (QuEST)	3	IDS xxx	Ethics / Pluralism / World Views (QuEST)	3
Varies	Free Elective	3	Varies	Free Elective	3
	TOTAL	16		**TOTAL**	15

*Fall-only courses

**Spring-only courses

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

† 3 credits from CIS 315, 335, 415, 418 or 487 fulfill concentration requirements

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 (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st language requirement (QuEST)	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
Varies	Social Science / History 1 of 2 (QuEST)	3	Varies	2nd language requirement (QuEST)	3
	TOTAL	15		**TOTAL**	15
Sophomore – Fall			**Sophomore – Spring**		
CIS 281*	Programming for User Interaction	3	CIS 283	Business Systems Applications	3
CIS 291*	Web Development II: Server Side	3	MATH 180**	Discrete Math	3
CIS 251* **or** CIS 255* **or** CIS 384	Hardware and Software **or** NIX System Admin & Security **or** Hardware and Software	3	MATH 111 **or** STAT 269 **or** STAT 281	Calculus I **or** Introductory Statistics **or** Applied Statistics for Management	3-4
Varies	3rd semester of language **or** cross-cultural (QuEST)	3	Varies	Lab Science (QuEST)	3
WELL xxx	Wellness (QuEST)	1	PHIL/RELI xxx	Philosophy or Religion (QuEST)	3
	TOTAL	16		**TOTAL**	15-16
Junior – Fall			**Junior – Spring**		
CIS 332*	Database Concepts	3	CIS 411**	Systems Analysis and Design Concepts	3
CIS 381	Information Systems & Managers	3	CIS 335** **or** CIS 482**	Software Engineering **or** Organization of Programming Languages	3
CIS xxx	CIS Elective 1 of 2†	3	Varies	Social Science / History 2 of 2 (QuEST)	3
ENGL xxx	Literature (QuEST)	3	THEO 2xx	Christian Beliefs (QuEST)	3
Varies	Free Elective	3	Varies	Art, Music, Theater or Dance (QuEST)	3
	TOTAL	15		**TOTAL**	15
Senior – Fall			**Senior – Spring**		
INTE 394	Internship	4	CIS 335** **or** CIS 482**	Software Engineering **or** Organization of Programming Languages	3
CIS 385*	Data Structures and Algorithms	3	CIS 472**	Application Development II	3
CIS 471*	Application Development I	3	CIS xxx	CIS elective 2 of 2†	3
IDNW xxx	Non-Western Studies (QuEST)	2-3	IDS xxx	Ethics / Pluralism / World Views (QuEST)	3
BIBL 20x	Knowledge of the Bible (QuEST)	3	Varies	Free Elective	3
	TOTAL	15-16		**TOTAL**	15

*Fall-only courses

**Spring-only courses

† 6 credits from CIS 315, 415, 416, 418, 482 or 487 fulfill concentration requirements

