

Program Change Request

Date Submitted: 11/07/18 3:37 pm

Viewing: **BS-APMS-BIO : Applied Mathematical Sciences - BS, Biological Science Emphasis**

Last approved: 03/19/18 4:53 pm

Last edit: 11/09/18 2:31 pm

Changes proposed by: donnalh

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

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

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	Biology Track (BIO)
Catalog Program Title	Applied Mathematical Sciences - BS, Biological Science 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. ~~*Adding ENGL 103 as an acceptable Communication Requirement will assist students who have earned credit for ENGL 1301.*The course content of MATH 220 and CSCE 222/ECEN 222 is too similar to allow credit both courses.*Removing MATH 150 from the ineligible General Elective list will assist students with the new Financial Aid regulations.Correcting the error in Howdy degree evaluation Rule A.of General Electives will make Howdy agree with the 2018 2019 Undergraduate Catalog.*All courses with the [KHIS] attribute have been approved by Undergraduate Studies Committee as eligible to satisfy the Citizenship Core Requirement.To be in compliance with *With the development of the new Core Curriculum requirement for Cultural Discourse, undergraduate program in Statistics, new upper level Statistics courses have been created that should be included in Major GPR calculations.~~
4. ~~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.~~
5. **There is no longer other courses equivalent to CHEM 102/CHEM 112, so the Limitation is no longer needed.**
6. **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.**

Program hours 120

Approval Path

1. 11/07/18 4:42 pm
Emil Straube (e-straube): Approved for MATH Department Head
2. 11/09/18 2:32 pm
Angel Mario Carrizales (carri214): 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. Apr 27, 2017 by Angela Allensworth (arankin)

Is this program eligible
for financial aid? No

3. Mar 19, 2018 by Donna
Hoffman (donna1h)

Will program hours
change
(increase/decrease)
due to the proposed
curriculum changes? No

Program delivery mode On-campus

Catalog Program Requirements

Biological Science Emphasis: Consult with departmental advisor.

Plan of Study Grid

First Year

Fall		Semester Credit Hours
BIOL 111	Introductory Biology I	4
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 121	Introduction to Program Design and Concepts	
CSCE 206	Structured Programming in C	
Directed Studies 1		1
	Semester Credit Hours	16

Spring

BIOL 112	Introductory Biology II	4
MATH 172	Calculus	4
Select one of the following:		4
CHEM 101	Course CHEM 101 Not Found	-
& CHEM 111	and Fundamentals of Chemistry Laboratory I	
CHEM 119	Fundamentals of Chemistry I	
CHEM 107	General Chemistry for Engineering Students	
& CHEM 117	and General Chemistry for Engineering Students Laboratory	
American History		3
Directed Studies 1		1
	Semester Credit Hours	16

Second Year

Fall		
MATH 220	Foundations of Mathematics	3
BIOL 213	Molecular Cell Biology	3
MATH 221	Several Variable Calculus	4
MATH 300	Foundations of Mathematics	3
STAT 211	Principles of Statistics I	3
American History		3
Directed Studies 1		1
	Semester Credit Hours	17
Spring		
BIOL 214	Genes, Ecology and Evolution	3
CHEM 222	Elements of Organic and Biological Chemistry	4
& CHEM 242	and Elementary Organic Chemistry Laboratory	
MATH 308	Differential Equations	3
MATH 323	Linear Algebra	3
Directed Studies 1		1
	Semester Credit Hours	14

Third Year

Fall		
MATH 409	Advanced Calculus I	3
MATH 469	Introduction to Mathematical Biology	3
POLS 206	American National Government	3
Language, philosophy and culture 2		3
Directed Studies 1		1
		-

MATH elective 3		3
Semester Credit Hours		16
Spring		
MATH 417	Numerical Methods	4
or MATH 437	or Principles of Numerical Analysis	
MATH 442	Mathematical Modeling	3
STAT 212	Principles of Statistics II	3
Directed Studies 1		1
MATH elective 3		3
Semester Credit Hours		14
Fourth Year		
Fall		
MATH 410	Advanced Calculus II	3
or MATH 446	or Principles of Analysis I	
MATH 415	Modern Algebra I	3
or MATH 433	or Applied Algebra	
POLS 207	State and Local Government	3
Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
Creative arts 4		3
Semester Credit Hours		15
Spring		
ECON 202	Principles of Economics	3
or ECON 203	or Principles of Economics	
MATH Elective hours 3		6
Elective hours 4		3
Semester Credit Hours		12
Total Semester Credit Hours		120

1 Select from [MATH 285](#) or [BIOL 285](#) (Quantative Biology Seminar.) Consult Departmental advisor for selection of proper section.

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

3 Select from [MATH 325](#), [MATH 407-499](#). One course must be a W or C 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 - 303](#); [URPN 200](#); [WFSC 101](#)).

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 [CSC 222/ECEN 222](#) may be used in this degree program.

