NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **CEFNS** 2. Academic Unit: **Physics and Astronomy**

3. Academic Plan Name: **B.S. Ed. Secondary Education; Physics (PSPBSEDX)** 4. Emphasis: **N/A**

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to ~~**Bold Red with strikethrough**~~ for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
Candidates in this plan will demonstrate content knowledge, pedagogical knowledge and skills, professional knowledge, and professional dispositions to be eligible to enter student teaching or internship placements.	**UNCHANGED**

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: (http://catalog.nau.edu/Catalog/)

Physics-Secondary Education; B.S.Ed.

In addition to University Requirements:

- At least 78 units of major requirements including at least 12-14 units of concentration requirements in mathematics or chemistry.
- At least 31 units of Mathematics and Science Teaching requirements.
- Be aware that you may not use courses with a PHY prefix to satisfy liberal studies requirements. Required courses in this major also satisfy 16 of your 35 liberal studies units. See your advisor for details.
- Elective courses, if needed, to reach an overall total of at least 120 units.

Candidates in this program are required to demonstrate content knowledge, pedagogical knowledge and skills, professional knowledge, and professional dispositions to be eligible to enter student teaching or internship placements. Content, pedagogical, and professional knowledge or skills, professional dispositions are demonstrated through candidate performance on key assessments embedded in the following course(s):

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

TSM 350, TSM 404, TSM 450, TSM 495C, TSM 496C, BME 437

Minimum Units for Completion	120
GPA	2.5
Mathematics Required	MAT 238
Additional Admission Requirements	Required
Student Teaching/Supervised Teaching	Required
University Honors Program	Optional
Progression Plan	View Progression Plan

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to ~~**Bold Red with strikethrough**~~ for what is being deleted.

Physics-Secondary Education; B.S.Ed.

In addition to University Requirements:

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Candidates in this program are required to demonstrate content knowledge, pedagogical knowledge and skills, professional knowledge, and professional dispositions to be eligible to enter student teaching or internship placements. Content, pedagogical, and professional knowledge or skills, professional dispositions are demonstrated through candidate performance on key assessments embedded in the following course(s):

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Student Teaching/Supervised Teaching	Required
University Honors Program	Optional
Progression Plan	View Progression Plan

Additional Admission Requirements

Admission requirements over and above

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Admission requirements over and above admission to NAU are required.

To be eligible for admission to the teacher education program, candidates must meet the following requirements and apply for the program online.
30 units of coursework which includes:

- TSM 101 and TSM 102 with grades of "C" or better
- Program Mathematics Foundations requirement with a grade of "C" or better
- The English foundations requirement (ENG 105 or equivalent) with a minimum GPA of 3.0. (If your English GPA is below 3.0, you may take an approved writing course to achieve the 3.0 GPA.)
- Completion of or enrollment in TSM 300, Knowing and Learning
- A minimum GPA of 2.5 in all content major coursework (must have taken at least 6 units) AND one of the following grade point average requirements:
    - A cumulative 2.5 GPA in Liberal Studies courses
    - A cumulative 2.5 GPA in all courses
- You must be declared in this major
- Completion of a teacher-education orientation for Secondary Education
- Submission of a copy of your State-approved Identity-Verified Print (IVP) fingerprint clearance card, obtainable through the Arizona Department of Public Safety (602-223-2279)

Major Requirements
Take the following 78 - 81 units:

- PHY 161 or PHY 171 (recommended in consultation with your advisor) (4-5 units)
- PHY 262, PHY 262L, PHY 263, PHY 264, PHY 361 (13 units)
- (AST 183 and AST 184L) or (AST 180 and AST 181) (4 units)
- MAT 136, MAT 137 (8 units)
- PHY 333W (3 units)
- PHI 359 (3 units)

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- TSM 101 and TSM 102 with grades of "C" or better
- Program Mathematics Foundations requirement with a grade of "C" or better
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    - A cumulative 2.5 GPA in Liberal Studies courses
    - A cumulative 2.5 GPA in all courses
- You must be declared in this major
- Completion of a teacher-education orientation for Secondary Education
- Submission of a copy of your State-approved Identity-Verified Print (IVP) fingerprint clearance card, obtainable through the Arizona Department of Public Safety (602-223-2279)

Major Requirements
Take the following 78~~-81~~ **82** units:

- **(**PHY 161 or PHY 171***)** ~~**(*recommended in consultation with your advisor)**~~ (4-5 units)
- **(**PHY 262/PHY 262L **or PHY 172*) (4-5 units)**

*** PHY 171 and PHY 172 are recommended in consultation with your advisor.**

- PHY 263, PHY 264, PHY 361 (~~**13**~~ **9** units**)**
- (AST 183 and AST 184L) or (AST 180 and AST 181) (4 units)
- MAT 136, MAT 137 (8 units)
- PHY 333W (3 units)

Concentration Requirements (Select One):
Physics/Chemistry (14 units)

- CHM 151, CHM 151L, CHM 152, CHM 152L, CHM 230, CHM 230L, CHM 295 (14 units)

Physics/Mathematics (12 units)

- MAT 185 (3 units)
- MAT 401 or MAT 402 (3 units)
- MAT 365 or MAT 320W (3 units)
- Select one of the following: MAT 226, STA 270, STA 275 (3 units)

Note: It is highly recommended that all new students take our 1-unit first-year seminar, PHY 103.

Mathematics and Science Teaching Courses (33 units)

- TSM 300 with a grade of "C" or better (3 units)
- TSM 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and TSM 495C meet Northern Arizona University's senior capstone requirement.

In order to be approved for student teaching, you must complete the following 15 units, earning a grade of "B" or better in four of the five courses and earning a "C" or better in the remaining course.

- BME 200, BME 437 (6 units)
- TSM 350, TSM 404, TSM 450 (9 units)

Teacher Preparation

In all of our teacher education programs, you are required to apply for, and complete a student teaching or internship experience. Applications are due one year prior to the student teaching semester. In addition, a minimum number of units of practicum is required, which involves supervised field experience with a practicing teacher.

Before being accepted to student teaching, the following criteria must be met:

- Admission to the teacher education program
- NAU GPA must be at least 2.5, with a GPA of
- PHI 359 (3 units)

Concentration Requirements (Select One):
Physics/Chemistry (14 units)

- CHM 151, CHM 151L, CHM 152, CHM 152L, CHM 230, CHM 230L, CHM 295 (14 units)

Physics/Mathematics (12 units)

- MAT 185 (3 units)
- MAT 401 or MAT 402 (3 units)
- MAT 365 or MAT 320W (3 units)
- Select one of the following: MAT 226, STA 270, STA 275 (3 units)

Note: It is highly recommended that all new students take our 1-unit first-year seminar, PHY 103.

Mathematics and Science Teaching Courses (~~33~~ **31** units)

- TSM 300 with a grade of "C" or better (3 units)
- TSM 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and TSM 495C meet Northern Arizona University's senior capstone requirement.

In order to be approved for student teaching, you must complete the following 15 units, earning a grade of "B" or better in four of the five courses and earning a "C" or better in the remaining course.

- BME 200, BME 437 (6 units)
- TSM 350, TSM 404, TSM 450 (9 units)

Teacher Preparation

In all of our teacher education programs, you are required to apply for, and complete a student teaching or internship experience. Applications are due one year prior to the student teaching semester. In addition, a minimum number of units of practicum is required, which involves supervised field experience with a practicing teacher.

Before being accepted to student teaching, the following criteria must be met:

- Admission to the teacher education program

2.5 in all teacher preparation courses, with no grade lower than a "C"
- Complete all plan requirements.
- Take the appropriate AEPA Subject Knowledge test.
- All major coursework, with the exception of TSM 101, must be completed within the six years prior to student teaching.
- All candidates must demonstrate social and emotional maturity consistent with professional standards of classroom instruction as well as adequate physical health for teaching.

In order to be approved for student teaching, you must complete these five courses, earning a grade of "B" or better in four of the five courses and earning a "C" or better in the remaining course.
- TSM 350, TSM 404, TSM 450 (9 units)
- BME 200, BME 437 (6 units)
- TSM 495C or ECI 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and (TSM 495C or ECI 495C) meet Northern Arizona University's senior capstone requirement.

For the teacher-preparation portion of the plan, you must have an academic advisor in both your major department and in the NAUTeach program.

Arizona Teacher Certification
In order to obtain an Arizona teaching certificate you must pass both the appropriate National Evaluation Series subject matter test and the National Evaluation Series Secondary Assessment Professional Knowledge.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any academic areas, using these courses to pursue

- NAU GPA must be at least 2.5, with a GPA of 2.5 in all teacher preparation courses, with no grade lower than a "C"
- Complete all plan requirements.
- Take the appropriate AEPA Subject Knowledge test.
- All major coursework, with the exception of TSM 101, must be completed within the six years prior to student teaching.
- All candidates must demonstrate social and emotional maturity consistent with professional standards of classroom instruction as well as adequate physical health for teaching.

In order to be approved for student teaching, you must complete these five courses, earning a grade of "B" or better in four of the five courses and earning a "C" or better in the remaining course.
- TSM 350, TSM 404, TSM 450 (9 units)
- BME 200, BME 437 (6 units)
- TSM 495C or ECI 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and (TSM 495C or ECI 495C) meet Northern Arizona University's senior capstone requirement.

For the teacher-preparation portion of the plan, you must have an academic advisor in both your major department and in the NAUTeach program.

Arizona Teacher Certification
In order to obtain an Arizona teaching certificate you must pass both the appropriate National Evaluation Series subject matter test and the National Evaluation Series Secondary Assessment Professional Knowledge.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any

your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Please note that you may take as an elective POS 220 (or POS 110 and POS 241), which satisfies the state and federal constitution requirement for Arizona certification, or you may meet the requirement by demonstrating proficiency on a special exam. *Additional Information* • You may not count more than one "D" toward the major and emphasis requirements for this degree. Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. This degree plan is supported through the NAUTeach program. http://nau.edu/CEFNS/CSTL/Degrees-Programs/NAUTeach/	academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Please note that you may take as an elective POS 220 (or POS 110 and POS 241), which satisfies the state and federal constitution requirement for Arizona certification, or you may meet the requirement by demonstrating proficiency on a special exam. *Additional Information* • You may not count more than one "D" toward the major and emphasis requirements for this degree. Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. This degree plan is supported through the NAUTeach program. http://nau.edu/CEFNS/CSTL/Degrees-Programs/NAUTeach/

8. Justification for proposal:
The new PHY 172 course is being created as the preferred alternative to PHY 262 for most majors in the Department of Physics and Astronomy. We are leaving PHY 262 as an alternative because we will definitely not be able to offer PHY 172 as often as PHY 262, e.g. every semester plus summer, and we do not want to hold students back.

9. NCATE designation, if applicable:
☒ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
    Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐

    If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐

    If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**10/22/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Stephen C. Tegler	**10/09/2013**
Department Chair/Unit Head (if appropriate)	Date
Chair of college curriculum committee	Date
Dean of college	Date
For Committee use only:	
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
    Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐

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15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐

    If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**10/15/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
Matt	10/21/13
Chair of college curriculum committee	Date
Pauline Scott	10/21/13
Dean of college	Date
For Committee use only: K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate **Approvals:**	Date
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Secondary Education - Physics Bachelor of Science in Education

2014-2015 2013-2014 Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
Choose one of the options below:		
Option: A		
AST 180	*Introduction To Astronomy*	3
AST 181	*Intro To Observational Astrnmy*	1
Option: B		
AST 183	*Life In The Universe*	3
AST 184L	*Life In The Universe Lab*	1
MAT 136	Calculus I	4
TSM 101	Step 1	1
PHY 103	First-year Seminar	1
ENG 105	Critical Read/Writng In Univ	4
LIBST COURSE	Liberal Studies Course	3

Year 1 - Spring		
Choose one of the options below:		
Option: A		
PHY 171	*Univ Physics I For Physicists*	5
Option: B		
PHY 161	*University Physics I*	4
MAT 137	Calculus II	4
TSM 102	Step 2	1
LS/DIV COURSE	Liberal Studies/Diversity Course	3
LIBST COURSE	Liberal Studies Course	3

Year 2 - Fall		
PHY 262	University Physics II	3
PHY 262L	University Physics II Lab	1
MAT 238	Calculus III	4
Choose one of the options below:		
Option: A		
CHM 151	*General Chemistry I*	4
CHM 151L	*General Chemistry I Lab*	1
Option: B		
MAT 226	*Discrete Mathematics*	3
Option: C		
STA 270	*Applied Statistics*	3
Option: D		
STA 275	*Statistical Analysis*	3
TSM 300	Knowing And Learning	3
Apply to NAUTeach Program		

Year 2 - Spring		
PHY 263	University Physics III	3
PHY 264	Electronics For Science Stdnts	3
Choose one of the options below:		
Option: A		
CHM 152	*General Chemistry II*	3
CHM 152L	*General Chemistry II Lab*	1
Option: B		
MAT 185	*Functions, Applications & Expl*	3
TSM 350	Classroom Interactions	3
GE COURSE	General Elective Course	3

Year 3 - Fall		
Choose one of the options below:		
Option: A		
CHM 295	*Lab Safety And Supervision*	1
Option: B		
MAT 365	*Modern Geometry*	3
Option: C		
MAT 320W	*Foundations Of Mathematics*	3
PHI 359	Philosophy Of Science	3
BME 200	Intro Struct English Immersion	3
LS/DIV COURSE	Liberal Studies/Diversity Course	3
TSM 404	Research Methods	3

Year 3 - Spring		
PHY 333W	Advanced Lab	3
PHY 361	Modern Physics	3
Choose one of the options below:		
Option: A		
CHM 230	*Fundamental Organic Chemistry*	3
CHM 230L	*Fundmtl Organic Chemistry Lab*	1
Option: B		
MAT 401	*Mthds Tchg Sec Sch Math I*	3
Option: C		
MAT 402	*Mthds Tchg Sec Sch Math II*	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	4
Attempt AEPA Physics Subject Knowledge Test **Apply to Apprentice Teaching**		

Year 4 - Fall		
BME 437	Sci Methods Secondary School	3
TSM 450	Project-based Instruction	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	4
Submit graduation application this term.		

Year 4 - Spring		
Choose one of the options below:		
Option: A		
TSM 495C	*Apprentice Teaching*	12
Option: B		
ECI 495C	*Supervised Teaching: Secondary*	12
TSM 496C	Apprentice Teaching Seminar	1

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**MAT 137 (4)**
Aesthetic and Humanistic Inquiry (AHI)	**PHI 359 (3)**
Science/Applied Science (SAS/LAB)	**AST 180 (3), AST 181 (1), AST 183 (3), AST 184L (1), MAT 136 (4)**

(1)

PHY 262 University Physics II (3)

PHY 262L University Physics II Lab (1)

or

PHY 172 Univ Physics II For Physicists (5)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree. No more than one D is allowed in the major & emphasis requirements.

* PHY 171 is recommended.

* PSY 101 (SPW) recommended.

** Major electives include selecting either the chemistry or math concentration (12-14 units):
- Chemistry: CHM 151, 151L; CHM 152, 152L; CHM 295; CHM 230, 230L
- Mathematics: MAT 226, STA 270 or STA 275; MAT 185; MAT 401 or 402; MAT 365 or 320W

*** MAT 238 is not a major requirement but is a prerequisite for PHY 361

**** In order to be approved for student teaching, you must complete these five courses, earning a grade of B or better in four of the five courses and earning a C or better in the remaining course (TSM 350, 404 & 450, BME 200 & 437)

NAUTeach Program Admission:
In order to take NAUTeach courses, you must apply for and be admitted to the Teacher Education Program. Program acceptance is required before enrolling in TSM 350. Admission requirements are as follows:
- Completion of TSM 101 and 102 with a grade of C or better.
- Completion of or enrollment in TSM 300 Knowing and Learning.
- Copy of fingerprint clearance card OR verification of application for fingerprint card.
- Completion of 30 units of course work which includes:
  - a grade of at least B for the English foundation requirement (ENG 105 or ENG 101 & 102). If you do not receive a 3.0, you may complete an additional English writing course, at the 200 level or above, with at least a B, to meet this requirement.
  - a grade of at least C for the Mathematics foundation requirement (MAT 125, 136, or equivalent).
- A minimum grade point average of 2.5 in all content major course work (must have taken at least 6 units).
- A declared science or mathematics BSED major.
- Completion of a teacher education orientation for secondary education.

You must have a grade point average of at least 2.5 in all of your NAU course work in order to ~~graduate~~ student teach.
See catalog for additional information regarding application for Apprentice Teaching.

CONTACT INFORMATION

Academic Services Office
College of Engineering, Forestry, & Natural Sciences
Building 21, Room 132
Phone: 928-523-3842
EMAIL: cefnsacademic@nau.edu

Department of Physics and Astronomy
Building 19, Room 209
Phone: 928-523-2661
EMAIL: astro.physics@nau.edu
http://www.physics.nau.edu/

Center for Science Teaching and Learning
NAUTeach Program
Building 20, Room 105
Phone: 928-523-7160
EMAIL: cstl@nau.edu

NORTHERN ARIZONA UNIVERSITY

Professional Education Program

MEMO

To: Dr. Pradeep Maxwell Dass
Ms. Sharon Cardenas

From: Cynthia Conn, PhD, Assistant Vice Provost

Date: 12/2/2013

RE: NCATE accreditation implications of the BSEd in Secondary Education, Physics proposed program changes

I write in my capacity as the Northern Arizona University Assistant Vice Provost for the Professional Education Program which is accredited by NCATE. This review is in regards to compliance with NCATE/CAEP accreditation. The BSEd in Secondary Education, Physics is reviewed through the NCATE/CAEP Specialized Professional Association Program Review process which is accepted by the Arizona Department of Education per the Arizona and NCATE state agreement. Based on the success of the BSEd Secondary Education, Physics SPA program review and the unit level or institutional accreditation process, the Arizona Department of Education does grant an institutional recommendation for this program. This memo addresses accreditation and state review issues only, and should not be construed as an endorsement of any proposed changes.

Additionally, this verification does not include evaluation of the content related assessments required by the NAU Professional Education Program. However, there are still several assessment requirements noted in the NCATE/CAEP guidelines and established by the Professional Education Program that are needed for the unit level or institutional accreditation report.

Accreditation Verification: The proposed program changes for the BSEd in Secondary Education, Physics maintain documentation of candidate performance regarding institutional, state, and national level standards and criteria required for NAU's NCATE/CAEP accreditation status.

Rationale: The program changes involve recommending students take PHY 172 and adjusting the number of credit hours for Mathematics and Science Teaching Courses. These changes do not affect candidates' ability to demonstrate State, NCATE/CAEP or Unit level standards. The proposed changes do not jeopardize NCATE/CAEP accreditation.

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for New Course

Please attach proposed Syllabus in approved university format.

1. Course subject and number: MAT 220 2. Units: 3
   See upper and lower division undergraduate course definitions.

3. College: Engineering, Forestry & Natural Sciences 4. Academic Unit: Mathematics & Statistics

5. Student Learning Outcomes of the new course. *(Resources & Examples for Developing Course Learning Outcomes)*

Upon successful completion of the course, the student will be able to:
1. Solve multi-step, complex problems in elementary areas of mathematics using common problem solving strategies;
2. Judge what constitutes a solid mathematical argument;
3. Write readable and concise solutions using correct English with some mathematical notation.

6. Justification for new course, including how the course contributes to degree program outcomes, or other university requirements / student learning outcomes. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes)*.

