

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	MC Courses Credited
Computer Science A	3,4,5	3	CIS 181
Math: Calculus AB	3	3	MATH 108
	4, 5	4	MATH 111
Math: Calculus BC	3 with AB subscore 3	3	MATH 108
	3 with AB subscore 4,5	4	MATH 111
	4,5	8	MATH 111, 112
Statistics	3,4,5	3	STAT 269
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
ECON 120	Principles of Macroeconomics	3	Varies	2 nd semester of language*	3
IDFY 101	First-Year Seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of language*	3			
TOTAL		18	TOTAL		15
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	Literature meeting QuEST*	3	Varies	Philosophy or Religion meeting QuEST*	3
ECON 220	Principles of Microeconomics	3	STAT 292	Inferential Statistics	3
BIBL 201/203/204	Bible*	3	CIS 181	Computer Programming I	3
TOTAL		16	TOTAL		15
Junior – Fall			Junior – Spring		
FINA 350	Financial Management	3	THEO 205-238	Christian Beliefs*	3
HIST 1xx	US/European History meeting QuEST*	3	INTE 391	Internship	3
MATH 350 or STAT 417	Mathematics of Finance I OR Mathematical Statistics**	3	MATH 351 or STAT 345	Mathematics of Finance II OR Time Series Analysis**	3
PHYS 211	General Physics I with lab	4	Varies	Art, Music, Theatre or Dance meeting QuEST*	3
TOTAL		13	TOTAL		12
Senior – Fall			Senior – Spring		
MATH 350 or STAT 417	Mathematics of Finance I OR Mathematical Statistics**	3	MATH 351 or STAT 345	Mathematics of Finance II OR Time Series Analysis**	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			
TOTAL		12-13	TOTAL		12

* QuEST requirement

** These pairs of courses are offered in alternate years. MATH 350/351 should be taken Fall/Spring whichever year it is offered and STAT 417/345 should be taken Fall/Spring in the alternate year.

NOTE: The major includes 10-11 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
LANG 101	Language 101*	3	LANG 102	Language 102*	3
PHIL/RELI xxx	Philosophy and Religion*	3	LAB xxx	Lab Science*	3-4
TOTAL		15	TOTAL		15-16
Sophomore – Fall			Sophomore – Spring		
BUSA 360	Operations Management §	3	CIS 284	Computer Programming II §	3
ACCT 141	Financial Accounting	3	BUSA 120	Principles of Management	3
ECON 120	Macroeconomics	3	MATH 107	Applied Mathematics for Management §	3
SOCI/HIST	Social Science / History 1 of 2*	3	MRKT 230	Marketing Principles	3
LANG 201	Language 201*	3	BIBL 20x	Knowledge of the Bible*	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	ENGL xxx	Literature*	3
SOCI/HIST	Social Science / History 2 of 2*	3	THEO 2xx	Christian Beliefs*	3
ART xxx	Arts*	3	WELL xxx	Wellness*	1
IDNW xxx	Non-Western Studies*	2-3			
TOTAL		17-18	TOTAL		13
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		Free elective 3 of 5	3
INTE 394	Internship	4		Free elective 4 of 5	3
	Free elective 1 of 5	3		Free elective 5 of 5	3
	Free elective 2 of 5	3			
TOTAL		16	TOTAL		12

*QuEST requirement

†Offered alternate years as indicated

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

Note: CIS 471 and CIS 472 is replacing CIS 412 and CIS 432.

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
LANG 101	Language 101*	3	LANG 102	Language 102*	3
PHIL/RELI xxx	Philosophy and Religion*	3	SOCI/HIST	Social Science / History 1 of 2*	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 482	Organization of Programming Languages	3
LANG 201	Language 201*	3	PHYS 202	Introductory Physics II §	3
ENGL xxx	Literature*	3	SOCI/HIST	Social Science / History 2 of 2*	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 381	Information Systems and Managers	3
CIS 384	Elements of Computer Systems	3	IDNW xxx	Non-Western Studies	3
CIS 418	Artificial Intelligence † § (even fall)	3	ART xxx	Arts*	3
STAT 291	Statistics for Math Sciences §	3	WELL xxx	Wellness*	1
ENGR 342	Embedded Systems Design	4		Free Elective 1 of 6	3
TOTAL		16	TOTAL		13
Senior – Fall			Senior – Spring		
CIS 411	Systems Analysis and Design Concepts	3	CIS 416	OS & Comp Architecture † (odd spring)	3
INTE 394	Internship	4	IDS xxx	Ethics / Pluralism / World Views*	3
	Free elective 2 of 6	4		Free elective 5 of 6	3
	Free elective 3 of 6	3		Free elective 6 of 6	3
	Free elective 4 of 6	3			
TOTAL		17	TOTAL		12

*QuEST requirement

†Offered alternate years as indicated

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

Note: CIS 471 and CIS 472 is replacing CIS 412 and CIS 432.

