

## University Courses & Curricula Committee 2016-2017

November 30<sup>th</sup>, 2016  
Talley Student Union 4140  
12:45pm-2:45pm

### Call to Order 12:45pm

- Welcome and Instructions, Chair Andy Nowel
- Remarks from Associate Vice Provost, Dr. Barbara Kirby
- Approval of UCCC November 16<sup>th</sup>, 2016 Minutes
- Course and Curricular Business

### New Business

Consent Agenda		
Action	Type	Notes
<a href="#">BIO 361 Developmental Biology</a>	Revision	Requisites

College of Sciences			
Presenter	Reviewers	Action	Type
Banks	Despain, Lindsay, Rieder	Chemistry BS (17CHEMBS) Curricula change	Revisions: electives, semester display, courses
Banks	Despain, Trivedi, Orphanides	<a href="#">ST 433/(533) Applied Spatial Statistics</a>	New Course. Dual Level.
Klesath	Driscoll, Hessling, Podurgal	<a href="#">ST 440/(540) Applied Bayesian Analysis</a>	New Course. Dual Level.
Klesath	Driscoll, Hessling, Tarp	<a href="#">ST/CSC 442 Introduction to Data Science</a>	New Course. Crosslisted.

College of Humanities and Social Sciences			
Presenter	Reviewers	Action	Type
Driscoll	Beller, Tarp, Fath	<a href="#">ANT 428/(528) Human Paleopathology</a>	New Course. Dual Level.
Driscoll	Peretti, Podurgal, Young	<a href="#">ENG 255 Beyond Britain: Literature from Colonies of the British empire</a>	New Course.
Driscoll	Ferguson, Klesath, Hessling	<a href="#">ENG 339 Literature and Technology</a>	New Course.
Driscoll	Trivedi, Lindsay, Beller	<a href="#">ENG 340 Literature, Art, and Society</a>	Revisions: title, course number, restrictions, description, student learning outcomes
Driscoll	Orphanides, Fath, Podurgal	<a href="#">ENG 342 Literature of Space and Place</a>	New Course.
Driscoll	Beller, Klesath, Orphanides	<a href="#">ENG 464 British Literature and the Founding of Empire</a>	Revisions: title, offering, description, student learning outcomes
Despain	Rieder, Hessling, Tarp	<a href="#">ENG 466 Transatlantic Literatures</a>	New Course.
Despain	Peretti, Banks, Reider	<a href="#">ENG 470 American Literature, Twentieth Century and Beyond</a>	Revisions: title, term offering, requisites/ restrictions, student learning outcomes, description
Despain	Ferguson, Reider, Klesath	<a href="#">ENG 482 Reading in the Digital Age</a>	New Course.
Despain	Podurgal, Rieder, Young	<a href="#">PHI 312 Philosophy of Law</a>	Revisions: offering, student learning outcomes

Despain	Trivedi, Peretti, Banks	<a href="#">PSY/WGS 406 Psychology of Gender</a>	Crosslisted. Revisions: requisites, student learning outcomes
Despain	Tarpy, Hergeth, Beller	<a href="#">WGS 350 Emerging Issues in Women's and Gender Studies</a>	New Course.

College of Education			
Presenter	Reviewers	Action	Type
Hessling	Banks, Driscoll, Ferguson	Mathematics Education: Computer Science (13MTHEDBS-13MTHEDCPS)	Revisions: co-requisite change to ST 305, adding ST 307 and content.
	Hergeth, Beller, Orphanides	Mathematics Education: Mathematics (13MTHEDBS-13MTHEDEMS)	
	Fath, Klesath, Young	Mathematics Education: Statistics (13MTHEDBS-13MTHEDEST)	

College of Agricultural Life Sciences			
Presenter	Reviewers	Action	Type
Trivedi	Hergeth, Rieder Orphanides	<a href="#">HS 141 Greenhouse Crop Production</a>	Revisions: credit hours, component type, student learning outcomes,

**Discussion:**

**Notes:**

- All linked course actions are viewable in CIM.
- To view actions, please click on the hyperlink. You may need to use your Unity ID to log in.
- If you experience issues logging in, please go to <https://next-catalog.ncsu.edu/courseadmin/> and type the course prefix and number into the search bar.

**University Courses and Curricula Committee**

November 16<sup>th</sup> 2016  
Talley Student Union 4140  
Call to Order: 12:49 pm

**Members Present:** Chair Andy Nowel, Alton Banks, Amanda Beller, Scott Despain, Catherine Driscoll, Helmut Hergeth, Peter Hessling, Marta Klesath, Edwin Lindsay, David Tarpy, Shweta Trivedi (remotely), Mian Wu, Elizabeth Fath, Andreas Orphanides, Kathleen Rieder, Greg Young, Steven Peretti, Richard Podurgal, Daniel Harper

**Members Absent:** Michael Robinson, Scott Ferguson

**Ex-Officio Members Present:** Li Marcus, Lexi Hergeth, Barbara Kirby Charles Clift, Rebecca Swanson, and Kevin Burge

**Guests:**

**WELCOME AND INTRODUCTIONS**

➤ **Remarks from Chair**— Chair Andy Nowel

➤ **Approval of the Minutes from November 2<sup>nd</sup> 2016** – Approved Unanimously

- Discussion: Member Daniel Harper moved to approve. The past minutes were presented and approved without further discussion.

**OLD BUSINESS**

- **PS 303 Race in US Politics** – Approved Unanimously  
Discussion: Member Scott Despain presented the course.

**NEW BUSINESS**

- **Consent Agenda**—Approved Unanimously  
Discussion: Member Scott Despain moved to approve. The consent agenda was presented and approved with no further discussion.
- **ANT 411(511) Overview of Anthropological Theory**– Approved Unanimously  
Discussion: Member Catherine Driscoll presented. Members discussed the grading scale. Friendly suggestion to use the general grading scale that clarifies how grade points will be rounded.
- **ENG 361 Studies in British Poetry**– Approved Unanimously  
Discussion: Member Catherine Driscoll presented the course. Member discussed the requisites and the 70% availability. Li Marcus explained that the 70% availability is generally for seat reservations. 30% of the seats are reserved for the major. Member suggested clarifying restrictions. Member suggested the intellectual standards of critical thinking be explicitly stated for courses.
- **ENG 362 Studies in the British Novel**–Approved Unanimously  
Discussion: Member Catherine Driscoll presented the course. Member made a friendly suggestion to address rounding in the grading scale.
- **ENG 370 American Fiction, Twentieth Century and Beyond**–Approved Unanimously  
Discussion: Member Catherine Driscoll presented the course. Member discussed how the course is entered as a revision but everything about the course seems to have changed.
- **ENG/WGS 410 Studies in Gender and Genre**– Approved Unanimously  
Discussion: Member Catherine Driscoll presented. Member discussed how some students may find this controversial and suggested a statement of some kind of template language that civility amongst all students is expected for this course. Friendly suggestion to include the written non-discrimination agreement. Dr. Kirby said professors are required to include the URL. Faculty could add a statement or include the text from the University's statement in their syllabus. Member suggested replacing "or" with "and" for the GEP requirements in the syllabus.

- **ENG 481 History of the Book – Approved Unanimously**  
Discussion: Member Catherine Driscoll presented. Dr. Kirby asked why many of the courses are at the 400 level, mentioning that students may benefit from the courses at the 200-level as well. Presenter will bring the question back to the college.
- **ENG 483 Literature and Media– Approved Unanimously**  
Discussion: Member Catherine Driscoll presented the course.
- **ENG 495 Studies in Literature – Approved Unanimously**  
Discussion: Member Scott Despain presented the course. Member asked about the wording in the student evaluation methods; “students will type a series of” and what that means, members pointed out an additional explanation in syllabus for the evaluation method. Member asked if this was a series of seminars or lectures and the presenter confirmed this is a part of a series of seminars.
- **PS 464 The Classical Liberal Tradition– Approved Pending**  
Discussion: Member Scott Despain presented the course. Member discusses the consultation with history, clarifying that the consultation with a typo referencing the course as PS 363 instead of PS 464. Presenter explained this as a typo. Member discussed that the course objectives would be better suited for the justification section. Friendly suggestion that the course objectives lack clarity. Approved pending clarification on the prerequisites in CIM and clarification on the credit and contact hours. Friendly suggestion to adjust the section under "Objectives", this would fit better in the "Justification" section as it relates to the role that the course will play in the curriculum and department.
- **HS 175 Horticulture Entrepreneurial Skills for Local Markets – Approved Unanimously**  
Discussion: Member David Tarpy presented the course. Presenter explained that although consultations within the same college do not appear in CIM this course did consult with the other department in CALS. Members suggested clarifying the grading scale.
- **ECE/CSC 406/(506) Architecture Of Parallel Computers – Approved Pending**  
Discussion: Member Steven Peretti presented the course. Member asked if a student could receive credit for ECE 406 as an undergraduate and CSC 506 as a graduate student. Charles Clift and John Harrington confirmed that students cannot receive credit twice for the same course (students would receive an error message regarding repeats when trying to enroll for the “second” time). Members discussed the importance of clearly stating this, especially if a student decides to pursue a graduate degree after receiving an undergraduate degree at NC State. Members also clarified that advisors and departments account for these situations and do advise/work with students in this situation. Members discussed the restrictions on dual level courses and not counting the same course twice, once as an undergraduate and once as a graduate level student. Requisites need to be adjusted so they can be coded.
- **GN 434 Genes and Development – Approved Unanimously**  
Discussion: Member Marta Klesath presented the course. Members brought attention to the lack of listed instructor in the syllabus.