MAT 220 is being introduced in part because of assessment reports identifying weaknesses in communication and reasoning of senior mathematics majors. Instructors of key courses (e.g., MAT 320 Foundations) indicate similar issues at the junior level. This course is focused on reasoning and communication through problem solving and written mathematical arguments in order to provide students with more experience and training early in their university studies. In addition, problem solving of the type in the course – problems in elementary areas with little background required that make use of multi-step, complex solutions – is a fundamental component of mathematics that receives little focused attention elsewhere in our program. Decisions about whether to require the course and how it will serve as a prerequisite will be made during the current academic year.

The course directly addresses program outcomes and student learning outcomes in the areas of reasoning and communication as well as providing additional background for central courses in our major and minor programs.

7. Effective **BEGINNING** of what term and year? Spring 2014
   See effective dates calendar.

8. Long course title: Introduction to Mathematical Reasoning
   (max 100 characters including spaces)

9. Short course title: Intro Mathematical Reasoning
   (max. 30 characters including spaces)

10. Catalog course description *(max. 60 words, excluding requisites):*

Mathematical reasoning in multi-step problems across different areas of mathematics. Focuses on problem solving and solution writing.

11. Will this course be part of any plan (major, minor or certificate) or sub plan (emphasis)? Yes ☒ No ☐

    If yes, include the appropriate plan proposal.

Mathematics BS (elective), Mathematics-Secondary Education BSEd (elective, , Mathematics Education Minor

12. Does this course duplicate content of existing courses? Yes ☐ No ☒
    If yes, list the courses with duplicate material. If the duplication is greater than 20%, explain why NAU should establish this course.

The course will be unique on our course list. To some extent it replaces and extends a 1 hour course (no longer being offered) in problem solving, but the proposed course is more extensive, more rigorous, with broader expectations.

13. Will this course impact any other academic unit's enrollment or plan(s)? Yes ☐ No ☒
    If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

14. Grading option: Letter grade ☒ Pass/Fail ☐ Both ☐

15. Co-convened with: _____ 14a. UGC approval date*: _____
    (For example: ESE 450 and ESE 550) See co-convening policy.
    *Must be approved by UGC before UCC submission, and both course syllabi must be presented.

16. Cross-listed with: _____
    (For example: ES 450 and DIS 450) See cross listing policy.
    Please submit a single cross-listed syllabus that will be used for all cross-listed courses.

17. May course be repeated for additional units? Yes ☐ No ☒
    16a. If yes, maximum units allowed? _____
    16b. If yes, may course be repeated for additional units in the same term? Yes ☐ No ☒

18. Prerequisites: MAT 136 with a grade of C or better
    If prerequisites, include the rationale for the prerequisites.

The course will not require any mathematics beyond one semester of calculus. In fact most features (problems to solve) will not require calculus, but calculus represents the level of mathematical maturity expected of students.

19. Co requisites: _____
    If co requisites, include the rationale for the co requisites.

20. Does this course include combined lecture and lab components? Yes ☐ No ☒
If yes, include the units specific to each component in the course description above.

21. Names of the current faculty qualified to teach this course: Nandor Sieben, Dana Ernst, Jeffrey Rushall, James Swift, Terence Blows, and others

22. Classes scheduled before the regular term begins and/or after the regular term ends may require additional action. Review "see description" and "see impacts" for "Classes Starting/Ending Outside Regular Term" under the heading "Forms" http://nau.edu/Registrar/Faculty-Resources/Schedule-of-Classes-Maintenance/.

Do you anticipate this course will be scheduled outside the regular term? Yes ☐ No ☒

Answer 22-23 for UCC/ECCC only:

23. Is this course being proposed for Liberal Studies designation? Yes ☐ No ☒
If yes, include a Liberal Studies proposal and syllabus with this proposal.

24. Is this course being proposed for Diversity designation? Yes ☐ No ☒
If yes, include a Diversity proposal and syllabus with this proposal.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**12/10/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
Chair of college curriculum committee	Date
Dean of college	Date
For Committee use only:	
UCC/UGC Approval	Date

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If yes, include the units specific to each component in the course description above.

21. Names of the current faculty qualified to teach this course: Nandor Sieben, Dana Ernst, Jeffrey Rushall, James Swift, Terence Blows, and others

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Do you anticipate this course will be scheduled outside the regular term? Yes ☐ No ☒

Answer 22-23 for UCC/ECCC only:

23. Is this course being proposed for Liberal Studies designation? Yes ☐ No ☒
If yes, include a Liberal Studies proposal and syllabus with this proposal.

24. Is this course being proposed for Diversity designation? Yes ☐ No ☒
If yes, include a Diversity proposal and syllabus with this proposal.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**09/13/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
	12/9/13
Chair of college curriculum committee	Date
	12/9/13
Dean of college	Date
For Committee use only:	
K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate **Approvals:**	Date
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY
College of Engineering, Forestry & Natural Sciences

Department of Mathematics & Statistics

SYLLABUS AND COURSE INFORMATION
MAT220 Introduction to Mathematical Reasoning

General Information
Title: MAT220: Introduction to Mathematical Reasoning
Semester: Spring 2014
Credits: 3
Section: 1
Time: 11:30-12:20
Location: AMB 162

Instructor Information
Instructor: Dr. Dana C. Ernst
Office: AMB 119
Office Phone: 928.523.6852
Email: mailto:dana.ernst@nau.edu
Office Hours: MWF at 10:00-11:30AM (or by appointment)
Webpage: http://danaernst.com
Course Information and Policies

Prerequisites: MAT136 with a grade greater than or equal to C.

Catalog Description: Introduction to Mathematical Reasoning (3) Mathematical reasoning in multi-step problems across different areas of mathematics. Focuses on problem solving and solution writing.

Course Description: MAT220 is an introductory course in mathematical reasoning in multi-step problems across different areas of mathematics. The goal is to use elementary mathematical tools to solve more complex problems in already familiar areas of study such as precalculus, basic number theory, geometry, and discrete mathematics, instead of teaching new mathematical tools that are used in straightforward one-step exercises. The focus is on problem solving and solution writing.

What is this course really about? In most of our courses, we focus on content and hope that you as a student will pick up process skills along the way. In this course, we will focus explicitly on the process skills. In some sense the content is irrelevant. The goal is for the students to work on interesting yet challenging multi-step problems that require almost zero background knowledge. Along the way you will develop (or at least move in the direction of) the habits of mind of a

mathematician. In addition, students typically enter college not really having a sense of what mathematics is all about and have not been trained to think hard about a problem for more than a few minutes. One goal of this course is to remedy this.

Course Content: The content of the course includes, but is not limited to:

- Problem solving strategies such as: use of figures and diagrams, use of variables, considering simpler cases, recognizing patterns, conjectures, counterexamples, breaking up into sub-problems, working backwards, case analysis, considering an extreme case, contradiction, induction, pigeon hole principle, symmetry, algorithms, coding, persistence;
- Writing solutions such as: communicating a solution, planning, organization, lemmas, naming, figures, concise vs. detailed, proofreading;
- Mathematical thinking such as: generalization, converse, hidden connections, new problem construction, open ended problems, ill-defined problems.

Course Structure and Approach: Class meetings will consist of discussion of problems, student-led presentations, and group work focused on problems selected by the instructor. A typical class session may include:

- Informal student presentations of progress on previously assigned homework problems;
- Summary of major steps and techniques of the solution of a finished problem;
- Exploration of alternative approaches, possible generalizations, consequences, special cases, converse;
- Discussion of relationships to previously assigned or solved problems;
- Assignment of new problems;
- Explanation of unfamiliar mathematical concepts as needed.

Course Notes: We will not be using a textbook this semester, but rather a problem-sequence titled *MAT220 Problem Collection*, Department of Mathematics and Statistics, NAU. The problem collection will be available on the course webpage. We will not be covering every detail of the notes and the only way to achieve a sufficient understanding of the material is to be digesting the reading in a meaningful way. You should be seeking clarification about the content of the notes whenever necessary by asking questions in class or posting questions to the course forum.

Recommended optional materials/references: Other possible resources include:

- *The Art and Craft of Problem Solving* by Paul Zeitz
- *The Contest Problem Book*, MAA
- *Mathematical Discovery* by George Polya

Course Outline: We will work through the problem-sequence as the semester progresses. The pace at which we cover the material depends largely on how quickly the class can digest the material in a meaningful way. In general, the difficulty of the problems will increase as the course progresses. Activities, assignments, and class discussions will be designed to introduce you to a variety of problem solving strategies. At the beginning, students will work in small groups most of the time, but the course will gradually become more individualized as you gain confidence and experience.

Student Learning Expectations/Outcomes: Upon successful completion of the course, you will be able to:

- Solve multi-step, complex problems in elementary areas of mathematics using common problem

solving strategies;
- Judge what constitutes a solid mathematical argument;
- Write readable and concise solutions using correct English with some mathematical notation.

Assessment of Student Learning Outcomes: Student assessment will be based on regular class attendance, participation during class meetings, consistent progress on assigned problems, quizzes, 2 midterm examinations, and a comprehensive final examination. Written work will be submitted regularly and revised for resubmission. Homework may include newly assigned problems, as well as formal write-ups of previously explored problems. In addition, some assignments may require students to write simple computer programs.

Exams: There will be two midterm exams and a cumulative final exam. Each exam will be worth 15% of your overall grade and may consist of both an in-class portion and a take-home portion. The in-class portions of the midterm exams are tentatively scheduled for **Friday, February 22** and **Friday, April 19**, and the in-class portion of the final exam will be on **Wednesday, May 8 at 10:00AM–12:00PM**. Make-up exams will only be given under extreme circumstances, as judged by me. In general, it will be best to communicate conflicts ahead of time.

Homework: Generally, homework will fall into two categories.

1. **Daily Homework**: Homework will be assigned each class meeting, and you are expected to complete (or try your best to complete) each assignment before walking into the next class period. All assignments should be carefully, clearly, and cleanly written. Among other things, this means your work should include proper grammar, punctuation and spelling. You will almost always write a draft of a given solution before you write down the final argument, so do yourself a favor and get in the habit of differentiating your scratch work from your submitted assignment.

   The Daily Homework will generally consist of solving problems from the problem sequence. Daily Homework will be graded on a ✓-system.

   You are allowed (in fact, encouraged!) to modify your written solution in light of presentations made in class; however, you are required to use the felt-tip pens provided in class. I will provide more guidance with respect to this during the first couple weeks of the semester.

2. **Weekly Homework:** In addition to the Daily Homework, you will also be required to submit two formally written proofs each week. You may choose any two problems marked with * that were turned in during a given week to submit the following Tuesday by 5PM. For example, you may choose any two problems marked with a * that were turned in during week 2 for the second Weekly Homework. These problems are due by 5PM on Tuesday in week 3.

Please understand that the purpose of the written assignments is to teach you to solve problems. It is not expected that you started the class with this skill; hence, some low grades are to be expected. However, I expect that everyone will improve dramatically. Improvement over the course of the semester will be taken into consideration when assigning grades.

You are allowed and encouraged to work together on homework. Yet, each student is expected to turn in his or her own work. In general, late homework will not be accepted. However, you are allowed to turn in up to 5 homework assignments (daily or weekly) late with no questions asked. Unless you

have made arrangements in advance with me, homework turned in after class will be considered late. Your overall homework grade will be worth 20% of your final grade.

Class Presentations: (Adopted from *Chapter Zero Instructor Resource Manual*) Though the atmosphere in this class should be informal and friendly, what we do in the class is serious business. In particular, the presentations made by students are to be taken very seriously since they spearhead the work of the class. Here are some of my expectations:

- In order to make the presentations go smoothly, the presenter needs to have written out the solution in detail and gone over the major ideas and transitions, so that he or she can make clear the path of the proof to others.
- The purpose of class presentations is not to prove to me that the presenter has done the problem. It is to make the ideas of the solution clear to the other students.
- Presenters should explain their reasoning as they go along, not simply write everything down and then turn to explain.
- Fellow students are allowed to ask questions at any point and it is the responsibility of the person making the presentation to answer those questions to the best of his or her ability.
- Since the presentation is directed at the students, the presenter should frequently make eye contact with the students in order to address questions when they arise and also be able to see how well the other students are following the presentation.

Presentations will be graded using the rubric below.

Grade	Criteria
4	Completely correct and clear solution. Yay!
3	Solution has minor technical flaws, some unclear language, or lacking some details.
2	A partial explanation is provided but a significant gap still exists to reach a full solution.
1	Minimal progress has been made that includes relevant information & could lead to a solution.
0	You were completely unprepared.

Basis for Evaluation: Your final grade will be determined by your scores in the following categories.

- Homework: 20%
- Quizzes: 5%
- Midterm Exams: 40% (Each exam is worth 20%)
- Presentations/Participation: 15%
- Final Exam: 20%

Determination of Course Grade: In general, you should expect the grades to adhere to the standard letter-grade cutoffs: A 100- 90%, B 80-89%, C 70-79%, D 60-69%, F 0-59%.

Rules of the Game: You should not look to resources outside the context of this course for help. That is, you should not be consulting the web, other texts, other faculty, or students outside of our course. On the other hand, you may use each other, the course notes, your own intuition, and me.

Additional Information

Additional Comments and Some More Propaganda: This course will likely be different than any other math class that you have taken before for two main reasons. First, you are used to being asked to do things like: "solve for x," "take the derivative of this function," "integrate this function," etc. Accomplishing tasks like these usually amounts to mimicking examples that you have seen in class or in your textbook. Likely for the first time, you will be exposed to what "doing" mathematics is really all about. This will most likely be a shock to your system. Considering the number of math courses that you have taken before you arrived here, one would think that you have some idea what mathematics is all about. You must be prepared to modify your paradigm. The second reason why this course will be different for you is that the method by which the class will run and the expectations I have of you will be different. In a typical course, math or otherwise, you sit and listen to a lecture. (Hopefully) These lectures are polished and well delivered. You may have often been lured into believing that the instructor has opened up your head and is pouring knowledge into it. I absolutely love lecturing and I do believe there is value in it, but I also believe that in reality most students do not learn by simply listening. You must be active in the learning you are doing. I'm sure that each of you has said, "Hmmm, I understood this concept when the professor was going over it, but now that I am alone, I am lost."

In order to promote a more active participation in your learning, we will incorporate ideas from an educational philosophy called inquiry-based learning (IBL) or discovery-based learning. If you want to learn more about IBL, go here. Much of the course will be devoted to students presenting their ideas on the board and a significant portion of your grade will be determined by how much mathematics you produce. I use the word "produce" because I believe that the best way to learn mathematics is by doing mathematics. Someone cannot master a musical instrument or a martial art by simply watching, and in a similar fashion, you cannot master mathematics by simply watching; you must do mathematics!

Furthermore, it is important to understand that solving problems is difficult and takes time. You shouldn't expect to complete a single problem in 10 minutes. Sometimes, you might have to stare at the statement for an hour before even understanding how to get started. In fact, solving problems can be a lot like the clip from the *Big Bang Theory* located here.

Aside from the obvious goal of wanting you to learn how to solve problems, one of my principal ambitions is to make you independent of me. Nothing else that I teach you will be half so valuable or powerful as the ability to reach conclusions by reasoning logically from first principles and being able to justify those conclusions in clear, persuasive language (either oral or written). Furthermore, I want you to experience the unmistakable feeling that comes when one really understands something thoroughly. Much "classroom knowledge" is fairly superficial, and students often find it hard to judge their own level of understanding. For many of us, the only way we know whether we are "getting it" comes from the grade we make on an exam. I want you to become less reliant on such externals. When you can distinguish between really knowing something and merely knowing about something, you will be on your way to becoming an independent learner.

All of the secondary skills you will develop in this course are highly valued by society. Whether you become a teacher, a lawyer, an engineer, or an artist, what differentiates you from your competition is your ability to think critically at a high level, collaborate professionally, and communicate effectively.

Attendance: Regular attendance is expected and is vital to success in this course, but you will not explicitly be graded on attendance. Yet, repeated absences may impact your participation grade (see above). Students can find more information about NAU's attendance policy on the Academic Policies page. Of course, institutional excuses will be honored.

Class Etiquette: You are expected to treat each other with respect. You are also expected to promote a healthy learning environment, as well as minimize distracting behaviors. In particular, you should be supportive of other students while they are making presentations. Moreover, every attempt should be made to arrive to class on time. If you must arrive late or leave early, please do not disrupt class. Please turn off the ringer on your cell phone. I do not have a strict policy on the use of laptops, tablets, and cell phones. You are expected to be paying attention and engaging in class discussions. If your cell phone, etc. is interfering with your ability (or that of another student) to do this, then put it away, or I will ask you to put it away.

Department and University Policies: You are responsible for knowing and following the Department of Mathematics and Statistics Policies (see attached) and other University policies listed here. More policies can be found in other university documents, especially the NAU Student Handbook (see appendices) and the website of the Office of Student Life.

Closing Remarks: (Adopted from pages 202-203 of *The Moore Method: A Pathway to Learner-Centered Instruction* by C.A Coppin, W.T. Mahavier, E.L. May, and G.E. Parker) There are two ways to approach this class. The first is to jump right in and start wrestling with the material. The second is to say, "I'll wait and see how this works and then see if I like it and put some problems on the board later in the semester after I catch on." The second approach isn't such a good idea. If you try every night to do the problems, then either you will get a problem (Shazaam!) and be able to put it on the board with pride or you will struggle with the problem, learn a lot in your struggle, and then watch someone else put it on the board. When this person puts it up you will be able to ask questions that help you and the others understand it, as you say to yourself, "Ahhh, now I see where I went wrong and now I can do this one and a few more for the next class." If you do not try problems each night, then you will watch the student put the problem on the board, but perhaps will not quite catch all the details and then when you study for the exams or try the next problems you will have only a loose idea of how to tackle such problems. And then the anxiety will build and build and build. So, take a guess what I recommend that you do.

NORTHERN ARIZONA UNIVERSITY
DEPARTMENT OF MATHEMATICS AND STATISTICS
UNIVERSITY AND DEPARTMENT POLICIES – SPRING 2012

Course Prerequisites and Placement: Prior to enrollment in a course in the Department of Mathematics and Statistics a student must have completed the course prerequisites or have proper placement for the course. It is the students' responsibility to check that they are properly enrolled in a

course and to drop the course if they are not. Failure to do so could result in not receiving credit for the course. The department may cancel students' registration in a course in which they are not properly enrolled. However, it is the student's responsibility to monitor their own enrollment.

Administrative Drops: An instructor may administratively drop from a course any student who is absent **one or more times** from class during the first week without contacting the instructor and receiving approval. Students who have not met all prerequisites for a course may be administratively dropped. However, it is the student's responsibility to monitor their own enrollment.

Class Attendance: Students are expected to assume full responsibility for class attendance and are accountable for work missed because of absences. Instructors are under no obligation to make special arrangements for students who have been absent unless such absence has been excused by a formal institutional excuse. Institutional excuses permit a student to be absent from classes to represent the University in athletics and extracurricular or academic activities. Institutional excuses must be hand-delivered to the instructor and arrangements made for the work missed prior to the planned absence from class.

Dropping/Auditing a Course: The last day you may drop/delete a course (*without the class appearing on your transcripts*) is **January 26**. The last day you may drop a course (and receive a **W)** is **March 23, 2012**. Academic policy requires that a student who never attended class or stopped attending class receive an **F** should the student fail to officially drop the course. The deadline to change from credit to audit or vice versa is **January 27, 2012**. Once a student has registered and completed a class as an auditor, the audit grade cannot be changed to a credit-earning grade. The grade of **AU** is awarded to auditors for satisfactory attendance. See the most recent *Academic Catalog* for more information at: http://www4.nau.edu/aio/AcademicCatalog/academiccatalogs.htm.

