

Program Change Request

Date Submitted: 11/07/18 3:38 pm

Viewing: **BS-APMS-CPS : Applied Mathematical Sciences - BS, Computational Emphasis**

Last approved: 03/21/18 10:09 am

Last edit: 11/09/18 2:14 pm

Changes proposed by: donnalh

In Workflow

1. **MATH Department Head**
2. **Curricular Services Review**
3. **SC Committee Preparer UG**
4. **SC Committee Chair UG**
5. **SC College Dean UG**
6. **UCC Preparer**
7. **UCC Chair**
8. **Faculty Senate Preparer**
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services

Catalog Pages Using this Program [Applied Mathematical Sciences - BS, Computational Emphasis](#)

Contact(s)

Name	E-mail	Phone
Donna Hoffman	donnalh@tamu.edu	979-862-4306

Academic level	Undergraduate
Effective Term	2019-2020
Department	Mathematics
College	Science
Program type	Degree w/Concentration
Degree designation	BS - Bachelor of Science
With a major in	Applied Mathematical Sciences (APMS)
Associated Program	Not Applicable
With a concentration in	Computational Science Option (CPS)

Catalog Program Title

Applied Mathematical Sciences - BS, Computational Emphasis

CIP and Fund code

27030100

Rationale for Proposal

1. **To comply with new course number established by the Academic Success Center.**
2. **To comply with new course numbers established by the Chemistry Department.**
3. **To comply with new course numbers established by the Physics Department.**
4. **To comply with new course numbers established by the Physics Department.**
5. **To be in compliance with the new Core Curriculum requirement for Cultural Discourse.**
6. ~~*Adding ENGL 103 as an acceptable Communication Requirement will assist students who have earned credit for ENGL 1301.*ATMO 201/ATMO 202, CHEM 107/CHEM 117, GEOL 101/GEOL 102, and OCNG 251/OCNG 252 have been approved by Undergraduate Studies Committee as eligible to satisfy the Freshman Science requirement. Adding ATMO 201/ATMO 202, GEOL 101/GEOL 102 and OCNG 251/OCNG 252 as an option for 4 credits will allow students more flexibility in their degree plans. The~~
~~*The course content of CHEM 119 MATH 220 and CHEM 107/CHEM 117 CSCE 222/ECEN 222 is too similar to allow credit for both courses.~~
7. **There is no longer other courses equivalent to CHEM 102/CHEM 112, so the Limitation is no longer needed.**
8. **This course is foundational and fundamental to virtually all upper level coursework in our degrees and as such, we are moving this course to a number that will more accurately reflect its inherent maturity level, and to stress the course's importance and pivotal role within our degree programs. *The course content of MATH 220 and CSCE 222 are too similar to include CSCE 222 in the list of acceptable CSCE electives. As CSCE 285, 289, and 291 are directed studies/research courses, they are not acceptable for CSCE elective credit. *Removing MATH 150 from the ineligible General Elective list will assist students**

Approval Path

1. 11/07/18 4:42 pm
Emil Straube (e-straube): Approved for MATH Department Head
2. 11/09/18 2:33 pm
Angel Mario Carrizales (carri1214): Approved for Curricular Services Review
3. 11/12/18 2:04 pm
Sara Thigpin (sarathigpin): Approved for SC Committee Preparer UG
4. 11/12/18 4:53 pm
Lucas Macri (lmacri): Approved for SC Committee Chair UG
5. 11/12/18 4:55 pm
Lucas Macri (lmacri): Approved for SC College Dean UG
6. 11/14/18 10:49 am
Sandra Williams (sandra-williams): Approved for UCC Preparer
7. 12/10/18 10:55 am
Terra Bissett (t.bissett): Approved for UCC Chair

History

1. Mar 6, 2017 by Donna Hoffman (donnalh)
2. Mar 19, 2018 by Donna Hoffman (donnalh)

~~with the new Financial Aid regulations. *With the development of the new undergraduate program in Statistics, new upper-level Statistics courses have been created that are acceptable elective courses and should be included in Major GPR calculations. *All courses with the [KHS] attribute have been approved by Undergraduate Studies Committee as eligible to satisfy the Citizenship Core Requirement.~~

Program hours 120
 Is this program eligible for financial aid?
 Will program hours change (increase/decrease) due to the proposed curriculum changes? No
 Program delivery mode On-campus

