Final 3/2/2017

MINUTES OF THE MEETING
OF THE UNDERGRADUATE ACADEMIC POLICIES AND PROCEDURES COMMITTEE
March 1, 2017

The AP&P Committee met on Wednesday, March 1, 2017 at 3:00 p.m. in the William C. Strickland Conference Room of I.G. Greer Hall.

Committee members present: Dr. Teresa Carnevale, Dr. Jon Carter, Dr. Ellen Cowan, Dr. Jeff Hirst, Dr. René Horst, Dr. Joe Klein, Mr. Jason Miller, Dr. Ben Powell, Dr. Teressa Sumrall, Mr. John Wiswell, Mr. Rice Neese, Mr. Travis O'Shell

Committee members excused: Dr. Jon Beebe, Dr. Tanga Mohr, Dr. René Salinas

Committee members unexcused: Dr. Janice Pope

At 3:00 p.m., Dr. Ben Powell noted that we have a quorum and he called the meeting to order.

Subcommittee

Approval of Minutes

January 18, 2017

Vote 1 – To approve the January 18, 207 minutes – PASSED

Announcements

The General Education Council meeting on February 17, 2017 was cancelled.

"For Information Only" list of semester offering changes 2/2/2017 through 2/15/2017.

- SD 2800 changed from Fall to On Demand
- FIN 3600 changed from Fall; Spring to On Demand
- FIN 4700 changed from Fall to Fall, Spring
- COM 2300 changed from Fall; Spring to On Demand

New Business

Procedural note: All dual-listed graduate course changes are also approved through the Graduate AP&P Committee. The complete action of the proposal will be listed but only the undergraduate curriculum is voted on by Undergraduate AP&P.

Order of presentation (Total 13)
College of Fine and Applied Arts (13)

Dr. Dru Henson presented proposals from the College of Arts and Sciences for the Department of Mathematical Sciences

The proposals from the Department of Mathematical Sciences were approved as follows: (EFFECTIVE: Fall 2017)

U_CAS_MAT_2016_01 Change the title and course description of **MAT 4330. Senior Seminar in Actuarial Sciences (3).S.**
MAT 4330. Senior Seminar in Actuarial Science (3).S.
GEN ED: Capstone Experience
A course designed to provide majors in Actuarial Science the opportunity to study actuarial problems from a variety of sources. The emphasis will be

on the oral and written presentation of results. The course should prepare the student for making the transition from academic courses to actuarial practice. Students taking this course should have completed most of the Actuarial Science curriculum. Students are also encouraged to register for at least one Society of Actuaries professional exam during this course. Prerequisite: MAT 3330 and STT 3250.

POS affected: 106A

U_CAS_MAT_2016_02 Change the title of the Bachelor of Science in Actuarial Sciences (106A/52.1304). to the Bachelor of Science in Actuarial Science (106A/52.1304) (CONTINGENT ON APPROVAL BY UNC-GENERAL ADMINISTRATION)

U_CAS_MAT_2016_03 Change the credit hours and course description of **MAT 2110. Techniques of Proof (3).F;S.** to read as follows:
MAT 2110. Techniques of Proof (4).F;S.
A study of methods of proof used in mathematics. Formal proof topics include propositional calculus, predicate calculus, and several first order theories. Informal proof topics are drawn from number theory, set theory, and other areas of mathematics. Additional topics include introductions to writing mathematics, searching for mathematical content and sources, and careers in mathematics. Prerequisite: MAT 1120 or permission of the instructor.

POS affected: 106A, 260B, 260D, 260E, 260F, 260G, 260H, 260I, 261A
SAC affected: Mathematical Sciences

U_CAS_MAT_2016_04 Change the course description and prerequisite statement of **MAT 4310. Numerical Methods (3).S.** to read as follows:
MAT 4310. Numerical Methods (3).S.
Theoretical development and implementation of classical numerical methods. Topics covered include computer arithmetic, interpolation, and approximation. Numerical algorithms investigated may include root finding, interpolation, linear system solutions, derivative and integral estimation, and differential equation solutions. Knowledge of calculus, linear algebra, and programming will be assumed. Prerequisites: MAT 2240 and MAT 2310 or permission of the instructor, with MAT 2130 or MAT 3130 recommended.