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
LANG 101	Language 101*	3	COMM 105	Oral Communication*	3
SOCI/HIST	Social Science / History 1 of 2*	3	LANG 102	Language 102*	3
TOTAL		15	TOTAL		15
Sophomore – Fall			Sophomore – Spring		
CIS 283	Business Systems Applications † (odd fall)	3	CIS 482	Organization of Programming Languages	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
LANG 201	Language 201*	3	LAB xxx	Lab Science*	3
ENGL xxx	Literature*	3	PHIL/RELI xxx	Philosophy and Religion*	3
WELL xxx	Wellness	1			
TOTAL		16	TOTAL		16
Junior – Fall			Junior – Spring		
CIS 332	Database Concepts	3	CIS 381	Information Systems and Managers	3
CIS 384	Elements of Computer Systems§	3	SOCI/HIST	Social Science / History 2 of 2*	4
CIS 335	Software Engineering † (even fall)	4	THEO 2xx	Christian Beliefs*	3
CIS 418	Artificial Intelligence † § (even fall)	3	ART xxx	Arts*	3
	Free Elective 1 of 6	3			
TOTAL		16	TOTAL		13
Senior – Fall			Senior – Spring		
CIS 411	Systems Analysis and Design Concepts	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			
	Free elective 3 of 6	3			
TOTAL		17-18	TOTAL		12

*QuEST requirement

†Offered alternate years as indicated

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

Note: CIS 471 and CIS 472 is replacing CIS 412 and CIS 432.

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
LANG 101	Language 101*	3	LANG 102	Language 102*	3
SOCI/HIST	Social Science / History 1 of 2*	3	ENGL xxx	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 112	Intro to Graphic Design §	3
BUSA 120	Principles of Management	3	MRKT 230	Marketing Principles	3
LANG 201	Language 201*	3	LAB xxx	Lab Science*	3
SOCI/HIST	Social Science / History 2 of 2*	3	PHIL/RELI xxx	Philosophy and 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
BUSA 380	Small Business Development	3	ART 337	Graphic Design & Professional Practice §	3
ART 211	Computer Art and Imaging §	3	THEO 2xx	Christian Beliefs*	3
IDNW xxx	Non-Western Studies*	2-3	WELL xxx	Wellness*	1
CIS 257**	Information Assurance	3			
TOTAL		17-18	TOTAL		13
Senior – Fall			Senior – Spring		
CIS 411	Systems Analysis and Design Concepts	3	IDS xxx	Ethics / Pluralism / World Views*	3
INTE 394	Internship	3		Free elective 4 of 6	3
	Free elective 1 of 6	4		Free elective 5 of 6	3
	Free elective 2 of 6	3		Free elective 6 of 6	3
	Free elective 3 of 6	3	ART 312	Digital Imaging§	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

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

Note: CIS 471 and CIS 472 is replacing CIS 412 and CIS 432.