The Grade of Incomplete: A grade of **I** is given by an instructor only if a student is unable to finish a course due to extraordinary, unforeseeable circumstances, and the deadline to drop has passed. An incomplete is only given to a student who was passing the course with a grade of **C** or higher at the time the student was forced to stop attending. Before a grade of **I** can be given the student and instructor must complete the official department form indicating the work to be completed, as well as the date(s) by which the work must be completed. A grade of **I** not removed within a one-year period automatically reverts to a grade of **F**.

Final Examinations: Final examinations are required in all classes and must be given at the scheduled times and dates indicated in the university final exam schedule. An exception to the official final examination schedule can be made if a student is scheduled to take more than two examinations in one day. For more information, see the schedule at: http://home.nau.edu/registrar/FinalExam1121.asp.

Other University Policies

Students are responsible for the following policies: Safe Environment, Students with Disabilities, Institutional Review Board, Academic Integrity, and Academic Contact Hour. A copy of these policies may be downloaded from the web site http://www2.nau.edu/academicadmin/UCCPolicy/plcystmt.html.

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: CEFNS
2. Academic Unit: Mathematics & Statistics
3. Academic Plan Name: Minor in Mathematics Secondary Education **(MATEDMN)**
4. Emphasis:
5. Plan proposal: ☒ Plan Change ☐ Plan Deletion
   ☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
• Diversity: Special Education; English Language Learner; Culture • Implement: Inquiry/non-inquiry; Questioning; Management; Presentation Skills; Accommodation; Flexibility • Students: Caring Empathetic Attitude; Equity-Valuing all Students; Understand Students; Value Inquiry & Hands - On Lessons • Analysis: Analysis of Student Learning; Analysis of Student Behavior; Analysis of Student Response; Analysis of Student Engagement	**UNCHANGED**

• Assessment: Research; Student Misconceptions; Types of Assessment • Basic Skills: Reading; Writing; speaking • Legal/Ethical: Safety; Reporting Student Conduct • Math and Science: Deep & Connected; General Content Knowledge; Nature of the Discipline; Process Standards; Syntactic knowledge; Modeling • Pedagogical: Research; Developmental A & S Interpret & Apply Standards; Making Content Assessable; Curriculum Resources; Teaching Strategies • Planning: Instructional Strategies; Sequencing; Learning Goals; Questioning; Assessment; Management; Unit sequencing; Metacognition; Curriculum Analysis • Profession: Value Application of Technology; Dress Professionally; Ethical - Academic Integrity; Time Management & Responsibility; Team Player/Collaborate • Self: Life - Long Learner; Reflective Practitioner; Flexibility & Adaptability; Open to Change; Hard Working Effective; Time Management • Teach and Learn: Problem Solving; Metacognition Instructional Strategies; General Pedagogical Knowledge; Classroom Management • Technology: Research; Pedagogically Appropriate • Ability to communicate mathematics clearly • Breadth and depth of mathematical knowledge • Facility with mathematical reasoning	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**	Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.
In addition to University Requirements: • Complete individual plan requirements. Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details. Minimum Units for Completion 20 GPA C Mathematics Required MAT 401 Minor Requirements Take the following 20 units with a Grade of "C" or better in each course: o MAT 136, MAT 137, MAT 320W, MAT 401 (14 units) o STA 275 (3 units) Select from the following (3 units): o MAT 185, MAT 226, MAT 365, MAT 402 Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.	In addition to University Requirements: • Complete individual plan requirements. Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details. Minimum Units for Completion **19** ~~20~~ GPA C Mathematics Required MAT **402** ~~401~~ Minor Requirements Take the following **19** ~~20~~ units with a Grade of "C" or better in each course: o MAT 136, ~~MAT 137, MAT 320W~~, **MAT185, MAT 220,** MAT 401, **MAT 402 (16** ~~14~~ units) o STA **270 or** 275 (3 units) ~~Select from the following (3 units):~~ o ~~MAT 185, MAT 226, MAT 365, MAT 402~~ Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

The change increases methodology coursework with the intended audience in mind, namely, secondary education majors in other areas such as physics and elementary education majors seeking a stronger background in mathematics content and teaching methodology. The new course MAT 220, which focuses on communication, reasoning, and problem solving, is also required in order to bolster those skills for students in the expected audience.

9. NCATE designation, if applicable:
   ☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: 2014
    See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
    If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☐ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
    Does this minor have 12 units of unique required credit? Yes ☒ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**12/5/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
	12/9/13
Chair of college curriculum committee	Date

Pauline Fox Dean of college	12/9/13 Date
For Committee use only: Laurie Dickson UCC/UGC Approval	1/28/14 Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** (***Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: CEFNS
2. Academic Unit: Mathematics & Statistics
3. Academic Plan Name: BS Mathematics **(MATBS)**
4. Emphasis:
5. Plan proposal: ☒ Plan Change ☐ Plan Deletion
   ☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both c**ore and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This plan addresses three general student learning outcomes: breadth and depth of mathematical knowledge, ability to communicate mathematics clearly, and facility with mathematical reasoning. Broad mathematical knowledge implies a basic understanding of the theory and applications of calculus, set theory, algebraic structures, and	**UNCHANGED**

probability. Students should be able to communicate effectively and be comfortable collaborating with others on mathematical problems. Mathematical reasoning involves the ability to read and understand formal mathematics, construct rigorous proofs, and solve mathematical problems, as well as an understanding of the context and applications of mathematics, and facility with the use of technology in a mathematical context.	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**	Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.
In addition to University Requirements: • At least 51 units of major requirements • Be aware that you may not use courses with an MAT or STA prefix to satisfy liberal studies requirements. Please note that the usual 35 units for liberal studies are reduced to 32 units for mathematics majors, who are exempt from the 3-unit mathematics foundation requirement. • Elective courses, if needed, to reach an overall total of at least 120 units	In addition to University Requirements: • At least 51 units of major requirements • Be aware that you may not use courses with an MAT or STA prefix to satisfy liberal studies requirements. Please note that the usual 35 units for liberal studies are reduced to 32 units for mathematics majors, who are exempt from the 3-unit mathematics foundation requirement. • Elective courses, if needed, to reach an overall total of at least 120 units
Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.	Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.
Minimum Units for Completion 120 Mathematics Required MAT 441C University Honors Program Optional Progression Plan View Progression Plan	Minimum Units for Completion 120 Mathematics Required MAT 441C University Honors Program Optional Progression Plan View Progression Plan
Major Requirements Take the following 51 units with a Grade of "C" or better in each mathematics or statistics course: o MAT 136, MAT 137, MAT 226, MAT 238, MAT 316 (18 units) o STA 275 (3 units) o CS 122, CS 122L (3 units) o MAT 320W (3 units) o MAT 411, MAT 431, and STA 473 plus one of MAT 412C, MAT 441C, or STA 474C. (Please note that MAT 412C, MAT 441C, or STA 474C meet Northern Arizona University's senior capstone requirement.) (12 units) o Additional coursework selected from MAT 239 and/or most MAT or STA courses numbered 300 or above (except MAT 302, MAT 401, MAT 402, MAT 405, and MAT 406). (12 units)	Major Requirements Take the following 51 units with a Grade of "C" or better in each mathematics or statistics course: o MAT 136, MAT 137, MAT **220 or** 226, MAT 238, MAT 316 (18 units) o STA **270 or** 275 (3 units) o CS 122, CS 122L (3 units) o MAT 320W (3 units) o MAT 411, MAT 431, and STA 473 plus one of MAT 412C, MAT 441C, or STA 474C. (Please note that MAT 412C, MAT 441C, or STA 474C meet Northern Arizona University's senior capstone requirement.) (12 units) o Additional coursework selected from MAT **220, 226, or** 239 and/or most MAT or STA courses numbered 300 or above (except MAT 302, MAT 401, MAT 402, MAT 405, and MAT 406). (12 units)
General Electives Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.	General Electives Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any

You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Additional Information Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor	academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Additional Information Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

The change permits students the alternative of taking MAT 220 in place of MAT 226. MAT 220 is a new course that emphasizes communication, mathematical reasoning and mathematical problem solving, created in part in response to assessment reports indicating a need to strengthen communication and reasoning skills of our majors. The other change allows students with transfer credit or AP credit in STA 270 to count this course in place of STA 275. Currently, students entering with STA 270 credit must take STA 275 as well, and in the process lose three hours credit. STA 275 and STA 270 share significant content, but STA 275 emphasizes a more mathematical approach. Mathematics majors who take their elementary statistics course while at NAU will take STA 275.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: 2014
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
    Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**12/5/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
Chair of college curriculum committee	Date
Dean of college	Date
For Committee use only:	
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

FLAGSTAFF MOUNTAIN CAMPUS

probability. Students should be able to communicate effectively and be comfortable collaborating with others on mathematical problems. Mathematical reasoning involves the ability to read and understand formal mathematics, construct rigorous proofs, and solve mathematical problems, as well as an understanding of the context and applications of mathematics, and facility with the use of technology in a mathematical context.	12/5/2013
Scott Galland Reviewed by Curriculum Process Associate	Date
Approvals: Department Chair/Unit Head (if appropriate)	Date 12/9/13
Chair of college curriculum committee	Date 12/9/13
Dean of college	Date
For Committee use only: K. Laurie Dickson UCC/UGC Approval	1/28/14 Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Effective Fall 2013

Reviewed by Curriculum Process Associate **Approvals:**	Date
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Mathematics Bachelor of Science

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Honors Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
MAT 123	First Year Seminar	1
MAT 136	Calculus I	4
DIV ELECTIVE	Diversity Elective	3
HON 190	Sem Critical Readng & Writng I	3
GE COURSE	General Elective Course	3
HON 100	Introduction To Honors	1

Year 1 - Spring		
MAT 137	Calculus II	4
~~MAT 226~~ (1)	~~Discrete Mathematics~~	3
HON 29X	Honors Topic Seminar 29X	4
LIBST COURSE	Liberal Studies Course	3

Year 2 - Fall		
MAT 238	Calculus III	4
MAT 316	Introduction To Linear Algebra	3
~~STA 275~~ (2)	~~Statistical Analysis~~	3
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	3

Year 2 - Spring		
MAT 320W	Foundations Of Mathematics	3
MAJOR ELECTIVE	Major Elective	3
CS 122	Programming For Eng & Sci	2
CS 122L	Prog For Egr & Sci Lab	1
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3

Year 3 - Fall		
Choose one of the options below:		
Option: A		
MAT 411	*Intro To Abstract Algebra*	3
Option: B		
MAT 431	*Introduction To Analysis*	3
STA 473	Intro To Math Statistics I	3
HON 39X	Honors Advanced Seminar 39X	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

Year 3 - Spring		
Choose one of the options below:		
Option: A		
MAT 412C	*Intro To Abstract Algebra II*	3
Option: B		
MAT 441C	*Intro To Topology*	3
Option: C		
STA 474C	*Intro To Math Statistics II*	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

Year 4 - Fall		
Choose one of the options below:		
Option: A		
MAT 411	*Intro To Abstract Algebra*	3
Option: B		
MAT 431	*Introduction To Analysis*	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

University Requirements Specified by Major	
Science/Applied Science (SAS/LAB)	**CS 122 (2), CS 122L (1)**

University Honors Program
1124 S Knoles Dr
PO Box: 5689
Flagstaff AZ 86011-5689
Cowden Hall - (Bldg #38)
Email: Honors@nau.edu
Phone: 928-523-3334
Fax: 928-523-6558
http://nau.edu/Honors

College of Engineering, Forestry, and Natural Sciences
2112 S Huffer Ln
PO Box: 5621
Flagstaff AZ 86011
Engineering and Technology - (Bldg #69)
Email: cefnsacademic@nau.edu
Phone: 928-523-2408
Fax: 928-523-2300
http://nau.edu/CEFNS/Welcome/

① MAT 220 — Introduction to Mathematical Reasoning — (3)
or
MAT 226 — Discrete Mathematics — (3)

② STA 270 — Applied Statistics — (3)
or
STA 275 — Statistical Analysis — (3)

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Mathematics Bachelor of Science

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
MAT 123	First Year Seminar	1
MAT 136	Calculus I	4
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	4
GE COURSE	General Elective Course	3
NAU 100	Transition To College	1

Year 1 - Spring		
MAT 137	Calculus II	4
~~MAT 226~~	~~Discrete Mathematics~~	~~3~~
ENG 105	Critical Read/Writng In Univ	4
LIBST COURSE	Liberal Studies Course	3

(1)

Year 2 - Fall		
MAT 238	Calculus III	4
MAT 316	Introduction To Linear Algebra	3
~~STA 275~~	~~Statistical Analysis~~	~~3~~
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	3

(2)

Year 2 - Spring		
MAT 320W	Foundations Of Mathematics	3
MAJOR ELECTIVE	Major Elective	3
CS 122	Programming For Eng & Sci	2
CS 122L	Prog For Egr & Sci Lab	1
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3

Year 3 - Fall		
Choose one of the options below:		
Option: A		
MAT 411	*Intro To Abstract Algebra*	3
Option: B		
MAT 431	*Introduction To Analysis*	3
STA 473	Intro To Math Statistics I	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

Year 3 - Spring		
Choose one of the options below:		
Option: A		
MAT 412C	*Intro To Abstract Algebra II*	3
Option: B		
MAT 441C	*Intro To Topology*	3
Option: C		
STA 474C	*Intro To Math Statistics II*	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

Year 4 - Fall		
Choose one of the options below:		
Option: A		
MAT 411	*Intro To Abstract Algebra*	3
Option: B		
MAT 431	*Introduction To Analysis*	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	2

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Science/Applied Science (SAS/LAB)	**CS 122 (2), CS 122L (1)**

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.
The math foundation requirement for this major is waived.

You must have a grade of C or better in each mathematics or statistics course that is used to fulfill the requirements for this major.

* Major electives include 12 units of Mathematics/Statistics course work from ~~MAT 239~~ (MAT 220, 226, or 239) or any MAT or STA course numbered 300 or above (except MAT 302, 401, 402, 405 and 406)

** If you complete a minor in Computer Science, CS 122/L is not required, and another liberal studies course is needed.

CONTACT INFORMATION

Academic Services Office
College of Engineering, Forestry & Natural Sciences
Building 21, Room 132
Phone: 928-523-3842
EMAIL: cefnsacademic@nau.edu

Department of Mathematics and Statistics
Building 26, Room 105
Phone: 928-523-3481
EMAIL: adelmathematics@nau.edu
http://www.cefns.nau.edu/Academic/Math/

(1) MAT 220 Intro to Mathematical Reasoning (3)
or
MAT 226 Discrete Mathematics (3)

(2) STA 270 Applied Statistics (3)
or
STA 275 Statistical Analysis (3)

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** (***Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: CEFNS
2. Academic Unit: Mathematics & Statistics
3. Academic Plan Name: BSEd in Secondary Education – Mathematics **(MATBSED)**
4. Emphasis:
5. Plan proposal: ☒ Plan Change ☐ Plan Deletion ☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to ~~**Bold Red with strikethrough**~~ for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
• Diversity: Special Education; English Language Learner; Culture • Implement: Inquiry/non-inquiry; Questioning; Management; Presentation Skills; Accommodation; Flexibility • Students: Caring Empathetic Attitude; Equity-Valuing all Students; Understand Students; Value Inquiry & Hands - On Lessons • Analysis: Analysis of Student Learning; Analysis of Student Behavior; Analysis of Student Response;	**UNCHANGED**

Analysis of Student Engagement • Assessment: Research; Student Misconceptions; Types of Assessment • Basic Skills: Reading; Writing; speaking • Legal/Ethical: Safety; Reporting Student Conduct • Math and Science: Deep & Connected; General Content Knowledge; Nature of the Discipline; Process Standards; Syntactic knowledge; Modeling • Pedagogical: Research; Developmental A & S Interpret & Apply Standards; Making Content Assessable; Curriculum Resources; Teaching Strategies • Planning: Instructional Strategies; Sequencing; Learning Goals; Questioning; Assessment; Management; Unit sequencing; Metacognition; Curriculum Analysis • Profession: Value Application of Technology; Dress Professionally; Ethical - Academic Integrity; Time Management & Responsibility; Team Player/Collaborate • Self: Life - Long Learner; Reflective Practitioner; Flexibility & Adaptability; Open to Change; Hard Working Effective; Time Management • Teach and Learn: Problem Solving; Metacognition Instructional Strategies; General Pedagogical Knowledge; Classroom Management • Technology: Research; Pedagogically Appropriate • Ability to communicate mathematics clearly • Breadth and depth of mathematical knowledge • Facility with mathematical reasoning	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**	Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.
In addition to University Requirements: • At least 78 units of major requirements which includes at least 31 units of Mathematics and Science Teaching requirements • Be aware that you may not use courses with an MAT or STA prefix to satisfy liberal studies requirements. Please note that the usual 35 units for liberal studies are reduced to 32 units for mathematics majors, who are exempted from the 3-unit mathematics foundation requirement • Elective courses, if needed, to reach an overall total of at least 120 units Candidates in this program are required to demonstrate content knowledge, pedagogical knowledge and skills, professional knowledge, and professional dispositions to be eligible to enter student teaching or internship placements. Content, pedagogical, and professional knowledge or skills, professional dispositions are demonstrated through candidate performance on key assessments embedded in the following course(s): TSM 350, TSM 404, TSM 450, TSM 495C, TSM 496C, BME 437 Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details. Minimum Units for Completion 120 GPA 2.5 Mathematics Required MAT 442 Additional Admission Requirements Required Student Teaching/Supervised Teaching Required University Honors Program Optional Progression Plan View Progression	7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)** In addition to University Requirements: • At least 78 units of major requirements which includes at least 31 units of Mathematics and Science Teaching requirements • Be aware that you may not use courses with an MAT or STA prefix to satisfy liberal studies requirements. Please note that the usual 35 units for liberal studies are reduced to 32 units for mathematics majors, who are exempted from the 3-unit mathematics foundation requirement • Elective courses, if needed, to reach an overall total of at least 120 units Candidates in this program are required to demonstrate content knowledge, pedagogical knowledge and skills, professional knowledge, and professional dispositions to be eligible to enter student teaching or internship placements. Content, pedagogical, and professional knowledge or skills, professional dispositions are demonstrated through candidate performance on key assessments embedded in the following course(s): TSM 350, TSM 404, TSM 450, TSM 495C, TSM 496C, BME 437 Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details. Minimum Units for Completion 120 GPA 2.5 Mathematics Required MAT 442 Additional Admission Requirements Required Student Teaching/Supervised Teaching Required University Honors Program Optional Progression Plan View Progressior

Additional Admission Requirements

Admission requirements over and above admisssion to NAU are required.

To be eligible for admission to the teacher education program, candidates must meet the following requirements and apply for the program online.

30 units of coursework which includes:

- TSM 101 and TSM 102 with grades of "C" or better
- MAT 136 with a grade of "C" or better.
- The English foundations requirement (ENG 105 or equivalent) with a minimum GPA of 3.0. (If your English GPA is below 3.0, you may take an approved writing course to achieve the 3.0 GPA.)
- Completion of or enrollment in TSM 300, Knowing and Learning

- A minimum GPA of 2.5 in all content major coursework (must have taken at least 6 units) AND one of the following grade point average requirements:

-
  - A cumulative 2.5 GPA in Liberal Studies courses
  - A cumulative 2.5 GPA in all courses

-
- You must be declared in this major
- Completion of a teacher-education orientation for Secondary Education
- Submission of a copy of your State-approved Identity-Verified Print (IVP) fingerprint clearance card, obtainable through the Arizona Department of Public Safety (602-223-2279)

Major Requirements

Take the following 78 units. You must complete the next 47 units with a Grade of "C" or better:

- MAT 136, MAT 137, MAT 185, MAT 226, MAT 318, MAT 365, MAT 401, MAT 402, MAT 442, STA 275 (32 units)
- CS 122, CS 122L (If you complete a minor or major in computer science, you may add 3 units to your general electives instead of taking this course.) (3 units)
- MAT 320W (3 units)
- MAT 411 or MAT 431 (3 units)
- Select additional units of MAT and STA courses numbered 238 or above (6 units)

Additional Admission Requirements

Admission requirements over and above admisssion to NAU are required.