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 150† **or** ACCT 141†	Introduction to Cybersecurity **or** Financial Accounting	3
CIS 181	Computer Programming I	3	CIS 191**	Web Development I: Client Side	3
IDFY 101	First Year Seminar (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st language requirement (QuEST)	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
Varies	Social Science / History 1 of 2 (QuEST)	3	Varies	2nd language requirement (QuEST)	3
	TOTAL	15		**TOTAL**	15
Sophomore – Fall			**Sophomore – Spring**		
CIS 281*	Programming for User Interaction	3	CIS 257† **or** elective	Information Assurance (even springs) **OR** free elective	3
CIS 291*	Web Development II: Server Side	3	CIS 283** **or** CIS 284 **or** CIS 287**	Business Systems Applications **or** Computer Programming II **or** Introduction to Game Design	3
BUSA 120	Principles of Management	3	MRKT 130	Marketing Principles	3
Varies	3rd semester of language **or** cross-cultural (QuEST)	3	Varies	Social Science / History 2 of 2 (QuEST)	3
BIBL 20x	Knowledge of the Bible (QuEST)	3	Varies	Lab Science (QuEST)	3-4
WELL xxx	Wellness (QuEST)	1			
	TOTAL	16		**TOTAL**	15-16
Junior – Fall			**Junior – Spring**		
CIS 255*	System Administration and Security	3	CIS 257† **or** elective	Information Assurance (Even Springs **or** elective	3
CIS 332*	Database Concepts	3	CIS 343** **or** CIS 381	E-Commerce (odd springs) **OR** Information Systems and Managers	3
Varies^	Choice Block (ART/ARTH/COMM)	3	CIS 411**	Systems Analysis and Design Concepts	3
BUSA 380† **or** elective	Small Business Development **or** free elective	3	ENGL xxx	Literature (QuEST)	3
PHIL/RELI	Philosophy or Religion (QuEST)	3	THEO 2xx	Christian Beliefs (QuEST)	3
	TOTAL	5		**TOTAL**	15
Senior – Fall			**Senior – Spring**		
CIS 471	Application Development I*	3	CIS 343** or CIS 381	E-Commerce (odd springs) **OR** Information Systems and Managers	3
Varies^	Choice Block (ART/ARTH/COMM)	3	CIS 472**	Application Development II	3
INTE 394	Internship	4	IDS xxx	Ethics / Pluralism / World Views (QuEST)	3
Varies	Free elective	3	Varies	Free elective	3
IDNW xxx	Non-Western Studies (QuEST)	2-3	Varies	Free elective	3
	TOTAL	5-6		**TOTAL**	14-15

*Fall-only courses

**Spring-only courses

§ 3 credits from CIS 283, 284, or 287 fulfill concentration requirements

†6 credits of concentration electives. Option 1: CIS 150 and CIS 257, Option 2: ACCT 141 and BUSA 380,

^6 credits from ART 217, ARTH 205, COMM 207, COMM 337 or COMM 382 fulfill concentration requirements.

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

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			**First Year – Spring**		
CIS 180	Intro to CIS	3	CIS 150	Intro to Cybersecurity	3
CIS 181	Programming I	3	CIS 284	Computer Programming II	3
FYS 101^	First Year Seminar (QuEST/major)	3	IDCR 151	Created and Called for Community (QuEST)	3
COMM 105^	Fundamentals ofOral Communication (QuEST/major)	3	CIS 191	Web Development: Client Side	3
Varies	1st semester of language (QuEST)	3	WELL 1XX	Wellness (QuEST)	1
			Varies	2nd semester of language (QuEST)	3
			Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.		
	TOTAL	15		**TOTAL**	16
Sophomore –Fall			**Sophomore – Spring**		
CIS 291*	Web Development: Server Side	3	CIS 283**	Business Systems Applications	3
CIS 251* or CIS 384*	Hardware and Software (odd Falls) **or** Elements of Computer Systems	3	MATH 180**	Discrete Mathematics	3
CIS 385 **or** CIS 415*	Data Structures and Algorithms **or** Data Communications&Networking (even Falls)	3	EDUC 208	Teaching English Language Learners	3
STAT 269	Introductory Statistics	3	EDSP 207§	Introduction to Special Education	3
BIBL 2xx	Knowledge of the Bible (QuEST)	3	TEP 210§	Sophomore Field Experience	0
Varies	3rd semester of language (QuEST)	3	EDUC 203§	Educational Psychology	3
			ENGL 122-176^	Literature (QuEST/major)	3
			Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.		
	TOTAL	18		**TOTAL**	18
Junior – Fall			**Junior – Spring**		
CIS 332*	Database Concepts	3	CIS 381	Information Systems and Managers	3
CIS 251* or CIS 384*	Hardward & Software (odd Falls) or Elements of Computer Syst (even Falls)	3	Varies	Art, Music, Theater or Dance (QuEST)	3
CIS 385 **or** CIS 415*	Data Structures and Algorithms **or** Data Communications&Networking (even Falls)	3	MATH 307**	Teaching Secondary Math & Comp.Science	2
EDUC 346	Socio-Cultural Perspectives on Education	3	EDUC 331§§	Instruct. Design & Assessment	3
HDFS 311	Adolescent Development	3	EDSP 307§§	Inclusion Practices	3
			TEP 310§§	Junior Field Experience	0
			Varies	Lab Science (QuEST)	3-4
			Submit Professional Semester application electronically by 1/15.		
	TOTAL	18		**TOTAL**	17-18
Senior – Fall			**Senior – Spring**		
Professional Semester			CIS 411**	Systems Analysis & Design Concepts	3
TEP 407 §§§	Student Teaching Seminar	1	Varies	Philosophy or Religion	3
TEP 410 §§§	Pre-student Teaching	0	IDNW 2XX	Non-western Studies (QuEST)	2-3
TEP 435 §§§	Student Teaching	9	THEO 205-238	Christian Beliefs (QuEST)	3
EDUC 420 §§§	Professional Issues in Education	2	Varies	History (QuEST)	3
			Take Praxis II Computer Science exam (5651)		
	TOTAL	12		**TOTAL**	14-15

