## Mathematics (BS) (17MATHBS)

Semester Display Effective Date: 7.2015

### FRESHMAN YEAR

#### Fall Semester
- **MA 141 Calculus I**<sup>A,2,11</sup> 4
- **CH 101 Chemistry – A Molecular Science**<sup>3,B</sup> 3
- **CH 102 General Chemistry Laboratory**<sup>3,B</sup> 1
- **ENG 101 Academic Writing & Research** 4
- **COS 100 Perspectives on Learning**<sup>H</sup> 1
- **GEP Requirements**<sup>C,D,F</sup> 3

#### Spring Semester
- **MA 241 Calculus II**<sup>A,2,11</sup> 4
- **PY 205 Physics for Engineers & Scientists I**<sup>B,4,10</sup> 3
- **PY 206 Physics for Engineers & Scientists I Lab**<sup>B,4,10</sup> 1
- **Introduction to Programming** 3
- **HES *** Health & Exercise Studies Course**<sup>E</sup> 1
- **GEP Requirements**<sup>C,D,F</sup> 3

### SOPHOMORE YEAR

#### Fall Semester
- **MA 242 Calculus III**<sup>2,11</sup> 4
- **MA 225 Foundations of Advanced Math**<sup>2,11</sup> 3
- **PY 208 Physics for Engineers & Scientists II**<sup>B,5,10</sup> 3
- **PY 209 Physics for Engineers & Scientists II Lab**<sup>B,5</sup> 1
- **HES *** Health & Exercise Studies Course**<sup>E</sup> 3
- **ST 380 Probability and Statistics for the Physical Sciences**<sup>10,13</sup> 1

#### Spring Semester
- **MA 341 Applied Differential Equations I**<sup>2,11</sup> 3
- **MA 405 Linear Algebra and Matrices**<sup>11</sup> 3
- **MA 421 Introduction to Probability**<sup>11,12,13</sup> 3
- **Free Elective**<sup>5</sup> 3
- **GEP Requirements**<sup>C,D,F</sup> 3

### JUNIOR YEAR

#### Fall Semester
- **MA 407 Introduction to Modern Algebra**<sup>11</sup> 3
- **Advanced Mathematics Elective**<sup>11,12</sup> 3
- **Science/Engineering/Business/Statistics**<sup>13,14</sup> 3
- **Advanced Writing**<sup>2,9</sup> 3
- **GEP Requirements**<sup>C,D,F</sup> 3

#### Spring Semester
- **MA 425 Mathematical Analysis I**<sup>11</sup> 3
- **MA 325 Intro to Applications of Math**<sup>11,12</sup> 3
- **Science/Engineering/Business/Statistics**<sup>13,14</sup> 3
- **Free Elective**<sup>8</sup> 3
- **GEP Requirements**<sup>C,D,F</sup> 3

### SENIOR YEAR

#### Fall Semester
- **MA 426, or other MA Elective**<sup>11,12</sup> 3
- **Advanced Mathematics Elective**<sup>11,12</sup> 3
- **Science/Engineering/Business/Statistics**<sup>13,14</sup> 3
- **Free Elective**<sup>8</sup> 3

#### Spring Semester
- **Advanced Mathematics Elective**<sup>11,12</sup> 3
- **Science/Engineering/Business/Statistics**<sup>13,14</sup> 3
- **Free Electives**<sup>8</sup> 3
**Major/Program Footnotes:**

1. At least one course must be chosen from the following Major Paper course list: MA 402, MA 427, MA 428, MA 432, MA 433, MA 437, MA 491, MA 494, MA 544, MA/BMA 573, and MA/BMA 574.

2. At most one grade below a C is permitted in CH 101, 102, Introduction to Programming, the two courses satisfying the physics requirement, and the course satisfying the statistics requirement.

3. At most one grade below a C is permitted in Advanced Mathematics courses. No grades below a C- are permitted in Basic Mathematics courses.


5. The preferred statistics sequence is ST 380 with MA 421. Alternatives include ST 370 with MA 421, or STS 371 with STS 372, or ST 421 with ST 422, or MA 421 with ST 422. If ST 370 or ST 380 is taken, MA 421 will be an advanced mathematics elective. If ST 371/372 is taken, ST 371 will be a Science/Engineering/Bus/Stat. elective. If MA 421 is taken as any advanced math elective then ST 422 will satisfy the ST requirement.

6. Science/Engineering/Business/Statistics courses must be selected from the following: BIO/ZO 160, BIO 18*, BIO 200>, CE ***, CH ***, ECE ***, ECI 305, ECI 416, EMS 470, EMS 480, GN ***, ISE ***, MAE ***, MB ***, MEA ***, NE ***, NTR ***, OR ***, PY 300>, PB ***, ZO ***, ACC ***, BUS ***, EC ***, CSC ***, ST 300> (except not the courses CH 100, CH 111, CSC 100, CSC 200, ST 311, or ST 361) Note: Business courses are restricted to BUS majors/minor.

7. The Advanced Writing course may not be used from ENG 331, ENG 332, or ENG 333. The Advanced Writing course may not be used to satisfy the GEP requirements, it is taken in addition to the GEP.

8. Free electives courses cannot be MA 100, MA 101, MA 103, MA 107, MA 108, MA 111, MA 121, MA 131, MA 231, PY 131, PY 211, PY 212, ENG 100, 100-level Foreign Language Course (FL*, LAT, GRK, PER).

9. At least one course must be chosen from the following Major Paper course list: MA 402, MA 427, MA 428, MA 432, MA 433, MA 437, MA 491, MA 494, MA 544, MA/BMA 573, and MA/BMA 574.

10. At least one grade below a C is permitted in CH 101, 102, Introduction to Programming, the two courses satisfying the physics requirement, and the course satisfying the statistics requirement.

11. At most one grade below a C- is permitted in Advanced Mathematics courses. No grades below a C- are permitted in Basic Mathematics courses.


13. The preferred statistics sequence is ST 380 with MA 421. Alternatives include ST 370 with MA 421, or STS 371 with STS 372, or ST 421 with ST 422, or MA 421 with ST 422. If ST 370 or ST 380 is taken, MA 421 will be an advanced mathematics elective. If ST 371/372 is taken, ST 371 will be a Science/Engineering/Bus/Stat. elective. If MA 421 is taken as any advanced math elective then ST 422 will satisfy the ST requirement.

14. Science/Engineering/Business/Statistics courses must be selected from the following: BIO/ZO 160, BIO 18*, BIO 200>, CE ***, CH ***, ECE ***, ECI 305, ECI 416, EMS 470, EMS 480, GN ***, ISE ***, MAE ***, MB ***, MEA ***, NE ***, NTR ***, OR ***, PY 300>, PB ***, ZO ***, ACC ***, BUS ***, EC ***, CSC ***, ST 300> (except not the courses CH 100, CH 111, CSC 100, CSC 200, ST 311, or ST 361) Note: Business courses are restricted to BUS majors/minor.

**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.ncsu.edu/gep-courses](http://oucc.ncsu.edu/gep-courses).

**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, BIO 183, CH 101-CH 102, CH 203-CH 204, CH 220, CH 221-CH 222.**

**C. 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: **none**

**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: **none**

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

Humanities/Social Sciences/Visual and Performing Arts
G. 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: none

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: none

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: none

K. Foreign Language proficiency - Proficiency at the FL_102 level is required for graduation.