**Discussion:** Subcommittee meeting

Meeting adjourned at 1:34 pm

*Respectfully submitted by Lexi Hergeth*

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MEMORANDUM

TO: University Courses and Curricula Committee

FROM: Dr. Jeremiah Feducia, Co-Director of the Undergraduate Program, Department of Chemistry

RE: Major Curriculum Action, Changes to Chemistry BS major (17CHEMBS).

**Proposed Effective Date:** Fall Semester, 2017

The Chemistry Department proposes several changes to the BS Chemistry degree. As noted in the proposed 8 semester displays, these changes include 1) change in COS 100 to 2 cr, 2) change in recommendation for *when* students enroll in PY 205 and PY 208, 3) change in the Advanced Writing Requirement, 4) Addition of CH 415 to and removal of CH 435 from the list of required CH courses, 5) Removal of CH 230 and 232 as required courses, 6) addition of Advised Elective. These changes will require an update to the degree audit and the 8-semester display (new 8-semester display attached).

**Chemistry BS Justifications**

- 1) **Change in COS 100 to 2 cr** – The College of Sciences has changed the orientation course, COS 100, from a one credit hour orientation course, to a 2 cr orientation course which also fulfills 2 cr of GEP-IP (Interdisciplinary Perspectives)
- 2) **PY205/208** – One justification for the earlier placement of PY 205/208 within the curriculum is that this more accurately reflects when our students are actually taking this course. From data of our graduates from Fall 2013 through Spring 2016, only 38% of students enrolled in PY 205 in the third semester or beyond. The average performance is also better for students taking PY 205 *prior* to the third semester (3.00) as, compared to those students taking PY 205 in the third semester (2.53). Enforcing enrollment in this course earlier rather than later also allows students that struggle in this course to use summer school as an opportunity to avoid falling behind in the Physics sequence. As PY 208 is a critical path (CP) course, enrolling in this course earlier also allows for students and advisors to gather more information in the event that a student changes majors. Identifying this earlier rather than later, benefits the students by decreasing their time to graduation.



**Consultation:**

Jeremy, Concerning your proposed change to the chemistry curriculum, to switch the timing of PY205/206 and PY208/209 from Fall and Spring to Spring and Fall: I have discussed this with Paul Huffman (department head) and Keith Warren (assistant department head). We are happy to accommodate this change, assuming it causes a shift in our enrollment of roughly 30 students. We ask that you keep us posted as these changes are put into place. This will help us estimate the number of lecture and lab sections to offer each semester.

---David Brown

- 3) **Change to Advanced Writing Requirement** - The "Advanced Writing Requirement" for both the BS and BA Chemistry degrees can currently be fulfilled by ENG 331, ENG 332 or ENG 333. Those courses have a prerequisite of "Junior standing", and our students often have difficulty in enrolling in a timely fashion. The Chemistry department proposes to expand the menu of courses that would fulfill the requirement. To a large degree, our students are taught chemistry specific writing in their chemistry laboratory courses, which are usually taken before students enroll in the currently required English courses. We feel that it is to our students' advantage to enroll in writing intensive courses earlier in their career, even if the writing is not directly science related. Therefore, we have chosen to add some editing and creative writing courses to the Advanced Writing menu.

Current requirement : ENG 331, ENG 332 or ENG 333

New proposed requirement : ENG 214, ENG 281, ENG 287, ENG 288, ENG 289, ENG 316, ENG 323, ENG 331, ENG 332, ENG 333 or ENG 425

**Consultation :**

On Jan 28, 2016, at 3:35 PM, Gregory Neyhart <[gneyhart@ncsu.edu](mailto:gneyhart@ncsu.edu)> wrote:

>

> Jason,

>

> Attached is a curriculum action from Chemistry on the Advanced Writing Option; specifically adding additional ENG courses to the list of acceptable courses to fulfill the option. Following our discussion in the Fall semester, we have decided to include those courses you recommended that have ENG 101 as a prerequisite. In addition, we have added some creative writing courses in the ENG 28X series to the list.

>

> If you have comments or concerns regarding this action, please let me know in the next three weeks, before this action goes to UCCC for their consideration.

>

> Greg Neyhart

> Co-Director of the Undergraduate Program

> Department of Chemistry

On Fri, Jan 29, 2016 at 3:30 PM, Jason Swarts <[jswarts@ncsu.edu](mailto:jswarts@ncsu.edu)> wrote:

Hello, Greg. It is good to hear from you and I'm glad to see that you had a chance to talk with your colleagues about the shortage of available seats in ENG 331, 332, and 333.

I do remember discussing this list of courses with you over lunch, but as I mentioned at the time, I don't think many of the courses on your list are substitutable for 331, 332, or 333. In particular, courses like 281, 287, 288, and 289 are all creative writing courses and I do not think it advisable that Chemistry students be



directed to those classes. Likewise, as I also mentioned, ENG 214 is a basic editing course and ENG 316 is a journalism course in which students write articles intended for publication in newspapers and news magazines. Your students might do fine in those courses but the writing would be completely unlike ENG 331, 332, or 333. The remaining courses (aside from ENG 331, 332, and 333 which were part of the original requirement) would offer instruction of potential benefit to Chemistry majors; although, the students would be more likely to succeed in those courses if they had some previous writing courses or training in rhetoric.

Jason Swarts

Dr. Jason Swarts  
Professor of English  
Director of Professional Writing

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From: **Gregory Neyhart** <[gneyhart@ncsu.edu](mailto:gneyhart@ncsu.edu)>

Date: Tue, Feb 9, 2016 at 3:54 PM

Subject: Re: Consultation - Advanced Writing Requirement for Chemistry

To: Jason Swarts <[jswarts@ncsu.edu](mailto:jswarts@ncsu.edu)>

Jason,

Thank you for your reply. In considering alternatives to ENG 331, 332 and 333, we are not necessarily looking for courses that would give the students the same experiences that they would receive in ENG 33X. We are of the opinion that any courses where extensive writing is required will benefit our students. Most helpful would be scientific writing courses early in their curriculum.

Students in the Chemistry program do most of their scientific writing in the junior/senior level advanced laboratory courses. In an ideal situation, students would take ENG 333 prior to their junior year, to prepare them for the writing in their upper level chemistry courses. In practice, it rarely happens this way. Students normally learn the scientific writing in their laboratory courses, then go on to take ENG 33X later in their academic career. While this can still be a benefit to the professional careers of those students, we believe that other forms of writing, contained in the other classes we propose, will also offer lifelong benefits to those students.


Greg

- 4) **Addition of CH 415 to and removal of CH 435 from the list of required CH courses** – In the current course design for the Advanced Measurements Lab (CH 452), the time allotted for the lecture component is not sufficient in order to adequately introduce and develop a thorough theoretical understanding of instrumental analysis necessary for success in CH 452. CH 415 is a course in which the theoretical background of instrumental analysis is discussed in great detail, therefore adding CH 415 to the required course list will greatly enhance the student learning experience in CH 452. At this point, the majority of our students have not taken CH 415 before enrolling in CH 452 and making this course required will correct this issue. In addition, many of our graduates that go directly into the work force, are finding that their job responsibilities involve a great deal of experiments in which their prior knowledge of a wide variety of instrumentation would be beneficial. To keep graduation requirements for the BS degree (which are already extensive) as reasonable as possible, it is recommended that the third semester of Physical Chemistry, CH 435, be removed from the list of required courses. In order to continue to accommodate students with an interest in quantum theory, students can still choose CH 435 as one of their Chemistry Advanced Electives.


- 5) **Removal of CH 230 and 232 as required courses** – Considering that the content in these courses are introduced, developed, and mastered in other required courses, the Chemistry faculty have agreed to the proposal of removing CH 230 and 232 from the list of required CH courses in favor of developing a new computational lab which would be added to the list of courses fulfilling the Chemistry Advanced Laboratory Option.
- 6) **Addition of Advised Elective** - With the change in COS 100 to a 2 cr GEP-IP course, and with the removal of CH 230 and CH 232 from the curriculum, three credit hours become available and will become part of the Advised Electives, increasing the number of cr from 9 to 12.
- 7) **Other 8-semester changes** – As a result of the above changes, other courses were moved in the 8-semester display to provide a more balanced workload for students, such as the movement of some Advanced Labs and BCH 451. As our students currently enroll in BCH courses during the Fall, Spring, and Summer we do not foresee any changes to the current enrollments in this course. GEPs were moved in the 8-semester display to balance credit hours only and have been highlighted.