* Fall-only courses, ** Spring-only courses
^Course must be completed prior to applying for the teacher education program. Admission to the TEP is required for junior level field experience and related courses.
§ EDSP 207, TEP 210, EDUC 203 must be taken concurrently.
§§ EDUC 331, EDSP 307, TEP 310 must be taken concurrently.
§§§ TEP 407, TEP 410, TEP 435, EDUC 420 must be taken concurrently. No other course may be taken during the professional semester.

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

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall (Odd)			**First Year – Spring (Even)**		
CIS 150	Introduction to Cybersecurity	3	CIS 284	Programming II	3
CIS 181	Programming I	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
IDFY 101	First Year Seminar (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st Language (QuEST)	3	Varies	2nd Language (QuEST)	3
Varies	Social Science / History 1 of 2 (QuEST)	3	Varies	Philosophy or Religion (QuEST)	3
			WELL 1xx	Wellness (QuEST)	1
	Total	**15**		**Total**	**16**
Sophomore – Fall (Even)			**Sophomore – Spring (Odd)**		
CIS 255*	NIX System Administration & Security	3	MATH 180**	Discrete Math	3
CIS 332*	Database Concepts	3	CIS 335	Software Engineering	3
STAT 2xx	Statistics	3	SOCI/HIST	Social Science / History 1 of 2 (QuEST)	3
Varies	3rd Language or cross-cultural (QuEST)	3	ENGL xxx	Literature (QuEST)	3
Varies	Art, Music, Theater or Dance (QuEST)	3	BIBL 2xx	Knowledge of the Bible (QuEST)	3
	Total	**15**		**Total**	**15**
Junior – Fall (Odd)			**Junior – Spring (Even)**		
CIS 381	Information Systems and Managers	3	CIS 257**	Information Assurance (even Springs)	3
CIS 484*	Ethical Hacking (odd Falls)	3	CIS 411**	System Analysis & Design Concepts	3
Varies	Lab Science (QuEST)	3-4	CIS 474**	Digital Forensics (even Springs)	3
Varies	Internship† or free elective	2-6	Varies	Ethics/World Views/Pluralism (QuEST)	3
IDNW 2xx	Non-Western Studies (QuEST)	2-3	Varies	Internship† or free elective	2-6
	Total	**13-18**		**Total**	**14-18**
Senior – Fall (Even)			**Senior – Spring (Odd)**		
CIS 385	Data Structures and Algorithms	3	CIS 371**	Database Security (odd Springs)	3
CIS 415*	Data Communications and Networking (even Falls)	3	CIS 455**	Network Security (odd Springs)	3
Varies	Internship† or free elective	2-6	Varies	Social Science / History 2 of 2 (QuEST)	3
Varies	Christian Beliefs (QuEST)	3	Varies	Free Elective	3
Varies	Free Elective	3	Varies	Internship† or free elective	2-6
	Total	**14-18**		**Total**	**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