POS affected: 219A, 260B, 260D, 260E, 260F, 260G, 260H, 261A

U_CAS_MAT_2016_05 Course Addition:
MAT 4900. Internship (1-12).On Demand.
Independent, supervised work in mathematics or actuarial science for an approved agency, business, or organization. The number of semester hours taken must be approved by the department chair, and may not all be approved to count toward major requirements. Prerequisite: approval of the department chair. Graded on an S/U basis.

Course Addition:
STT 4900. Internship (1-12).On Demand.
Independent, supervised work in statistics for an approved agency, business, or organization. The number of semester hours taken must be approved by the department chair, and may not all be approved to count toward major requirements. Prerequisite: approval of the department chair. Graded on an S/U basis.

U_CAS_MAT_2016_06 Course Additions:
MAT 1530-1549. Selected Topics (1-4).On Demand.
MAT 2530-2549. Selected Topics (1-4).On Demand.
MAT 4530-4549. Selected Topics (1-4).On Demand.
STT 1530-1549. Selected Topics (1-4).On Demand.
STT 2530-2549. Selected Topics (1-4).On Demand.
STT 4530-4549. Selected Topics (1-4).On Demand.

U_CAS_MAT_2016_07 Course Additions:
MAT 4500. Independent Study (1-4).On Demand.
STT 2500. Independent Study (1-4).On Demand.
STT 4500. Independent Study (1-4).On Demand.

U_CAS_MAT_2016_08 Change the credit hours and semester offering of **MAT 2500. Independent Study (1-3).F;S.** to read as follows:
MAT 2500. Independent Study (1–4).On Demand.

POS affected: 261A

U_CAS_MAT_2016_09 Revise the program of study for the Bachelor of Arts in Mathematics (261A/27.0101). The program of study is at the end of the minutes.

U_CAS_MAT_2016_10 Revise the program of study for the Bachelor of Science in Mathematics (260*/27.0101) with concentrations in General (260B), Computation (260E), Life Sciences (260F), Physical Sciences (260G), and Statistics (260H). The programs of study is at the end of the minutes.

U_CAS_MAT_2016_11 Revise the program of study for the Bachelor of Science in Mathematics (260*/27.0101) with a concentration in Business (260D). The program of study is at the end of the minutes.

U_CAS_MAT_2016_12 Revise the program of study for the Bachelor of Science in Mathematics (260*/27.0101) with a concentration in Secondary Education (260I). The program of study is at the end of the minutes.

U_CAS_MAT_2016_13 Revise the Undergraduate Bulletin to remove **MAT 1120. Calculus With Analytic Geometry II, Honors (4).F.** from the MATHEMATICS HONORS list of courses. MAT 1120 is not being deleted.

Vote 2 – To approve the proposals from the Department of Mathematical Sciences - PASSED

Old Business

Other

Adjournment

Vote 3 – To approve the motion to adjourn – PASSED

UNDERGRADUATE ACADEMIC POLICIES AND PROCEDURES COMMITTEE
March 1, 2017
Unofficial Vote Record

Committee Members	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Jon Beebe	-	-	-										
Teresa Carnevale	Y	Y	Y										
Jon Carter	Y	Y	Y										
Ellen Cowan	Y	Y	Y										
Jeff Hirst	Y	Y	Y										
René Horst	Y	Y	Y										
Joe Klein	Y	Y	Y										
Jason Miller	Y	Y	Y										
Tanga Mohr	-	-	-										
Janice Pope	-	-	-										
Ben Powell	Y	Y	Y										
René Salinas	-	-	-										
Teressa Sumrall	Y	Y	Y										
John Wiswell	Y	Y	Y										
Rice Neese	Y	Y	Y										
Travis O'Shell	Y	Y	Y										

The recommendations from the March 1, 2017 Undergraduate Academic Policies and Procedures Committee meeting are approved.

Darrell P. Kruger 3/6/2017

Darrell P. Kruger Date
Provost and Executive Vice Chancellor

Bachelor of Arts (BA) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 261A PROPOSED

I. GENERAL EDUCATION CURRICULUM 44
Math 1110 will count toward Quantitative Literacy general education requirement.

II. LANGUAGE (Completion of 6 semester hours at the *intermediate level, or higher) 6
_____1040 ____ and 1050 ___ or 1060 ____; or higher level courses _____
**NOTE: Language 1010 and 1020 (or 1030) are prerequisites for the intermediate levels. FL 1050 or 1060 may be used in Gen Ed Liberal Studies Experience*

III. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)* **..... 31**
2. 0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under III. No more than 46 semester hours of Mathematics courses may be counted toward the BA Degree.

