

GEORGE MASON UNIVERSITY
COLLEGE OF SCIENCE
B.S. DEGREE IN MATHEMATICS (4400 Exploratory Hall, 703-993-1485)
<http://math.gmu.edu/degree-programs.php>

2018-2019 CATALOG

| <u>Department(s) & Course #(s)</u> | <u>Completed/ Grade(s)</u> | <u>Needed</u> |
|--|--------------------------------|---------------|
| MASON CORE REQUIREMENTS (30) | | |
| a. Written Communication: ENGH 101 (100), ENGH 302 (C or better) (3,3) | _____ | _____ |
| b. Oral Communication: COMM 100 or 101 (circle choice) (3) | _____ | _____ |
| c. Literature (3) d. Arts (3) | _____ | _____ |
| e. Western Civ. (3) f. Social/Behavioral Science (3) | _____ | _____ |
| g. Global Understanding (3) | _____ | _____ |
| h. Information Technology (3) (may be satisfied by completion of CS 112 plus the ethics component) | _____ | _____ |
| i. Synthesis (3) | _____ | _____ |
| (Quantitative Reasoning and Natural Science are satisfied by completion of major requirements.) | | |

Go to: <http://catalog.mu.edu/mason-core/> to link to information on Mason Core requirements.

MAJOR REQUIREMENTS (47-56 hours required)

Mathematics Core (23)

| | | |
|--|----------|-------|
| a. MATH 113, MATH 114 (4,4) | a. _____ | _____ |
| b. MATH 203; MATH 214 or MATH 216 (circle choice) (3,3) | b. _____ | _____ |
| c. MATH 213 or MATH 215 (circle choice) (3) | c. _____ | _____ |
| d. MATH 290 (writing intensive course), MATH 322 (3,3) | d. _____ | _____ |
| e. Twenty-four hours of additional mathematics for Traditional Mathematics/BS without Concentration (24) | | |
| 1. MATH 125, MATH 315 (3,3) | 1. _____ | _____ |
| 2. MATH 316; MATH 321 or MATH 431 (circle choice) (3,3) | 2. _____ | _____ |
| 3. Twelve hours of additional mathematics courses; numbered above MATH 300 (excluding MATH 400) (list course #s) (12) | | |
| a. MATH _____ b. MATH _____ c. MATH _____ d. MATH _____ | _____ | _____ |

CONCENTRATIONS (Optional)

Students may select an optional concentration in applied mathematics, actuarial mathematics, mathematical statistics, or education. Students selecting a concentration take the courses listed below instead of the 24 credits for Traditional Mathematics.

1. Applied Mathematics Concentration (24)

- a. MATH 125 (3), MATH 315 (3), MATH 351 (3), MATH 413 (3), MATH 414 (3), MATH 446 (3)
- b. **Six hours of additional mathematics courses** numbered above MATH 300 (excluding MATH 400) (list course #s) (6)
 - 1. MATH _____
 - 2. MATH _____

2. Actuarial Mathematics Concentration (36)

- a. MATH 351 (3); MATH 352 (3); MATH 551 (3); MATH 554 (3); MATH 555 (3); MATH 556 (3); two chosen from: MATH 441 (3), MATH 442 (3), MATH 446 (3) (circle choices); ACCT 203 (3); ECON 103 (3), ECON 306 or ECON 310 or FNAN 321 (3); STAT 362 (3)

3. Mathematical Statistics (27)

- a. MATH 125 (3), MATH 315 (3), MATH 351 (3), MATH 352 (3), MATH 453 (3), MATH 551 (3), STAT 362 (3)
- b. Two of the following (circle choices): STAT 455 (3), STAT 463 (3), STAT 474 (3)

OTHER REQUIREMENTS (16-24 hours required)

| | | |
|---|----------|-------|
| a. CS 112 (4) | _____ | _____ |
| b. One-year of laboratory science sequence chosen from the following (8 credits): | | |
| 1. PHYS 160, 161, 260, 261 (3,1, 3,1) | 1. _____ | _____ |
| 2. CHEM 211/213, 212/214 (3/1,3/1) | 2. _____ | _____ |
| 3. GEOL 101, 102 (4,4) | 3. _____ | _____ |
| c. For Applied Concentration, Mathematical Statistics or Traditional/BS without Concentration: One of the following three options: | | |
| 1. A second sequence for the list above | 1. _____ | _____ |
| 2. PHYS 262, 263 (3,1) | 2. _____ | _____ |
| 3. 6 credits from more advanced courses in chemistry, geology, or physics (but only courses acceptable for credit toward a natural science major) | 3. _____ | _____ |

No more than six hours of C- or D in MATH permitted in the major.