Cybersecurity (B.S.) (Even fall start)
8 Semester Plan

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall (Even)			**First Year – Spring (Odd)**		
CIS 150	Introduction to Cybersecurity	3	CIS 284	Programming II	3
CIS 181	Programming I	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
IDFY 101	First Year Seminar (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st Language (QuEST)	3	Varies	2nd Language (QuEST)	3
Varies	Social Science / History 1 of 2 (QuEST)	3	Varies	Philosophy or Religion (QuEST)	3
	Total	**15**		**Total**	**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 (even Springs)	3
STAT 2xx	Statistics	3	CIS 385	Data Structures and Algorithms	3
Varies	3rd Language (QuEST)	3	ENGL xxx	Literature (QuEST)	3
Varies	Art, Music, Theater or Dance (QuEST)	3	BIBL 2xx	Knowledge of the Bible (QuEST)	3
			WELL xxx	Wellness (QuEST)	1
	Total	**15**		**Total**	**16**
Junior – Fall (Even)			**Junior – Spring (Odd)**		
CIS 385*	Data Structures & Algorithms	3	CIS 371*	Database Security (odd Springs)	3
CIS 415*	Data Communications and Networking (even Falls)	3	CIS 455**	Network Security (odd Springs)	3
Varies	Lab Science (QuEST)	3-4	IDS xxx	Ethics/Pluralism/World Views (QuEST)	3
Varies	Internship† or free elective	2-6	Varies	Social Science / History 2 of 2 (QuEST)	3
			Varies	Internship† or free elective	2-6
IDNW 2xx	Non-Western Studies (QuEST)	2-3			
	Total	**13-18**		**Total**	**14-18**
Senior – Fall (Odd)			**Senior – Spring (Even)**		
CIS 381	Information Systems and Managers	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	3-6
Varies	Christian Beliefs (QuEST)	3	Varies	Free Elective	3
Varies	Free Elective	3			
	Total	**14-18**		**Total**	**12-15**

† 4 credits of INTE 391 or INTE 394 can be taken any semester Junior or Senior year
*Fall-only courses
**Spring-only courses

Digital Media (B.A.) Mobile Application and Game Design Concentration
8-semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			**First Year – Spring**		
CIS 180	Introduction to CIS	3	DIGM 105**	Foundations in Creative Digital Media	
CIS 181	Computer Programming I	3	CIS 284	Computer Programming II	3
COMM 203	Basic Video and Editing Techniques	3	IDCR 151	Created and Called for Community (QuEST)	3
IDFY 101	First Year Seminar (QuEST)	3	DIGM 105**	Foundations in Creative Digital Media	3
Varies	1st semester of language (QuEST)	3	Varies	2nd semester of language (QuEST)	3
	TOTAL	15		**TOTAL**	15
Sophomore – Fall			**Sophomore – Spring**		
ARTxxx or ARTH xxx	Art Foundation (ART 121, 171, 182, 217, 251, 336***, 352, 431*** OR ARTH 151, 205, 209)	3	ARTxxx or ARTH xxx	Art Foundation (ART 121, 171, 182, 217, 251, 336***, 352, 431*** OR ARTH 151, 205, 209)	3
COMM 217	Introduction to Film	3	ARTH 210** or COMM 321, 327	Topics in NW Art **OR** Latin American Cinema **OR** Global Indigenous Media	3
CIS 281*	Programming for User Interaction	3	COMM 105	Fundamentals of Oral Communication (QuEST)	3
Varies	3rd semester of language (QuEST)	3	COMM 382	History and Theory of Digital Media	3
DIGM 210* **or** DIGM 215*	Video and Church Media Seminar (odd falls) **OR** Game and Art design Seminar (even falls)	1			
Varies	Social Science/History 1 of 2 (QuEST)	3	BIBL 20x	Knowledge of the Bible (QuEST)	3
			WELL 1xx	Wellness (QuEST)	1
	TOTAL	16		**TOTAL**	16
Junior – Fall			**Junior – Spring**		
CIS 287* **or** CIS 291*	Introduction to Game Design (even falls) **OR** Web Development: Server Side	3	CIS 315** **or** CIS 381	Intro to Mobile App Design (even falls) **OR** Information Systems and Managers	3
ARTxxx or ARTH xxx	Art Foundation (ART 121, 171, 182, 217, 251, 336***, 352, 431*** OR ARTH 151, 205, 209)	3	MUCM 353**	Sound Design	3
ENGL 1xx	Literature (QuEST)	3	Varies	Laboratory Science (QuEST)	3-4
Varies	Social sciences & History 2 (QuEST)	3	Varies	Philosophy or Religion (QuEST)	3
THEO 2xx	Christian Beliefs (QuEST)	3	Varies	Free Elective	3
DIGM 210* **or** DIGM 215*	Video and Church Media Seminar (odd falls) **or** Game and Art design Seminar (even falls)	1			
	TOTAL	16		**TOTAL**	15-16
Senior – Fall			**Senior – Spring**		
DIGM 490*	Senior Seminar and Project	4	CIS 381	Information Systems and Managers	3
Varies	Digital Media Elective from list	3	Varies	Digital Media Elective from list	3
Varies	Ethics/Pluralism/World Views (QuEST)	3	Varies	Free Elective	3
Varies	Free Elective	3	Varies	Free Elective	3
Varies	Free Elective	3	Varies	Free Elective	3
	TOTAL	16		**TOTAL**	15