To be eligible for admission to the teacher education program, candidates must meet the following requirements and apply for the program online.

30 units of coursework which includes:

- TSM 101 and TSM 102 with grades of "C" or better
- MAT 136 with a grade of "C" or better.
- The English foundations requirement (ENG 105 or equivalent) with a minimum GPA of 3.0. (If your English GPA is below 3.0, you may take an approved writing course to achieve the 3.0 GPA.)
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-
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-
  -
    - A cumulative 2.5 GPA in Liberal Studies courses
    - A cumulative 2.5 GPA in all courses

-
- You must be declared in this major
- Completion of a teacher-education orientation for Secondary Education
- Submission of a copy of your State-approved Identity-Verified Print (IVP) fingerprint clearance card, obtainable through the Arizona Department of Public Safety (602-223-2279)

Major Requirements

Take the following 78 units. You must complete the next 47 units with a Grade of "C" or better:

- MAT 136, MAT 137, MAT 185, MAT 226, MAT 318, MAT 365, MAT 401, MAT 402, MAT 442, STA **270 or** 275 (32 units)
- CS 122, CS 122L (If you complete a minor or major in computer science, you may add 3 units to your general electives instead of taking this course.) (3 units)
- MAT 320W (3 units)
- MAT 411 or MAT 431 (3 units)
- Select additional units **from MAT 220, MAT 238, MAT 239 and/or** ~~of~~ MAT and STA courses numbered **300** ~~238~~ or above (6 units)

Mathematics and Science Teaching Courses (33 units)

- TSM 300 with a grade of "C" or better (3 units)
- TSM 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and TSM 495C meet Northern Arizona University's senior capstone requirement.

In order to be approved for student teaching, you must complete the following 15 units, earning a grade of "B" or better in four of the five courses and earning a "C" or better in the remaining course.

- BME 200, BME 437 (6 units)
- TSM 350, TSM 404, TSM 450 (9 units)

Teacher Preparation

In all of our teacher education programs, you are required to apply for, and complete a student teaching or internship experience. Applications are due one year prior to the student teaching semester. In addition, a minimum number of units of practicum is required, which involves supervised field experience with a practicing teacher.

Before being accepted to student teaching, the following criteria must be met:

- Admission to the teacher education program
- NAU GPA must be at least 2.5, with a GPA of 2.5 in all teacher preparation courses, with no grade lower than a "C"
- Complete all plan requirements.
- Take the appropriate AEPA Subject Knowledge test.
- All major coursework, with the exception of TSM 101, must be completed within the six years prior to student teaching.
- All candidates must demonstrate social and emotional maturity consistent with professional standards of classroom instruction as well as adequate physical health for teaching.

Arizona Teacher Certification

In order to obtain an Arizona teaching certificate you must pass both the appropriate National Evaluation Series subject matter test and the National Evaluation Series Secondary Assessment Professional Knowledge.

General Electives

Mathematics and Science Teaching Courses (33 units)

- TSM 300 with a grade of "C" or better (3 units)
- TSM 495C (12 units)
- TSM 496C with a grade of "B" or better (1 unit)

Note: Together, TSM 496C and TSM 495C meet Northern Arizona University's senior capstone requirement.

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Teacher Preparation

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- Take the appropriate AEPA Subject Knowledge test.
- All major coursework, with the exception of TSM 101, must be completed within the six years prior to student teaching.
- All candidates must demonstrate social and emotional maturity consistent with professional standards of classroom instruction as well as adequate physical health for teaching.

Arizona Teacher Certification

In order to obtain an Arizona teaching certificate you must pass both the appropriate National Evaluation Series subject matter test and the National Evaluation Series Secondary Assessment Professional Knowledge.

General Electives

Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Please note that you may take as an elective POS 220 (or POS 110 and POS 241), which satisfies the state and federal constitution requirement for Arizona certification, or you may meet the requirement by demonstrating proficiency on a special exam. Additional Information Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. This degree plan is supported through the NAUTeach program. http://nau.edu/CEFNS/CSTL/Degrees-Programs/NAUTeach/	Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) Please note that you may take as an elective POS 220 (or POS 110 and POS 241), which satisfies the state and federal constitution requirement for Arizona certification, or you may meet the requirement by demonstrating proficiency on a special exam. Additional Information Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. This degree plan is supported through the NAUTeach program. http://nau.edu/CEFNS/CSTL/Degrees-Programs/NAUTeach/

8. Justification for proposal:

This is a very small change which has the effect of adding MAT 220 (a new course that focuses on communication, reasoning and mathematical problem solving) to the list of permitted electives. The other change allows students with transfer credit or AP credit in STA 270 to count this course in place of STA 275. Currently, students entering with STA 270 credit must take STA 275 as well, and in the process lose three hours credit. STA 275 and STA 270 share significant content, but STA 275 emphasizes a more mathematical approach. Mathematics education majors who take their elementary statistics course while at NAU will take STA 275.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**:

    See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
    If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
    Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐
    If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**12/5/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date
	12/9/13
Chair of college curriculum committee	Date

Pauline Jo	12/9/13
Dean of college	Date
For Committee use only: K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Secondary Education - Mathematics Bachelor of Science in Education

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
MAT 136	Calculus I	4
MAT 123	First Year Seminar	1
TSM 101	Step 1	1
LS/DIV COURSE	Liberal Studies/Diversity Course	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
NAU 100	Transition To College	1

Year 1 - Spring		
MAT 137	Calculus II	4
MAT 226	Discrete Mathematics	3
ENG 105	Critical Read/Writng In Univ	4
CS 122	Programming For Eng & Sci	2
CS 122L	Prog For Egr & Sci Lab	1
TSM 102	Step 2	1

Year 2 - Fall		
~~STA 275~~	~~Statistical Analysis~~	~~3~~
MAJOR ELECTIVE	Major Elective	3
TSM 300	Knowing And Learning	3
LIBST LAB	Liberal Studies (LAB) Course	4
LIBST COURSE	Liberal Studies Course	3
Apply to NAUTeach Program		

Year 2 - Spring		
MAT 320W	Foundations Of Mathematics	3
MAT 185	Functions, Applications & Expl	3
TSM 350	Classroom Interactions	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3

Year 3 - Fall		
MAT 401	Mthds Tchg Sec Sch Math I	3
MAT 365	Modern Geometry	3
MAJOR ELECTIVE	Major Elective	3
BME 200	Intro Struct English Immersion	3
LS/DIV COURSE	Liberal Studies/Diversity Course	3

Year 3 - Spring		
MAT 402	Mthds Tchg Sec Sch Math II	3
MAT 318	Elementary Number Theory	3
MAT 442	History & Philosophy Of Math	3
TSM 404	Research Methods	3
LIBST COURSE	Liberal Studies Course	3
Attempt AEPA Mathematics Subject Knowledge Test **Apply to Apprentice Teaching**		

Year 4 - Fall		
Choose one of the options below:		
Option: A		
MAT 411	*Intro To Abstract Algebra*	3
Option: B		
MAT 431	*Introduction To Analysis*	3
TSM 450	Project-based Instruction	3
BME 437	Sei Methods Secondary School	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
Choose one of the options below:		
Option: A		
TSM 495C	*Apprentice Teaching*	12
Option: B		
ECI 495C	*Supervised Teaching: Secondary*	12
TSM 496C	Apprentice Teaching Seminar	1

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Science/Applied Science (SAS/LAB)	**CS 122 (2)**

PROGRAM INFORMATION

A minimum of 120 units are required for this degree. A grade of C or better is required for all MAT/STA courses. The Liberal Studies Mathematics foundation requirement for this major is waived.

* PSY 101 Introduction to Psychology (SPW) is recommended

** Major electives include 6 units ~~of MAT or STA courses numbered 238 or higher.~~ 300
MAT 220, 238, 239 and/or MAT/STA courses 300 or higher

*** If you complete a minor in Computer Science, CS 122/L is not required, and another liberal studies course is needed

**** In order to be approved for student teaching, you must complete these five courses, earning a grade of B or better in four of the five courses and earning a C or better in the remaining course (TSM 350, 404, 450, BME 200 & 437)

NAUTeach Program Admission:

In order to take NAUTeach courses, you must apply for and be admitted to the Teacher Education Program. Program acceptance is required before enrolling in TSM 350. Admission requirements are as follows:

- Completion of TSM 101 and 102 with a grade of C or better.
- Completion of or enrollment in TSM 300 Knowing and Learning.
- Copy of fingerprint clearance card OR verification of application for fingerprint card.
- Completion of 30 units of course work which includes:
    - a grade of at least B for the English foundation requirement (ENG 105 or ENG 101 & 102). If you do not receive a 3.0, you may complete an additional English writing course, at the 200 level or above, with at least a B, to meet this requirement.
    - a grade of at least C for the Mathematics foundation requirement (MAT 125, 136, or equivalent).
- A minimum grade point average of 2.5 in all content major course work (must have taken at least 6 units).
- A declared science or mathematics BSED major.
- Completion of a teacher education orientation for sedondary education.

You must have a grade point average of at least 2.5 in all of your NAU course work in order to graduate.
See catalog for additional information regarding application for Apprentice Teaching.

CONTACT INFORMATION

Academic Services Office
College of Engineering, Forestry & Natural Sciences
Building 21, Room 132
Phone: 928-523-3842
Email: cefnsacademic@nau.edu

Department of Mathematics and Statistics
Building 26, Room 105
Phone: 928-523-2481
EMAIL: adelmathematics@nau.edu
http://www.cefns.nau.edu/Academic/Math/

Center for Science Teaching and Learning
NAU Teach Program
Building 20, Room 105
Phone: 928-523-7160
EMAIL: cstl@nau.edu

① STA 270 or STA 275 — Applied Statistics (3) / Statistical Analysis (3)

NORTHERN ARIZONA UNIVERSITY

Professional Education Programs

MEMO

To: Dr. Pradeep Maxwell Dass
Dr. Jeff Hovermill

From: Cynthia Conn, PhD, Acting Assistant Vice Provost

Date: 1/28/2014

RE: NCATE accreditation implications of the BSEd in Mathematics Secondary Education proposed program changes

I write in my capacity as the Northern Arizona University Acting Assistant Vice Provost for the Professional Education Programs which is accredited by NCATE. This review is in regards to compliance with NCATE/CAEP accreditation. The BSEd in Mathematics Secondary Education is reviewed through the NCATE/CAEP Specialized Professional Association Program Review process which is accepted by the Arizona Department of Education per the Arizona and NCATE state agreement. Based on the success of the BSEd Mathematics Secondary Education SPA program review and the unit level or institutional accreditation process, the Arizona Department of Education (ADE) does grant an institutional recommendation for this program. This memo addresses accreditation and state review issues only, and should not be construed as an endorsement of any proposed changes.

Additionally, this verification does not include evaluation of the content related assessments required by the NAU Professional Education Programs. However, there is still several assessment requirements noted in the NCATE/CAEP guidelines and established by the Professional Education Programs that are needed for the unit level or institutional accreditation report.

Accreditation Verification: The proposed program changes for the BSEd in Mathematics Secondary Education are comparable to the previous requirements and maintain documentation of candidate performance regarding institutional, state, and national level standards and criteria required for NAU's NCATE/CAEP accreditation status.

Rationale: Program changes prior to a subsequent review by NCATE/CAEP and ADE need to be either comparable in terms of course replacement/credit hours or increase expectations for students. It appears that these changes should not affect candidates' ability to demonstrate State, NCATE/CAEP or Unit level standards. The proposed changes should not jeopardize NCATE/CAEP accreditation or ADE institutional recommendation.

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **CENFS** 2. Academic Unit: **SESES**

3. Academic Plan Name: **Environmental Sciences; B.S. (ENVSCBS)**

4. Emphasis: **Applied Mathematics (ESAMM)**
Biology (ESBIOM)
Chemistry (ESCHMM)
Environmental Administration & Policy (ESAPM)
Environmental Communication (ESECM)
Environmental Management (ESEMM)

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☒ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to ~~**Bold Red with strikethrough**~~ for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
1. Students will demonstrate an understanding and ability to use key concepts from the environmental sciences. 2. Students will demonstrate oral and written	

skills in presenting information in the environmental sciences. 3. Students will demonstrate skills in conducting research and/or applying environmental sciences knowledge in an employment setting. 4. Students will demonstrate understanding of key concepts and skills in their emphasis	**UNCHANGED**

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Environmental Sciences; B.S.

In addition to University Requirements:

- At least 82 units of major requirements including at least 42-62 units of emphasis requirements
- Be aware that you may not use courses with an ENV prefix to satisfy liberal studies requirements
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Emphasis, Minor, Certificate	Required
Fieldwork Experience/Internship	Optional
Research	Optional
University Honors Program	Optional
Progression Plan	View Progression Plan

Major Requirements

Take the following 82 - 102 units with a grade of Grade of "C" or better in the first 37 units and a "C" average in emphasis courses:

- ENV 230, ENV 326 ENV 326L, ENV 360 (12 units)
- ENV 385W (4 units)
- ENV 408 or ENV 485 (3 units)
- CHM 151, CHM 151L, CHM 152, CHM 152L (9 units)
- POS 359 and (STA 270 or STA 275]) (6 units)
- ENV 490C (3 units)
- One additional upper-division ENV course (3 units)

Emphasis Requirements (Select One):

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Environmental Sciences; B.S.

In addition to University Requirements:

- At least **~~82~~ 80** units of major requirements including at least 42-62 units of emphasis requirements
- Be aware that you may not use courses with an ENV prefix to satisfy liberal studies requirements
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Emphasis, Minor, Certificate	Required
Fieldwork Experience/Internship	Optional
Research	Optional
University Honors Program	Optional
Progression Plan	View Progression Plan

Major Requirements

Take the following **~~82 102~~ 80-88** units with a grade of Grade of "C" or better in the first **~~37~~ 43** units and a "C" average in emphasis courses:

- **ENV 115,** ENV 230, ENV 326 ENV 326L, ENV 360 (**~~12~~ 15** units)
- ENV 385W (4 units)
- ENV 408 or ENV 485 (3 units)
- CHM 151, CHM 151L, CHM 152, CHM 152L (9 units)
- POS 359 and (STA 270 or STA 275]) (6 units)
- ENV 490C (3 units)
- One additional upper-division ENV course (3 units)

Emphasis Requirements (Select One):

Applied Geology Emphasis (50 units) Select one of the following combinations (4 units): ○ GLG 101, GLG 103 (Recommended) ○ GLG 100, GLG 100L with grades of "B" or better ○ GLG 112, GLG 112L with grades of "B" or better • GLG 102, GLG 104, GLG 240, (GLG 259 and GLG 259L), GLG 309, GLG 324, GLG 360, GLG 435, GLG 451 (31 units) • MAT 136 MAT 137 (8 units) • PHY 111 or PHY 161 (4 units) • One additional upper-division ENV course (3 units)	Applied Geology Emphasis (50 units) Select one of the following combinations (4 units): ○ GLG 101, GLG 103 (Recommended) ○ GLG 100, GLG 100L with grades of "B" or better ○ GLG 112, GLG 112L with grades of "B" or better • GLG 102, GLG 104, GLG 240, (GLG 259 and GLG 259L), GLG 309, GLG 324, GLG 360, GLG 435, GLG 451 (31 units) • MAT 136 MAT 137 (8 units) • PHY 111 or PHY 161 (4 units) • One additional upper-division ENV course (3 units)
Applied Mathematics Emphasis (44 units) • (CS 122 and CS 122L) or CS 123 (3 units) • ENV 440, ENV 440L (4 units) • GSP 239 (4 units) • MAT 136, MAT 137, MAT 238, MAT 239, MAT 316 (18 units) • STA 471 (3 units) • Select four or more additional mathematics, statistics, and/or science courses chosen with your advisor's approval; excluding BIO 326, BIO 326LW, any recitation ("R") courses. (12 units)	Applied Mathematics Emphasis (**~~44~~ 38** units) • (CS 122 and CS 122L) or CS 123 (3 units) • ENV 440, ENV 440L (4 units) • GSP 239 (4 units) • MAT 136, MAT 137, MAT 238, MAT 239, MAT 316 (18 units) • STA 471 (3 units) • Select **~~four~~ two** or more additional mathematics, statistics, and/or science courses chosen with your advisor's approval; excluding BIO 326, BIO 326L**~~W~~**, any recitation ("R") courses. (**~~12~~ 6** units)
Biology Emphasis (44-49 units) • BIO 181, BIO 181L, BIO 182, BIO 182L, BIO 205, BIO 205L (12 units) • CHM 230, CHM 360 (6 units) • ENV 440, ENV 440L (4 units) • GSP 239 (4 units) • MAT 136 or (MAT 114, MAT 119, and MAT 131) (4-9 units) • Select 14 units of non-repeating courses, with 7 of the 14 units at the 300-level or above from ENV, BIO, CHM, FOR, or GLG courses; excluding ENV 101, ENV 101L, ENV 182, BIO 100, BIO 100L, BIO 171, BIO 326, BIO 326LW, GLG 100, GLG 100L, CHM 130 or any recitation ("R") courses. (14 units)	Biology Emphasis (**~~44-49~~ 40-45** units) • BIO 181, BIO 181L, BIO 182, BIO 182L, BIO 205, BIO 205L (12 units) • CHM 230, CHM 360 (6 units) • ENV 440, ENV 440L (4 units) • **~~GSP 239 (4 units)~~** • MAT 136 or (MAT 114, MAT 119, and MAT 131) (4-9 units) • Select 14 units of non-repeating courses, with 7 of the 14 units at the 300-level or above from ENV, BIO, CHM, FOR, or GLG courses; excluding ENV 101, ENV 101L, ENV 182, BIO 100, BIO 100L, BIO 171, BIO 326, BIO 326LW, GLG 100, GLG 100L, CHM 130 or any recitation ("R") courses. (14 units)
Chemistry Emphasis (42 units) • CHM 235, CHM 235L, CHM 238, CHM 238L,	Chemistry Emphasis (**~~42~~ 37** units)

CHM 320, CHM 320L, CHM 341, CHM 425C, CHM 425L (22 units)
- ENV 430 (3 units)
- MAT 136, MAT 137 (8 units)
- PHY 161, PHY 262 (PHY 262L is not required) (7 units)
- One additional upper-division ENV course (3 units)

Environmental Administration and Policy Emphasis (48 units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8 units)
- COM 150 (3 units)
- GLG 101, GLG 103 (4 units)
- PHI 331 (3 units)
- POS 224, POS 250, POS 325, POS 344, POS 455 (15 units)
- One 200-level or higher, non-repeating, CHM, GLG, PHY, or BIO course (excluding BIO 326, BIO 326LW or recitations) (3 units)
- One additional upper-division ENV course (3 units)
- One budgeting and/or economics course, chosen from a departmental list (may include POS, STA, ECO, and FOR) (3 units)
- Related coursework chosen with your advisor's approval (6 units)