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

Superscript indicates course prerequisite

Unless indicated, CIS courses are offered every semester

Semester 1 CIS 180 Intro to CIS (3) CIS 181 Programming I (3) IDFY First Year Seminar (3) COMM 105 Oral Communication (3) LANG 101 (3) 15 credits	Semester 2 CIS 284 Programming II (3) ^{CIS181 prereq} CIS 150 Introduction to Cybersecurity (3) <i>CIS 150 if offered spring semesters</i> CIS 191 Web Development Client Side (3) LANG 102 (3) IDCC Created and Called for Community (3) WELL (1) 16 credits
Semester 3 CIS 251 Hardware & Software (3) <i>CIS 251 offered in 'odd falls' only</i> CIS 291 Web Development Server Side (3) ^{CIS 191 prereq} <i>CIS 291 offered fall semesters</i> CIS 283 Business Systems Applications (3) <i>CIS 283 offered fall semesters</i> STAT 269 Introductory Statistics (3) Bible (3) 15 credits	Semester 4 LANG 201 or CC (3) ARTS (3) EDUC 208 Teaching English LL in K-12 Schools (3) EDSP 207 Introduction to Special Education (3) TEP 210 Sophomore Field Experience (0) EDUC 203 Educational Psychology (3) Literature (ENGL 122-176) (3) 18 credits
Semester 5 CIS 332 Database Concepts (3) ^{CIS284} <i>CIS 332 is offered fall semesters</i> CIS 384 Elements of Computer Systems (3) ^{CIS284} <i>CIS 384 offered fall semesters</i> CIS 415 Data Communications and Networking (3) <i>CIS 415 offered even fall semesters</i> PHIL/REL (3) EDUC 346 Socio-Cultural Perspectives on Educ (3) HDFS 311 Adolescent Development (3) 18 credits	Semester 6 CIS 411 Sys Analysis & Design Concepts (3) <i>CIS 411 offered spring semesters</i> MATH 180 Discrete Math (3) <i>MATH 180 offered spring semesters</i> MATH 307 (2) <i>MATH 307 offered spring semesters</i> EDSP 307 Inclusion Practices(3) ^{EDSP 331 & TEP 310 concurrent} EDUC 331 Instructional Design & Assessment Middle/Secondary (3) ^{EDSP 307 & TEP 310 concurrent} TEP 310 Junior Field Exp. (0) ^{EDSP 307 & EDUC 331 concurrent} Laboratory Science (3-4) 17-18 credits
Semester 7 Professional Semester EDUC 420 Professional Issues in Education (2) ^{TEP 435 concurrent} TEP 435 Student Teaching Secondary (9) TEP 407 Student Teaching Seminar (1) ^{TEP 435 concurrent} TEP 410 Sec Pre-Student Teach Exp (0) ^{TEP 435 concurrent} 12 credits	Semester 8 CIS 381 Information Systems and Managers (3) CIS 385 Data Structures and Algorithms (3) ^{CIS284 prereq} Non-Western (2-3) Christian Beliefs (3) History (3) 14-15 credits

Cybersecurity (B.S.) (Odd year start)

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	Programming II	3
CIS 181	Programming I	3	CIS 150	Introduction to Cybersecurity	3
IDFY 101	First Year Seminar	3	IDCR 151	Created and Called for Community	3
COMM 105	Oral Communication	3	Varies	2 nd Language	3
Varies	1 st Language	3	Varies	Philosophy or Religion	3
Total		15	Total		15
Sophomore – Fall			Sophomore – Spring		
CIS 332	Database Concepts	3	CIS 255	NIX System Administration & Security	3
CIS 385	Data Structures and Algorithms	3	MATH 180	Discrete Math	3
CIS 265	Digital Forensics	3	ENGL xxx	Literature	3
STAT 291	Statistics for Math Sciences	3	Varies	3 rd Language	3
BIBL 2xx	Knowledge of the Bible	3			
Total		16	Total		12
Junior – Fall*			Junior – Spring*		
CIS 335	Software Engineering	3			
CIS 257	Information Assurance	3	CIS 364	Ethical Hacking	3
Varies	Internship or free elective	2-6	CIS 462	Secure Software	3
Varies	Lab Science	3	Varies	Internship or free elective	2-6
WELL xxx	Wellness	1	Varies	Social Science	3
			Varies	History	3
Total		12-15	Total		14-18
Senior – Fall*			Senior – Spring*		
CIS 411	System Analysis & Design Concepts	3	CIS 455	Network Security	3
CIS 415	Data Communications and Networking	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	ART xxx	Arts	3
Varies	Free Elective	3	Varies	Free Elective	3
Total		14-18	Total		14-18

*QuEST requirement

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

**Semesters should not exceed 18 credits

Cybersecurity (B.S.) (Even Year Start)