*Fall-only courses
**Spring-only courses
†Courses contain a pre-requisite (the pre-requisite counts as DIGM elective)

Mathematics (B.A.)
8-semester Plan

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			**First Year – Spring**		
MATH 111	Calculus I with lab	4	MATH 112	Calculus II with lab	4
MATH 196*	Mathematics Seminar	2	MATH 198**	Introduction to Mathematical Proof	2
FYS 101	First Year Seminar (QuEST)	3	PHYS 211	General Physics I with lab	4
COMM 105	Fundamentals of Oral Communication (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st semester of language (QuEST)	3	Varies	2nd semester of language (QuEST)	3
	TOTAL	15		**TOTAL**	16
Sophomore – Fall			**Sophomore – Spring**		
MATH 211	Calculus III with lab	4	MATH 261**	Linear Algebra	3
STAT 291*	Probability & Statistics	3	STAT 292**	Inferential Statistics	3
CIS 181	Computer Programming I	3	ECON 120	Principles of Macroeconomics	3
PHYS 212*	General Physics II with lab	4	Varies	3rd semester of language or cross-cultural (QuEST)	3
ENGL XXX	Literature (QuEST)	3	Varies	Philosophy or Religion (QuEST)	3
			WELL 1XX	Wellness (QuEST)	1
	TOTAL	17		**TOTAL**	6
Junior – Fall			**Junior – Spring**		
MATH 362*	Algebraic Structures	3	MATH 412**	Real Analysis	3
MATH 308*	Differential Equations	3	MATH/STAT 3XX/4XX	Math/Stat Elective (Upper Level)	3
HIST 1xx or 2xx	US/European History (QuEST)	3	THEO 205-238	Christian Beliefs (QuEST)	3
BIBL 201/203/204	Knowledge of the Bible (QuEST)	3	Varies	Art, Music, Theater or Dance (QuEST)	3
Varies	Free Elective	3	Varies	Electives	3
	TOTAL	15		**TOTAL**	15
Senior – Fall			**Senior – Spring**		
MATH/STAT 3XX/4XX	Math/Stat Elective (Upper Level)	3	MATH/STAT 3XX/4XX	Math/Stat Elective (Upper Level)	3
IDNW 2XX	Non-western Studies (QuEST)	2-3	MATH 496**	Mathematics Capstone	2
			Varies	Ethics/WV/Pluralism (QuEST)	3
Varies	Free Elective	3	Varies	Free Elective	3
Varies	Free Elective	3	Varies	Free Elective	3
Varies	Free Elective	3			
	TOTAL	14-15		**TOTAL**	15

*Fall-only courses

**Spring-only courses

NOTE: The major includes 20-21 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 STAT 291 in fall of first year, if possible (Pre-req: MATH 111).