1. Mathematics Major Requirements: (~~28-29~~29-30 s.h.)

MAT 1110 _____ (4) Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120 _____ (4) Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2130 _____ (4) Calculus with Analytic Geometry III *(Pre: MAT 1120 w/min grade C-)*
MAT 2110 _____ (~~3~~4) Techniques of Proof *(Pre: MAT 1120)*
MAT 2240 _____ (3) Introduction to Linear Algebra *(Pre: MAT 1120)*

Choose one:
MAT 3130 _____ (3) Intro Differential Equations *(Pre: MAT 1120)*
STT 3850 _____ (4) Statistical Data Analysis *(Pre: MAT 1110)*

Choose one WID course: *(Pre for WID: RC 2001, MAT 2110 or 2510)*
MAT 3110 _____ (3) Intro to Modern Algebra **[WID]** *(Co: 2240)*
MAT 3220 _____ (3) Intro to Real Analysis I **[WID]**

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 35 hours in Area III. Please see your advisor for approval and more information.

Choose one 4 hour combination (courses must be taken in same semester);
[CAP] is Capstone course: each has corequisite of first class in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4310___ (3) Numerical Meth *(Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*	**AND**	MAT 4311 ___ (1) Numerical Methods **[CAP]**
MAT 4340___ (3) Intro to Operations Research *(Pre: MAT 2240, STT 3 850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory *(Pre: MAT 3130 or 3310)*	**AND**	MAT 4421 ___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___(3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **[CAP]**

2. Mathematics Electives: (~~6-7~~5-6 s.h. **to bring total hours in AREA III to 35 hours~~; at least 3 hours must be from 4000 level~~**);
Any course listed above but not used to meet requirements above, may be used in this section.

MAT 2310 ___ (3) Computational Math *(Pre: MAT 1120)*
MAT 2500 ___ (1-3) Independent Study
MAT 3010 ___ (2) Survey in History of Math *(Pre: MAT 1120; MAT 2110 or 2510)*
MAT 3310 ___ (3) Discrete & Continuous Math Models *(Pre: MAT 1120; Co: 2240)*
MAT 3330 ___ (3) Financial Mathematics *(Pre: MAT 1120)*
MAT 3350 ___ (3) Intro to Mathematical Biology *(Pre: MAT 1120, Jr stdng)*
MAT 3500 ___ (1-3) Independent Study
MAT 3510 ___ (3) Junior Seminar
MAT 3610 ___ (3) Intro to Geometry *(Pre: MAT 1120; MAT 2110 or 2510)*
MAT 4400 ___ (1-3) Senior Research *(Pre:3 sh 4000 level MAT)*
STT 3250 ___ (4) Fundamentals of Probability *(Pre: MAT 2130)*
STT 3820 ___ (3) Statistical Methods I *(Pre: STT 2810 or 2820)*
STT 3830 ___ (3) Statistical Methods II *(Pre: STT 3820)*
STT 3840 ___ (3) Elem Prob & Surv Smpg *(Pre: STT 2810 or 2820)*
STT 3851 ___ (3) Stat Data Anlys II **[WID]** *(Pre: STT 3850; RC 2001)*
STT 4811 ___ (3) Stat Concepts & Applications I *(Pre: MAT 1120)*
STT 4812 ___ (3) Stat Concepts & Applications II *(Pre: STT 4811)*

IV. MINOR REQUIRED 12-21
Minimum of 9 semester hours of courses taken to fulfill minor requirements must be courses offered by Appalachian.