8 Semester Plan

*QuEST requirement

Course #	Course Name	Credits	Course #	Course Name	Credits
First Year – Fall			First Year – Spring		
CIS 180	Introduction to CIS	3	CIS 284	Programming II	3
CIS 181	Programming I	3	CIS 150	Introduction to Cybersecurity	3
IDFY 101	First Year Seminar	3	IDCR 151	Created and Called for Community	3
COMM 105	Oral Communication	3	Varies	2 nd Language	3
Varies	1 st Language	3	Varies	Philosophy or Religion	3
Total		15	Total		15
Sophomore – Fall			Sophomore – Spring		
CIS 332	Database Concepts	3	CIS 364	Ethical Hacking	3
CIS 385	Data Structures and Algorithms	3	MATH 180	Discrete Math	3
CIS 257	Information Assurance	3	ENGL xxx	Literature	3
STAT 291	Statistics for Math Sciences	3	Varies	3 rd Language	3
BIBL 2xx	Knowledge of the Bible	3	Varies	History	3
Total		15	Total		15
Junior – Fall*			Junior – Spring*		
CIS 415	Data Communications and Networking	3	CIS 255	NIX System Administration & Security	3
CIS 265	Digital Forensics	3	CIS 455	Network Security	3
Varies	Internship or free elective	2-6	Varies	Internship or free elective	2-6
Varies	Lab Science	3	Varies	Social Science	3
WELL xxx	Wellness	1	ART xxx	Arts	3
Total		12-15	Total		14-18
Senior – Fall*			Senior – Spring*		
CIS 411	System Analysis & Design Concepts	3	CIS 416	Operating Systems and Architecture	3
CIS 335	Software Engineering	3	CIS 462	Secure Software	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		14-18	Total		14-18

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

**Semesters should not exceed 18 credits

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	CIS 191	Web Development I: Client Side	3
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*	3
IDFY 101	First Year Seminar*	3	COMM 105	Oral Communication*	3
LANG 101	Language 101*	3	LANG 102	Language 102*	3
TOTAL		15	TOTAL		18
Sophomore – Fall			Sophomore – Spring		
ART 236	Graphic Design and Visual Culture §	3	ART 171	Foundations of Drawing §	3
CIS 291	Web Development II: Server Side	3	ARTH 210	Topics in Non-Western Art §	3
COMM 217	Intro to Film	3	CIS 287	Intro to Game Design † (even J-Term)	3
SOCI/HIST	Social Science / History 1 of 2*	3	COMM 382	History and Theory of Digital Media	3
LANG 201	Language 201*	3	BIBL 20x	Knowledge of the Bible*	3
DIGM 210 or	Video and Church Media Seminar	1	WELL xxx	Wellness*	1
TOTAL		16	TOTAL		16
Junior – Fall			Junior – Spring		
CIS 315	Intro to Mobile App Design † (odd fall)	3	MUCM 353	Sound Design	3
ART 336	Design for New Media §	3	LAB xxx	Laboratory Science*	3-4
SOCI/HIST	Social Science / History 2 of 2*	3	ENGL xxx	Literature*	3
THEO 2xx	Christian Beliefs*	3	PHIL/RELI xxx	Philosophy/Religion*	3
	Free Elective	3		Free Elective	3
DIGM 210 or	Video and Church Media Seminar	1			
TOTAL		16	TOTAL		15-16
Senior – Fall			Senior – Spring		
DIGM 490	Senior Seminar and Project	4	CIS 381	Information Systems and Managers	3
	Digital Media Elective from list	3		Digital Media Elective from list	3
IDS XXX	Ethics/Pluralism/World Views*	3		Free Elective	3
	Free Elective	3		Free Elective	3
	Free Elective	3		Free Elective	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

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		17
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	Literature meeting QuEST*	3	Varies	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	MATH 308/382	Differential Equations/Geometry**	3
HIST 1xx	US/European History meeting QuEST*	3	MATH 412	Real Analysis ^o	3
MATH/STAT 3xx/4xx	Upper Level Math/Stat Elective	3	THEO 205-238	Christian Beliefs*	3
BIBL 201/203/204	Bible*	3	Varies	Art, Music, Dance, Theatre meeting QuEST*	3
TOTAL		12	TOTAL		12
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
			WELL 1xx	Wellness*	1
TOTAL		12-13	TOTAL		12

*Fulfills QuEST requirement

**Offered spring of odd-numbered years.

^oMay be taken in either the 3rd or 4th year of spring.