**SIGNATURES (AS REQUIRED):**

 11/7/2016  
Head, Department of Chemistry Date

 11/7/2016  
Chair, College Courses & Curricula Committee Date

 \_\_\_\_\_  
Dean, College of Sciences Date

\_\_\_\_\_  
Chair, University Courses & Curricula Committee Date

\_\_\_\_\_  
Dean, Academic and Student Affairs Date

EFFECTIVE DATE : \_\_\_\_\_

**FORMAT A**  
(SEMESTER-BY-SEMESTER CURRICULUM DISPLAY)

Indicate display status: Current: Proposed: x Proposed Effective Semester: **Fall 2017**

Degree/Plan Title: Bachelor of Science in Chemistry

Concentration/Subplan Title: n/a

Plan SIS Code: 17CHEMBS

Subplan SIS Code:

New Degree Audit required? (Y or N) Y

Critical Path Courses - Identify using the code (CP) which courses are considered critical path courses which represent specific major requirements that are predictive of student success in a given program/plan. Place the (CP) next to the credit hours for the course.

FRESHMAN YEAR			
FALL SEMESTER	CREDITS	SPRING SEMESTER	CREDITS
CH 103 : General Chemistry I for Students in Chemical Sciences <sup>1,B</sup>	3 (CP)	CH 203 : General Chemistry II for Students in Chemical Sciences <sup>1,B</sup>	3 (CP)
CH 104 : General Chemistry Laboratory I for Students in Chemical Sciences <sup>1,B</sup>	1 (CP)	CH 204 : General Chemistry Laboratory II for Students in Chemical Sciences <sup>1,B</sup>	1 (CP)
MA 141 : Calculus I <sup>1,A</sup>	4	MA 241 : Calculus II <sup>1,A</sup>	4
ENG 101 : Academic Writing & Research <sup>1,H</sup>	4	PY 205 : Physics for Engineers and Scientists I <sup>1</sup>	3
COS 100 : Perspectives in Learning <sup>2,G</sup>	4	PY 206 : Physics for Engineers and Scientists I Laboratory <sup>1</sup>	1
GEP Health and Exercise Studies <sup>B</sup>	1	GEP Health and Exercise Studies <sup>B</sup>	1
GEP Requirements <sup>E</sup>	3	GEP Requirements <sup>E</sup>	3
		GEP Requirements <sup>D</sup>	3
	<b>Total: 16</b>		<b>Total: 15</b>
SOPHOMORE YEAR			
FALL SEMESTER	CREDITS	SPRING SEMESTER	CREDITS
CH 225 : Organic Chemistry I for Students in Chemical Sciences <sup>1</sup>	3 (CP)	CH 227 : Organic Chemistry II for Students in Chemical Sciences <sup>1</sup>	3
CH 226 : Organic Chemistry Laboratory I for Students in Chemical Sciences <sup>1</sup>	1	CH 228 : Organic Chemistry Laboratory II for Students in Chemical Sciences <sup>1</sup>	1
PY 205 : Physics for Engineers and Scientists I <sup>+</sup>	3	CH315 : Quantitative Analysis <sup>1</sup>	3 (CP)
PY 206 : Physics for Engineers and Scientists I Laboratory <sup>+</sup>	1	CH316 : Quantitative Analysis Laboratory <sup>1</sup>	1 (CP)
PY 208 : Physics for Engineers and Scientists II <sup>1</sup>	3 (CP)	PY 208 : Physics for Engineers and Scientists II <sup>+</sup>	3 (CP)
PY 209 : Physics for Engineers and Scientists II Laboratory <sup>1</sup>	1	PY 209 : Physics for Engineers and Scientists II Laboratory <sup>+</sup>	1
MA 242 : Calculus III <sup>1</sup>	4	MA 341 : Applied Differential Equations I <sup>1</sup>	3
GEP Requirements <sup>D</sup>	3	GEP Health and Exercise Studies <sup>B</sup>	1
GEP Health and Exercise Studies <sup>B</sup>	1	GEP Requirements <sup>C</sup>	3
	<b>Total: 16</b>		<b>Total: 15</b>
JUNIOR YEAR			
FALL SEMESTER	CREDITS	SPRING SEMESTER	CREDITS
CH 431 : Physical Chemistry I <sup>1</sup>	3	CH 433 : Physical Chemistry II <sup>1</sup>	3
CH 401 : Systematic Inorganic Chemistry I <sup>1</sup>	3	CH 452 : Advanced Measurement Techniques I <sup>+</sup>	4
CH 442 : Advanced Synthetic Techniques <sup>1</sup>	4	CH 232 : Computational Chemistry II Laboratory <sup>+</sup>	1
CH 230 : Computational Chemistry Laboratory <sup>+</sup>	1	CH 415 : Analytical Chemistry II <sup>1</sup>	3
ENG 3xx Advanced Writing <sup>1,3</sup>	3	BCH 451 : Principles of Biochemistry <sup>1</sup>	4
Advanced Writing <sup>1,3</sup>	3	GEP Additional Breadth <sup>F</sup>	3
Advised Elective <sup>4</sup>	3	GEP Interdisciplinary Perspectives <sup>G</sup>	2 or 3
		Advised Elective <sup>4</sup>	3
	<b>Total: 17</b>		<b>Total: 16 or 17</b>
SENIOR YEAR			



FALL SEMESTER	CREDITS	SPRING SEMESTER	CREDITS
Chemistry Advanced Elective <sup>1,5</sup>	3	<del>CH 435 : Introduction to Quantum Chemistry</del>	<del>3</del>
<del>CH 444 Synthesis II or CH 454 Measurements II</del>	<del>4</del>	Chemistry Advanced Laboratory Option <sup>1,6</sup>	4
<sup>1,6</sup>		Chemistry Advanced Elective <sup>1,5</sup>	3
CH 452 : Advanced Measurement Techniques I <sup>1</sup>	4	GEP Interdisciplinary Perspectives <sup>G</sup>	3
<del>BCH 451 : Principles of Biochemistry <sup>+</sup></del>	<del>4</del>	Advised Elective <sup>4</sup>	3
GEP Requirements <sup>C</sup>	3		
Advised Elective <sup>4</sup>	3		
Free Elective <sup>7</sup>	3		
	<del>Total: 14</del> 16		<del>Total: 12</del> 13
Minimum Credit Hours Required for Graduation*: 121			

#### Major/Program Footnotes:

1. No grades below a C- are permitted.
2. E 115 may substitute for COS 100.
3. Advanced Writing course must be selected from ENG 214, ENG 281, ENG 287, ENG 288, ENG 289, ENG 316, ENG 323, ENG 331, ENG 332, ENG 333 or ENG 425. The Advanced Writing course may not be used to satisfy the GEP requirements; it is taken in addition to the GEP.
4. Advised electives are designed to allow students to concentrate in areas related to their academic goals. Courses used to fulfill this requirement are selected by the students after consultation and approval by their advisers or the Coordinator of Advising.
5. Choose among the following: CH 335, CH 403, ~~CH 415~~, CH 435, CH 441, or CH 7xx.
6. Choose among the following: CH 444 (Advanced Synthetic Techniques II) or CH 454 (Advanced Measurement Techniques II).
7. Free electives courses cannot be CH 100, CH 111, MA 100, MA 101, MA 107, MA 108, MA 111, MA 121, MA 131, MA 231, PY 131, PY 211, PY 212, ENG 100. 100-level Foreign Language Courses (FL\*, LAT, GRK, PER) can be used if not satisfying the language proficiency requirement.

#### \*General Education Program (GEP) requirements and GEP Footnotes:

To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at <http://www.ncsu.edu/uap/academic-standards/gep/courselists/index.html>.

- Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)  
Choose from the University approved GEP Mathematical Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **MA 141, MA 241**
- Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)  
Choose from the University approved GEP Natural Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **CH 103, CH 104, CH 203**
- Humanities** (6 credit hours selected from two different disciplines/course prefixes)  
Choose from the University approved GEP Humanities course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement:
- Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)  
Choose from the University approved GEP Social Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement:
- Health and Exercise Studies** (2 credit hours – at least one 100-level HESF Course)  
Choose from the University approved GEP Health and Exercise Studies course list.
- Additional Breadth** - (3 credit hours to be selected from the following checked University approved GEP course lists)  
\_\_\_\_ Humanities/Social Sciences/Visual and Performing Arts
- Interdisciplinary Perspectives** (5 credit hours)  
Choose from the University approved GEP Interdisciplinary Perspectives course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **COS 100**
- Introduction to Writing** (4 credit hours satisfied by completing ENG 101 with a C- or better )

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements:

- U.S. Diversity** (USD)  
Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:
- Global Knowledge** (GK)  
Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:
- Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.



# CURRICULUM REQUIREMENTS

## Format B

<u>Degree/Plan Title:</u> Bachelor of Science in Chemistry	<u>Plan SIS Code:</u> 17CHEMBS
<u>Concentration/Subplan Title:</u> n/a	<u>Subplan SIS Code:</u>
<u>Indicate requirements status:</u> Current:                      Proposed: x	<u>Proposed Effective Semester:</u> Fall 2017
<u>New Degree Audit required?</u> (Y or N) Y	
<u>Critical Path Courses</u> - Identify using the code (CP) which courses are considered critical path courses which represent specific major requirements that are predictive of student success in a given program/plan. Place the (CP) next to the credit hours for the course.	