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

Maximum of 3 hours of [MATH 417](#), [MATH 437](#) or [CSC 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:
	<p>1. To change the course number range of STLC 102 STAT courses to ASCC 102 STAT 404 — STAT 482 in Footnote 4. Howdy degree evaluation Rule A. and Howdy degree evaluation Rule A. of General Electives Are of Howdy Degree Evaluation. to; "MATH 102-148, 151-166, 304..."</p> <p>2. *To add ENGL 103 as an acceptable alternative to ENGL 104 in the Undergraduate Catalog, First Year, fall semester and in Howdy degree evaluation Rule A. of the Communication. *To add the statement, "Maximum of 3 hours of MATH 220 or CSC 222/ECEN 222 may be used in this degree program" to the Undergraduate Catalog and the corresponding "Limitation" in Howdy degree evaluation. To change the course number *To remove MATH 150 from list of CHEM 101/111 to CHEM 119 excluded General Electives in First Year Spring Semester Footnote 4 of the Undergraduate Catalog and change Howdy degree evaluation Rule F. A. of Life and Physical Sciences Area of Howdy Degree Evaluation.</p> <p>3. To change the wording in Footnote 4. to reflect the new requirement of 3 hours of Cultural Discourse. the Communication.</p> <p>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.</p> <p>4. To add the statement, "Maximum of 4 3-hours of CHEM 119, CHEM 107/CHEM 117 MATH 220 or CSC 222/ECEN 222</p>

may be used in this degree program" to the Undergraduate Catalog and update the corresponding Limitation "Limitation" in Howdy Degree Evaluation. ~~degree evaluation-~~

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

6. ~~of General Electives to, "MATH 102 148, 151 166, 304..."~~ Howdy degree evaluation Rule A. ~~of General Electives for 2017-2018 was not in agreement with the Undergraduate Catalog due to "MATH 304" not being listed in Howdy.~~ To change MATH 220 to MATH 300 in Second Year Fall Semester, ~~*To replace HIST 105 and HIST 106 with any course with~~ the statement, "Maximum of 3 hours of MATH 300 or CSCI 222/ECEN 222 may American History [KHS] attribute in the Undergraduate Catalog to be used in this agreement with Howdy degree program" and in the Departmental GPR Requirements in the Undergraduate Catalog. ~~evaluation Rule A.~~ To change MATH 220 to MATH 300 in Rule B. of Major Coursework and the corresponding Limitation in Howdy Degree Evaluation. ~~of Citizenship.~~ *To change the range of STAT courses to STAT 404—STAT 482 in Howdy degree evaluation Rule A. of GPR—Major.

Required Proposal

~~bs_apms_bio_17c.pdf~~

Forms

~~BS-APMS-BIO.pdf~~

~~012218PresidentApprovalMemo.pdf~~

[bs_apms_bio.pdf](#)

Reviewer Comments

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

Key: 486

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												
No	AND	B.	MATH 220 ³⁰⁰	3 hrs												
No	AND	C.	MATH 323	3 hrs												
No	AND	D.	MATH 409	3 hrs												
No	AND	E.	MATH 417 or 437	4 hrs												
No	AND	F.	MATH 308	3 hrs												

Total Credits and GPA 0.000 .00

unofficial evaluation

Area Supporting Coursework (34.000 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 415 or 433													
No	AND	B.	MATH 410 or 446													
No	AND	C.	MATH 469													
No	AND	D.	MATH 442													
No	AND	E.	MATH Elect.	12 hrs												
No	AND	F.	STAT 211													
No	AND	G.	STAT 212													
No	AND	H.	CSCE Elect	4 hrs												

Total Credits and GPA 0.000 .00

unofficial evaluation

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												

Total Credits and GPA 0.000 .00

unofficial evaluation

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												
No	AND	B.	MATH 172	4 hrs												

Total Credits and GPA 0.000 .00

unofficial evaluation

Area Life and Physical Sciences (28.000 credits) - Not Met

Met	Condition	Rule	Subject	Attribute	Low	High	Required Credits	Required Courses	Term	Subject	Course	Title	Attribute	Credits	Grade	Source
No		A.	BIOL 111	4 hrs												
No	AND	B.	BIOL 112	4 hrs												
No	AND	C.	Directed Studies	6 hrs												
			Select from BIOL 285 or MATH 285.													
No	AND	D.	BIOL 213	3 hrs												
No	AND	E.	BIOL 214	3 hrs												
No	AND	F.	CHEM Rqmt	4 hrs												
			Select from CHEM 119 or CHEM 107 and CHEM 117.													
No	AND	G.	CHEM 222	3 hrs												
No	AND	H.	CHEM 242	1 hr												
														Total Credits and GPA	0.000	.00

unofficial evaluation

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	3 hrs												
			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	3 hrs												
			Select from ECON 202, 203.													
														Total Credits and GPA	0.000	.00

unofficial evaluation

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

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				12hrs								
No	AND	B.	Residence 300-499				24hrs								
Includes any 300-499 course taken in residence at Texas A&M University.															
													Total Credits and GPA	0.000	.00

unofficial evaluation

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				48+hrs								
Includes MATH 151-499; STAT 211-212; STAT 404-482; CSCE 203-470; ISEN 320-489.															
													Total Credits and GPA	0.000	.00

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