Mathematics with Secondary 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 with lab	4	MATH 112^	Calculus II with lab	4
MATH 196*	Mathematics Seminar	2	MATH 198**	Introduction to Proof	2
FYS 101^	First Year Seminar (QuEST/major)	3	IDCR 151	Created and Called for Community (QuEST)	3
COMM 105^	Fundamentals of Oral Communication (QuEST/major)	3	CIS 181	Computer Programming I	3
Varies	1st semester of language (QuEST)	3	ENGL 122-176^	Literature (QuEST/major)	3
			Varies	2nd semester of language (QuEST)	3
			Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.		
	TOTAL	15		**TOTAL**	18
Sophomore –Fall			**Sophomore – Spring**		
MATH 211	Calculus III with lab	4	MATH 261**	Linear Algebra	3
STAT 291*	Probability & Statistics	3	Varies	3rd semester of language or cross-cultural (QuEST)	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	*Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.*		
	TOTAL	16		**TOTAL**	16
Junior – Fall			**Junior – Spring**		
MATH 362*	Algebraic Structures	3	MATH 307**	Secondary Math Instruction	2
MATH 308*	Differential Equations	3	MATH 382** or MATH 412**	Geometry (odd Springs) **or** Real Analysis	3
PHYS 212*	General Physics II with lab	4	EDUC 331§§	Instruct. Design & Assessment	3
HIST 1xx or 2xx	US/European History (QuEST)	3	EDSP 307§§	Inclusion Practices	3
BIBL 2xx	Knowledge of the Bible (QuEST)	3	TEP 310§§	Junior Field Experience	0
WELL 1XX	Wellness (QuEST)	1	HDFS 311	Adolescent Development	3
			Varies	Philosophy or Religion (QuEST)	3
			Submit Professional Semester application electronically by 1/15.		
	TOTAL	17		**TOTAL**	17
Senior – Fall			**Senior – Spring**		
	Professional Semester §§§		MATH 382** or MATH 412**	Geometry (odd Springs) **or** Real Analysis	3
TEP 407 §§§	Student Teaching Seminar	1	MATH 496**	Mathematics Capstone	2
TEP 410 §§§	Pre-student Teaching	0	IDNW 2XX	Non-western Studies (QuEST)	2-3
TEP 435 §§§	Student Teaching	9	THEO 205-238	Christian Beliefs (QuEST)	3
EDUC 420 §§§	Professional Issues in Education	2	Varies	Art, Music, Theater or Dance (QuEST)	3
			Take Praxis II Mathematics (5161) exam.		
	TOTAL	12		**TOTAL**	13-14

*Fall-only courses, **Spring-only courses

^Course must be completed prior to applying for the teacher education program. Admission to the TEP is required for junior level field experience and related courses.

§ EDSP 207, EDUC 203, TEP 210 must be taken concurrently.

§§ EDUC 331, EDSP 307, TEP 310 must be taken concurrently.

§§§ TEP 407, TEP 410, TEP 435, EDUC 420 must be taken concurrently. No other course may be taken during the professional semester.