Mathematics with Teaching Certification (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	Mathematics Seminar	2	ENGL 122-176	Literature meeting QuEST*	3
CIS 181/191	Comp. Prog. I/Web Dev. 1: Client Side	3	Varies	2 nd semester of Language*	3
IDFY 101	First-Year Seminar*^	3	IDCR 151	Created and Called for Community*	3
Varies	1 st semester of Language*	3	WELL 1xx	Wellness*	1
			<i>Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31. Take PAPA exam (formerly Praxis 1).</i>		
TOTAL		18	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
EDUC 346	Sociocultural Perspectives in Ed (spring)	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 less than one year old with applying.</i>		
TOTAL		16	TOTAL		16
Junior – Fall			Junior – Spring		
MATH 362	Algebraic Structures	3	MATH 308/382	Differential Equations/Geometry***	3
HIST xxx	US/European History meeting QuEST*	3	MATH 412	Real Analysis	3
PHYS 212	General Physics II with lab	4	MATH 307**	Secondary Math Instruction	2
Varies	Philosophy or Religion*	3	EDUC 331**	Instruct. Design & Assessment	3
BIBL 201/203/204	Bible*	3	EDSP 307**	Inclusion Practices	3
			TEP 310**	Junior Field Experience	
			HDFS 311	Adolescent Development	3
			<i>Submit Professional Semester application electronically by 1/15.</i>		
TOTAL		16	TOTAL		17
Senior – Fall			Senior – Spring		
	<u>Professional Semester</u>		MATH 308/382	Differential Equations/Geometry***	3
TEP 410**	Secondary Pre-student Teaching	0	MATH 496	Mathematical Capstone (take in Junior Spring if Student Teaching in Senior Spring)	2
TEP 435**	Student Teaching	9	IDNW 2xx	Non-western Studies*	2-3
EDUC 420**	Professional Issues in Education	2	THEO 205-238	Christian Beliefs*	3
TEP 407**	Student Teaching Seminar	1	Varies	Art, Music, Theatre or Dance meeting QuEST*	3
			<i>Take Praxis II exam.</i>		
TOTAL		12	TOTAL		13-14

*Fulfills QuEST requirement

**Courses to be taken concurrently.

***Offered spring of odd-numbered years.

^This course, or its transfer equivalent, is required for admission into the Teacher Education Program

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

Course #	Course name	Credits	Course #	Course name	Credits
First Year – Fall			First Year - Spring		
COMM 105	Oral Communication*	3	MATH 112	Calculus II	4
CHEM 105	General Chemistry I*	4	ENGL 122-176	Literature meeting QuEST*	3
CIS 181	Computer Programming I	3	PHYS 211	General Physics I	4
MATH 111	Calculus I*	4			
FYS 101	Varies	3			
			<i>Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31 to cwickey@messiah.edu or B414.</i>		
TOTAL		17	TOTAL		11
Sophomore –Fall			Sophomore – Spring		
MATH 211	Calculus III	4	PHYS 251	Modern Physics	4
PHYS 212	General Physics II	4	EDSP 207**	Introduction to Special Education+	3
EDUC 346	Sociocultural Perspectives on Education	3	EDUC 203**	Educational Psychology+	3
PHIL 101 or 102	Gen. Ed. Philosophy*	3	TEP 210**	Sophomore Field Experience+	0
			MATH 270	Advanced Math for the Sciences	3
			ENGR 212	Programming for Engineers	2
			<i>Submit Teacher Education Program app by 3/31 to B414.</i>		
TOTAL		14	TOTAL		15
Junior – Fall			Junior – Spring		
STAT 291 or ENGR 242	Probability and Statistics OR Experimental Methods	3	PHYS 402 †	Quantum Mechanics	3
ENGR 367	Electromagnetics	3	PHYS 307	Secondary Mathematics/Physics Instruction	2
EDUC 331*	Instructional Design & Assessment	3	ENGR 371	Thermodynamics	3
EDSP 307**	Inclusion Practices	3	HDFS 311	Adolescent Development	3
TEP 310**	Junior Field Experience	0	Varies	Electives	6
EDUC 208	Teaching English Language Learners	3			
SCIE 307**	Teaching Lab Sciences in Secondary Education	2			
			<i>Submit Professional Semester application electronically by 1/15.</i>		
TOTAL		17	TOTAL		17
Senior – Fall			Senior – Spring		
	<u>Professional Semester</u>				
TEP 410**	Pre-student Teaching	0	PHYS 494	Senior Physics Seminar	2
TEP 435**	Student Teaching	9	CHEM 495	Capstone; Natural Sciences	3
EDUC 420**	Professional Issues in Education	2	PHYS 328 †	Classical Mechanics	3
PHYS 407**	Secondary Physics Curriculum/ Instru.	1	PHYS 317 †	Optics	3
Varies	Elective	3	Varies	Elective	3
TOTAL		15	TOTAL		14