MAJOR FIELD OF STUDY REQUIREMENTS:		
<i>Required Courses/Groups/ Electives:</i>	<i>Credit Hours</i>	<i>GEP category, if applicable</i>
Indicate if course or course groupings have a C-wall or MGPA requirement and which are considered Critical Path courses – indicate with (CP) next to applic. course.		List GEP category and hours satisfied by a Major requirement
CH 103 General Chemistry I for Students in Chemical Sciences *	3 (CP)	Natural Sciences, 3
CH 104 General Chemistry Laboratory I for Students in Chemical Sciences *	1 (CP)	Natural Sciences, 1
CH 203 General Chemistry II for Students in Chemical Sciences *	3 (CP)	Natural Sciences, 3
CH 204 General Chemistry Laboratory II for Students in Chemical Sciences *	1 (CP)	Natural Sciences, 1
CH 225 Organic Chemistry I for Students in Chemical Sciences *	3 (CP)	
CH 226 Organic Chemistry Laboratory I for Students in Chemical Sciences *	1	
CH 227 Organic Chemistry II for Students in Chemical Sciences *	3	
CH 228 Organic Chemistry Laboratory II for Students in Chemical Sciences*	1	
<del>CH 230 Computational Chemistry Lab I*</del>	<del>1</del>	
<del>CH 232 Computational Chemistry Lab II*</del>	<del>1</del>	
CH 315 Quantitative Analysis *	3 (CP)	
CH 316 Quantitative Analysis Laboratory *	1 (CP)	
CH 401 Systematic Inorganic Chemistry I *	3	
CH 415 Analytical Chemistry II*	3	
CH 431 Physical Chemistry I *	3	
CH 433 Physical Chemistry II *	3	
<del>CH 435 Introduction to Quantum Chemistry*</del>	<del>3</del>	
CH 442 Advanced Synthetic Techniques *	4	
CH 452 Advanced Measurement Techniques I *	4	
Chemistry Advanced Laboratory Option (Select from CH 444 <u>OR</u> CH 454) *	4	
Chemistry Advanced Elective (Select from CH 335, CH 403, CH 415, CH 435, CH 441, <u>OR</u> CH 7xx) *	6	
MA 141 *	4	Mathematical Sciences, 4
MA 241 *	4	Mathematical Sciences, 4
MA 242 *	4	
MA 341 *	3	
PY 205 *	3	
PY 206 *	1	
PY 208 *	3 (CP)	
PY 209 *	1	



BCH 451 *	4	
Advanced Writing (Select from ENG 214, ENG 281, ENG 287, ENG 288, ENG 289, ENG 316, ENG 323, ENG 331, ENG 332, ENG 333 OR ENG 425)	3	
Advised Electives	9 12	
* = C- or better required		
<b>Concentration Courses/Groups/Electives:</b>		
<b>Free Electives:</b>	3	
<b>Total credit hours under Major Field of Study:</b> <i>Minimum 27 hours required in program area.</i>	94 95 hours	
<b>COLLEGE REQUIREMENTS:</b>		
<b>Orientation Course(s):</b> COS 100	2	Interdisciplinary Perspectives, 2
<b>Other:</b>		
<b>Total credit hours under College Requirements:</b>	± 2 Hours	

<b>NCSU GENERAL EDUCATION PROGRAM REQUIREMENTS</b>  <i>Courses in the Major and/or Minor may also fulfill a General Education requirement; however, a GEP category may not be subset to require a specific course from the category list. Required courses must be listed in the Major/College requirements.</i>  <i>Specific courses should not be listed in any of the fields below other than ENG 101.</i>		<b>At least one of the following must be listed:</b> 1 Choose course(s) from the University Approved GEP course list for this category. 2 Minimum requirements are satisfied by Major/College course requirements. 3 Major/College course requirement satisfies X credit hrs of this requirement. Remaining hours required must be chosen from the University Approved GEP course list for the category. 4 Co-requisite is satisfied by a Major/College course requirement. 5 Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts. 6 Choose course(s) from the University Approved GEP course lists for Natural Sciences/Mathematical Sciences.
<b>General Education Program Requirements:</b> <i>Minimum 39-40 hrs</i>	<b>Credit hours</b>	<b>How will the GEP requirement be met?</b> <b>(Choose applicable statement from 1-6 listed above)</b>


<b>Mathematical Sciences</b> (At least 1 course with MA or ST prefix) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	(6 credits)		(Choose statement 1, 2 or 3) 2
<b>Natural Sciences</b> (At least 1 lab course or course with a lab) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	(7 credits)		(Choose statement 1, 2 or 3) 2
<b>English 101</b> (C- or better required)	(4 credits)	4	ENG 101
<b>Humanities</b> (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	(6 credits)	6	(Choose statement 1, 2 or 3) 1
<b>Social Sciences</b> (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	(6 credits)	6	(Choose statement 1, 2 or 3) 1
<b>Additional Breadth</b> (Choose approach that is different from the approach of the Major) Major/College requirements cannot satisfy this requirement and an AB course cannot be double-counted except in satisfying the Global Knowledge or U.S. Diversity co-requisites.	(3 credits)	3	(Choose statement 5 or 6) 5
<b>Interdisciplinary Perspectives</b> Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	(5 credits)	5 3	(Choose statement 1, 2 or 3) 3, COS 100 (2 cr)
<b>Health and Exercise Studies</b> (Including one Fitness and Wellness course)	(2 credits)	2	Choose course(s) from the University Approved GEP course list for this category.
<b>Total credit hours needed to complete GEP that are not satisfied as part of the Major/College requirements.</b>		26 24	
<b>GEP Co-Requisites:</b>			Courses taken in the Major, GEP, or Minor may double-count to fulfill the co-requisites. Courses that satisfy the U.S. Diversity or Global Knowledge co-requisite are marked on course lists with a "USD" or "GK" indicator.
<b>U.S. Diversity co-requisite</b>	(USD)	n/a	(Choose statement 1 or 4) 1
<b>Global Knowledge co-requisite</b>	(GK)	n/a	(Choose statement 1 or 4) 1
<b>Foreign Language Proficiency</b>		n/a	Proficiency at the FL_102 level required.
<b>The following requirements must be satisfied within the College/Program:</b>			Place an X in the credit hour box to indicate below that the requirement is "Satisfied by College/Program Requirements"
<b>Communication in the Major (Advanced Communication)</b>		X	Satisfied by College/Program Requirements
<b>Technology Fluency</b>		X	Satisfied by College/Program Requirements
<b>Total credit hours required to complete Degree:</b> Total must be within 120-128 credit hours.		121 Total hours	As applicable, indicate here the overall GPA requirement for degree completion including course completion.

**College of Education**

**Minor Curriculum Change for Statistics courses in the following Math Education programs:  
13MTHEDBS-13MTHEDBS, 13MTHEDBS-13MTHEDST, and 13MTHEDCPS  
in the Dept. of Science, Technology, Engineering, and Mathematics Education  
North Carolina State University**

This request has been reviewed and approved by the appropriate campus committees and authorities.


**Endorsed By:**

  
Head, Department/Director of Undergraduate Program

  
Date

11/15/16

**Recommended By:**

  
Chair, College Courses & Curriculum Committee

  
Date

11/14/2016

**Endorsed By:**

  
College Dean

  
Date

11.11.16

**Recommended By:**

\_\_\_\_\_  
Vice Provost, DELTA (if DE degree)

\_\_\_\_\_  
Date

**Approved By:**

\_\_\_\_\_  
Dean of the Division of Academic and Student Affairs

\_\_\_\_\_  
Date

**Recommended By:**

\_\_\_\_\_  
Dean's Council

\_\_\_\_\_  
Date

**Approved By:**

\_\_\_\_\_  
Provost

\_\_\_\_\_  
Date

**Approved By:**

\_\_\_\_\_  
Chancellor

\_\_\_\_\_  
Date



TO: College of Education Courses and Curriculum Committee

FROM: Allison McCulloch, Undergraduate Program Coordinator Mathematics Education

RE: Curriculum Revision for 13MTHEDBS-13MTHEDBS, 13MTHEDBS-13MTHEDST, and 13MTHEDCPS

DATE: October 31, 2016

### **Proposed revisions with justification**

This action addresses the 13MTHEDBS-13MTHEDBS, 13MTHEDBS-13MTHEDST, and 13MTHEDCPS due to a co-req change to ST 305 (addition of ST 307 as a co-req) and the content needs of our students teaching high school mathematics. In a recent study of our students' statistical knowledge we found that they are in need of a course that is more experiential in nature and addresses topics beyond those included in ST 101. In order to meet the needs of our students keep the number of credit hours the same across sub-plans we request the following change:

Proposed effective date: Spring 2017

Current: ST 101 and ST 305 (7 credit hours)

Proposed: ST 311, ST 312, and ST 307 (7 credit hours)

### **Impact on students currently in the program**

This change will help prepare them to teach the statistics concepts included in the revised NC Mathematics Standards. The current requirements do not include some of the needed topics and the addition of ST 307 as a co-req for ST 305 added an additional credit hour to their program.