V. ELECTIVES (taken to total 122 hours for the degree) 20-29
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science (BS) ~~2016-2017~~ 2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260* **PROPOSED**
Concentration Code 260B **GENERAL**

I. GENERAL EDUCATION CURRICULUM **44**
Math 1110 will meet the Quantitative Literacy general education requirement.

II. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)* **61**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110 _____ (4) Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120 _____ (4) Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110 _____ (~~3~~4) Techniques of Proof *(Pre: MAT 1120)*
MAT 2240 _____ (3) Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 65 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for the Concentration (17 hours)

MAT 2130 _____ (4) Calculus with Analytic Geometry III *(Pre: MAT 1120 w/min grade C-)*
MAT 3110 _____ (3) Intro to Modern Algebra **[WID]** *(Pre: RC 2001, MAT 2110 or 2510; Co: 2240)*
MAT 3220 _____ (3) Intro to Real Analysis I **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*
Choose one:
MAT 3130 _____ (3) Intro to Differential Equations *(Pre: MAT 1120)*
MAT 3310 _____ (3) Discrete & Continuous Mathematical Models *(Pre: MAT 1120; Co: 2240)*
Choose one:
STT 3250 _____ (4) Fundamentals of Probability *(Pre: MAT 2130)*
STT 3850 _____ (4) Statistical Data Analysis *(Pre: MAT 1110)*

C. Capstone Requirements (4 hours) Choose one 4-hour combination (courses to be taken in the same semester); **[CAP]** is Capstone course: each has corequisite of first course in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4310___ (3) Numerical Meth (*Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*	**AND**	MAT 4311 ___ (1) Numerical Methods **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory *(Pre: MAT 3130 or 3310)*	**AND**	MAT 4421 ___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **[CAP]**

D. Approved Major Electives: ~~9~~ 8 hours in mathematical sciences **to bring total hrs in AREA II to 65 hrs**

3 hours at the 4000 level _____

Remaining ~~6~~ 5 hours: *(At least 3 hours in MAT if STT combination was chosen in Area C. Capstone)* _____ _____

E. A Career Support Concentration (at least 21 hours, which must be approved by the mathematical sciences advisor)

_____ _____ _____
_____ _____ _____
_____ _____ _____

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) **17**
2 semester hours of free electives must be outside the major discipline **122**

Bachelor of Science (BS) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260*
Concentration Code 260E **COMPUTATION**

I. GENERAL EDUCATION CURRICULUM..... 44
Math 1110 will meet the Quantitative Literacy general education requirement.

II. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)* **..... 61**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110	_____	(4)	Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120	_____	(4)	Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110	_____	(~~3~~4)	Techniques of Proof *(Pre: MAT 1120)*
MAT 2240	_____	(3)	Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 65 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for the Concentration (13 hours)

MAT 2310	_____	(3)	Computational Mathematics *(Pre: MAT 1120)*
MAT 4310	_____	(3)	Numerical Methods *(Pre: MAT 2310, 2240; rec: MAT 2130 or 3130))*
STT 3850	_____	(4)	Statistical Data Analysis I *(Pre: MAT 1110)*

Choose one:

MAT 3110	_____	(3)	Introduction to Modern Algebra **[WID]** *(Pre: RC 2001, MAT 2110 or 2510; Co: 2240)*
MAT 3220	_____	(3)	Intro to Real Analysis I **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*

C. Capstone Requirements (4 hours) Choose one option:
OPTION 1: 4 hours
MAT 4311 _____ (1) Capstone: Numerical Methods **[CAP]** *(Co: MAT 4310)*
3 hours MAT course ____ (3) _____

OPTION 2: Choose one 4-hour combination (courses taken in the same semester); [CAP] is Capstone course: each has CO: of first course in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory (*Pre: MAT 3130 or 3310)*	**AND**	MAT 4421 ___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___(1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711 ___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **CAP]**

D. Approved Electives: ~~11~~ 10 hours in mathematical sciences** **to bring total number of hours in AREA II to 65**
(At least 3 hours in MAT if STT combination was chosen in Area C. Capstone)

_____

E. Computational Concentration (14 hours)

C S 1440	_____	(4)	Computer Science I *(Pre: MAT 1020 or 1025 w/min grade C-)*
C S 2440	_____	(4)	Computer Science II *(Pre: CS 1440 or 1445 w/min grade C; Co: CS 1100)*
C S 3430	_____	(3)	Database *(Pre: CS 2440 with min grade of C)*
C S 3460	_____	(3)	Data Structures *(Pre: CS 2440 with min grade of C)*

F. Electives: 9 hours** of Approved courses in the sciences, which may include computer science_____
** *Must be approved by mathematical sciences advisor*.

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) 17
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science (BS) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260* **PROPOSED**
Concentration Code 260F **LIFE SCIENCES**

I. GENERAL EDUCATION CURRICULUM 44
CHE 1101/1110 & 1102/1120 fulfill the Science Inquiry perspective. MAT 1110 fulfills the Quantitative Literacy requirement.