Catalog Program Requirements

Plan of Study Grid

		Semester Credit Hours
First Year		
Fall		
ENGL 104	Composition and Rhetoric	3
or ENGL 103	or Introduction to Rhetoric and Composition	
MATH 171	Analytic Geometry and Calculus	4
Select one of the following:		4
CSCE 110	Programming I	
CSCE 111	Introduction to Computer Science Concepts and Programming	
CSCE 206	Structured Programming in C	
Freshman Science elective 1		4
Elective hours 2		1
	Semester Credit Hours	16
Spring		
CSCE 121	Introduction to Program Design and Concepts	4
MATH 172	Calculus	4
American History		3
Elective hours 2		1
Freshman Science elective 1		4
	Semester Credit Hours	16
Second Year		
Fall		
ECON 202	Principles of Economics	3
or ECON 203	or Principles of Economics	
MATH 220	Foundations of Mathematics	3
MATH 221	Several Variable Calculus	4
MATH 300	Foundations of Mathematics	3
STAT 211	Principles of Statistics I	3
American History		3
	Semester Credit Hours	16
Spring		
MATH 308	Differential Equations	3
MATH 323	Linear Algebra	3
POLS 206	American National Government	3
STAT 212	Principles of Statistics II	3
Language, philosophy and culture 3		3
	Semester Credit Hours	15
Third Year		
Fall		
MATH 409	Advanced Calculus I	3
MATH 415	Modern Algebra I	3
or MATH 433	or Applied Algebra	
PHYS 206	Newtonian Mechanics for Engineering and Science	4
& PHYS 226	and Physics of Motion Laboratory for the Sciences	
POLS 207	State and Local Government	3
PHYS 218	Mechanics	4

Elective hours	4	3
Semester Credit Hours		16
Spring		
CSCE 221	Data Structures and Algorithms	4
Select one from:		4
CSCE 442	Scientific Programming	
PHYS 208	Electricity and Optics	4
or OCNG 451	or Mathematical Modeling of Ocean Climate	
MATH 417	Numerical Methods	
MATH 437	Principles of Numerical Analysis	
Select one of the following:		4
OCNG 451	Mathematical Modeling of Ocean Climate	
PHYS 207	Electricity and Magnetism for Engineering and Science	
& PHYS 227	and Electricity and Magnetism Laboratory for the Sciences	
Semester Credit Hours		12
Fourth Year		
Fall		
CSCE 314	Programming Languages	3
CSCE 411	Design and Analysis of Algorithms	3
CSCE 433	Formal Languages and Automata	3
Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
Semester Credit Hours		12
Spring		
Select one of the following:		3
ISEN 320	Operations Research I	
ISEN 340	Operations Research II	
MATH 325	The Mathematics of Interest	
CSCE 210 - CSCE 470	5	
MATH 407 - MATH 499		
STAT 404 - STAT 482		
Select from the following:		9
MATH 325	The Mathematics of Interest	
MATH 407 - MATH 499		
Elective hours	4	5
Semester Credit Hours		17
Total Semester Credit Hours		120

1 Select 4 hours from: [ASTR 111](#), [BIOL 111](#), [BIOL 112](#), [CHEM 119](#), [CHEM 120](#), [CHEM 107/CHEM 117](#). The remaining 4 hours may be selected from: [ASTR 111](#), [ATMO 201/ATMO 202](#), [BIOL 111](#), [BIOL 112](#), [CHEM 119](#), [CHEM 120](#), [CHEM 107/CHEM 117](#), [GEOL 101/GEOL 102](#), [OCNG 251/OCNG 252](#).

2 [MATH 170](#) is highly recommended for math majors co-enrolled in [MATH 150](#), [MATH 151](#), [MATH 152](#), [MATH 171](#) or [MATH 172](#).

3 Select 3 hours from any 200-400 level course.

4 Three elective hours must be chosen from the approved [University Core Curriculum](#) list for creative arts. In addition, 3 hours of courses must be in the area of [International and Cultural Diversity](#) and 3 hours of courses must be in the area of [Cultural Discourse](#). These may be in addition to [University Core Curriculum](#) courses, or if a course in this category satisfies an area of the Core, it can be used to meet both requirements. Students desiring teacher certification should consult the requirements for certification before registering for electives.

Remaining electives may be selected from any 100-499 course not used elsewhere, (except [ALED 125](#); [ASCC 102](#); [ASTR 109/PHYS 109](#), [ASTR 119/PHYS 119](#); [BMEN 101](#); [BUSN 100](#); [ISEN 101](#); [KINE 199](#); [LAND 101](#); [MATH 102-148](#), [MATH 151 - 166](#), [MATH 304](#), [MATH 309](#), [MATH 311](#), [MATH 367](#), [MATH 368](#), [MATH 375](#), [MATH 376](#); [PHYS 109/ASTR 109](#), [PHYS 119/ASTR 119](#), [PHYS 201](#), [PHYS 202](#), [PHYS 205](#); [PSYC 301](#); [STAT 201](#), [STAT 301](#), [STAT 302](#), [STAT 303](#); [URPN 200](#); [WFSC 101](#)).