*Fulfills QuEST requirement

**Must be taken concurrently

^This course, or its transfer equivalent, is required for admission into the Teacher Education Program

† Offered in alternating years

**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	3	IDCR 151*	Created and Called	3
Varies*	1 st language requirement	3	Varies*	2 nd language requirement	3
COMM 105*	Foundations of Oral Communication	3	Varies*	1 st 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			Total
		17			17
Sophomore – Fall			Sophomore – Spring		
Varies*	3 rd language requirement	3	ENGL 1xx*	Literature meeting QuEST	3
BIBL 2xx*	Bible	3	PHIL 101*	Problems in 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			Total
		17			16
Junior – Fall			Junior – Spring		
Varies*	2 nd social science/history	3	WELL 1xx*	Wellness	1
Varies*	Christian Beliefs	3	ENGR 242	Experimental Methods	3
PHYS 421†	Particle Physics	3	PHYS 402†	Quantum Mechanics	3
ENGR 367	Electromagnetics	3	ENGR 371	Thermodynamics	3
CHEM393	Research Methods	3	PHYS322***	Independent Research	3
		Total			Total
		15			13
Senior – Fall			Senior – Spring		
Varies*	Ethics, World View or Pluralism	3	PHYS 494	Senior Physics Seminar	2
PHYS 425†	Solid State Physics	3	PHYS 328†	Classical Mechanics	3
PHYS 422***	Senior Research	3	PHYS 317†	Optics	3
Varies*	Interdisciplinary	3	CHEM 495	Capstone Natural Sciences	3
			Varies	Free Elective	3
		Total			Total
		12			14

* Fulfills QuEST requirement

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

*** Recommended, but not required for degree

† 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	3
Varies*	1 st language requirement	3	Varies*	2 nd language requirement	3
COMM 105*	Foundations of Oral Communication	3	Varies*	1 st 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	Total		17
Sophomore – Fall			Sophomore – Spring		
Varies*	3 rd language requirement	3	ENGL 1xx*	Literature	3
BIBL 2xx*	Bible	3	PHIL 101*	Problems in 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	Total		16
Junior – Fall			Junior – Spring		
Varies*	2 nd social science/history	3	WELL 1xx*	Wellness	1
Varies*	Christian Beliefs	3	ENGR 242	Experimental Methods	3
ENGR 367	Electromagnetics	3	PHYS 402†	Quantum Mechanics	3
CHEM 393	Research Methods	3	ENGR 371	Thermodynamics	3
Varies	Free Elective	3	PHYS322***	Independent Research	3
Total		15	Total		13
Senior – Fall			Senior – Spring		
Varies*	Ethics, World View or Pluralism	3	PHYS 494	Senior Physics Seminar	2
PHYS 422***	Senior Research	3	PHYS 328†	Classical Mechanics	3
Varies*	Interdisciplinary	3	PHYS 317†	Optics	3
Varies	Free Elective	3	CHEM 495	Capstone Natural Sciences	3
			Varies	Free Elective	3
Total		12	Total		14

* Fulfills QuEST requirement

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

*** Recommended, but not required for degree

† Offered in alternating 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			18
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			18
Junior – Fall			Junior – Spring		
MATH 362	Algebraic Structures	3	PHYS 402	Quantum Mechanics	3
RELI/PHIL	Religion/Philosophy*	3	MATH/STAT 3XX	Mathematics Course	3
ENGR 367	Electromagnetics	3	THEO 2xx	Christian Beliefs*	3
HIST xxx	History meeting QuEST*	3	IDNW xx	Non-Western Studies*	2-3
ENGL xxx	Literature meeting QuEST*	3	Varies	Social Science meeting QuEST*	3
COMM 105	Fundamentals of Oral Communication*	3			
		TOTAL			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			14-15

*QuEST requirement