II. MAJOR REQUIREMENTS *(not including 12 s.h. counted in Area I, above)* **..... 58**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110	_____	(4)	Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120	_____	(4)	Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110	_____	(~~3~~4)	Techniques of Proof *(Pre: MAT 1120)*
MAT 2240	_____	(3)	Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 70 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for the Concentration (19 hours)

MAT 2310	_____	(3)	Computational Mathematics (*Pre: MAT 1120)*
MAT 3130	_____	(3)	Introduction to Differential Equations *(Pre: MAT 1120)*
MAT 3220	_____	(3)	Intro to Real Analysis **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*
MAT 3350	_____	(3)	Intro to Mathematical Biology *(Pre: MAT 1120; Jr. standing)*
MAT 4420	_____	(3)	Dynamical Systems Theory *(Pre: MAT 3130 or 3310)*
STT 3850	_____	(4)	Statistical Data Analysis I *(Pre: MAT 1110)*

C. Capstone Requirements (4 hours) Choose one option:

OPTION 1: 4 hours

MAT 4421	_____	(1)	Capstone: Dynamical Systems Theory **[CAP]** *(Co: MAT 4420)*
3 hours MAT	_____	(3)	MAT course: _____

OPTION 2: Choose one 4-hour combination (courses taken in the same semester);
[CAP] is Capstone course: each has CO: of first course in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4310___ (3) Numerical Meth (*Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*	**AND**	MAT 4311 ___ (1) Numerical Methods **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **CAP]**

D. Life Sciences Concentration (30 hours)

CHE 1101/1110	_____	(4)	Introductory Chemistry I & Lab
CHE 1102/1120	_____	(4)	Introductory Chemistry II & Lab *(Pre: CHE 1101 & 1110)*
CHE 2101/2102	_____	(4)	Fundamentals of Organic Chemistry & Lab *(Pre: CHE 1102 & 1120)*
BIO 1801	_____	(4)	Biological Concepts I *(Co: CHE 1101)*
BIO 1802	_____	(4)	Biological Concepts II *(Pre: BIO 1801 w/min grade C)*

AND 10 hours of approved electives in BIO, CHE, GHY (at least one lab class; at least one class at 3000 level or higher)

_____

E. Approved Major Electives: (~~3~~ 2 hours)
~~3~~ 2 hours in mathematical sciences to bring total hrs in AREA II to 70 hours: _____

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) 20
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science (BS) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260* **PROPOSED**
Concentration Code 260G **PHYSICAL SCIENCES**

I. GENERAL EDUCATION CURRICULUM..... 44
Math 1110 will meet the Quantitative Literacy general education requirement.

II. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)*..... **61**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110 _____ (4) Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120 _____ (4) Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110 _____ (~~3~~4) Techniques of Proof *(Pre: MAT 1120)*
MAT 2240 _____ (3) Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
-You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 65 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for the Concentration (20 hours)

MAT 2130 _____ (4) Calculus with Analytic Geometry III *(Pre: MAT 1120 w/min grade C-)*
MAT 2310 _____ (3) Computational Mathematics *(Pre: MAT 1120)*
MAT 3130 _____ (3) Introduction to Differential Equations *(Pre: MAT 1120)*
MAT 4310 _____ (3) Numerical Methods *(Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*~~)~~
STT 3850 _____ (4) Statistical Data Analysis I *(Pre: MAT 1110)*
Choose one:
MAT 3110 _____ (3) Introduction to Modern Algebra **[WID]** *(Pre: RC 2001, MAT 2110 or 2510; Co: 2240)*
MAT 3220 _____ (3) Introduction to Real Analysis **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*

C. Capstone Requirements (4 hours) Choose one option:
OPTION 1: 4 hours
MAT 4311 _____ (1) Capstone: Numerical Methods **[CAP]** *(Co: MAT 4310)*
3 hours MAT course ____ (3) _____

OPTION 2: Choose one 4-hour combination (courses taken in the same semester); [CAP] is Capstone course: each has CO: of first course in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory (*Pre: MAT 3130 or 3310)*	**AND**	MAT 4421___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **CAP]**

D. Approved Electives: ~~10~~ 9 hours in mathematical sciences **to bring total hrs in AREA II to 65 hrs**
(At least 3 hours in MAT if STT combination was chosen in Area C. Capstone)
_____