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 (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
COMM 105^	Fundamentals of Oral Communication (QuEST)	3	Varies	2nd semester of language (QuEST)	3
Varies	1st semester of language (QuEST)	3	ENGL 122-176^	Literature (QuEST)	3
			Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31.		
	TOTAL	17		**TOTAL**	17
Sophomore –Fall -			**Sophomore – Spring -**		
MATH 211	Calculus III	4	ENGR 212**	Programming For Engineers	2
PHYS 212*	General Physics II	4	PHYS 251**	Modern Physics	4
EDUC 346	Sociocultural Perspectives on Education	3	MATH 270	Advanced Math for the Sciences	3
PHIL 101 or 102	Philosophy (QuEST)	3	EDSP 207 §	Introduction to Special Education	3
Varies	3rd semester of language (QuEST)	3	EDUC 203 §	Educational Psychology	3
			TEP 210 §	Sophomore Field Experience	0
			WELL 1xx	Wellness (QuEST)	1
			Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be <1 year old.		
	TOTAL	17		**TOTAL**	6
Junior – Fall -			**Junior – Spring -**		
ENGR 367*	Electromagnetics (odd Falls)	3	PHYS 317** or QuEST	Optics (even Springs) or Arts (QuEST)	3
ENGR 371	Thermodynamics	3	PHYS 328** or PHYS 402**	Classical Mechanics (odd Springs) or Quantum Mechanics (even Springs)	3
STAT 291* or ENGR 213	Statistics I **or** Engineering Statistics	3	SCIE 307**	Teaching Lab Sciences in Secondary Education	2
EDUC 331 §§	Instructional Design & Assessment	3	HDFS 311	Adolescent Development	3
EDSP 307 §§	Inclusion Practices	3	HIST 1xx or 2xx	European or US History (QuEST)	3
TEP 310 §§	Junior Field Experience	0	BIBL 201/203/204	Knowledge of the Bible (QuEST)	3
EDUC 208	Teaching English Language Learners	3	*Submit Professional Semester application electronically by 1/15.*		
	TOTAL	18		**TOTAL**	17
Senior – Fall -			**Senior – Spring -**		
Professional Semester****			PHYS 328**	Classical Mechanics (odd Springs)	3
TEP 407 §§§	Student Teaching Seminar	1	PHYS 494**	Senior Physics Seminar	2
TEP 410 §§§	Pre-student Teaching	0	CHEM 495	Senior Capstone: Natural Sciences	3
TEP 435 §§§	Student Teaching	9	THEO 223	Global Christian Theology (QuEST, both Non-western and Christian Belief)	3
EDUC 420 §§§	Professional Issues in Education	2	PHYS 317** or QuEST	Optics (even Springs) or Art/Music/Dance (QuEST)	3
			Take Praxis II exam.		
	TOTAL	12		**TOTAL**	14

* Fall-only courses, ** Spring-only courses ^Course must be completed prior to applying for the teacher education program. Admission to the TEP is required for junior level field experience and related courses.

§ EDSP 207, EDUC 203, TEP 210 must be taken concurrently.

§§ EDUC 331, EDSP 307, TEP 310 must be taken concurrently.

§§§ TEP 407, TEP 410, TEP 435, EDUC 420 must be taken concurrently. No other courses may be taken during the professional semester.

§§§ TEP 407, TEP 410, TEP 435, EDUC 420 must be taken concurrently. No other courses may be taken during the professional semester.

† Talk to your advisor about ENGR 367. A directed study might be needed.