GENERAL ELECTIVES: Maximum 2 credits of PHED, PRLS, and RECR coursework toward a COS degree. Only MLSC 400 and MLSC 402 may be used for credit towards a COS degree. (List courses) (12-23 credits)

MINIMUM 120 HOURS (including Minimum 45 UPPER DIVISION HOURS) to This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018-2019 Catalog; the University Catalog is the official reference for program requirements.

B.S. Mathematics

2018 - 2019

| FALL YEAR 1 | CREDITS | SPRING YEAR 1 | CREDITS | NOTES |
|----------------|------------|---------------|------------|--------------------------|
| MATH 113 | 4 | MATH 114 | 4 | *G.U. = Global |
| Core (Written) | 3 | MATH 125 | 3 | Understanding |
| Core (Oral) | 3 | Core (W.C.) | 3 | *W.C. = Western Civ. |
| Core (G.U.) | 3 | SCI 1a | 4 | *S.B.S. = Social and |
| Core (Arts) | 3 | Core (S.B.S.) | 3 | Behavioral Science |
| UNIV 100 | 1 | | | *SCI =First of two year- |
| Total: | 17 credits | Total: | 17 credits | long sequences** |

| FALL YEAR 2 | CREDITS | SPRING YEAR 2 | CREDITS | NOTES |
|-----------------|------------|------------------|------------|------------------------|
| MATH 213 or 215 | 3 | MATH 214 or 216 | 3 | *Some Literature |
| MATH 203 | 3 | MATH 290 | 3 | courses have a |
| C.S. 112 | 4 | Core (Lit) | 3 | required pre-requisite |
| SCI 1b | 4 | SCI 2a | 4 | of 45 completed |
| IT Ethics | 1 | General Elective | 3 | credits. |
| Total: | 15 credits | Total: | 16 credits | |

| FALL YEAR 3 | CREDITS | SPRING YEAR 3 | CREDITS | NOTES |
|------------------|------------|-----------------------|------------|-------------------|
| MATH 322 | 3 | MATH 321 or 431 | 3 | *UL – Upper level |
| MATH 315 | 3 | MATH 316 | 3 | |
| SCI 2b | 4 | General Elective | 3 | |
| ENGH 302 | 3 | General Elective (UL) | 3 | |
| General Elective | 3 | General Elective (UL) | 3 | |
| Total: | 16 credits | Total: | 15 credits | |

| FALL YEAR 4 | CREDITS | SPRING YEAR 4 | CREDITS | NOTES |
|-----------------------|------------|-----------------------|------------|-------|
| MATH 3xx | 3 | MATH 3xx | 3 | |
| MATH 3xx | 3 | MATH 3xx | 3 | |
| General Elective | 3 | MATH 400 (Synthesis) | 3 | |
| General Elective (UL) | 3 | General Elective (UL) | 3 | |
| General Elective (UL) | 3 | | | |
| Total: | 15 credits | Total: | 12 credits | |

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

**Approved science sequences are CHEM 211/213 and CHEM 212/214, GEOL 101 and GEOL 102, or PHYS 160/161 and PHYS 260/261. See catalog for more details.