E. Physical Sciences Concentration (17 hours)

PHY 2010 _____ (4) Intermediate Physics I *(Pre: PHY 1104 or 1151, MAT 1120)*
PHY 2020 _____ (4) Intermediate Physics II *(Pre: PHY 2010, MAT 2130)*
PHY 3210 _____ (3) Modern Physics I *(Pre: PHY 1151 or Co: PHY 2010)*
3 hours of approved electives** in physics at or above 2000 level _____
3 hours of approved electives** in physics or technology _____ *** Must be approved by math sciences advisor.*

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) **17**
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science (BS) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260* **PROPOSED**
Concentration Code 260H **STATISTICS**

I. GENERAL EDUCATION CURRICULUM..... 44
Math 1110 will meet the Quantitative Literacy general education requirement.

II. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)*..... **61**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110	_____	(4)	Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120	_____	(4)	Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110	_____	(~~3~~4)	Techniques of Proof *(Pre: MAT 1120)*
MAT 2240	_____	(3)	Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 65 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for Concentration (16 hours)

MAT 2130	_____	(4)	Calculus with Analytic Geometry III *(Pre: MAT 1120 w/min grade C-)*
MAT 2310	_____	(3)	Computational Mathematics *(Pre: MAT 1120)*
MAT 3130	_____	(3)	Introduction to Differential Equations *(Pre: MAT 1120)*
MAT 3220	_____	(3)	Introduction to Real Analysis **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*
MAT 4310	_____	(3)	Numerical Methods *(Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*

C. Capstone Requirements (4 hours) Choose one option:

OPTION 1: 4 hours
MAT 4311 _____ (1) Capstone: Numerical Methods **[CAP]** *(Co: MAT 2310 and 4310)*
3 hours MAT course ____ (3) _____

OPTION 2: Choose one 4-hour combination (courses taken in the same semester); [CAP] is Capstone course: each has CO: of first course in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory (*Pre: MAT 3130 or 3310)*	**AND**	MAT 4421 ___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **CAP]**

D. Approved Electives: ~~6~~ 5 hours in mathematical sciences **to bring total hrs in AREA II to 65** _____ _____

E. Statistics Concentration (25 hours)

STT 3250	_____	(4)	Fundamentals of Probability *(Pre: MAT 2130)*
STT 3850	_____	(4)	Statistical Data Analysis I *(Pre: MAT 1110)*
STT 3851	_____	(3)	Statistical Data Analysis II **[WID]** *(Pre: RC 2001, STT 3850)*

5 hours of approved statistics electives** at or above STT 3830 (excluding STT 4811 and 4812) _____
9 hours of approved electives** in related coursework which may include courses from outside mathematical sciences
_____

** *Must be approved by mathematical sciences advisor.*

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) **17**
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science (BS) ~~2016-2017~~2017-2018 **Program of Study for Mathematics Majors**
Degree Code 260* **PROPOSED**
Concentration Code 260D **BUSINESS**

I. GENERAL EDUCATION CURRICULUM **44**
Math 1110 will meet the Quantitative Literacy general education requirement.

II. MAJOR REQUIREMENTS *(not including 4 s.h. counted in Area I, above)* **61**
2.0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under II. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Mathematics Common Core (~~14~~ 15 hours)

MAT 1110	_____	(4)	Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120	_____	(4)	Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2110	_____	(~~3~~4)	Techniques of Proof *(Pre: MAT 1120)*
MAT 2240	_____	(3)	Introduction to Linear Algebra *(Pre: MAT 1120)*

HONORS STUDENTS
You may substitute MAT 2510 Sophomore Honors Seminar for MAT 2110, and MAT 4510 Senior Honors Thesis for your Capstone. This will slightly change your elective requirements to ensure you earn 65 hours in Area II. Please see your advisor for approval and more information.