Physics (B.S.)
8-semester Plan

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall -			**First Year – Spring -**		
IDFY 101	First Year Seminar (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st language requirement (QuEST)	3	Varies	2nd language requirement (QuEST)	3
COMM 105	Fundamentals of Oral Communication (QuEST)	3	Varies	Social Science / History 1 of 2 (QuEST)	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**		**Total**	**17**
Sophomore – Fall -			**Sophomore – Spring -**		
Varies	3rd language requirement (QuEST)	3	ENGL 1xx	Literature (QuEST)	3
BIBL 2xx	Knowledge of the Bible (QuEST)	3	PHIL 101 or 102	Philosophy (QuEST)	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**		**Total**	**16**
Junior – Fall -			**Junior – Spring -**		
Varies	Social Science / History 2 of 2 (QuEST)	3	PHYS 317** or elective	Optics (even Springs) or free elective	3
Varies	Christian Beliefs (QuEST)	3	PHYS 328** or PHYS 402**	Classical Mechanics (odd Springs) or Quantum Mechanics (even Springs)	3
PHYS 421* or PHYS 421*	Particle Physics (even Falls) or Solid State Physics (odd Falls)	3	PHYS 322†	Independent Research (or other Physics elective)	3
ENGR 367* or ENGR 371*	Electromagnetics (odd Falls) or Thermodynamics	3	IDNW 2xx	Non-Western Studies (QuEST)	2-3
STAT 291* **or** ENGR 213	Probability and Statistics **or** Engineering Statistics	3	WELL 1xx	Wellness (QuEST)	1
SCIE 393†	Research Methods	1	Varies	Free Elective	3
	Total	**16**		**Total**	**15-16**
Senior – Fall -			**Senior – Spring -**		
PHYS 421* or PHYS 425*	Particle Physics (even Falls) or Solid State Physics (odd Falls)	3	PHYS 328** or PHYS 402**	Classical Mechanics (odd Springs) OR Quantum Mechanics (even Springs)	3
PHYS 422†	Senior Research (or free elective)	3	PHYS 317** or elective	Optics (even Springs) or free elective	2
ENGR 367* or ENGR 371	Electromagnetics (odd Falls) or Thermodynamics	3	PHYS 494	Senior Physics Seminar	3
Varies	Ethics, World View or Pluralism (QuEST)	3	SCIE 495	Capstone Natural Sciences	3
Varies	Free Elective	3	Varies	Art, Music, Theater or Dance (QuEST)	3
	Total	**15**		**Total**	**14**

*Fall-only courses

**Spring-only courses

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

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

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 (QuEST)	3	IDCR 151	Created and Called for Community (QuEST)	3
Varies	1st language requirement (QuEST)	3	Varies	2nd language requirement (QuEST)	3
COMM 105	Fundamentals of Oral Communication (QuEST)	3	Varies	Social Science / History 1 of 2 (QuEST)	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**		**Total**	**17**
Sophomore – Fall -			**Sophomore – Spring -**		
Varies	3rd language requirement (QuEST)	3	ENGL 1xx	Literature (QuEST)	3
BIBL 2xx	Knowledge of the Bible (QuEST)	3	PHIL 101 or 102	Philosophy (QuEST)	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
			WELL 1xx	Wellness (QuEST)	1
	Total	**17**		**Total**	**17**
Junior – Fall -			**Junior – Spring -**		
Varies	Social Science / History 2 of 2 (QuEST)	3	PHYS 317** or elective	Optics (even Springs) or free elective	3
Varies	Christian Beliefs (QuEST)	3	PHYS 328** or PHYS 402**	Classical Mechanics (odd Springs) or Quantum Mechanics (even Springs)	3
ENGR 367* or ENGR 371	Electromagnetics (odd Falls) or Thermodynamics	3	IDNW 2xx	Non-Western Studies (QuEST)	2-3
STAT 291* **or** ENGR 213	Probability and Statistics **or** Engineering Statistics	3	Varies	Free Elective	3
	Total	**15**		**Total**	**14-15**
Senior – Fall -			**Senior – Spring -**		
Varies	Ethics, World View or Pluralism (QuEST)	3	PHYS 328** or PHYS 402**	Classical Mechanics (odd Springs) or Quantum Mechanics (even Springs)	3
Varies	Art, Music, Theater or Dance (QuEST)	3	PHYS 494	Senior Physics Seminar	2
ENGR 367* or ENGR 371	Electromagnetics (odd Falls) or Thermodynamics	3	SCIE 495	Capstone Natural Sciences	3
Varies	Free Elective	3	PHYS 317** or elective	Optics (even Springs) or free elective	3
Varies	Free Elective	3	Varies	Free Elective	3
	Total	**15**		**Total**	**14**

*Fall-only courses **Spring-only courses

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