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	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	2nd semester of language*	3
IDFY 101	First-Year Seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1st 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	3rd 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**	11

> **Commented [DS1]:** Students need at least 12 credits for fulltime status.

* 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

Commented [DS2]: Should this be CIS 255 instead?

*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 Management Concentration
8-semester Plan

Add ART 312, BUSA 362 as options and drop CIS 401. Replace CIS 255 with 257

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
	TOTAL	15		**TOTAL**	15
	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			
LANG 201	Language 201*	3	MRKT 230	Marketing Principles	3
SOCI/HIST	Social Science / History 2 of 2*	3	LAB xxx	Lab Science*	3
BIBL 20x	Knowledge of the Bible*	3	PHIL/RELI xxx	Philosophy and Religion*	3
	TOTAL	15		**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
ART 336	Design for New Media † (odd fall)	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
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			
	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 Science with Teaching Certification (B.A.)
8-Semester Plan

Superscript indicates course prerequisite
Unless indicated, CIS courses are offered every semester

Semester 1	Semester 2
CIS 180 Intro to CIS (3)	CIS 284 Programming II (3) ^{CIS181 prereq}
CIS 181 Programming I (3)	CIS 150 Introduction to Cybersecurity (3)
IDFY First Year Seminar (3)	*CIS 150 if offered spring semesters*
COMM 105 Oral Communication (3)	CIS 191 Web Development Client Side (3)
LANG 101 (3)	LANG 102 (3)
	IDCC Created and Called for Community (3)
	WELL (1)
15 credits	16 credits

Semester 3	Semester 4
CIS 251 Hardware & Software (3)	LANG 201 or CC (3)
CIS 251 offered in 'odd falls' only	ARTS (3)
CIS 291 Web Development Server Side (3)^{CIS 191 prereq}	EDUC 208 Teaching English LL in K-12 Schools (3)
CIS 291 offered fall semesters	EDSP 207 Introduction to Special Education (3)
CIS 283 Business Systems Applications (3)	TEP 210 Sophomore Field Experience (0)
CIS 283 offered fall semesters	EDUC 203 Educational Psychology (3)
STAT 269 Introductory Statistics (3)	Literature (ENGL 122-176) (3)
Bible (3)	
15 credits	18 credits

Semester 5	Semester 6
CIS 332 Database Concepts (3) ^{CIS284}	CIS 411 Sys Analysis & Design Concepts (3)
CIS 332 is offered fall semesters	*CIS 411 offered spring semesters*
CIS 384 Elements of Computer Systems (3)^{CIS284}	MATH 180 Discrete Math (3)
CIS 384 offered fall semesters	*MATH 180 offered spring semesters*
CIS 415 Data Communications and Networking (3)	MATH 307 (2)
CIS 415 offered even fall semesters	*MATH 307 offered spring semesters*
PHIL/REL (3)	EDSP 307 Inclusion Practices(3) ^{EDSP 331 & TEP 310 concurnt}
EDUC 346 Socio-Cultural Perspectives on Educ (3)	EDUC 331 Instructional Design & Assessment
HDFS 311 Adolescent Development (3)	Middle/Secondary (3)^{EDSP 307 & TEP 310 concurrent}
	TEP 310 Junior Field Exp. (0)^{EDSP 307 & EDUC 331 concurnt}
	Laboratory Science (3-4)
18 credits	17-18 credits

Semester 7	Semester 8
Professional Semester	CIS 381 Information Systems and Managers (3)
EDUC 420 Professional Issues in Education (2)^{TEP 435 concurrent}	CIS 385 Data Structures and Algorithms (3)^{CIS284 prereq}
	Non-Western (2-3)
TEP 435 Student Teaching Secondary (9)	Christian Beliefs (3)
TEP 407 Student Teaching Seminar (1)^{TEP 435 concurrent}	History (3)
TEP 410 Sec Pre-Student Teach Exp (0)^{TEP 435 concurrent}	
12 credits	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	2nd Language	3
Varies	1st 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	3rd Language	3
BIBL 2xx	Knowledge of the Bible	3	Varies	History	3
WELL xxx	Wellness	1			
	Total	16		Total	15
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
			Varies	Social Science	3
	Total	11-15		Total	11-15
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

Commented [DS4]: Students need a minimum of 12 credits to be full-time.

*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	2nd Language	3
Varies	1st 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	3rd Language	3
BIBL 2xx	Knowledge of the Bible	3	Varies	History	3
WELL xxx	Wellness	1			
	Total	16		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
			ART xxx	Arts	3
	Total	11-15		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

Commented [DS5]: Students need 12 credits minimum. Please adjust accordingly.

*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
ECON 120	Macroeconomics	3	Varies	2nd semester of Language*	3
IDFY 101	First-Year Seminar*	3	IDCR 151	Created and Called for Community*	3
Varies	1st semester of Language*	3			
	TOTAL	**19**		**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	3rd 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			
	TOTAL	17		**TOTAL**	12
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*	2-3	MATH 496	Mathematical Capstone	2
WELL 1xx	Wellness*	1	Varies	Ethics/WV/Pluralism*	3
Varies	Free Elective	3	Varies	Free Elective	3
Varies	Free Elective	3			
	TOTAL	**12-13**		**TOTAL**	**11**

*Fulfills QuEST requirement

**Offered spring of odd-numbered years.

[O]May be taken in either the 3rd or 4th year of spring.

> **Commented [DS6]:** Too many credits. What will you move to a different semester? It is good to keep the Language first semester/second semester senquencing in the first year, so try to avoid moving those courses.

> **Commented [DS7]:** Students need 12 credits for fulltime status

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	2nd semester of Language*	3
IDFY 101	First-Year Seminar*^	3	IDCR 151	Created and Called for Community*	3
Varies	1st semester of Language*	3	WELL 1xx	Wellness*	1
			Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31. Take PAPA exam (formerly Praxis 1).		
	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	3rd 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			
			Submit Teacher Education Program application electronically by 3/31. Clearances completed last year must be less than one year old with applying.		
	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
			Submit Professional Semester application electronically by 1/15.		
	TOTAL	16		**TOTAL**	17
	Senior – Fall			**Senior – Spring**	
	Professional Semester		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
			Take Praxis II exam.		
	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			
				Submit the three required security clearances (FBI, Child Abuse, Criminal) by 3/31 to cwickey@messiah.edu or B414.	
	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
				Submit Teacher Education Program app by 3/31 to B414.	
	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			
				Submit Professional Semester application electronically by 1/15.	
	TOTAL	17		**TOTAL**	17
	Senior – Fall			**Senior – Spring**	
	Professional Semester				
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*	1st language requirement	3	Varies*	2nd language requirement	3
COMM 105*	Foundations of Oral Communication	3	Varies*	1st 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*	3rd 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	17		Total	16
Junior – Fall			**Junior – Spring**		
Varies*	2nd 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	15		Total	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	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

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*	1st language requirement	3	Varies*	2nd language requirement	3
COMM 105*	Foundations of Oral Communication	3	Varies*	1st 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*	3rd 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*	2nd 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	2nd semester of Language*	3
Varies	First semester of language*	3			
	TOTAL	**18**		**TOTAL**	**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	**18**		**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	**18**		**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	**15**		**TOTAL**	**14-15**

*QuEST requirement