B. Mathematics Courses for the Concentration (14 hours)

MAT 2130	_____	(4)	Calculus with Analytic Geometry III *(Pre: MAT 1120 w/min grade C-)*
MAT 3220	_____	(3)	Intro to Real Analysis I **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*
STT 3850	_____	(4)	Statistical Data Analysis I *(Pre: MAT 1110)*
Choose one:			
MAT 3130	_____	(3)	Intro to Differential Equations *(Pre: MAT 1120)*
MAT 3310	_____	(3)	Discrete & Continuous Mathematical Models *(Pre: MAT 1120; Co: 2240)*

C. Capstone Requirement: (4 hours) - Choose one 4 hour combination (courses must be taken in same semester);
[CAP] is Capstone course: each has corequisite of first class in each pair below

MAT 4010___ (1-3) Current Topics in Mathematics	**AND**	MAT 4011 ___ (1) Current Topics in Math **[CAP]**
MAT 4140___ (3) Differential Geometry *(Pre: MAT 2130; Co: MAT 2240)*	**AND**	MAT 4141 ___ (1) Differential Geometry **[CAP]**
MAT 4220___ (3) Intro to Real Analysis II *(Pre: MAT 3220)*	**AND**	MAT 4221 ___ (1) Intro to Real Analysis II **[CAP]**
MAT 4310___ (3) Numerical Meth(*Pre: MAT 2310, 2240; rec: MAT 2130 or 3130)*	**AND**	MAT 4311 ___ (1) Numerical Methods **[CAP]**
MAT 4340___ (3) Intro to Operations Research (*Pre: MAT 2240, STT 3850; Sr st)*	**AND**	MAT 4341 ___ (1) Intro to Oper Research **[CAP]**
MAT 4420___ (3) Dynamical Systems Theory *(Pre: MAT 3130 or 3310)*	**AND**	MAT 4421 ___ (1) Dynamical Systems Theory **[CAP]**
MAT 4590___ (3) Adv Topics in Differential Equations *(Pre: MAT 3130; Sr st)*	**AND**	MAT 4591 ___ (1) Adv Topics in Diff Equations **[CAP]**
MAT 4710___ (3) Intro to Topology *(Pre: MAT 3220; St st)*	**AND**	MAT 4711___ (1) Introduction to Topology **[CAP]**
MAT 4720___ (3) Abstract Algebra *(Pre: MAT 3110; Sr st)*	**AND**	MAT 4721 ___ (1) Abstract Algebra **[CAP]**
MAT 4990___ (3) Numerical Linear Algebra *(Pre: MAT 4310; Sr. st)*	**AND**	MAT 4991 ___ (1) Numerical Linear Algebra **[CAP]**
STT 4820___ (3) Design & Analysis of Experiments *(Pre: STT 3820; Sr st)*	**AND**	STT 4821 ___ (1) Design & Analysis of Exper **[CAP]**
STT 4830 ___(3) Linear Regression Models *(Pre: MAT 2240; STT 3830; Sr. st)*	**AND**	STT 4831 ___ (1) Linear Regression Models **[CAP]**
STT 4840 ___ (3) Regression & Time Series Forec *(Pre: MAT 2240; STT 3250, 3850)*	**AND**	STT 4841 ___ (1) Regression &Time Series Forec **[CAP]**

D. Major Approved Electives: ~~10~~ 9 hours in mathematical sciences **to bring total hours in AREA II to 65 hours**

3 hours at the 4000 level _____

Remaining ~~7~~ 6 hours: *(At least 3 hours in MAT if STT combination was chosen in Area C. Capstone)* _____ _____

E. Business Concentration (at least ~~20~~ 21 advisor-approved hours in business courses)

_____ _____ _____

_____ _____ _____

F. Concentration Electives (~~3~~ 2 hours) Advisor-approved elective in business or mathematical sciences _____

III. MINOR (optional)

IV. ELECTIVES (taken to total 122 hours for the degree) **17**
2 semester hours of free electives must be outside the major discipline. **122**

Bachelor of Science **~~2016-2017~~2017-2018** **Program of Study for Mathematical Sciences Majors**
Degree Code 260* **PROPOSED** **MATHEMATICS**
Concentration Code 260I **SECONDARY EDUCATION LICENSURE**

I. GENERAL EDUCATION CURRICULUM 44
Math 1110 will count toward Quantitative Literacy general education requirement.

II. PROFESSIONAL EDUCATION REQUIREMENTS 24
A minimum grade of C is required in each professional education course. CI 2300 & FDN 2400 are required prior to admission to Teacher Educ.