Please note that we recommend the following courses:
- Politics: POS 314, POS 315, POS 316, POS 317, POS 326, POS 335, POS 345, POS 421C, POS 428
- International and Comparative Politics: POS 360, POS 361, POS 362, POS 364, POS 366, POS 370, POS 372, POS 374, POS 380, POS 480
- Geography, Planning, and Recreation: GSP 201, GSP 206, GSP 302, GSP 401, GSP 499
- Environmental Sciences: ENV 440, FOR 445
- Social Sciences: ANT 370, CCJ 312, ECO 324, SOC 414
- Humanities: REL 380, REL 391

Environmental Communication Emphasis (47 units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8

- ~~**CHM 235, CHM 235L,**~~ **CHM 230, CHM 230L,** ~~**CHM 238, CHM 238L,**~~ CHM 320, CHM 320L, CHM 341, CHM 425C, CHM 425L (~~**22**~~ **16** units)
- ENV 430 (3 units)
- MAT 136, MAT 137 (8 units)
- PHY 161, PHY 262 (PHY 262L is not required) (7 units)
- One additional upper-division ENV course (3 units)

Environmental Administration and Policy Emphasis (~~**48**~~ **39** units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8 units)
- COM 150 (3 units)
- GLG 101, GLG 103 (4 units)
- PHI 331 (3 units)
- POS 224, POS 250, POS 325, ~~**POS 344, POS 455**~~ (~~**15**~~ **9** units)
- ~~**One 200-level or higher, non-repeating, CHM, GLG, PHY, or BIO course (excluding BIO 326, BIO 326LW or recitations) (3 units)**~~
- One additional upper-division ENV course (3 units)
- One budgeting and/or economics course, chosen from a departmental list (may include POS, STA, ECO, and FOR) (3 units)
- Related coursework chosen with your advisor's approval (6 units)

Please note that we recommend the following courses:
- Politics: POS 314, POS 315, POS 316, POS 317, POS 326, POS 335, ~~**POS 345,**~~ POS 421C, POS 428
- International and Comparative Politics: POS 360, POS 361, POS 362, POS 364, POS 366, POS 370, POS 372, POS 374, POS 380, POS 480
- Geography, Planning, and Recreation: GSP 201, GSP 206, ~~**GSP 302,**~~ GSP 401, GSP 499
- Environmental Sciences: ENV 440, FOR 445
- Social Sciences: ANT 370, CCJ 312, ECO 324, SOC 414
- Humanities: REL 380, REL 391

units)
- GLG 101, GLG 103 (4 units)
- JLS 131, JLS 231 (6 units)
- COM 131, COM 150, COM 200, CST 111 (12 units)
- One 200-level or higher, non-repeating, CHM, GLG, PHY, or BIO course; excluding BIO 326, BIO 326LW or recitation ("R") (3 units)
- One additional upper-division ENV course (3 units)

Select related coursework, with your advisor's approval, from (11 units):
- COM 250, COM 400
- EMF 223, EMF 229
- GSP 239
- JLS 382, JLS 431C, JLS 482
- PHO 281
- PR 332, CST 323, CST 361, CST 472, CST 477

Environmental Management Emphasis (62 units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8 units)
- ECO 284 (3 units)
- MAT 125 or MAT 136 (4 units)
- ENV 440 (3 units)
- FOR 230, FOR 381, FOR 430 (9 units)
- GSP 239, GSP 302 (7 units)
- Select two courses from: FOR 360, FOR 370, FOR 382, FOR 445; (PRM 346W or POS 344) (6 units)
- One additional upper-division ENV course (3 units)
- Select from: PHI 105, PHI 331; REL 380, REL 391 (3 units)
- Select from: ECO 285, ECO 324, ECO 486 (3 units)
- Select from: POS 250, POS 345 (3 units)
- Select from: ANT 370; MGT 303; POS 455; SOC 319 (3 units)
- Select from: GSP 320, GSP 331 (4 units)
- Select from: COM 150; CST 271, CST 323 (3 units)

General Electives

Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units

Environmental Communication Emphasis (47 units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8 units)
- GLG 101, GLG 103 (4 units)
- JLS 131, JLS 231 (6 units)
- COM 131, COM 150, COM 200, CST 111 (12 units)
- One 200-level or higher, non-repeating, CHM, GLG, PHY, or BIO course; excluding BIO 326, BIO 326LW or recitation ("R") (3 units)
- One additional upper-division ENV course (3 units)

Select related coursework, with your advisor's approval, from (11 units):
- COM 250, COM 400
- **EMF 129, ~~EMF 223~~, EMF 225, ~~EMF 229~~**
- GSP 239
- **JLS 284, JLS 335W,** JLS 382**~~, JLS 431C, JLS 482~~**
- PHO 281
- PR 332, CST 323, CST 361, CST 472, CST 477

Environmental Management Emphasis (**~~62~~ 40** units)
- BIO 181, BIO 181L, BIO 182, BIO 182L (8 units)
- ECO 284 (3 units)
- MAT 125 or MAT 136 (4 units)
- ENV 440 (3 units)
- FOR 230**~~, FOR 381, FOR 430~~** (**~~9~~ 3** units)
- GSP 239**~~, GSP 302~~** (**~~7~~ 4** units)
- Select **~~two courses~~ one** from: FOR 360, **~~FOR 370, FOR 382,~~** FOR 445**~~; (~~**PRM 346W **~~or POS 344)~~** (**~~6~~ 3** units)
- One additional upper-division ENV course (3 units)

In consultation with your advisor select three courses from the following list, with no more than one from each group (9 units)
- **~~Select from:~~** PHI 105, PHI 331; REL 380, REL 391 **~~(3 units)~~**
- **~~Select from:~~** ECO 285, ECO 324, ECO 486 **~~(3 units)~~**

of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.	• ~~**Select from:** POS 250, **POS 345 (3 units)**~~ • ~~**Select from:** ANT 370, MGT 303, **POS 455;** SOC 319 **(3 units)**~~ • ~~**Select from:** GSP 320, GSP 331 **(4 units)**~~ • ~~**Select from:** COM 150; CST 271, CST 323 **(3 units)**~~ *General Electives* Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

The subject of climate change has become one of the most pressing topics in environmental curricula in recent years, and will continue to be in the future. The issue touches all other environmental issues, from those of endangered species and energy policy to environmental justice issues. We wish to add this freshman level course to the core of the Environmental Sciences so that students can incorporate this information into the context of all of their subsequent coursework in their academic career.

We also have analyzed whether some courses are regularly taught or whether they are taught at all, and revised and minimized the number of credit hours for each of the emphases. This has dropped the number of credits in the major so that other courses can be taken by the student.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**

See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☒ No ☐
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

See attached notifications to/support from: GSP, CHM, POS, EMF, JLS, FOR, PHY, BIO (pending)

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**12/6/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	Date 12/7/13
Chair of college curriculum committee	Date 12/9/13
Dean of college	Date

that minor to differentiate it from other minors.

Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework?

Yes ☐ No ☐

If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework?

Yes ☐ No ☐

If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**11/15/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Mary R. Reid for PSU	11/18/13
Department Chair/Unit Head (if appropriate)	Date
Chair of college curriculum committee	Date
Dean of college	Date
For Committee use only:	
K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

For Committee use only:	
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES	
Reviewed by Curriculum Process Associate **Approvals:**	Date
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

From: Stuart S Galland
Sent: Wednesday, December 04, 2013 10:25 AM
To: Marin Sands Robinson; Mark A Neumann
Cc: Calvin Brant Short
Subject: FW: BS Environmental Science Proposed changes

HI,

This email is to notify you that the School of Environmental Sciences and Environmental Sustainability is proposing to remove/add your courses from their plan (emphasis) requirements;

- Drop CHM 235/235L and Add CHM 230, 230L
- Drop EMF 229 and Add EMF 129
- Drop JLS 431C, 482 and Add JLS 284, 335W

From: Marin Sands Robinson
Sent: Wednesday, December 04, 2013 10:49 AM
To: Stuart S Galland; Paul Quinn Helford; Mark A Neumann
Cc: Calvin Brant Short
Subject: RE: BS Environmental Science Proposed changes
All,
You also need to delete CHM 238 and CHM 238L. Can you fix it? I will then approve the changes.

Chemistry Emphasis (~~42~~ **37** units)

- ~~**CHM 235, CHM 235L,**~~ **CHM 230, CHM 230L,** CHM 238, CHM 238L, CHM 320, CHM 320L, CHM 341, CHM 425C, CHM 425L (~~**22**~~ **16** units)
- ENV 430 (3 units)
- MAT 136, MAT 137 (8 units)
- PHY 161, PHY 262 (PHY 262L is not required) (7 units)
- One additional upper-division ENV course (3 units)

From: Scott Anderson
Sent: Friday, December 06, 2013 5:23 AM
To: Paul Umhoefer; Stuart S Galland; Diana Frances Elder
Subject: RE: BS Environmental Science Proposed changes
Importance: High
My apologies to Marin on this. In our discussions this came up, and it was an oversight on my part on the document that I sent to Scott Galland, as I did indeed intend to delete those courses per Marin's suggestion. Scott, please do go ahead and delete those courses from our document. Thanks, Scott

From: Marin Sands Robinson
Sent: Friday, December 06, 2013 12:32 PM
To: Stuart S Galland
Subject: RE: BS Environmental Science Proposed changes
I approve the changes to the ENV CHM emphasis plan (replacing CHM 235/235L and CHM 238/238L with CHM 230/230L).
Sincerely,
Marin Sands Robinson
Chair
Chemistry and Biochemistry

From: Stuart S Galland
Sent: Thursday, December 05, 2013 4:54 PM
To: Norman J Medoff
Subject: BS Environmental Science Proposed changes

HI,

This email is to notify you that the School of Environmental Sciences and Environmental Sustainability is proposing to remove/add your courses from their plan (emphasis) requirements;

- Drop CHM 235/235L and Add CHM 230, 230L
- Drop EMF 229 and Add EMF 129
- Drop JL5 431C, 482 and Add JLS 284, 335W

From: Stuart S Galland
Sent: Wednesday, December 04, 2013 10:15 AM
To: Thomas Paradis; Frederic Solop; James A Allen; Stephen Christopher Tegler; Maribeth Watwood
Subject: BS Environmental Science Proposed changes

HI,

This email is to notify you that the School of Environmental Sciences and Environmental Sustainability is proposing to remove your courses from their plan requirements;

- GSP 239, 302
- POS 344, 345, 455
- FOR 370, 381, 382, 430
- PHY 2XX-4XX course
- BIO 2xx-4XX course

From: James A Allen
Sent: Wednesday, December 04, 2013 2:34 PM
To: Stuart S Galland
Subject: RE: BS Environmental Science Proposed changes
Hi Scott,
Okay, thanks for letting me know.
Jim
James A. Allen, Professor and Executive Director
School of Forestry
College of Engineering, Forestry and Natural Sciences
Northern Arizona University
P.O. Box 15018
Flagstaff, AZ 86011-5018
Office Phone: 928-523-5894
Fax: 928-523-1080
School of Forestry

From: Thomas Paradis
Sent: Wednesday, December 04, 2013 10:55 AM
To: Stuart S Galland
Subject: RE: BS Environmental Science Proposed changes
Scott, thank you for the notification on this. Tom

From: Stephen Christopher Tegler
Sent: Wednesday, December 04, 2013 1:00 PM
To: Frederic Solop; Stuart S Galland
Cc: Thomas Paradis; James A Allen; Maribeth Watwood
Subject: RE: BS Environmental Science Proposed changes
Scott,
Thanks for the message.
Steve

Stephen C. Tegler
Professor and Chair, Physics and Astronomy
Northern Arizona University
Box 6010
Flagstaff, AZ 86011
Phone: (928) 523-9382
Fax: (928) 523-1371

From: solop21@gmail.com [mailto:solop21@gmail.com] **On Behalf Of** Fred Solop
Sent: Wednesday, December 04, 2013 10:20 AM
To: Stuart S Galland
Cc: Thomas Paradis; James A Allen; Stephen Christopher Tegler; Maribeth Watwood
Subject: Re: BS Environmental Science Proposed changes
Thank you for the update.

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Applied Geology - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
Choose one of the options below:		
Option: A		
GLG 101	*Physical Geology*	3
GLG 103	*Physical Geology Lab*	1
Option: B		
GLG 100	*Introductory Geology*	3
GLG 100L	*Introductory Geology Lab*	1
Option: C		
GLG 112	*Geologic Disasters*	3
GLG 112L	*Geologic Disasters Lab*	1
Choose one of the options below:		
Option: A		
MAT 125	*Precalculus Mathematics*	4
Option: B		
GE COURSE	*General Elective Course*	4
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
GLG 102	Historical Geology	3
GLG 104	Historical Geology Lab	1
ENG 105	Critical Read/Writng In Univ	4
MAT 136	Calculus I	4

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
GLG 240	Intro Field Mthds & Rprt Wrtg	3
MAT 137	Calculus II	4
~~LS/DIV COURSE~~	~~Liberal Studies/Diversity Course~~	~~3~~
LIBST COURSE	Liberal Studies Course	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
Choose one of the options below:		
Option: A		
PHY 111	*General Physics I*	4
Option: B		
PHY 161	*University Physics I*	4
LIBST COURSE	Liberal Studies Course	3
~~GE COURSE~~	~~General Elective Course~~	~~3~~
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
GLG 309	Mineralogy: Intro Earth Matls	4
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
POS 359	Environmental Policy	3
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
GLG 324	Sedimentology And Stratigraphy	4
GLG 360	Applied Geology	4
MAJOR ELECTIVE	Major Elective	3

Year 4 - Fall		
GLG 430	Geomorphology	4
GLG 435	Structural Geology	4
GLG 451	Hydrogeology	4
DIV ELECTIVE	Diversity Elective	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
LIBST COURSE	Liberal Studies Course	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**MAT 137 (4)**
Social and Political Worlds (SPW)	**POS 359 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**GLG 102 (3)**

① ENV 115 Climate Change (3)

② LS/DIV Course Liberal Studies/Diversity Course (3)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.
* If you are not prepared to take MAT 136 in term 2, MAT 125 will take the place of the general elective in term 1.

** Major elective includes one additional upper-division ENV course (3 units).

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or 275.
An average overall GPA of 2.0 or better is required for all ~~math and science courses~~ emphasis courses.
Recitations are available and strongly encouraged for CHM 151, CHM 152, PHY 111, & PHY 161; however, they are not required.

CONTACT INFORMATION

Academic Services Office
College of Engineering, Forestry & Natural Sciences
Building 21, Room 132
Phone: 928-523-3842
EMAIL: cefnsacademic@nau.edu

School of Earth Sciences and Environmental Sustainability
Environmental Sciences Programs
Building 19, Room 100
Phone: 928-523-9333
EMAIL: SESES_admin_support@nau.edu
http://nau.edu/CEFNS/NatSci/SESES/Degrees-Programs/

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Applied Mathematics - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
MAT 136	Calculus I	4
Choose one of the options below:		
Option: A		
CS 122	*Programming For Eng & Sci*	2
CS 122L	*Prog For Egr & Sci Lab*	1
Option: B		
CS 123	*Programming In Fortran*	3
NAU 100	Transition To College	1
GE COURSE	General Elective Course	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
MAT 137	Calculus II	4
ENG 105	Critical Read/Writng In Univ	4
DIV ELECTIVE	Diversity Elective	3

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
MAT 238	Calculus III	4
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
~~LIBST COURSE~~	~~Liberal Studies Course~~	~~3~~
LIBST COURSE	Liberal Studies Course	3

(1)

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
GSP 239	Intro To Geographic Info Sys	4
MAT 239	Differential Equations	3
MAJOR ELECTIVE	Major Elective	3
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
ENV 440	Conservation Biology	3
ENV 440L	Conservation Biology Lab	1
MAT 316	Introduction To Linear Algebra	3
POS 359	Environmental Policy	3
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
(2) ~~GE COURSE~~	~~General Elective Course~~	~~3~~

Year 4 - Fall		
STA 471	Regression Analysis	3
(3) ~~MAJOR ELECTIVE~~	~~Major Elective~~	~~3~~
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
~~MAJOR ELECTIVE~~ (3)	~~Major Elective~~	~~3~~
~~MAJOR ELECTIVE~~ (3)	~~Major Elective~~	~~3~~
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	3

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**MAT 137 (4)**
Social and Political Worlds (SPW)	**POS 359 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), MAT 136 (4)**

Liberal Studies Elective	CHM 152 (3)

① ENV 115	Climate Change	(3)
② LIBST COURSE	Liberal Studies Course	(3)
③ GE Course	General Elective Course	(3)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or STA 275.
An average overall GPA of 2.0 or better is required for all ~~computer science, math and science courses~~. emphasis courses

Recitations are available and strongly encouraged for CHM 151 and CHM 152; however, they are not required.

*Major electives include ~~15~~ 12 units of the following:

- Select ~~4~~ or more additional ~~upper-division~~ mathematics, statistics, and science courses chosen with your advisor approval, excluding BIO 326, 326L or recitations (~~12 units~~) 9 6 units
- One upper-division ENV course (3 units)

CONTACT INFORMATION

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Environmental Sciences Programs
Building 19, Room 100
Phone: 928-523-9333
EMAIL: SESES_admin_support@nau.edu
http://nau.edu/CEFNS/NatSci/SESES/Degrees-Programs/

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Biology - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Honors Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
Choose one of the options below:		
Option: A		
MAT 114	*Quantitative Reasoning*	3
Option: B		
MAT 136	*Calculus I*	4
HON 190	Sem Critical Readng & Writng I	3
GE COURSE	General Elective Course	3
HON 100	Introduction To Honors	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
HON 29X	Honors Topic Seminar 29X	4
DIV ELECTIVE	Diversity Elective	3

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
~~GSP 239~~	~~Intro To Geographic Info Sys~~	~~4~~
Choose one of the options below:		
Option: A		
MAT 119	*Finite Mathematics*	3
Option: B		
~~*GE COURSE*~~	~~*General Elective Course*~~	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
BIO 205	Microbiology	3
BIO 205L	Microbiology Lab	1
Choose one of the options below:		
Option: A		
MAT 131	*Topics In Calculus*	3
Option: B		
~~*GE COURSE*~~	~~*General Elective Course*~~	3
CHM 230	Fundamental Organic Chemistry	3
Meet with your advisor to discuss internship or research options.		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
ENV 440	Conservation Biology	3
ENV 440L	Conservation Biology Lab	1
CHM 360	Fundamental Biochemistry	3
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
POS 359	Environmental Policy	3
HON 39X	Honors Advanced Seminar 39X	3

Year 4 - Fall		
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	2
LIBST COURSE	Liberal Studies Course	3
LANGUAGE 101	Language 101-level Course	4
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
DIV ELECTIVE	Diversity Elective	3
LANGUAGE 102	Language 102-level Course	4
GE COURSE	General Elective Course	2

University Requirements Specified by Major	
Foundation Requirements:Math (FNRQ:MAT)	**MAT 136 (4)**
Social and Political Worlds (SPW)	**POS 359 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**

① ENV 115 Climate Change (3)

② GE Course General Elective Course (3)

University Honors Program

1124 S Knoles Dr
PO Box: 5689
Flagstaff AZ 86011-5689

Cowden Hall - (Bldg #38)
Email: Honors@nau.edu
Phone: 928-523-3334
Fax: 928-523-6558
http://nau.edu/Honors

College of Engineering, Forestry, and Natural Sciences

2112 S Huffer Ln
PO Box: 5621
Flagstaff AZ 86011

Engineering and Technology - (Bldg #69)
Email: cefnsacademic@nau.edu
Phone: 928-523-2408
Fax: 928-523-2300
http://nau.edu/CEFNS/Welcome/

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Biology - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
Choose one of the options below:		
Option: A		
MAT 114	*Quantitative Reasoning*	3
Option: B		
MAT 136	*Calculus I*	4
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
ENG 105	Critical Read/Writng In Univ	4
DIV ELECTIVE	Diversity Elective	3

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
~~GSP 239~~ (2)	~~Intro To Geographic Info Sys~~	~~4~~
Choose one of the options below:		
Option: A		
MAT 119	*Finite Mathematics*	3
Option: B		
~~*GE COURSE*~~ (1)	~~*General Elective Course*~~	~~3~~

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
BIO 205	Microbiology	3
BIO 205L	Microbiology Lab	1
Choose one of the options below:		
Option: A		
MAT 131	*Topics In Calculus*	3
Option: B		
~~*GE COURSE*~~ (1)	~~*General Elective Course*~~	~~3~~
CHM 230	Fundamental Organic Chemistry	3
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
ENV 440	Conservation Biology	3
ENV 440L	Conservation Biology Lab	1
CHM 360	Fundamental Biochemistry	3
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
POS 359	Environmental Policy	3
LIBST COURSE	Liberal Studies Course	3

Year 4 - Fall		
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	2
LIBST COURSE	Liberal Studies Course	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	2

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	ENG 105 (4)
Foundation Requirements:Math (FNRQ:MAT)	MAT 136 (4)
Social and Political Worlds (SPW)	POS 359 (3)
Science/Applied Science (SAS/LAB)	CHM 151 (4), CHM 151L (1), CHM 152 (3)
Liberal Studies Elective	BIO 181 (3)

① ENV 115 Climate Change (3)

② GE COURSE General Elective Course (3)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or STA 275.
An average overall GPA of 2.0 or better is required for all ~~math, science and geography courses.~~ emphasis courses

Recitations are available and strongly encouraged for CHM 151, CHM 152, BIO 181 and BIO 182; however, they are not required.