5 Except [CSCE 222/ECEN 222](#), [CSCE 285](#), [CSCE 289](#), [CSCE 291](#).

Maximum of 4 hours of [MATH 147](#), [MATH 151](#), or [MATH 171](#) may be used in this degree program.

Maximum of 4 hours of [MATH 148](#), [MATH 152](#), or [MATH 172](#) may be used in this degree program.

Maximum of 3 hours of [MATH 300](#) or [MATH 220](#) or [CSCE 222/ECEN 222](#) /ECEN 222 may be used in this degree program.

Maximum of 3 hours of [MATH 411](#) or [STAT 414](#) may be used in this degree program.

Maximum of 3 hours of [MATH 417](#), [MATH 437](#) or [CSCE 442](#) may be used in this degree program.

Maximum of 4 hours of [CHEM 119](#), [CHEM 107/CHEM 117](#) may be used in this degree program.

If a grade of D or F is earned in any of the following courses, [MATH 151/MATH 171](#), [MATH 152/MATH 172](#), [MATH 221/MATH 251/MATH 253](#), [MATH 300](#), [MATH 220](#), [MATH 323](#) or [MATH 308](#), this course must be immediately retaken and a grade of C or better earned. The department will allow at most two D's in upper-level (325-499) courses. If a third D is earned, one of the three courses in which a D was earned must be retaken and a grade of C or better earned.

Additional information

Description of changes:

1. To change the course number of STLC 102 to ASCC 102 in Footnote 4. and Rule A. of General Electives Area of Howdy Degree Evaluation.

2. To change the course number of CHEM 101/111 to CHEM 119 and CHEM 102/112 to CHEM 120 in Footnote 1. and Rule B.

and Rule C. of Life and Physical Sciences Area in Howdy Degree Evaluation.

3. To change the course number of PHYS 218 to PHYS206/PHYS226 in Third Year Fall Semester and Rule A. of Life and Physical Sciences Area in Howdy Degree Evaluation.

4. To change the course number of PHYS 208 to PHYS 207/PHYS 227 in Third Year Spring Semester and Rule D. of Life and Physical Sciences Area in Howdy Degree Evaluation.

5. To change the wording in Footnote 5. to reflect the new requirement of 3 hrs of Cultural Discourse. To change Rule A. of International Cultural Diversity to 3 hrs and add Rule B. of Cultural Discourse for 3 hrs in Howdy Degree Evaluation.

6. To add the statement, "Maximum of 4 hours of CHEM 119, CHEM 107/CHEM 117 may be used in this degree program" to the Undergraduate Catalog and update the corresponding Limitation in Howdy Degree Evaluation.

7. To remove the Limitation, "Maximum of 4 hours of CHEM 102, 112 may be used in this degree program" in Howdy Degree Evaluation.

8. To change MATH 220 to MATH 300 in Second Year Fall Semester, the statement, "Maximum of 3 hours of MATH 300 or CSCE 222/ECEN 222 may be used in this degree program" and in the Departmental GPR Requirements in the Undergraduate Catalog. To change MATH 220 to MATH 300 in Rule B. of Major Coursework and the corresponding Limitation in Howdy Degree Evaluation. ~~3.21.18 Update to course link in footnotes.~~

Required Proposal

[bs_apms_cps_17c.pdf](#)

Forms

[BS-APMS-CPS.pdf](#)

[bs_apms_cps.pdf](#)

Reviewer Comments

Terra Bissett (t.bissett) (12/10/18 10:55 am): UCC approved December 2018.

Key: 487

Area Major Coursework (16.000 credits) - Not Met
:

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	MATH 221				4 hrs								
								Must make a grade of 'C' or better.							
No	AND	B.	MATH 220				3 hrs								
								Must make a grade of 'C' or better.							
No	AND	C.	MATH 323				3 hrs								
								Must make a grade of 'C' or better.							
No	AND	D.	MATH 308				3 hrs								
								Must make a grade of 'C' or better.							
No	AND	E.	MATH 409				3 hrs								
													Total Credits and GPA	0.000	.00

unofficial evaluation

Area Supporting Coursework (46.000 credits) - Not Met
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Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	MATH/CPSC				4 hrs								
								Select from CSCE 442; MATH 417 or MATH 437.							
No	AND	B.	Algebra Rqmt				3 hrs								
								Select from MATH 415, 433.							
No	AND	C.	CSCE 221												
No	AND	D.	CSCE 314												
No	AND	E.	CSCE 411												
No	AND	F.	CSCE 433												
No	AND	G.	MATH Elect				9 hrs								
								Select from MATH 325, 407-499.							
No	AND	H.	MATH Elect II				3 hrs								
								Select from CSCE 210-470 (except 222, 285, 291); ISEN 320, 340; MATH 325, 407-499; STAT 404-482.							
No	AND	I.	STAT 211												
No	AND	J.	STAT 212												
No	AND	K.	Computer Science Elect				4 hrs								
								Select from CSCE 110, 111, 206.							
No	AND	L.	CSCE 121				4 hrs								
													Total Credits and GPA	0.000	.00

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Area Communication (6.000 credits) - Not Met
:

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	ENGL 103 or ENGL 104				3 hrs								
No	AND	B.	Communication Rqmt				3 hrs								
								Select from COMM 203, 205 or 243.							
													Total Credits and GPA	0.000	.00

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Area Mathematics (8.000 credits) - Not Met
:

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	MATH 171				4 hrs								
								Must make a grade of 'C' or better.							