CONCENTRATION IN ACTUARIAL MATHEMATICS

B.S. Mathematics

2018 - 2019

| FALL YEAR 1 | CREDITS | SPRING YEAR 1 | CREDITS | NOTES |
|----------------|------------|---------------|------------|----------------------|
| MATH 113 | 4 | MATH 114 | 4 | *G.U. = Global |
| ECON 103 | 3 | ACCT 203 | 3 | Understanding |
| Core (Written) | 3 | Core (W.C.) | 3 | *W.C. = Western Civ. |
| Core (Oral) | 3 | SCI 1a | 4 | *S.B.S. = Social and |
| Core (G.U.) | 3 | Core (S.B.S.) | 3 | Behavioral Science |
| UNIV 100 | 1 | | | *SCI =Year-long |
| Total: | 17 credits | Total: | 17 credits | science sequence** |

| FALL YEAR 2 | CREDITS | SPRING YEAR 2 | CREDITS | NOTES |
|-----------------|------------|-----------------------------|------------|------------------------|
| MATH 213 or 215 | 3 | MATH 214 or 216 | 3 | *Some Literature |
| MATH 203 | 3 | MATH 290 | 3 | courses have a |
| C.S. 112 | 4 | MATH 351 | 3 | required pre-requisite |
| SCI 1b | 4 | ECON 306,310 or FNAN 321 | 3 | of 45 completed |
| IT Ethics | 1 | Core (Lit.) | 3 | credits. |
| Total: | 15 credits | Total: | 15 credits | |

| FALL YEAR 3 | CREDITS | SPRING YEAR 3 | CREDITS | NOTES |
|------------------|------------|------------------|------------|--------------------------|
| MATH 322 | 3 | MATH 441 | 3 | *Take MATH 554 |
| MATH 352 | 3 | STAT 362 | 3 | during the summer |
| Core (Arts) | 3 | General Elective | 3 | between Year 3 |
| ENGH 302 | 3 | General Elective | 3 | and Year 4. |
| General Elective | 3 | General Elective | 3 | |
| Total: | 15 credits | Total: | 15 credits | |

| FALL YEAR 4 | CREDITS | SPRING YEAR 4 | CREDITS | NOTES |
|-----------------------|------------|-----------------------|------------|-------------------|
| MATH 442 or 446 | 3 | MATH 551 | 3 | *UL = Upper level |
| MATH 555 | 3 | MATH 557 | 3 | |
| General Elective | 3 | MATH 400 (Synthesis) | 3 | |
| General Elective (UL) | 3 | General Elective (UL) | 3 | |
| Total: | 12 credits | Total: | 12 credits | |

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

**Approved science sequences are CHEM 211/213 and CHEM 212/214, GEOL 101 and GEOL 102, or PHYS 160/161 and PHYS 260/261. See catalog for more details.

B.S. Mathematics

2018 - 2019

| FALL YEAR 1 | CREDITS | SPRING YEAR 1 | CREDITS | NOTES |
|----------------|------------|---------------|------------|--------------------------|
| MATH 113 | 4 | MATH 114 | 4 | *G.U. = Global |
| Core (Written) | 3 | MATH 125 | 3 | Understanding |
| Core (Oral) | 3 | Core (W.C.) | 3 | *W.C. = Western Civ. |
| Core (G.U.) | 3 | SCI 1a | 4 | *S.B.S. = Social and |
| Core (Arts) | 3 | Core (S.B.S.) | 3 | Behavioral Science |
| UNIV 100 | 1 | | | *SCI =First of two year- |
| Total: | 17 credits | Total: | 17 credits | long sequences** |

| FALL YEAR 2 | CREDITS | SPRING YEAR 2 | CREDITS | NOTES |
|-----------------|------------|-----------------|------------|------------------------|
| MATH 213 or 215 | 3 | MATH 214 or 216 | 3 | *Some Literature |
| MATH 203 | 3 | MATH 290 | 3 | courses have a |
| C.S. 112 | 4 | MATH 351 | 3 | required pre-requisite |
| SCI 1b | 4 | SCI 2a | 4 | of 45 completed |
| IT Ethics | 1 | Core (Lit.) | 3 | credits. |
| Total: | 15 credits | Total: | 16 credits | |

| FALL YEAR 3 | CREDITS | SPRING YEAR 3 | CREDITS | NOTES |
|-------------|------------|-----------------------|------------|-------------------|
| MATH 322 | 3 | MATH 453 | 3 | *UL – Upper level |
| MATH 315 | 3 | STAT 362 | 3 | |
| MATH 352 | 3 | General Elective | 3 | |
| SCI 2b | 4 | General Elective | 3 | |
| ENGH 302 | 3 | General Elective (UL) | 3 | |
| Total: | 16 credits | Total: | 15 credits | |