*Math requirement is satisfied by taking either: MAT 136 OR MAT 114, 119 and 131.

**Major electives include four or more non-repeating ENV, BIO, CHM, FOR, or GLG courses; excluding ENV 101, 101L, 182, BIO 100, 100L, 171, 326, 326L, GLG 100, 100L, CHM 130 or recitations (14 units; including 7 units at the 300 level or above)

CONTACT INFORMATION

Academic Services Office
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EMAIL: cefnsacademic@nau.edu

School of Earth Sciences and Environmental Sustainability
Environmental Sciences Programs
Building 19, Room 100
Phone: 928-523-9333
EMAIL: SESES_admin_support@nau.edu
http://nau.edu/CEFNS/NatSci/SESES/Degrees-Programs/

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Chemistry - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Honors Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
HON 190	Sem Critical Readng & Writng I	3
Choose one of the options below:		
Option: A		
MAT 125	*Precalculus Mathematics*	4
Option: B		
GE COURSE	*General Elective Course*	4
HON 100	Introduction To Honors	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
MAT 136	Calculus I	4
HON 29X	Honors Topic Seminar 29X	4
~~LIBST COURSE~~ (1)	~~Liberal Studies Course~~	~~3~~

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
(4) ~~CHM 235~~	~~General Organic Chemistry I~~	~~4~~
(5) ~~CHM 235L~~	~~Gen Organic Chemistry I Lab~~	~~1~~
MAT 137	Calculus II	4
PHY 161	University Physics I	4

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
(3) ~~CHM 238~~	~~General Organic Chemistry II~~	~~3~~
~~CHM 238L~~	~~Gen Organic Chemistry II Lab~~	~~1~~
PHY 262	University Physics II	3
DIV ELECTIVE	Diversity Elective	3
GE COURSE	General Elective Course	1
Meet with your advisor to discuss internship or research options.		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
CHM 341	Physical Chemistry I	3
POS 359	Environmental Policy	3
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
CHM 320	Analytical Chemistry	3
CHM 320L	Analytical Chemistry Lab	1
HON 39X	Honors Advanced Seminar 39X	3

Year 4 - Fall		
CHM 425C	Instrumental Analysis	3
CHM 425L	Instrumental Analysis Lab	2
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	4
(2) ~~GE COURSE~~	~~General Elective Course~~	~~3~~
Submit graduation application this term.		

Year 4 - Spring		
ENV 430	Environmental Chemistry	3
ENV 490C	Senior Sem In Enviro Sciences	3
DIV ELECTIVE	Diversity Elective	3
(6) ~~GE COURSE~~	~~General Elective Course~~	~~3~~
LIBST COURSE	Liberal Studies Course	3

University Requirements Specified by Major	
Foundation Requirements:Math (FNRQ:MAT)	**MAT 137 (4)**
Social and Political Worlds (SPW)	**POS 359 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**

Liberal Studies Elective	MAT 136 (4)

① ENV 115	Climate Change	(3)
② LIBST COURSE	Liberal Studies Course	(3)
③ CHM 230	Fundamental Organic Chemistry	(3)
CHM 230L	Fundamental Organic Chem Lab	(1)
④ GE COURSE	General Elective Course	(3)
⑤ GE COURSE	General Elective Course	(2)
⑥ MAJOR ELECTIVE	Major Elective	(3)

University Honors Program

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NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Chemistry - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
LIBST COURSE	Liberal Studies Course	3
Choose one of the options below:		
Option: A		
MAT 125	*Precalculus Mathematics*	4
Option: B		
GE COURSE	*General Elective Course*	4
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
MAT 136	Calculus I	4
ENG 105	Critical Read/Writng In Univ	4
~~LIBST COURSE~~	~~Liberal Studies Course~~	~~3~~

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
~~CHM 235~~	~~General Organic Chemistry I~~	~~4~~
~~CHM 235L~~	~~Gen Organic Chemistry I Lab~~	~~1~~
MAT 137	Calculus II	4
PHY 161	University Physics I	4

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
~~CHM 238~~	~~General Organic Chemistry II~~	~~3~~
~~CHM 238L~~	~~Gen Organic Chemistry II Lab~~	~~1~~
PHY 262	University Physics II	3
DIV ELECTIVE	Diversity Elective	3
GE COURSE	General Elective Course	1
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
CHM 341	Physical Chemistry I	3
POS 359	Environmental Policy	3
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
CHM 320	Analytical Chemistry	3
CHM 320L	Analytical Chemistry Lab	1
LIBST COURSE	Liberal Studies Course	3

Year 4 - Fall		
CHM 425C	Instrumental Analysis	3
CHM 425L	Instrumental Analysis Lab	2
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	4
~~GE COURSE~~	~~General Elective Course~~	~~3~~
Submit graduation application this term.		

Year 4 - Spring		
ENV 430	Environmental Chemistry	3
ENV 490C	Senior Sem In Enviro Sciences	3
DIV ELECTIVE	Diversity Elective	3
LIBST COURSE	Liberal Studies Course	3
~~GE COURSE~~	~~General Elective Course~~	~~3~~

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**MAT 137 (4)**
Social and Political Worlds (SPW)	**POS 359 (3)**

Science/Applied Science (SAS/LAB)	CHM 151 (4), CHM 151L (1), CHM 152 (3)
Liberal Studies Elective	MAT 136 (4)

①	ENV 115	Climate Change	(3)
②	LIBST COURSE	Liberal Studies Course	(3)
③	CHM 230	Fundamental Organic Chemistry	(3)
	CHM 230L	Fundamental Organic Chemistry Lab	(1)
④	GE COURSE	General Elective Course	(3)
⑤	GE COURSE	General Elective Course	(2)
⑥	MAJOR ELECTIVE	Major Elective	(3)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

* If you are not prepared to take MAT 136 in term 2, MAT 125 will take the place of the general elective in term 1.
** Major Electives include ~~one additional~~ two upper-division ENV course (3 units).

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or STA 275.
An average overall GPA of 2.0 or better is required for all ~~math and science courses.~~ emphasis courses
Recitations are available and strongly encouraged for CHM 151, CHM 152, CHM 235, CHM 238, PHY 161 and PHY 262; however they are not required.

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NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Administration and Policy - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
POS 250	Intro To Public Policy Making	3
COM 150	Environmental Communication	3
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
ENG 105	Critical Read/Writng In Univ	4
~~GE COURSE~~ (1)	~~General Elective Course~~	~~3~~

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
GLG 101	Physical Geology	3
GLG 103	Physical Geology Lab	1
MAJOR ELECTIVE	Major Elective	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
POS 224	Public Administration	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
DIV ELECTIVE	Diversity Elective	3
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
POS 359	Environmental Policy	3
POS 325	Human Resource Mgmt	3
PHI 331	Environmental Ethics	3
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
~~POS 455~~ (2)	~~Political Ecology~~	~~3~~
GE COURSE	General Elective Course	3

Year 4 - Fall		
(2) ~~POS 344~~	~~Environmental Movements~~	~~3~~
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
DIV ELECTIVE	Diversity Elective	3
GE COURSE	General Elective Course	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	3
GE COURSE	General Elective Course	3

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**STA 270 (3), STA 275 (3)**
Aesthetic and Humanistic Inquiry (AHI)	**PHI 331 (3)**
Social and Political Worlds (SPW)	**POS 250 (3), POS 224 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

A grade of C or better is required for all ENV courses, POS 359, and STA 270 and STA 275.
An average overall GPA of 2.0 or better is required for all ~~major~~ emphasis courses (see catalog)

Recitations are available and strongly encouraged for CHM 151, CHM 152, BIO 181 and BIO 182; however, they are not required.

*Major electives include 15 units from the following:

- One additional upper-division ENV course (3 units).
- ~~One 200-level or higher course in BIO (excluding BIO 326/L and any recitations), CHM, GLG, or PHY course (3 units)~~.
- One budgeting and/or economics course, chosen from a departmental list (may include POS, STA, ECO, and FOR) (3 units).
- Related course work chosen with your advisor approval (6 units).

The following courses are recommended and liberal studies and diversity are indicated in ( ).

POLITICS: POS 314, 315, 316, 317, 326, 335, ~~345~~, 421C, and 428
INTERNATIONAL AND COMPARATIVE POLITICS: POS 360 (SPW), POS 361(SPW & Global), POS 362 (SPW), POS 364 (SPW), POS 366 (CU & Global), POS 370 (CU & Global), POS 374 (CU & Global), ~~POS 376 (SPW)~~, POS 380(SPW), ~~POS 472 (Global)~~, and POS 480 . POS 372
PLANNING: ~~GSP 302, PL 201 (SPW), PL 301, 306, 308W, 401, 402W, and 499~~
ENVIRONMENTAL SCIENCES: ENV 440 and FOR 445
SOCIAL SCIENCES: ANT 370 (SPW), CCJ 312, ECO ~~325, GGR 370W, and~~ SOC 414 (324)
HUMANITIES: REL 380 (CU & Ethnic) and REL 391 (CU)

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GSP 201, 206, 401, 499

① ENV 115	Climate Change	(3)
② GE COURSE	General Elective Course	(3)

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Environmental Communication - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Honors Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
COM 150	Environmental Communication	3
CST 111	Fdmtls Of Public Speaking	3
HON 190	Sem Critical Readng & Writng I	3
HON 100	Introduction To Honors	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
HON 29X	Honors Topic Seminar 29X	4
~~GE COURSE~~ (1)	~~General Elective Course~~	~~4~~

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
COM 131	Writing For Comm Channels	3
JLS 104	Grammar & Style	1
MAJOR ELECTIVE	Major Elective	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
COM 200	Basic Communication Theory	3
JLS 131	Basic Reporting	3

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
JLS 231	Field Reporting Topics	3
POS 359	Environmental Policy	3
GLG 101	Physical Geology	3
GLG 103	Physical Geology Lab	1
Meet with your advisor to discuss internship or research options.		

Year 3 - Spring		
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
HON 39X	Honors Advanced Seminar 39X	3
GE COURSE	General Elective Course	4

Year 4 - Fall		
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
LANGUAGE 101	Language 101-level Course	4
DIV ELECTIVE	Diversity Elective	3
MAT 125	Precalculus Mathematics	4
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	2
LANGUAGE 102	Language 102-level Course	4
DIV ELECTIVE	Diversity Elective	3

University Requirements Specified by Major	
Foundation Requirements:Math (FNRQ:MAT)	**MAT 125 (4)**
Social and Political Worlds (SPW)	**COM 150 (3), CST 111 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**

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(1) ENV 115 Climate Change (3)

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Environmental Communication - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
COM 150	Environmental Communication	3
CST 111	Fdmtls Of Public Speaking	3
LIBST COURSE	Liberal Studies Course	3
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
ENG 105	Critical Read/Writng In Univ	4
~~GE COURSE~~	~~General Elective Course~~	~~4~~

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
COM 131	Writing For Comm Channels	3
JLS 104	Grammar & Style	1
MAJOR ELECTIVE	Major Elective	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
COM 200	Basic Communication Theory	3
JLS 131	Basic Reporting	3

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
JLS 231	Field Reporting Topics	3
POS 359	Environmental Policy	3
GLG 101	Physical Geology	3
GLG 103	Physical Geology Lab	1
Meet with your advisor to discuss internship or research options		

Year 3 - Spring		
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
ENV 385W	Energy, Resources And Policy	4
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
GE COURSE	General Elective Course	4

Year 4 - Fall		
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
DIV ELECTIVE	Diversity Elective	3
GE COURSE	General Elective Course	4
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	2
LIBST COURSE	Liberal Studies Course	3
DIV ELECTIVE	Diversity Elective	3

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**STA 270 (3), STA 275 (3)**
Social and Political Worlds (SPW)	**COM 150 (3), CST 111 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or STA 275.
An average overall GPA of 2.0 or better is required for all ~~major courses listed in the catalog~~. emphasis courses

Recitations are available and strongly encouraged for BIO 181, BIO 182, CHM 151 and CHM 152; however, they are not required.

*Major electives include ~~17~~ 20 units of the following. Many of these courses have pre-requisites. Check with the course catalog or your advisor.

- TWO ~~One~~ additional upper-division ENV course (~~3 units~~) 6 units
- One 200-level or higher BIO (excluding BIO 326/ 326L~~W~~), CHM, GLG, or PHY course (3 units)
- Related course work chosen with your advisor approval, from COM 250 and 400; ~~EMF 223 and~~ EMF 129 225 ~~229~~; GSP 239; JLS ~~382, 431C and 482~~ 284, 335W; PHO 281; PR 332; and ~~SC~~ CST 323, 361, 472, and 477 (11 units)

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(1) ENV 115 Climate Change (3)

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Environmental Management - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Honors Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
Choose one of the options below:		
Option: A		
MAT 125	*Precalculus Mathematics*	4
Option: B		
MAT 136	*Calculus I*	4
HON 190	Sem Critical Readng & Writng I	3
LIBST COURSE	Liberal Studies Course	3
HON 100	Introduction To Honors	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
FOR 230	Multicultl Prspcts Nat Res Mgt	3
HON 29X	Honors Topic Seminar 29X	4

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
DIV ELECTIVE	Diversity Elective	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
(1) ~~GSP 302~~	~~Environmental Planning~~	~~3~~
GSP 239	Intro To Geographic Info Sys	4
ECO 284	Principles Of Economics: Micro	3
Meet with your advisor to discuss internship or research options.		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
(2) ~~FOR 430~~	~~Leadership And The Environment~~	~~3~~
POS 359	Environmental Policy	3
MAJOR ELECTIVE	Major Elective	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
(2) ~~FOR 381~~	~~Forest Ecosystem Management~~	~~3~~
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
(2) ~~MAJOR ELECTIVE~~	~~Major Elective~~	~~3~~

Year 4 - Fall		
ENV 440	Conservation Biology	3
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
HON 39X	Honors Advanced Seminar 39X	3
LANGUAGE 101	Language 101-level Course	4
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
(2) ~~MAJOR ELECTIVE~~	~~Major Elective~~	~~3~~
(2) ~~MAJOR ELECTIVE~~	~~Major Elective~~	~~3~~
LANGUAGE 102	Language 102-level Course	4

University Requirements Specified by Major	
Foundation Requirements:Math (FNRQ:MAT)	**MAT 125 (4), MAT 136 (4)**
Social and Political Worlds (SPW)	**FOR 230 (3), ECO 284 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**
Diversity:U.S. Ethnic (DIV:ETHN)	**FOR 230 (3)**

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① ENV 115 Climate Change (3)

② GE COURSE General Elective Course (3)

NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

Environmental Sciences Bachelor of Science

Environmental Management - Emphasis

2014-2015 ~~2013-2014~~ Undergraduate Catalog

Four Year Progression Plan

Sample Progression Plans are for planning purposes only; see the catalog for official details.

Year 1 - Fall		
CHM 151	General Chemistry I	4
CHM 151L	General Chemistry I Lab	1
Choose one of the options below:		
Option: A		
MAT 125	*Precalculus Mathematics*	4
Option: B		
MAT 136	*Calculus I*	4
LIBST COURSE	Liberal Studies Course	3
LIBST COURSE	Liberal Studies Course	3
NAU 100	Transition To College	1

Year 1 - Spring		
CHM 152	General Chemistry II	3
CHM 152L	General Chemistry II Lab	1
BIO 181	Unity Of Life I: Cell Life	3
BIO 181L	Unity Of Life I Lab	1
FOR 230	Multicultl Prspcts Nat Res Mgt	3
ENG 105	Critical Read/Writng In Univ	4

Year 2 - Fall		
ENV 230	Fndtns Env Sci: Humans & Env	4
BIO 182	Unity/Life II: Multicellular	3
BIO 182L	Bio 182 Lab	1
Choose one of the options below:		
Option: A		
STA 270	*Applied Statistics*	3
Option: B		
STA 275	*Statistical Analysis*	3
DIV ELECTIVE	Diversity Elective	3

Year 2 - Spring		
ENV 326	Ecology	3
ENV 326L	Environmental Ecology Lab	1
~~GSP 302~~ (1)	~~Environmental Planning~~	~~3~~
GSP 239	Intro To Geographic Info Sys	4
ECO 284	Principles Of Economics: Micro	3
Meet with your advisor to discuss internship or research options		

Year 3 - Fall		
ENV 360	Atmosphere & Hydrosphere	4
Choose one of the options below:		
Option: A		
ENV 408	*Field Work Experience*	3
Option: B		
ENV 485	*Undergraduate Research*	3
~~FOR 430~~ (2)	~~Leadership And The Environment~~	~~3~~
POS 359	Environmental Policy	3
MAJOR ELECTIVE	Major Elective	3

Year 3 - Spring		
ENV 385W	Energy, Resources And Policy	4
~~FOR 381~~ (2)	~~Forest Ecosystem Management~~	~~3~~
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
~~MAJOR ELECTIVE~~ (2)	~~Major Elective~~	~~3~~

Year 4 - Fall		
ENV 440	Conservation Biology	3
MAJOR ELECTIVE	Major Elective	3
MAJOR ELECTIVE	Major Elective	3
LIBST COURSE	Liberal Studies Course	3
LIBST COURSE	Liberal Studies Course	3
Submit graduation application this term.		