CI 2300 _____ (2) Teaching and Learning in the Digital Age *(Entry course to teacher education)*
FDN 2400 _____ (2) Critical Perspectives on Teaching and Learning *(Pre or Co: CI 2300) (Entry course to teacher education)*
PSY 3010 _____ (3) Psychology Applied to Teaching *(Pre or Co: CI 2300)*
SPE 3300* _____ (3) Creating Inclusive Learning Communities *(Pre: CI 2300, FDN 2400, PSY 3010)*
C I 3400* _____ (2) Policies and Practice in Educational Assessment *(Pre: CI 2300, FDN 2400, PSY 3010)*
C I 4900 _____ (12) Student Teaching **[CAP]** *(Pre: 2.7 cumulative GPA; All courses in professional core must be completed with grades of C (2.0) or higher prior to student teaching, along with other courses (including methods and reading) identified within the major.*

PROFICIENCIES:
Reading _____
English _____

*Admission to Teacher Education required.

Minimum 2.7 cumulative GPA required to graduate

NOTE: Teacher licensure programs require a minimum 2.7 cumulative GPA from admission into the teacher education program until graduation, including for admission to student teaching. Admission also requires students to take and satisfy testing requirements for Reading, Writing and Math areas of the PRAXIS I Core. The PRAXIS II Area Exams are required prior to the end of student teaching.

III. MAJOR REQUIREMENTS (not including 4 s.h. counted in Area I, above) ..... **~~45~~44**
2. 0 major GPA is required for graduation. Major GPA calculation will include all courses taken in the major department, plus any other courses under III. Minimum of 18 semester hours of courses taken to fulfill major requirements must be courses offered by Appalachian.

A. Area of Specialization in Preparation for Teaching: (~~46-47~~45 hours)
Mathematics:

MAT 1110 _____ (4) Calculus with Analytic Geometry I *(Pre: MAT 1025 w/min grade C-)*
MAT 1120* _____ (4) Calculus with Analytic Geometry II *(Pre: MAT 1110 w/min grade C-)*
MAT 2240 _____ (3) Introduction to Linear Algebra *(Pre: MAT 1120)*
MAT 3010 _____ (2) Survey in the History of Mathematics *(Pre: MAT, 2110 or 2510)*
MAT 3015 _____ (2) Junior Seminar for Mathematics Majors in Education *(Pre: MAT 2240, 3010)*
~~MAT 3110* _____ (3) Introduction to Modern Algebra **[WID]** *(Pre: RC 2001, MAT 2110 or 2510; Co: 2240)*~~
~~MAT 3220* _____ (3) Introduction to Real Analysis I **[WID]** *(Pre: RC 2001, MAT 2110 or 2510)*~~
MAT 3310 _____ (3) Discrete and Continuous Mathematical Models *(Pre: MAT 1120; Co: 2240)*
MAT 3520 _____ (1) Instructional Assistance *(Pre: Jr./Sr. standing)*
MAT 3610* _____ (3) Introduction to Geometry *(Pre: MAT, 2110 or 2510)*
MAT 4015 _____ (3) Advanced Seminar in Secondary Math Education *(Pre: MAT 3015, 3 s.h. 4000-level MAT/STT; Sr. stdg)*
STT 4811 _____ (3) Statistical Concepts and Applications I *(Pre: MAT 1120)*
STT 4812 _____ (3) Statistical Concepts and Applications II with Probability Modeling *(Pre: STT 4811)*

** Grade of C required in MAT 1120, 3610, and 3110 or 3220 for CI 4900*

Choose one:

MAT 2110 _____ (~~3~~4) Techniques of Proof *(Pre: MAT 1120)*
MAT 2510 _____ (4) Sophomore Honors Seminar *(Pre: MAT 1120)*

Choose one:
MAT 3110 _____ (3) Introduction to Modern Algebra [WID] (Pre: RC 2001, MAT 2110 or 2510; Co: MAT 2240)
MAT 3220 _____ (3) Introduction to Real Analysis I [WID] (Pre: RC 2001, MAT 2110 or 2510)

~~5~~-67 s.h. approved courses in Mathematical Sciences **to bring total hrs in AREA III to 48 hrs** (at least 3 s.h. MAT at 4000 level):

_____ _____

B. Other Required Education Course (3 hours)
C I 4085* _____ (3) Teaching High School Mathematics *(Pre: Sr. standing)*
**Minimum "C" grade required*

IV. MINOR (optional)

V. ELECTIVES (taken to total 122 hours for the degree) ..... **~~9~~10**
2 semester hours of free electives must be outside the major discipline. **122**