### **Impact on other Departments/Programs**

We consulted with Dr. Spencer Muse about the courses with appropriate content for our students. We received feedback that this change is acceptable and does not impact their course offerings. (See below.)



Re: Consultation - changing a ST course

 Inbox x **Spencer Muse**

9:55 AM (4 minutes ago)

to me ▾

I think this is a good plan for your students, and they can still add a minor in Statistics with three elective courses after 312.

We should talk about the dual degree program soon. The requirements are not really in line with our current Statistics curriculum, so students are now receiving a Statistics major with coursework that is very different from what our Statistics majors take. Notably, we now have a much more substantive computer programming element (8 credit hours) than the 3 credits we once had, reflecting the increasing importance of statistical computing in the field.

Let me know when we might get the relevant people together for a discussion of the program and we can work on scheduling a meeting.

Spencer

On Nov 2, 2016, at 9:29 AM, Allison McCulloch <[awmccull@ncsu.edu](mailto:awmccull@ncsu.edu)> wrote:

Hi Spencer,

As Karen H communicated with you in the spring, the mathematics education program proposes to make the following changes to a couple of our degree plans (e.g., the math specialization, computer science specialization, and the statistics specialization).

To meet the content needs of our future teachers and keep the total credits on these subplans the same as the others we propose that instead of taking ST 101 and ST 305 (which now requires ST 307) our students in these programs would take ST 311, ST 312, and ST 307. (There are no changes to the math double, stat double, or middle grads programs.)

Please let me know if these changes are ok with you and will not impact your course offerings.

Thanks! I hope all is well.

Cheers,  
Allison

# Mathematics Education (BS): Computer Science (13MTHEDBS-13MTHEDCPS)

Semester Display Effective Date: 1.2011

Fall Semester	Credit	Spring Semester	Credit
MA 141 Calculus I <sup>A,5</sup>	4	MA 241 Calculus II <sup>A,5</sup>	4
Science <sup>2,B,4</sup>	4	Science <sup>2,B,4</sup>	4
ENG 101 Academic Writing & Research <sup>H</sup>	4	CSC 116 Intro to Computing Java <sup>5</sup>	3
E 115 Intro to Computing Environments <sup>I</sup>	1	HES_***Health & Exercise Studies Course <sup>E</sup>	1
ED 100 Intro to Education <sup>6</sup>	2	COM 112 Interpersonal Communication <sup>D</sup>	3
<b>15</b>		<b>15</b>	
<b>SOPHOMORE YEAR</b>			
Fall Semester	Credit	Spring Semester	Credit
MA 242 Calculus III <sup>5</sup>	4	CSC 216 Programming Concepts - Java <sup>5</sup>	3
EMS 204 Intro to Mathematics Education <sup>6</sup>	2	CSC 226 Discrete Math for Computer Scientists <sup>5</sup>	3
ED 204 Intro to 21 <sup>st</sup> Century Teaching <sup>6</sup>	2	EDP 304 Educational Psychology <sup>D,6</sup>	3
GEP Humanities Req. <sup>C,I,J</sup>	3	ST 305 Statistical Methods <sup>5,3</sup>	4
ST 101H Statistics by Example <sup>5,3</sup>	3	ST 312 Introduction to Statistics II <sup>5</sup>	3
ST 311 Introduction to Statistics <sup>5</sup>	3	ST 307 Introduction to Statistical Programming <sup>5</sup>	1
GEP Interdiscip. Persp. <sup>G,I,J</sup>	2-3	GEP Interdiscip. Persp. <sup>G,I,J</sup>	3
<b>16-17</b>		<b>16</b>	
<b>JUNIOR YEAR</b>			
Fall Semester	Credit	Spring Semester	Credit
MA 405 Linear Algebra and Matrices <sup>5</sup>	3	CSC 236 Computer Org. & Assembly Lang. for Comp. Sci. <sup>5</sup>	3
MA 403 Intro to Modern Algebra <sup>5</sup>	3	MA 408 Foundations of Euclidean Geometry <sup>5</sup>	3
ELP 344 School and Society <sup>6</sup>	3	EMS 480 Teaching Mathematics with Technology <sup>6</sup>	3
ECI 416 Teaching Exceptional Students <sup>6</sup>	3	ED 311 Classroom Assessment Principles and Practices <sup>6</sup>	2
Science <sup>2,B,4</sup>	3	ED 312 Classroom Assess. Princ.& Practices: Prof. Learning Lab <sup>6</sup>	1
Free Electives	2	HES_***Health & Exercise Studies Course <sup>E</sup>	1
<b>17</b>		GEP Add.l Breadth Req.- HUM/SS/VPA <sup>F,I,J</sup>	3
		<b>16</b>	
<b>SENIOR YEAR</b>			
Fall Semester	Credit	Spring Semester	Credit
EMS 472 Teaching Math Topics in High School <sup>6</sup>	3	EMS 471 Student Teaching <sup>7</sup>	12
CSC 316 Data Structures for Computer Scientists <sup>5</sup>	3		
EMS 490 School Math from an Adv. Perspective <sup>6</sup>	3		
GEP Humanities Req. <sup>C,I,J</sup>	3		
EMS 470 Methods & Materials for Teaching Math <sup>7</sup>	3		
<b>15</b>		<b>12</b>	

**Major/Program Footnotes:**

1. COS 100 may substitute for E 115
2. To satisfy the science requirement a sequence of two lab-based science courses (CH 101/CH 102 and CH 201/CH 202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202, or PY 211 and PY 212) must be taken. The third science may be selected from the GEP list of approved science courses.
3. ~~ST 101H and ST 305 is the preferred Statistics sequence of courses. ST 311 and ST 312 can also be taken to satisfy the Statistics sequence.~~
4. At most one grade below a C- is permitted in the courses satisfying the science requirement.
5. At most one grade below a C is permitted in the mathematics, statistics, and computer science courses.
6. A grade below a B- is not permitted in EMS 204. A grade below a C is not permitted in all other EMS, EDP, ECI, ELP, and ED courses.
7. A grade of C or better is required in EMS 470 to continue in school placement full-time.

**\*General Education Program (GEP) requirements and GEP Footnotes:**

To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at <http://oucc.dasa.ncsu.edu/general-education-program/>.

**A. Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)

Choose from the University approved GEP Mathematical Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **MA 141, MA 241**

**B. Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)

Choose from the University approved GEP Natural Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **CH 101/102 and CH 201/202, or PY 201 and PY 202; or PY205 and PY 208, or PY 211 and PY 212**

**C. Humanities** (6 credit hours selected from two different disciplines/course prefixes)

Choose from the University approved GEP Humanities course list.

**D. Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)

Choose from the University approved GEP Social Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **ED 304, COM 112**

**E. Health & Exercise Studies** (2 credit hours – at least one 100-level Health & Exercise Studies Course)

Choose from the University approved GEP Health & Exercise Studies course list.

**F. Additional Breadth** - (3 credit hours to be selected from the following checked University approved GEP course lists)

☒ Humanities/Social Sciences/Visual and Performing Arts

**G. Interdisciplinary Perspectives** (5-6 credit hours)

Choose from the University approved GEP Interdisciplinary Perspectives course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement:

**H. Introduction to Writing** (4 credit hours satisfied by completing ENG 101 with a C- or better )

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements:

**I. U.S. Diversity** (USD)

Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:

**J. Global Knowledge** (GK)

Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:

**K. Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.



**Current Degree Key: 13MED097C**

**Effective Date of Revision:** ~~7/2010~~ 1/2017

MAJOR FIELD OF STUDY REQUIREMENTS:		
Required Courses/Groups/ Electives:	Credit Hours	GEP category, if applicable
Indicate if course or course groupings have a C-wall or MGPA requirement		List GEP category and hours satisfied by a Major requirement
<b>Mathematical Sciences</b> (at most one grade below a C- is permitted in the Introduction to Programming, and the courses satisfying the Statistics requirement)		
<b>Mathematics Courses</b> MA 141, MA 241, MA 242, MA 405, MA 403, MA 408	21	Mathematics (6 hours)
<b>Statistics Courses</b> ST 101H ST 305 ST 311 ST 312 ST 307	3 4 3 3 1	
<b>Computer Science Courses</b> E 115 CSC 116 CSC 216 CSC 226 CSC 236 CSC 316	1 3 3 3 3 3	
<b>Natural Sciences</b> (at most one grade below a C- is permitted in courses satisfying the science requirement)		
Science Sequence To satisfy the science requirement a sequence of two lab-based science courses (CH101/CH102 and CH201/CH202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202 or PY 211 and PY 212) must be taken.	8	
Science (The third science may be selected from the GEP list of approved)	3	Natural Sciences (7 hours)
<b>English and Communication</b> Communication (COM 112)	3	Social Sciences (3 hours)
<b>Professional Education</b> (A C- or higher is required for all courses except EMS 203 for which a B- or higher is required)		
ED 100 EDP 304 ECI 305 ELP 344 ECI 416 EMS 204	2 3 3 3 3 2	Social Sciences (3 hours)



*Courses in the Major and/or Minor may also fulfill a General Education requirement; however, a GEP category may not be subset to require a specific course from the category list. Required courses must be listed in the Major/College requirements.*

- 1 Choose course(s) from the University Approved GEP course list for this category.
- 2 Minimum requirements are satisfied by Major/College course requirements.
- 3 Major/College course requirement satisfies **X** credit hrs of this requirement. Remaining hours required must be chosen from the University Approved GEP course list for the category.
- 4 Co-requisite is satisfied by a Major/College course requirement.
- 5 Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts.
- 6 Choose course(s) from the University Approved GEP course lists for Natural Sciences/Mathematical Sciences.