Year 4 - Spring		
ENV 490C	Senior Sem In Enviro Sciences	3
MAJOR ELECTIVE	Major Elective	3
~~MAJOR ELECTIVE~~ (2)	~~Major Elective~~	~~3~~
~~MAJOR ELECTIVE~~ (2)	~~Major Elective~~	~~3~~
GE COURSE	General Elective Course	2

University Requirements Specified by Major	
Foundation Requirements:English (FNRQ:ENG)	**ENG 105 (4)**
Foundation Requirements:Math (FNRQ:MAT)	**MAT 125 (4), MAT 136 (4)**
Social and Political Worlds (SPW)	**FOR 230 (3), ECO 284 (3)**
Science/Applied Science (SAS/LAB)	**CHM 151 (4), CHM 151L (1), CHM 152 (3)**
Liberal Studies Elective	**BIO 181 (3)**

Diversity:U.S. Ethnic (DIV:ETHN)	FOR 230 (3)

① ENV 115 Climate Change (3)

② GE COURSE General Elective Course (3)

PROGRAM INFORMATION

A minimum of 120 units are required for this degree.

A grade of C or better is required for all ENV courses, POS 359, and STA 270 or STA 275.
An average overall GPA of 2.0 or better is required for all math and science courses. emphasis courses

Recitations are available and strongly encouraged for CHM 151, CHM 152, BIO 181 and BIO 182; however, they are not required.

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* Major electives include at least 28 units of the following:
Two One additional upper-division ENV course (3 units) - C or better required (6 units)

One
Two courses from the following group:
- FOR 360, 370(SCI:SAS), 382 (SCI:SAS), or 445, PRM 346W, or POS 344 (SPW) (6 units) (3 units)

One course from each of the following groups. Some courses satisfy liberal studies or diversity and are noted in ( ). No More Than One from each group (9 units)
- PHI 105 (AHI) or PHI 331 (AHI), or REL 380 (CU & Ethnic) or REL 391 (CU) (3 units)
- ECO 285 (SPW), ECO 324 (formerly ECO 325), or 486 (3 units)
- POS 250 (SPW) or POS 345 (3 units)
- ANT 370 (SPW), MGT 303, POS 455, or SOC 319 (3 units)
- GSP 320, GSP 331 (4 units)
- COM 150 (SPW) or CST 271, CST 323 (3 units)

CONTACT INFORMATION

Academic Services Office
College of Engineering, Forestry & Natural Sciences
Building 21, Room 132
Phone: 928-523-3842
EMAIL: cefnsacademic@nau.edu

School of Earth Sciences and Environmental Sustainability
Environmental Sciences Programs
Building 19, Room 100
Phone: 928-523-9333
EMAIL: SESES_admin_support@nau.edu
http://nau.edu/CEFNS/NatSci/SESES/Degrees-Programs/

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for New Course

Please attach proposed Syllabus in approved university format.

1. Course subject and number: **HS 460C** 2. Units: **3**
   See upper and lower division undergraduate course definitions.

3. College: **Health and Human Services** 4. Academic Unit: **Health Sciences**

5. Student Learning Outcomes of the new course. *(Resources & Examples for Developing Course Learning Outcomes)*

Upon successful completion of this course, careful reading of all materials, and a genuine effort in participating in the various course activities, the learner should be able to:

1. **Demonstrate knowledge of leadership and interprofessional teamwork concepts.**
2. **Contribute informed reflective discussions on ten specific course topics with classmates from a variety of health-related disciplines.**
3. **Complete 24 hours of observation of leadership and interprofessional activities in different health-related disciplines.**
4. **Analyze and synthesize issues related to course topics in leadership skills and interprofessional teamwork identified during the observational experiences.**
5. **Submit a summative portfolio of important concepts and skills acquired throughout the degree program (foundational knowledge of health promotion and disease prevention concepts, professional communication skills necessary in health care settings, knowledge of health disparities, knowledge and skills needed for personal health and well-being, leadership and interprofessional teamwork concepts in health-related settings.**

6. Justification for new course, including how the course contributes to degree program outcomes, or other university requirements / student learning outcomes. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes)*.

Knowledge and skills in leadership and interprofessional teamwork are becoming increasingly more important in the healthcare environment. These degrees serve licensed allied health professionals who are often planning to move forward into administrative positions upon completion of their bachelor's degree. This course strengthens the curriculum by addressing this identified gap in content within the degree program. It also contributes to efficiencies in degree delivery. As the capstone course, this course will integrate leadership and interprofessional teamwork concepts with knowledge and skills acquired throughout the degree program.

7. Effective **BEGINNING** of what term and year? **Fall 2014**
   See effective dates calendar.

8. Long course title: **LEADERSHIP AND INTERPROFESSIONAL TEAMWORK FOR HEALTH PROFESSIONALS**
   (max 100 characters including spaces)

9. Short course title: **LEADERSHIP/TEAMWORK HLTH PROFFS**
(max. 30 characters including spaces)

10. Catalog course description *(max. 60 words, excluding requisites):*
Leadership and interprofessional teamwork concepts and applications for health professionals. Prerequisites: Completion of all 200 and 300 level program requirements with a grade of C or better. Instructor consent required. Letter grade only.

11. Will this course be part of any plan (major, minor or certificate) or sub plan (emphasis)? Yes ☒ No ☐
If yes, include the appropriate plan proposal.
Health Sciences-Allied Health BS, Health Sciences-DMIT BS, Health Sciences-Medical Assisting BS, Health Sciences-Paramedic Care BS, Health Sciences-PT Assisting BS, Health Sciences-Respiratory Care BS, Health Sciences-Surgical Technology BS

12. Does this course duplicate content of existing courses? Yes ☐ No ☒
If yes, list the courses with duplicate material. If the duplication is greater than 20%, explain why NAU should establish this course.

13. Will this course impact any other academic unit's enrollment or plan(s)? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

14. Grading option: Letter grade ☒ Pass/Fail ☐ Both ☒

15. Co-convened with: _____ 14a. UGC approval date*: _____
(For example: ESE 450 and ESE 550) See co-convening policy.
*Must be approved by UGC before UCC submission, and both course syllabi must be presented.

16. Cross-listed with: _____
(For example: ES 450 and DIS 450) See cross listing policy.
Please submit a single cross-listed syllabus that will be used for all cross-listed courses.

17. May course be repeated for additional units? Yes ☐ No ☒
16a. If yes, maximum units allowed? _____
16b. If yes, may course be repeated for additional units in the same term? Yes ☐ No ☐

18. Prerequisites: **Instructor Consent**
If prerequisites, include the rationale for the prerequisites.
As a capstone course, this course requires instructor consent to assure that all requirements for enrollment in the course have been met.

19. Co requisites: **NONE**

If co requisites, include the rationale for the co requisites.

20. Does this course include combined lecture and lab components? Yes ☐ No ☒
If yes, include the units specific to each component in the course description above.

21. Names of the current faculty qualified to teach this course: **Deborah J. McCormick, Ph.D.**

22. Classes scheduled before the regular term begins and/or after the regular term ends may require additional action. Review "see description" and "see impacts" for "Classes Starting/Ending Outside Regular Term" under the heading "Forms" http://nau.edu/Registrar/Faculty-Resources/Schedule-of-Classes-Maintenance/.

Do you anticipate this course will be scheduled outside the regular term? Yes ☐ No ☒

Answer 22-23 for UCC/ECCC only:

23. Is this course being proposed for Liberal Studies designation? Yes ☒ No ☐
If yes, include a Liberal Studies proposal and syllabus with this proposal.

24. Is this course being proposed for Diversity designation? Yes ☐ No ☒
If yes, include a Diversity proposal and syllabus with this proposal.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**10/17/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	10/22/13 Date
Chair of college curriculum committee	10/24/13 Date
Dean of college	10/28/13 Date
For Committee use only: K. Laurie Dickson	
UCC/UGC Approval	1/28/14 Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES	
Reviewed by Curriculum Process Associate **Approvals:**	Date
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

THIS COURSE IS ASYNCHRONOUS, BUT IT IS NOT SELF-PACED. ASSIGNMENTS ARE DUE AT REGULAR INTERVALS AS POSTED IN THE SYLLABUS AND THROUGHOUT THE COURSE.

Meeting Place/Time/Days: Asynchronous Online
Credit Hours: 3 semester credit hours
Instructor: Deborah J. McCormick, Ph.D.
Office Phone: 928-523-8534
Office Hours: By appointment
E-mail: Use E-mail function within BbLearn
Fax: 928-523-0148
Office Location: 227B Health Professions Building
Course Prerequisites: Permission of instructor

Course Description
Catalog Description:
Leadership and interprofessional teamwork concepts and applications for health professionals. Prerequisites: Completion of all 200 and 300 level program requirements with a grade of C or better. Instructor consent required. Letter grade only.

Expanded Course Description:
This course will explore theoretical concepts of leadership and interprofessional teamwork for health professionals. Knowledge and application of these concepts will assist health professionals in preparing for effective leadership and teamwork with those in other related health care disciplines. As a capstone course, this course will include opportunities to reflect on and synthesize important concepts and skills acquired throughout the degree program.

Student Learning Outcomes:
Upon successful completion of this course, careful reading of all materials, and a genuine effort in participating in the various course activities, the learner should be able to:

1. Demonstrate knowledge of leadership and interprofessional teamwork concepts.
2. Contribute informed reflective discussions on ten specific course topics with classmates from a variety of health-related disciplines.
3. Complete 24 hours of observation of leadership and interprofessional activities in different health-related disciplines.
4. Analyze and synthesize issues related to course topics in leadership skills and interprofessional teamwork identified during the observational experiences.
5. Submit a summative portfolio of important concepts and skills acquired throughout the degree program (foundational knowledge of health promotion and disease prevention concepts, professional communication skills necessary in health care settings, knowledge of health disparities, knowledge and skills needed for personal health and well-being, leadership and interprofessional teamwork concepts in health-related settings.

Textbooks
If you have not already done so, you should order your textbooks immediately. Web students may order their textbooks at 1-800-426-7674 from the NAU Bookstore. You may also order your texts through almost any online or storefront site.

Klauss, P. (2007). The Hard Truth About Soft Skills: Workplace Lessons Smart People Wish They'd Learned Sooner. Harper Collins. ISBN-13: 978-06-128414-4

Weiss, D., Tillin, F., & Morgan, M. (2013). The Interprofessional Health Care Team: Leadership and Development. Jones and Bartlett Learning. ISB-13: 9781449673369

Course Structure/Approach
This course is taught entirely online. All learning activities, interaction activities, and assessment will happen inside Blackboard. To contact your instructor, teaching assistants, and other students, you will utilize the Mail Messages feature inside BbLearn.

Course Evaluation
Your grade will be determined by the accumulation of points received for completion of course requirements.

Possible Points

1. Five (5) Quizzes (40 points each)	200
2. Ten (10) Discussion Postings (5 points each)	50
3. Observation of Leadership and Teamwork and Report	75
4. Summative Reflective Portfolio	75
Total Possible Points	**400**

Grading Scale
- 360-400 pts. = A
- 320-359 pts. = B
- 280-319 pts. = C
- 240-279 pts. = D
- < 240 = F

Course Requirements (See the "Calendar" function for due dates for all assignments!)
1. Five (5) Quizzes (40 points each) = 200
The questions on the quizzes will be primarily objective, multiple-choice, or true/false questions. They will cover material from the assigned readings as well as additional information presented and discussed in class lessons. Quiz times posted are Arizona (MST) times. Note that Arizona does ***not*** convert to Daylight Savings Time. You may take each quiz a maximum of two times. You will have 45 minutes for each attempt. You will receive the average of the grades scored during your attempts. Since you have ample time to access each quiz, there are NO MAKE-UP QUIZZES. If you forget to access a quiz, or if you wait until the last minute and are then unable to access the quiz for some reason, you should be prepared to accept the responsibility for the resulting missed points. ONE Cumulative Replacement Quiz will be offered near the end of the course. This quiz will be comprehensive over all material covered in the course. It will be worth 40 points and may be used to replace one missed quiz or one low quiz score. See the Course Calendar for opening and closing dates and times of quizzes.

2. Ten (10) Discussion Board Postings (5 points each) = 50
You will have an opportunity to participate in Discussion Board postings throughout the course. There will be a minimum of 12 opportunities to participate in a Discussion Board posting throughout the course. You need to receive full credit for at least 10 in order to receive all points for this assignment. If you participate in any additional Discussion Board topics, you may earn an extra 5 points for each of the postings (a maximum of 10 additional points). You may receive a maximum of 3 points for your initial response posting to the topic. In order to be eligible to receive full credit, responses must be thoughtful and demonstrate knowledge and reflection regarding the topic, as well as utilize proper

grammar and spelling. You may receive 1 point for each of your first two responses to a fellow classmate's posting. You may post additional responses to the postings of your classmates, but you will not receive additional points. Thus the maximum number of points for any single Discussion Topic is 5 points. **IMPORTANT:** *If you do NOT post an initial response by the deadline, you will not receive* ***ANY*** *points for a secondary response!*

Discussion Topics for **each** week will be posted by Monday at noon. All times posted are Arizona (MST) times. Note that Arizona does ***not*** convert to Daylight Savings Time. **You must post an answer to BOTH discussion topics no later than Wednesday at midnight, or you will not receive ANY credit for the discussion topics that week.** From Thursday until Sunday midnight, you have the opportunity to comment on postings by fellow classmates. **In order to receive full credit for a particular discussion, you must, at a minimum, post an initial response to the Discussion Topic by Wednesday at midnight and comment on at least two postings by a fellow classmate by Sunday at midnight.**
Please note: The purpose of the Discussion Board topics is to encourage reflective thought, class discussion, and student interaction on the topics presented. It is not possible to achieve these outcomes if all postings for a particular discussion are done at one time. For the possibility of full credit on discussion postings, you must demonstrate that you have posted to the Discussion Board on at least **TWO** separate days during the week. **You will not receive full credit if all of your postings for a single Discussion Topic are on the same day.**

Each Monday by noon, a discussion topic will be posted to the Discussion Board. The discussion and comments on that topic of discussion will end at midnight the following Sunday. The topic will officially close at that time, and no further postings will be accepted on that topic of discussion (for point credit). The instructor and/or teaching assistants will monitor the discussion during the week but may or may not comment. Lively discussions are expected and encouraged. Personal attacks and insults will not be tolerated. If such behavior occurs, the offending individual will be given **one** warning. Any recurrence of the behavior will result in the offending individual being removed from the Discussion Board group and receiving a ZERO for all future Discussion assignments. REMINDER: All postings to the Discussion Board will be accessed by all members of the class and the instructor, so post messages accordingly.

3. Observation of Leadership and Interprofessional Teamwork and Report (75 points)
For this assignment, you will make arrangements to observe and interact with four different health professionals who have leadership responsibilities. These observations and interactions will occur both within your own discipline as well as outside your discipline. A minimum of 24 hours of observation is required, evenly divided among the four health professionals. A written report will be submitted at the end of the observational experience. See the guidelines for this assignment posted in a file on the "Course Resources" page. See the Course Calendar for the due date of this assignment. This assignment will be submitted via the Assignments link accessible through the Course Content link in the Menu Bar on the left-hand side of your screen.

4. Summative Reflective Portfolio (75 points)
In this assignment, you will prepare and present a summative reflective electronic portfolio answering targeted questions relevant to application of program concepts and skills in future practice as a health professional. These will include concepts and skills related to foundational knowledge of health promotion and disease prevention concepts, professional communication skills necessary in health care settings, knowledge of health disparities, knowledge and skills needed for personal health and well-being, leadership and interprofessional teamwork concepts in health-related settings. See the guidelines for this assignment posted in a file on the "Course Resources" page. See the Course Calendar for the due date of this assignment.

EXTRA CREDIT: Since there are ample opportunities to accumulate the necessary points in a wide variety of ways, **NO** extra credit opportunities will be given.

TIPS FOR CLASS SUCCESS

1. Purchase the textbook, and read the text ahead of time. Come to that week's lessons with your reading already done. Unless specifically instructed otherwise, chapters will be covered in the same order as presented in the textbook.
2. Come to class with a positive attitude. This class, like life, will be what **you** make of it. It's not my class--it's **our** class. What you get out of it is largely up to you.
3. Prepare ahead of time! Study, research, write, and review ahead of time. Leave yourself time to be successful.
4. Take good care of yourself. Rest, good nutrition, exercise, and stress reduction are not only keys to a healthy lifestyle but to good academic performance as well.
5. If you have any questions about this class or personal concerns that I can assist you with, please let me know. I am concerned about you as a student and as a person.

A Word from Your Instructor:

The focus of this class is active, experiential learning. Much of the value that you attain from this course will depend upon what you are willing to put into the course: academically, emotionally, and socially. While there are always risks in such an investment of yourself, there are also significant benefits. I hope you will approach this course with an open mind and a willingness to learn in a new way. I think you will be richly rewarded, both personally and academically.

Course Policies and Expectations

- **You are expected to attend class via the internet multiple times each week.** Many of the class activities are interactive. It is impossible to make up these experiences after discussions have been completed. Simply reading the book does not equal being an active class participant!
- It is **expected** that each student will be an integral part of the learning that occurs in this class. Each of you has unique qualities, skills, abilities, interests, and experiences that will lend value to the class. **What you put into this class will be the most important determinant of what you get out of the class.**
- Students are responsible for all information assigned or presented in class materials.

Missed or late written assignments:

Students should be prepared to submit written assignments on or before the due dates. Late assignments will be accepted with a penalty deduction of 5 points per day, regardless of the total point value of the assignment.

Late discussion posts and quizzes:

You will not receive any credit for late discussion posts or quizzes.

Remember to allow yourself adequate time to deal with potential technical barriers to submitting your assignments. Technical barriers include such things as the NAU server being down, bad weather affecting transmission over telephone lines, or unanticipated problems with your computer. To allow time to deal with such problems, you should submit assignments one or two days before the due dates. The Student Technology Center (Academic Help Desk) staff are available to help you, but you should not assume that they will always be online.

Additional responsibilities of the student:

It is the student's responsibility to ask questions IMMEDIATELY if she/he is unsure of requirements for the assignments or if she/he has technical problems with access to course information. Contact the instructor with questions regarding interpreting or posting assignments **well in advance** of

assigned due dates. While I will check my Mail regularly, I will **not** be on-line **every** day, so please plan ahead. In general, I will check my e-mail for this class on Monday, Wednesday, and Friday between 8 a.m. and 5 p.m.

If you are unfamiliar with using a computer, you are strongly advised **not** to take a web-based class. Just as this class requires basic college-level reading and writing skills, you must also have basic proficiency in computer use and the ability to follow detailed instructions and navigate within a web-based format.

Expectations regarding professional class behavior:
Students should act in a professional and courteous manner when offering opinions or responding to others' ideas, even if those ideas vary substantially from their own beliefs. Students may have differing opinions or perspectives on concepts presented in class, and all students should feel that the expression of their ideas will be respected. I count on each of you to contribute to a safe and considerate learning environment for all.

Individual work:
All assignments for this class (all quizzes, written assignments, and discussion posts) must be your own work and completed independently. You may discuss information and concepts with other individuals or students, but **the actual writing of assignments for a grade must be your own independent work.** If academic dishonesty is confirmed, the student will receive a grade of 0% (zero points) on the assignment, and further action will be taken by the Department.

Collaborative work:
Students are highly encouraged to work together and assist each other by asking questions in class discussions and by exploring resources and problem-solving strategies in the process of investigating health information. For example, sharing websites or other resources that you found helpful is beneficial to the entire class.

Academic dishonesty:
Academic dishonesty is a form of misconduct that is subject to disciplinary action under the *Student Code of Conduct* and includes the following: cheating, fabrication, fraud, facilitating academic dishonesty and plagiarism.