| FALL YEAR 4 | CREDITS | SPRING YEAR 4 | CREDITS | NOTES |
|-----------------------|------------|-----------------------|------------|-------|
| STAT 4xx | 3 | MATH 551 | 3 | |
| General Elective | 3 | STAT 4xx | 3 | |
| General Elective | 3 | MATH 400 (Synthesis) | 3 | |
| General Elective (UL) | 3 | General Elective (UL) | 3 | |
| General Elective (UL) | 3 | | | |
| Total: | 15 credits | Total: | 12 credits | |

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

**Approved science sequences are CHEM 211/213 and CHEM 212/214, GEOL 101 and GEOL 102, or PHYS 160/161 and PHYS 260/261. See catalog for more details.

***The first three semesters of this concentration are rather rigid if a student wishes to complete the concentration within a 4-year timeframe. MATH 290 in the fourth semester is a gateway class to the upper-level math courses. It and MATH 351 should be taken in the fourth semester at the latest in order to graduate with this concentration within 4 years.

***Approved 400-level statistics electives are STAT 455, 463, and 474.

CONCENTRATION IN APPLIED MATHEMATICS

B.S. Mathematics

2018 - 2019

| FALL YEAR 1 | CREDITS | SPRING YEAR 1 | CREDITS | NOTES |
|----------------|------------|---------------|------------|--------------------------|
| MATH 113 | 4 | MATH 114 | 4 | *S.B.S. = Social and |
| Core (Written) | 3 | MATH 125 | 3 | Behavioral Science |
| Core (Oral) | 3 | Core (W.C.) | 3 | *W.C. = Western Civ. |
| Core (S.B.S.) | 3 | SCI 1a | 4 | *G.U. = Global |
| Core (Arts) | 3 | Core (G.U.) | 3 | Understanding |
| UNIV 100 | 1 | | | *SCI =First of two year- |
| Total: | 17 credits | Total: | 17 credits | long sequences** |

| FALL YEAR 2 | CREDITS | SPRING YEAR 2 | CREDITS | NOTES |
|-----------------|------------|------------------|------------|------------------------|
| MATH 213 or 215 | 3 | MATH 214 or 216 | 3 | *Some Literature |
| MATH 203 | 3 | MATH 290 | 3 | courses have a |
| C.S. 112 | 4 | Core (Lit) | 3 | required pre-requisite |
| SCI 1b | 4 | SCI 2a | 4 | of 45 completed |
| IT Ethics | 1 | General Elective | 3 | credits. |
| Total: | 15 credits | Total: | 16 credits | |

| FALL YEAR 3 | CREDITS | SPRING YEAR 3 | CREDITS | NOTES |
|------------------|------------|-----------------------|------------|-------------------|
| MATH 322 | 3 | MATH 351 | 3 | *UL – Upper level |
| MATH 315 | 3 | MATH 446 | 3 | |
| SCI 2b | 4 | General Elective | 3 | |
| ENGH 302 | 3 | General Elective (UL) | 3 | |
| General Elective | 3 | General Elective (UL) | 3 | |
| Total: | 16 credits | Total: | 15 credits | |

| FALL YEAR 4 | CREDITS | SPRING YEAR 4 | CREDITS | NOTES |
|-----------------------|------------|-----------------------|------------|-------|
| MATH 413 | 3 | MATH 414 | 3 | |
| MATH 3xx | 3 | MATH 3xx | 3 | |
| General Elective | 3 | MATH 400 (Synthesis) | 3 | |
| General Elective (UL) | 3 | General Elective (UL) | 3 | |
| General Elective (UL) | 3 | | | |
| Total: | 15 credits | Total: | 12 credits | |

*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

**Approved science sequences are CHEM 211/213 and CHEM 212/214, GEOL 101 and GEOL 102, or PHYS 160/161 and PHYS 260/261. See catalog for more details.