*How will the GEP requirement be met?*

Minimum 39-40 hrs		hours	(Choose applicable statement from 1-6 listed above)
<b>Mathematical Sciences</b> (6 credits) (At least 1 course with MA or ST prefix) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>Natural Sciences</b> (7 credits) (At least 1 lab course or course with a lab) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>English 101</b> (C- or better required) (4 credits)		4	ENG 101
<b>Humanities</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		6	Choose course(s) from the University Approved GEP course list for this category
<b>Social Sciences</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>Additional Breadth</b> (3 credits) (Choose approach that is different from the approach of the Major) Major/College requirements cannot satisfy this requirement and an AB course cannot be double-counted except in satisfying the Global Knowledge or U.S. Diversity co-requisites.		3	Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts.
<b>Interdisciplinary Perspectives</b> (5-6 credits) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		5	Choose course(s) from the University Approved GEP course list for this category
<b>Physical Education/Healthy Living</b> (2 credits) (Including one Fitness and Wellness course)		2	Choose course(s) from the University Approved GEP course list for this category.
<b>Total credit hours needed to complete GEP that are <u>not</u> satisfied as part of the Major/College requirements.</b>		20 hours	
<b>GEP Co-Requisites:</b>			Courses taken in the Major, GEP, or Minor may double-count to fulfill the co-requisites. Courses that satisfy the U.S. Diversity or Global Knowledge co-requisite are marked on course lists with a "USD" or "GK" indicator.
<b>U.S. Diversity co-requisite</b> (USD)	n/a		Choose course(s) from the University Approved GEP course list for this category.
<b>Global Knowledge co-requisite</b> (GK)	n/a		Choose course(s) from the University Approved GEP course list for this category.
<b>Foreign Language Proficiency</b>		n/a	Proficiency at the FL_102 level required.
<b>The following requirements must be satisfied within the College/Program:</b>			Place an X in the credit hour box to indicate below that the requirement is "Satisfied by College/Program Requirements"
<b>Communication in the Major (Advanced Communication)</b>			Satisfied by College/Program Requirements
<b>Technology Fluency</b>			Satisfied by College/Program Requirements
<b>Total credit hours required to complete Degree:</b> Total must be within 120-128 credit hours.	125 Total hours	As applicable, indicate here the overall GPA requirement for degree completion including course completion.	

# Mathematics Education (BS): Mathematics (13MTHEDBS-13MTHEDMS)

Semester Display Effective Date: 1.2011

FRESHMAN YEAR				
Fall Semester	Credit		Spring Semester	Credit
MA 141 Calculus I <sup>A,5</sup>	4		MA 241 Calculus II <sup>A,5</sup>	4
Science <sup>2,B,4</sup>	4		Science <sup>2,B,4</sup>	4
ENG 101 Academic Writing & Research <sup>H</sup>	4		ST 101H Statistics by Example <sup>5,9</sup>	3
E 115 Intro to Computing Environments <sup>1</sup>	1		ST 311 Introduction to Statistics <sup>5</sup>	3
ED 100 Intro to Education <sup>7</sup>	2		GEP Humanities Req. <sup>C,I,J</sup>	3
	15		HES_***Health & Exercise Studies Course <sup>E</sup>	1
				15
SOPHOMORE YEAR				
Fall Semester	Credit		Spring Semester	Credit
MA 242 Calculus III <sup>5</sup>	4		MA 225 Foundations of Advanced Math <sup>5</sup>	3
Intro to Programming <sup>3,5</sup>	3		ST 305 Statistical Methods <sup>5</sup>	3
MA 351 Intro to Discrete Mathematical Models <sup>5,8</sup>	3		ST 312 Introduction to Statistics II <sup>5</sup>	1
EMS 204 Intro to Mathematics Education <sup>7</sup>	2		ST 307 Introduction to Statistical Programming <sup>5</sup>	3
ED 204 Intro to 21 <sup>st</sup> Century Teaching <sup>7</sup>	2		GEP Humanities Req. <sup>C,I,J</sup>	3
GEP Interdiscip. Persp. <sup>G,I,J</sup>	2-3		COM 112 Interpersonal Communication <sup>D</sup>	3
	16-17		Science <sup>2,B,4</sup>	
				16
JUNIOR YEAR				
Fall Semester	Credit		Spring Semester	Credit
MA 405 Linear Algebra and Matrices <sup>5</sup>	3		MA 408 Foundations of Euclidean Geometry <sup>5</sup>	3
MA 403 Intro to Modern Algebra <sup>5</sup>	3		EMS 480 Teaching Math with Technology <sup>7</sup>	3
ELP 344 School and Society <sup>7</sup>	3		Mathematics Elective <sup>5,6</sup>	3
EDP 304 Educational Psychology <sup>D,7</sup>	3		ED 311 Classroom Assessment Principles & Practices <sup>7</sup>	2
ECI 416 Teaching Exceptional Students <sup>7</sup>	3		ED 312 Classroom Assess. Principles & Practices: Prof. Learning Lab <sup>7</sup>	1
HES_***Health & Exercise Studies Course <sup>E</sup>	1		GEP Add. Breadth Req: HUM/SS/VPA <sup>F,I,J</sup>	3
	16		Free Electives	2
				17
SENIOR YEAR				
Fall Semester	Credit		Spring Semester	Credit
Mathematics Elective <sup>5,6</sup>	3		EMS 471 Student Teaching <sup>10</sup>	12
EMS 472 Teaching Math Topics in High School <sup>7</sup>	3			
EMS 490 School Math from an Adv. Perspective <sup>7</sup>	3			
EMS 470 Methods & Materials for Teaching Math <sup>10</sup>	3			
GEP Interdiscip. Persp. <sup>G,I,J</sup>	3			
	15			12
Minimum Credit Hours Required for Graduation <sup>I,J,K</sup> :				122

**Major/Program Footnotes:**

1. COS 100 may substitute for E 115
2. To satisfy the science requirement a sequence of two lab-based science courses (CH 101/CH 102 and CH 201/CH 202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202, or PY 211 and PY 212) must be taken. The third science may be selected from the GEP list of approved science courses.
3. Introduction to programming course must be selected from MA 116, CSC 112, CSC 114, or CSC 116.
4. At most one grade below a C- is permitted in the courses satisfying the science requirement.
5. At most one grade below a C is permitted in the mathematics, statistics, and computer science courses.
6. Math electives must be chosen from the following, if appropriate co/prerequisites have been met: MA 105 or MA 114; 325, 335, 341, 402, 410, 416, 421, 425, 427, 430, 432, 433, 437.
7. A grade below a B- is not permitted in EMS 204. A grade below a C is not permitted in all other EMS, EDP, ECI, ELP, and ED courses.
8. MA 341 may be taken in place of MA 351.
9. ST 101H and ST 305 is the preferred Statistics sequence of courses. ST 311 and ST 312 can also be taken to satisfy the Statistics sequence.
10. A grade of C or better is required in EMS 470 to continue in school placement full-time.

**\*General Education Program (GEP) requirements and GEP Footnotes:**

To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at <http://oucc.dasa.ncsu.edu/general-education-program/>.