No AND B. MATH 172 4hrs
Must make a grade of 'C' or better.

Total Credits and GPA 0.000 .00

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Area Life and Physical Sciences (16.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No				A. PHYS 206/226			4hrs									
No	AND			B. Science Rqmt			4 hrs									
				Select from ASTR 111; BIOL 111, BIOL 112; CHEM 119, 120, 107/ 117.												
No	AND			C. Science Rqmt II			4hrs									
				Select from ASTR 111; ATMO 201/202; BIOL 111, 112; CHEM 119, 120, 107/117; GEOL 101/102; OCNG 251/252.												
No	AND			D. Science Rqmt III			4 hrs									
				Select from OCNG 451 or PHYS 207/227												

Total Credits and GPA 0.000 .00

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Area Language, Philosophy & Culture (3.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No				A. Language, Philosophy & Culture												
				Select from any 200-499 course with the [KLPC] attribute.												

Total Credits and GPA 0.000 .00

unofficial evaluation

Area Creative Arts (3.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No				A. Creative Arts Requirement			3hrs									
				Select three hours from any course with the Creative Arts attribute [KCRA].												

Total Credits and GPA 0.000 .00

unofficial evaluation

Area Social and Behavioral Science (3.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No				A. Economics Rqmt			3hrs									
				Select from ECON 202, 203.												

Total Credits and GPA 0.000 .00

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Area : Citizenship (12.000 credits) - Not Met

Description Completion of 4 semesters of Upper-Level ROTC may be substituted for 3 hours of American History and 3 hours of Political Science.

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	American History	Rqmt	6	hrs										
			Select from any course with the [KHIS] attribute.													
No	AND	B.	Political Science	Rqmt	6	hrs										
			Take POLS 206 and POLS 207.													
														Total Credits and GPA	0.000	.00

unofficial evaluation

Area General Electives (7.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	General Electives		7	hrs										
			Select from any 100-499 course not used elsewhere. (except ALED 125; ASTR 109, 119; BMEN 101; BUSN 100; ISEN 101 KINE 199 LAND 200; MATH 102-148, 151-166, 304, 309, 311, 367-368, 375-376; PHYS 109, 119, 201-202, 205; PSYC 301; STAT 201, 301-303; STLE 102 ; URPN 200; WFSC 101.)													
			<i>ASCC 102;</i>													
														Total Credits and GPA	0.000	.00

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Area : Work Not Applied - Met

Description See advisor for acceptable substitutions.

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	Courses not applied													
														Total Credits and GPA	0.000	.00

unofficial evaluation

Area University Writing Requirement - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	Writing Requirement													
			Two courses required. Only sections of MATH 100-499; STAT 407; or UGST 491 with the Writing attribute [UWRT] or the Oral Communication attribute [UCRT] may be used to satisfy this requirement.													
														Total Credits and GPA	0.000	.00

unofficial evaluation

Area Int'l & Cult Diversity - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	Int'l & Cultural Diversity				3									
			Select from courses with the International and Cultural Diversity attribute [UICD] (except sections of BUSN 289 with the UWRT attribute).													
			<i>B. Cultural Discourse 3 hrs</i>													
														Total Credits and GPA	0.000	.00

unofficial evaluation

Area Foreign Language - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No	A.		Foreign Language Rqmt												
Complete one of the following:															
1. Two years of the same foreign language in High School.															
2. A two semester sequence of the same foreign language for University credit.															
													Total Credits and GPA	0.000	.00

unofficial evaluation

Area : Residence Requirement - Not Met

Description A minimum of 36 hours of 300-400 level coursework must be completed at Texas A&M University. 12 hours must be in the major field.

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	Residence - Major				12 hrs								
No	AND	B.	Residence 300-499				24 hrs								
Includes any 300-499 course taken in residence at Texas A&M University.															
													Total Credits and GPA	0.000	.00

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Area : GPR-Major - Not Met

Description A GPR of 2.00 must be maintained in all major field courses.

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course Title	Attribute	Credits	Grade	Source
No		A.	Major GPR				53+hrs								
Includes: CPSC 203-489; ISEN 420-421; MATH 151-499 (except MATH 166, 170); STAT 211-212, 404-482.															
													Total Credits and GPA	0.000	.00

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