1. **Plagiarism:** any attempt to pass off other's work as your own
2. **Cheating:** any attempt to gain an unfair, hidden advantage over one's fellow students
3. **Fabrication:** any attempt to present information that is not true
4. **Fraud:** any attempt to deceive an instructor or administrative officer of the university
5. **Facilitating Academic Dishonesty:** any attempt to assist an act of Academic Dishonesty by another individual

Students engaging in activity meeting the definition of academic dishonesty are subject to one of the penalties listed below. **As the faculty member, I reserve the right to assign the penalty based upon my analysis of the severity of the offense.**

1. Assign the student extra course work.
2. Require the assignment or examination to be repeated.
3. Reduce the grade on the assignment or examination.
4. Award zero grade on the assignment or examination.
5. Require the student to drop the course.
6. Award a failing grade in the course.

As a reference point, ANY act of academic dishonesty in this course will result in a MINIMUM penalty of a zero grade on the assignment or examination.

The complete **Academic Dishonesty** policy may be found in the link to the ***NAU Student Handbook***, accessible from at the following URL:
http://www4.nau.edu/stulife/handbookdishonesty.htm
Policy for incompletes or dropping this course:

Students sometimes find that they have over-committed themselves or that family and other obligations prevent their successful completion of courses. I want you to be successful and learn the skills you will need in your career, so review the following procedures in the event that you may need them later in the semester. Please evaluate your individual situation and take the action most appropriate for you.
XXX= Last day to drop a class without its appearing on the student's transcript.

XXX= Last day to withdraw from a class with a "W" without a formal petition and fee.

In rare circumstances, I will consider a student's request for an incomplete. Each case will be evaluated individually based on the circumstances and/or the amount and nature of the work remaining. If an incomplete is appropriate and is awarded, a faculty member is required to write a formal contract with the student for the incomplete. These are statements of what remains to be done to complete the course and by what deadline. When the student finishes the course work, the instructor will then change the incomplete to the appropriate grade. The student must complete all of the work within the time frame determined, or the incomplete will automatically convert to an F.
The student may also request to drop the course past the deadline. To request dropping a course past the deadline, the student needs to complete a petition form from the Office of the Registrar. This is accessible from a Forms link on the Registrar's homepage:
http://www4.nau.edu/registrar/downloadfile.asp?file=forms/petiti~9.doc Please note: The instructor is under no obligation to sign a request to drop the course past the deadline. If the instructor judges the request to be appropriate, the instructor will sign the petition to drop the course after the deadline, and the student may withdraw from the course. The student would then take the course again in a more suitable semester. A failing grade is NOT a sufficient reason to request a petition to drop the class. Refer to the Registrar's guidelines for acceptable criteria for dropping a class past the deadline: http://www4.nau.edu/registrar/forms/Petguide.pdf The student should contact the Registrar's Office (http://www4.nau.edu/registrar/) for more information about this process. It is the student's responsibility to ensure that all necessary forms are completed and submitted to the appropriate offices.

If the student is not granted an incomplete or an approval to drop the course past the deadline, then fortunately, NAU is still very generous: The student may retake the course and request a "grade replacement" (if the cumulative grade is D or F). While the original grade would remain on the student's transcript, the failing grade will not be calculated in the student's grade point average (GPA). Rather, the new grade will be used in calculating the student's grade point average (GPA).

University Policies:
Students are expected to follow **University Policies** related to Safe Working and Learning Environment, Students with Disabilities, Institutional Review Board process, Academic Integrity, Academic Contact Hours, and Sensitive Materials. These policies are accessible at:
http://www4.nau.edu/academicadmin/UCCPolicy/plcystmt.html)
*Please note that the University contact hour policy was intended for residential course work. It is difficult to "translate" this policy to a web-based format, since the amount of time that you spend on assignments is determined by your level of proficiency with the computer and your need to address any technical difficulties that may arise. According to Arizona Board of Regents requirements, **you should expect to spend, on average, a MINIMUM of 9 HOURS PER WEEK in reading, online**

research, homework, and preparation for and submission of assignments.

Students are often surprised that web-based courses require so much of their time. I realize that you may have other very important commitments, such as full-time employment and family. I strongly encourage you to review your personal time commitments and expectations--both at the beginning of the semester and throughout the course--in order to determine whether you are scheduling your time realistically. Please contact me immediately if you need guidance in this matter. I will be happy to try to assist you.

*** * * * * * * * * * * * * * * CONFIRMATION OF CLASS MEMBERSHIP* * * * * * * * * * * * * ***

In order to confirm your membership in this class, you must send an e-mail class confirmation to the instructor **within Blackboard during the first 5 days of the semester**. The subject line of the e-mail should read: Course Confirmation. The body of the e-mail must contain the following text:
I have read and understand the syllabus for this class, and I agree to abide by its content for this class. According to Arizona Board of Regents guidelines, **I am expected to spend, on average, a MINIMUM of 9 HOURS PER WEEK in reading, online research, homework, and preparation for and submission of assignments.** Type your name at the bottom of the e-mail.
Until this class confirmation is received, a student will not receive credit for any assignments for the class.

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **Health and Human Services** 2. Academic Unit: **Health Sciences**

3. Academic Plan Name: **Health Sciences-Allied Health; B.S. (HSAHBSX)** 4. Emphasis: _____

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This academic plan serves as a bachelor's degree completion program for students who are earning or who have earned an associate degree in an allied health area from a regionally accredited community college or university. This degree completion program provides a broad liberal studies background and an additional "Health Sciences Core Curriculum"	**UNCHANGED**

that complements the student's existing clinical background. Intended student outcomes for NAU Health Sciences Core Courses include a demonstrated knowledge of the areas listed below. Intended student outcome data will be collected and evaluated throughout the program of study. • Ethical issues related to health care delivery • Organization, and administration of health services and barriers to health services delivery • Implementation of health science educational programs • Evaluation of effectiveness of health science education programs • Application of the basic principles of epidemiology • Communicable and non-communicable disease • Classroom theory related to health science in a professional health setting • Physical Health Science • Mental, emotional, and spiritual health • Physical and social environmental health	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Health Sciences-Allied Health; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- An allied health discipline

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3 units)
- HHS 300W (3 units)

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Health Sciences-Allied Health; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	**Required**
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- An allied health discipline

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3 units)

- HS 408C (3 units)
- Any other Health Sciences or Fitness Wellness courses (6 units)

In addition, you take up to 58 units of requirements in an allied health discipline as a block of courses from an associate degree program at a regionally accredited community college or university. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline.

Note: Prior to beginning the HS 408C capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)

Additional Information
Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

- HHS 300W (3 units)
- ~~**HS 408C**~~ **HS 460C** (3 units)
- Any other Health Sciences or Fitness Wellness courses (6 units)

In addition, you take up to 58 units of requirements in an allied health discipline as a block of courses from an associate degree program at a regionally accredited community college or university. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline.

Note: Prior to beginning the ~~**HS 408C**~~ **HS 460C** capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)

Additional Information
Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

Knowledge and skills in leadership and interprofessional teamwork are becoming increasingly more important in the healthcare environment. These degrees serve licensed allied health professionals who are often planning to move forward into administrative positions upon completion of their bachelor's degree. This course strengthens the curriculum by addressing this identified gap in content within the degree program. It also contributes to efficiencies in degree delivery. As the capstone course, this course will integrate leadership and interprofessional teamwork concepts with knowledge and skills acquired throughout the degree program.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐
If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐
If no, explain why this proposal should be approved.

Scott Galland	**10/21/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	10/22/13 Date
Chair of college curriculum committee	10/24/13 Date
Dean of college	10/28/13 Date
For Committee use only: K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **Health and Human Services** 2. Academic Unit: **Health Sciences**

3. Academic Plan Name: **Health Sciences-Diagnostic Medical Imaging and Therapy; B.S. (HSDMITBSX)** 4. Emphasis: _____

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This academic plan serves as a bachelor's degree completion program for students who are earning or who have earned an associate degree in an allied health area from a regionally accredited community college or university. This degree completion program provides a broad liberal studies background and an	**UNCHANGED**

additional "Health Sciences Core Curriculum" that complements the student's existing clinical background. Intended student outcomes for NAU Health Sciences Core Courses include a demonstrated knowledge of the areas listed below. Intended student outcome data will be collected and evaluated throughout the program of study. • Ethical issues related to health care delivery • Organization, and administration of health services and barriers to health services delivery • Implementation of health science educational programs • Evaluation of effectiveness of health science education programs • Application of the basic principles of epidemiology • Communicable and non-communicable disease • Classroom theory related to health science in a professional health setting • Physical Health Science • Mental, emotional, and spiritual health • Physical and social environmental health	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Health Sciences-Digital Medical Imaging and Therapy; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Diagnostic medical imaging and therapy

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Health Sciences-Digital Medical Imaging and Therapy; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Diagnostic medical imaging and therapy

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321

units) • HHS 300W (3 units) • HS 408C (3 units) • Any other Health Sciences or Fitness Wellness courses (6 units) In addition, you take up to 58 units of requirements in diagnostic medical imaging and therapy as a block of courses from an associate degree program at a regionally accredited community college or university. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline Note: Prior to beginning the HS 408C capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it. *General Electives* Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.	(3 units) • HHS 300W (3 units) • ~~**HS 408C**~~ **HS 460C** (3 units) • Any other Health Sciences or Fitness Wellness courses (6 units) In addition, you take up to 58 units of requirements in diagnostic medical imaging and therapy as a block of courses from an associate degree program at a regionally accredited community college or university. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline Note: Prior to beginning the ~~**HS 408C**~~ **HS 460C** capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it. *General Electives* Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:
Knowledge and skills in leadership and interprofessional teamwork are becoming increasingly more important in the healthcare environment. These degrees serve licensed allied health professionals who are often planning to move forward into administrative positions upon completion of their bachelor's degree. This course strengthens the curriculum by addressing this identified gap in content within the degree program. It also contributes to efficiencies in degree delivery. As the capstone course, this course will integrate leadership and interprofessional teamwork concepts with knowledge and skills acquired throughout the degree program.

9. NCATE designation, if applicable:
☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐
If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐
If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**1021/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	10/22/13 Date
Chair of college curriculum committee	10/24/13 Date
Dean of college	10/28/13 Date
For Committee use only:	
UCC/UGC Approval	K. Laurie Dickson 1/28/14 Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES	
Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **Health and Human Services** 2. Academic Unit: **Health Sciences**

3. Academic Plan Name: **Health Sciences-Medical Assisting; B.S. (HSMEABSX)** 4. Emphasis: _____

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both c**ore and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This academic plan serves as a bachelor's degree completion program for students who are earning or who have earned an associate degree in an allied health area from a regionally accredited community college or university. This degree completion program provides a broad liberal studies background and an additional "Health Sciences Core Curriculum"	**UNCHANGED**

that complements the student's existing clinical background. Intended student outcomes for NAU Health Sciences Core Courses include a demonstrated knowledge of the areas listed below. Intended student outcome data will be collected and evaluated throughout the program of study. • Ethical issues related to health care delivery • Organization, and administration of health services and barriers to health services delivery • Implementation of health science educational programs • Evaluation of effectiveness of health science education programs • Application of the basic principles of epidemiology • Communicable and non-communicable disease • Classroom theory related to health science in a professional health setting • Physical Health Science • Mental, emotional, and spiritual health • Physical and social environmental health	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Health Sciences-Medical Assisting; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Medical assisting

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3 units)

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Health Sciences-Medical Assisting; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Medical assisting

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
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Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
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• HHS 300W (3 units) • HS 408C (3 units) • Any other Health Sciences or Fitness Wellness courses (6 units) In addition, you take up to 58 units of requirements in an allied health discipline as a block of courses from an associate degree program at a regionally accredited community college or university in medical assisting. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline. Note: Prior to beginning the HS 408C capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it. *General Electives* Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.	• HHS 300W (3 units) • ~~**HS 408C**~~ **HS 460C** (3 units) • Any other Health Sciences or Fitness Wellness courses (6 units) In addition, you take up to 58 units of requirements in an allied health discipline as a block of courses from an associate degree program at a regionally accredited community college or university in medical assisting. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline. Note: Prior to beginning the ~~**HS 408C**~~ **HS 460C** capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it. *General Electives* Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit. You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.) *Additional Information* Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

Knowledge and skills in leadership and interprofessional teamwork are becoming increasingly more important in the healthcare environment. These degrees serve licensed allied health professionals who are often planning to move forward into administrative positions upon completion of their bachelor's degree. This course strengthens the curriculum by addressing this identified gap in content within the degree program. It also contributes to efficiencies in degree delivery. As the capstone course, this course will integrate leadership and interprofessional teamwork concepts with knowledge and skills acquired throughout the degree program.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland	**10/21/2013**
Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	10/22/13 Date
Chair of college curriculum committee	10/24/13 Date
Dean of college	10/28/13 Date
For Committee use only: K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **Health and Human Services** 2. Academic Unit: **Health Sciences**

3. Academic Plan Name: **Health Sciences-Paramedic Care; B.S. (HSPARBSX)** 4. Emphasis: _____

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both c**ore and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This academic plan serves as a bachelor's degree completion program for students who are earning or who have earned an associate degree in an allied health area from a regionally accredited community college or university. This degree completion program provides a broad liberal studies background and an additional "Health Sciences Core Curriculum"	**UNCHANGED**

that complements the student's existing clinical background. Intended student outcomes for NAU Health Sciences Core Courses include a demonstrated knowledge of the areas listed below. Intended student outcome data will be collected and evaluated throughout the program of study. • Ethical issues related to health care delivery • Organization, and administration of health services and barriers to health services delivery • Implementation of health science educational programs • Evaluation of effectiveness of health science education programs • Application of the basic principles of epidemiology • Communicable and non-communicable disease • Classroom theory related to health science in a professional health setting • Physical Health Science • Mental, emotional, and spiritual health • Physical and social environmental health	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Health Sciences-Paramedic Care; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Paramedic care

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3 units)

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Health Sciences-Paramedic Care; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Paramedic care

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3 units)

- HHS 300W (3 units)
- HS 408C (3 units)
- Any other Health Sciences or Fitness Wellness courses (6 units)

In addition, you take up to 58 units of specialization requirements as a block of courses from an associate degree program at a regionally accredited community college or university in paramedic care. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline.

Note: Prior to beginning the HS 408C capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)

Additional Information
Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

- HHS 300W (3 units)
- ~~**HS 408C**~~ **HS 460C** (3 units)
- Any other Health Sciences or Fitness Wellness courses (6 units)

In addition, you take up to 58 units of specialization requirements as a block of courses from an associate degree program at a regionally accredited community college or university in paramedic care. This block includes courses that meet the requirements for graduation and for national certification or licensure in the discipline.

Note: Prior to beginning the ~~**HS 408C**~~ **HS 460C** capstone course, students must have completed their Associate's degree in the appropriate field. Students must hold a current certification or licensure in their field (if one is available) before and during their capstone course. The student is also required to have a current cumulative GPA of 2.5 or higher to be eligible to enroll in it.

General Electives
Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)

Additional Information
Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

8. Justification for proposal:

Knowledge and skills in leadership and interprofessional teamwork are becoming increasingly more important in the healthcare environment. These degrees serve licensed allied health professionals who are often planning to move forward into administrative positions upon completion of their bachelor's degree. This course strengthens the curriculum by addressing this identified gap in content within the degree program. It also contributes to efficiencies in degree delivery. As the capstone course, this course will integrate leadership and interprofessional teamwork concepts with knowledge and skills acquired throughout the degree program.

9. NCATE designation, if applicable:

☐ Initial Plan ☐ Advanced Plan ☐ Remove Designation

10. Effective beginning **FALL**: **2014**
See effective dates calendar.

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes ☐ No ☒
If yes, describe the impact. If applicable, include evidence of notification to and/or response from each impacted academic unit

Answer 12-13 for UCC/ECCC only:

12. A major is differentiated from another major by required course commonality: 24 units of the required credit hours of a major must be unique, (i.e. not common or not dual use as a required element in another major), to that major. Does this plan have 24 units of unique required credit? Yes ☒ No ☐

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least 18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor to differentiate it from other minors.
Does this minor have 12 units of unique required credit? Yes ☐ No ☐

Answer 14-15 for UGC only:

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework? Yes ☐ No ☐

If no, explain why this proposal should be approved.

FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland **10/21/2013**

Reviewed by Curriculum Process Associate	Date
Approvals:	
Department Chair/Unit Head (if appropriate)	10/22/13 Date
Chair of college curriculum committee	10/24/13 Date
Dean of college	10/28/13 Date
For Committee use only: K. Laurie Dickson	1/28/14
UCC/UGC Approval	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

EXTENDED CAMPUSES

Reviewed by Curriculum Process Associate	Date
Approvals:	
Academic Unit Head	Date
Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)	Date
Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)	Date
Chief Academic Officer; Extended Campuses (or Designee)	Date

Approved as submitted: Yes ☐ No ☐

Approved as modified: Yes ☐ No ☐

NORTHERN ARIZONA UNIVERSITY

UCC/UGC/ECCC

Proposal for Plan Change or Plan Deletion

☐ **FAST TRACK** ***(Select if this will be a fast track item.*** *Refer to* ***Fast Track Policy*** *for eligibility)*

If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.

All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.

UCC proposals must include an updated 8-term plan.
UGC proposals must include an updated program of study.

1. College: **Health and Human Services** 2. Academic Unit: **Health Sciences**

3. Academic Plan Name: **Health Sciences-Physical Therapist Assisting; B.S. (HSPTABSX)** 4. Emphasis: _____

5. Plan proposal: ☒ Plan Change ☐ Plan Deletion

☐ New Emphasis ☐ Emphasis Change ☐ Emphasis Deletion

6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both** core and emphasis.	Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. *(Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes).*
This academic plan serves as a bachelor's degree completion program for students who are earning or who have earned an associate degree in an allied health area from a regionally accredited community college or university. This degree completion program provides a broad liberal studies background and an	**UNCHANGED**

additional "Health Sciences Core Curriculum" that complements the student's existing clinical background. Intended student outcomes for NAU Health Sciences Core Courses include a demonstrated knowledge of the areas listed below. Intended student outcome data will be collected and evaluated throughout the program of study. • Ethical issues related to health care delivery • Organization, and administration of health services and barriers to health services delivery • Implementation of health science educational programs • Evaluation of effectiveness of health science education programs • Application of the basic principles of epidemiology • Communicable and non-communicable disease • Classroom theory related to health science in a professional health setting • Physical Health Science • Mental, emotional, and spiritual health • Physical and social environmental health	

7. Current catalog plan overview and requirements in this column. Cut and paste the ***Overview*** and ***Details*** tabs, in their entirety, from the current on-line academic catalog: **(http://catalog.nau.edu/Catalog/)**

Health Sciences-Physical Therapist Assisting; B.S.

In addition to University Requirements:

- At least 85 units of major requirements
- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
Additional Admission Requirements	Required
Fieldwork Experience/Internship	Required

Additional Admission Requirements
Admission requirements over and above admission to NAU are required.

To be eligible for this academic plan, students must be admitted to, enrolled in, or be graduates from an associate's degree program at a regionally accredited community college or university in:

- Physical therapist assisting

Additionally, a 2.5 or higher cumulative GPA in your associate's degree is required for admission to this degree plan.

Major Requirements
Take the following 85 units with a Grade of "C" or better in each course:

Health sciences core courses include (27 units)

- HS 200, HS 300, HS 404, HS 410 (12 units)
- Select one from: HS 301, FW 311, FW 321 (3

Show the proposed changes in this column. **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted.

Health Sciences-Physical Therapist Assisting; B.S.

In addition to University Requirements:

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- Be aware that you may not use courses with an HS prefix to satisfy liberal studies requirements.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
GPA	C
Mathematics Required	MAT 114
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FLAGSTAFF MOUNTAIN CAMPUS

Scott Galland **10/21/2013**