**A. Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)

*Choose from the University approved GEP Mathematical Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: MA 141, MA 241*

**B. Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)

*Choose from the University approved GEP Natural Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: CH 101/102 and CH 201/202; or BIO 181/183; or PY 201/202 or PY 205/208 or PY 211/212*

**C. Humanities** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Humanities course list.*

**D. Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Social Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: ED 304, COM 112*

**E. Health & Exercise Studies** (2 credit hours – at least one 100-level Health & Exercise Studies Course)

*Choose from the University approved GEP Health & Exercise Studies course list.*

**F. Additional Breadth** - (3 credit hours to be selected from the following checked University approved GEP course lists)

☒ **X** Humanities/Social Sciences/Visual and Performing Arts

**G. Interdisciplinary Perspectives** (5-6 credit hours)

*Choose from the University approved GEP Interdisciplinary Perspectives course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement:*

**H. Introduction to Writing** (4 credit hours satisfied by completing ENG 101 with a C- or better )

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements:

**I. U.S. Diversity** (USD)

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:*

**J. Global Knowledge** (GK)

*Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:*

**K. Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.



# CURRICULUM REQUIREMENTS

Format B – GEP 2009

<b>Degree Title:</b> MATHEMATICS EDUCATION /Mathematics Specialization (BS)
<b>Current Degree Key:</b> 13MED097Z
<b>Effective Date of Revision:</b> 7/2010

MAJOR FIELD OF STUDY REQUIREMENTS:		
<i>Required Courses/Groups/ Electives:</i>	<i>Credit Hours</i>	<i>GEP category, if applicable</i>
Indicate if course or course groupings have a C-wall or MGPA requirement		List GEP category and hours satisfied by a Major requirement
<b>Mathematical Sciences</b> (at most one grade below a C- is permitted in the Introduction to Programming, and the courses satisfying the Statistics requirement)		
<b>Mathematics Courses</b> MA 141, MA 241, MA 242, MA 351, MA 225, MA 405, MA 403, MA 408	27	Mathematics (6 hours)
<b>Mathematics Electives</b> 2 Math electives must be chosen from the following: (Math electives must be chosen from the following, if appropriate co/prerequisites have been met: MA 105, MA 325, MA 335, MA 341, MA 402, MA 410, MA 416, MA 421, MA 425, MA 427, MA 430, MA 432, MA 437.)	6	
<b>Statistics Courses</b> ST 101H ST 305 ST 311 ST 312 ST 307	3 4 3 3 1	
<b>Computer Science Courses</b> E 115 Introduction to Computing (Introduction to programming course must be selected from MA 116, CSC 112, CSC 114, or CSC 116)	1 3	
<b>Natural Sciences</b> (at most one grade below a C- is permitted in courses satisfying the science requirement)	8	Natural Sciences (7 hours)
Science Sequence To satisfy the science requirement a sequence of two lab-based science courses (CH101/CH102 and CH201/CH202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202 or PY 211 and PY 212) must be taken.	3	
Science (The third science may be selected from the GEP list of approved)		Social Sciences (3 hours)
	3	
<b>English and Communication</b> Communication (COM 112)		
<b>Professional Education</b> (A C- or higher is required for all courses except EMS 203 for which a B- or higher is required)		Social Sciences (3 hours)
ED 100	2	
EDP 304	3	
	3	

ECI 305	3	
ELP 344	3	
ECI 416	2	
EMS 204	2	
ED 204	2	
ED 311	1	
ED 312	3	
EMS 480	3	
EMS 470	12	
EMS 471	3	
EMS 472	3	
EMS 490		
<b><u>Concentration Courses/Groups/Electives:</u></b>		
<b><u>Free Electives:</u></b>	2	
<b>Total credit hours under Major Field of Study:</b> <i>Minimum 27 hours required in program area.</i>	105 hours	
<b>COLLEGE REQUIREMENTS:</b>		
<b><u>Orientation Course(s):</u></b>		
<b><u>Other:</u></b>		
<b>Total credit hours under College Requirements:</b>	Hours	

<b><u>NCSU GENERAL EDUCATION PROGRAM REQUIREMENTS</u></b>  <i>Courses in the Major and/or Minor may also fulfill a General Education requirement; however, a GEP category <u>may not be subset</u> to require a specific course from the category list. Required courses must be listed in the Major/College requirements.</i>  <b><i>Specific courses should not be listed in any of the fields below other than ENG 101.</i></b>		<b><u>At least one of the following must be listed:</u></b> 1 Choose course(s) from the University Approved GEP course list for this category. 2 Minimum requirements are satisfied by Major/College course requirements. 3 Major/College course requirement satisfies X credit hrs of this requirement. Remaining hours required must be chosen from the University Approved GEP course list for the category. 4 Co-requisite is satisfied by a Major/College course requirement. 5 Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts. 6 Choose course(s) from the University Approved GEP course lists for Natural Sciences/Mathematical Sciences.
<b>General Education Program Requirements:</b>	<b>Credit</b>	<b>How will the GEP requirement be met?</b>

Minimum 39-40 hrs		hours	(Choose applicable statement from 1-6 listed above)
<b>Mathematical Sciences</b> (6 credits) (At least 1 course with MA or ST prefix) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>Natural Sciences</b> (7 credits) (At least 1 lab course or course with a lab) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>English 101</b> (C- or better required) (4 credits)		4	ENG 101
<b>Humanities</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		6	Choose course(s) from the University Approved GEP course list for this category
<b>Social Sciences</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		X	Minimum requirements are satisfied by Major/College course requirements.
<b>Additional Breadth</b> (3 credits) (Choose approach that is different from the approach of the Major) Major/College requirements cannot satisfy this requirement and an AB course cannot be double-counted except in satisfying the Global Knowledge or U.S. Diversity co-requisites.		3	Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts.
<b>Interdisciplinary Perspectives</b> (5-6 credits) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.		5	Choose course(s) from the University Approved GEP course list for this category
<b>Physical Education/Healthy Living</b> (2 credits) (Including one Fitness and Wellness course)		2	Choose course(s) from the University Approved GEP course list for this category.
<b>Total credit hours needed to complete GEP that are <u>not</u> satisfied as part of the Major/College requirements.</b>		20 hours	
<b>GEP Co-Requisites:</b>			<i>Courses taken in the Major, GEP, or Minor may double-count to fulfill the co-requisites. Courses that satisfy the U.S. Diversity or Global Knowledge co-requisite are marked on course lists with a "USD" or "GK" indicator.</i>
<b>U.S. Diversity co-requisite</b> (USD)	n/a		Choose course(s) from the University Approved GEP course list for this category.
<b>Global Knowledge co-requisite</b> (GK)	n/a		Choose course(s) from the University Approved GEP course list for this category.
<b>Foreign Language Proficiency</b>		n/a	Proficiency at the FL_102 level required.
<b>The following requirements must be satisfied within the College/Program:</b>			Place an X in the credit hour box to indicate below that the requirement is "Satisfied by College/Program Requirements"
<b>Communication in the Major (Advanced Communication)</b>			Satisfied by College/Program Requirements
<b>Technology Fluency</b>			Satisfied by College/Program Requirements
<b>Total credit hours required to complete Degree:</b> Total must be within 120-128 credit hours.	125 Total hours	As applicable, indicate here the overall GPA requirement for degree completion including course completion.	



# Mathematics Education (BS): Statistics (13MTHEDBS-13MTHEDST)

Semester Display Effective Date: 1.2011

## FRESHMAN YEAR

Fall Semester	Credit	Spring Semester	Credit
MA 141 Calculus I <sup>A,5</sup>	4	MA 241 Calculus II <sup>A,5</sup>	4
Science <sup>2,B,4</sup>	4	Science <sup>2,B,4</sup>	4
ENG 101 Academic Writing & Research <sup>H</sup>	4	COM 112 Interpersonal Comm. <sup>D</sup>	3
E 115 Intro Computing Environments <sup>I</sup>	1	ST 101H Statistics by Example <sup>5</sup>	3
ED 100 Intro to Education <sup>6</sup>	2	ST 311 Introduction to Statistics <sup>5</sup>	3
	15	HES ***Health & Exercise Course <sup>E</sup>	1
			15

## SOPHOMORE YEAR

Fall Semester	Credit	Spring Semester	Credit
MA 242 Calculus III <sup>5</sup>	4	MA 403 Intro. to Modern Algebra <sup>5</sup>	3
MA 225 Found.of Advanced Math <sup>5</sup>	3	MA 405 Linear Algebra and Matrices <sup>5</sup>	3
EMS 204 Intro to Mathematics Education <sup>6</sup>	2	GEP Humanities Req. <sup>C,I,J</sup>	3
ED 204 Intro to 21 <sup>st</sup> Century Teaching <sup>6</sup>	2	EDP 304 Educational Psychology <sup>D,6</sup>	3
Introduction to Programming <sup>3,5</sup>	3	ST 305 Statistical Methods <sup>5</sup>	4
GEP Interdisc. Persp. <sup>G,I,J</sup>	2-3	ST 312 Introduction to Statistics II <sup>5</sup>	3
	16-17	ST 307 Introduction to Statistical Programming <sup>5</sup>	1
			16

## JUNIOR YEAR

Fall Semester	Credit	Spring Semester	Credit
ST 421 Intro. to Mathematical Statistics I <sup>5</sup>	3	ST 422 Intro to Mathematical Statistics II <sup>5</sup>	3
MA 351 Intro to Discrete Mathematical Models <sup>5,7</sup>	3	MA 408 Found. of Euclidean Geometry <sup>5</sup>	3
ELP 344 School and Society <sup>6</sup>	3	EMS 480 Teaching Math with Technology <sup>6</sup>	3
GEP Humanities Req. <sup>C,I,J</sup>	3	ED 311 Classroom Assessment Principles & Practices <sup>6</sup>	2
HES ***Health & Exercise Course <sup>E</sup>	1	ED 312 Classroom Assess. Principles & Practices:	1
Science <sup>2,B,4</sup>	3	Prof. Learning Lab <sup>6</sup>	
		GEP Interdiscip. Persp. <sup>G,I,J</sup>	3
		Free Elective	2
	16		17

## SENIOR YEAR

Fall Semester	Credit	Spring Semester	Credit
EMS 472 Teaching Math Topics in High School <sup>6</sup>	3	EMS 471 Student Teaching <sup>8</sup>	12
EMS 490 School Math from an Adv. Perspective <sup>6</sup>	3		
EMS 470 Methods & Materials for Teaching Math <sup>8</sup>	3		
GEP Add. Breadth Req.: Hum/SS/VPA <sup>F,I,J</sup>	3		
ECI 416 Teaching Exceptional Students <sup>6</sup>	3		
	15		12

Minimum Credit Hours Required for Graduation<sup>I,J,K</sup>:

122

### Major/Program Footnotes:

1. COS 100 may substitute for E 115

2. To satisfy the science requirement a sequence of two lab-based science courses (CH 101/CH 102 and CH 201/CH 202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202, or PY 211 and PY 212) must be taken. The third science may be selected from the GEP list of approved science courses.
3. Introduction to programming course must be selected from MA 116, CSC 112, CSC 114, or CSC 116.
4. At most one grade below a C- is permitted in the courses satisfying the science requirement.
5. At most one grade below a C is permitted in the mathematics, statistics, and computer science courses.
6. A grade below a B- is not permitted in EMS 204. A grade below a C is not permitted in all other EMS, EDP, ECI, ELP, and ED courses.
7. MA 341 may be taken in place of MA 351.
8. A grade of C or better is required in EMS 470 to continue in school placement full-time.

**\*General Education Program (GEP) requirements and GEP Footnotes:**

To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at <http://oucc.dasa.ncsu.edu/general-education-program/>.

**A. Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)

*Choose from the University approved GEP Mathematical Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **MA 141, MA 241***

**B. Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)

*Choose from the University approved GEP Natural Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **BIO 181 and BIO 183 or CH 101/102 and CH 201/202, or PY 201 and PY 202 or PY 205 and PY 208, or PY 211 and PY 212***

**C. Humanities** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Humanities course list.*

**D. Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Social Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: **ED 304, COM 112***

**E. Health and Exercise Studies** (2 credit hours – at least one 100-level Health & Exercise Studies Course)

*Choose from the University approved GEP Health & Exercise Studies course list.*

**F. Additional Breadth** - (3 credit hours to be selected from the following checked University approved GEP course lists)

**X** Humanities/Social Sciences/Visual and Performing Arts

**G. Interdisciplinary Perspectives** (5-6 credit hours)

*Choose from the University approved GEP Interdisciplinary Perspectives course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement:*

**H. Introduction to Writing** (4 credit hours satisfied by completing ENG 101 with a C- or better )

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements:

**I. U.S. Diversity (USD)**

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:*

**J. Global Knowledge (GK)**

*Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement:*

**K. Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.

**Current Degree Key: 13MED097S**

**Effective Date of Revision: 7/2010**

MAJOR FIELD OF STUDY REQUIREMENTS:		
<i>Required Courses/Groups/ Electives:</i>	<i>Credit Hours</i>	<i>GEP category, if applicable</i>
Indicate if course or course groupings have a C-wall or MGPA requirement		List GEP category and hours satisfied by a Major requirement
<b>Mathematical Sciences</b> (at most one grade below a C- is permitted in the Introduction to Programming, and the courses satisfying the Statistics requirement)		
<b>Mathematics Courses</b> MA 141, MA 241, MA 242, MA 351, MA 225, MA 405, MA 403, MA 408	27	Mathematics (6 hours)
<b>Statistics Courses</b> ST 101H ST 305 ST 311 ST 312 ST 307 ST 421 ST 422	3 4 3 3 1 3 3	
<b>Computer Science Courses</b> E 115 Introduction to Programming (MA 116, CSC 112, CSC 114, or CSC 116)	1 3	
<b>Natural Sciences</b> (at most one grade below a C- is permitted in courses satisfying the science requirement)	8	Natural Sciences (7 hours)
Science Sequence To satisfy the science requirement a sequence of two lab-based science courses (CH101/CH102 and CH201/CH202, or BIO 181 and BIO 183, or PY 205 and PY 208, or PY 201 and PY 202 or PY 211 and PY 212) must be taken.	3	
Science (The third science may be selected from the GEP list of approved)		Social Sciences (3 hours)
<b>English and Communication</b> Communication (COM 112)	3	
<b>Professional Education</b> <b>(A C- or higher is required for all courses except EMS 203 for which a B- or higher is required)</b> ED 100 EDP 304 ECI 305 ELP 344 ECI 416	2 3 3 3 3	Social Sciences (3 hours)

EMS 204	2	
ED 204	2	
ED 311	2	
ED 312	1	
EMS 480	3	
EMS 470	3	
EMS 471	12	
EMS 472	3	
EMS 490	3	
<b><u>Concentration Courses/Groups/Electives:</u></b>		
<b><u>Free Electives:</u></b>	2	
<b>Total credit hours under Major Field of Study:</b> <i>Minimum 27 hours required in program area.</i>	105 hours	
<b>COLLEGE REQUIREMENTS:</b>		
<b><u>Orientation Course(s):</u></b>		
<b><u>Other:</u></b>		
<b>Total credit hours under College Requirements:</b>	Hours	

<b><u>NCSU GENERAL EDUCATION PROGRAM REQUIREMENTS</u></b>  <i>Courses in the Major and/or Minor may also fulfill a General Education requirement; however, a GEP category <u>may not be subset</u> to require a specific course from the category list. Required courses must be listed in the Major/College requirements.</i>  <b><i>Specific courses should not be listed in any of the fields below other than ENG 101.</i></b>		<b><u>At least one of the following must be listed:</u></b> 1 Choose course(s) from the University Approved GEP course list for this category. 2 Minimum requirements are satisfied by Major/College course requirements. 3 Major/College course requirement satisfies X credit hrs of this requirement. Remaining hours required must be chosen from the University Approved GEP course list for the category. 4 Co-requisite is satisfied by a Major/College course requirement. 5 Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts. 6 Choose course(s) from the University Approved GEP course lists for Natural Sciences/Mathematical Sciences.
<b>General Education Program Requirements:</b>	<b>Credit</b>	<b>How will the GEP requirement be met?</b>



<i>Minimum 39-40 hrs</i>	<i>hours</i>	<b>(Choose applicable statement from 1-6 listed above)</b>
<b>Mathematical Sciences</b> (6 credits) (At least 1 course with MA or ST prefix) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	X	Minimum requirements are satisfied by Major/College course requirements.
<b>Natural Sciences</b> (7 credits) (At least 1 lab course or course with a lab) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	X	Minimum requirements are satisfied by Major/College course requirements.
<b>English 101</b> (C- or better required) (4 credits)	4	ENG 101
<b>Humanities</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	6	Choose course(s) from the University Approved GEP course list for this category
<b>Social Sciences</b> (6 credits) (Courses from two different disciplines) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	X	Minimum requirements are satisfied by Major/College course requirements.
<b>Additional Breadth</b> (3 credits) (Choose approach that is different from the approach of the Major) Major/College requirements cannot satisfy this requirement and an AB course cannot be double-counted except in satisfying the Global Knowledge or U.S. Diversity co-requisites.	3	Choose course(s) from the University Approved GEP course lists for the Humanities/ Social Sciences/ Visual & Performing Arts.
<b>Interdisciplinary Perspectives</b> (5-6 credits) Course(s) in the Major may double-count to satisfy this requirement and also satisfy either the Global Knowledge or U.S. Diversity co-requisites.	5	Choose course(s) from the University Approved GEP course list for this category
<b>Physical Education/Healthy Living</b> (2 credits) (Including one Fitness and Wellness course)	2	Choose course(s) from the University Approved GEP course list for this category.
<b>Total credit hours needed to complete GEP that are <u>not</u> satisfied as part of the Major/College requirements.</b>	20 hours	
<b>GEP Co-Requisites:</b>		<i>Courses taken in the Major, GEP, or Minor may double-count to fulfill the co-requisites. Courses that satisfy the U.S. Diversity or Global Knowledge co-requisite are marked on course lists with a "USD" or "GK" indicator.</i>
<b>U.S. Diversity co-requisite</b> (USD)	n/a	Choose course(s) from the University Approved GEP course list for this category.
<b>Global Knowledge co-requisite</b> (GK)	n/a	Choose course(s) from the University Approved GEP course list for this category.
<b>Foreign Language Proficiency</b>	n/a	Proficiency at the FL_102 level required.
<b>The following requirements must be satisfied within the College/Program:</b>		Place an X in the credit hour box to indicate below that the requirement is "Satisfied by College/Program Requirements"
<b>Communication in the Major (Advanced Communication)</b>		Satisfied by College/Program Requirements
<b>Technology Fluency</b>		Satisfied by College/Program Requirements
<b>Total credit hours required to complete Degree:</b> Total must be within 120-128 credit hours.	125 Total hours	As applicable, indicate here the overall GPA requirement for degree completion including course completion.