# Bachelor of Science in Mathematics

**MATH CHECKLIST | Effective Fall 2007 - Summer 2013**

**Total Degree Hours: 123**

## GENERAL EDUCATION (45 hrs)

### AREA A: Essential Skills
- ENGL 1101 Composition I (3 hrs)
- ENGL 1102 Composition II (3 hrs)
- **1** MATH 1112 College Trigonometry, MATH 1113 Precalculus (3 hrs), or MATH 1190 Calculus I (4 hrs)

### AREA B: Institutional Options

Select 1 two hour Contemporary Social Issues course:
- ANTH 2105 | CRJU 2105 | GEOG 2105 | PSYC 2105 | SOCI 2105 | STS 2105

Select 1 three hour Cultural Perspectives course*:
- AADS / AMST / ASIA / GWST / LALS / PAX / RELS 1102 | COM 1109 1100 | *FL 1002 (FL denotes any Foreign Language) | PHIL 2200 | POLS 2401

### AREA C: Humanities/Fine Arts

Select 1 three hour Literature of the World course:
- ENGL 2110, 2111, 2112, 2120, 2121, 2122, 2130, 2131, 2132, or 2300

Select 1 three hour Arts and Culture of the World course:
- ART 1107 | MUSI 1107 | TPS 1107 | DANC 1107

### AREA D: Science, Math, and Technology

- MATH 1190 Calculus I (4 hrs)

or MATH 1107 Intro to Statistics (3 hrs), if MATH 1190 was in Area **1**

Select 2 Science courses from the following*:
- BIOL 1107/L & 1108/L Biological Principles I & II (8 hrs)
- CHEM 1151/L & 1152/L Survey of Chemistry I & II (8 hrs)
- CHEM 1211/L & 1212/L General Chemistry I & II (8 hrs)
- GEOG 1112 & 1113 Weather/Climate & Intro to Landforms (8 hrs)
- PHYS 1111/L & 1112/L Intro. to Physics I & II (8 hrs)
- PHYS 2211/L & 2212/L Principles of Physics I & II (8 hrs)
- SCI 1101 & 1102 Science, Society, and the Environment I & II (7 hrs)

### AREA E: Social Sciences

- POLS 1101 American Government (3 hrs)

Select 1 three hour U.S. History course:
- HIST 2111 U.S. History to 1877 or HIST 2112 U.S. History since 1877

Select 1 three hour World History course:
- HIST 1110 1100, 1111, or 1112

- ECON 1100 Global Econ or ECON 2100 Prin. of Micro (3 hrs)

### INSTITUTIONAL REQUIREMENT

- HPS WELL 1000 Fitness for Living (3 hrs)

### FREE ELECTIVES (12 hrs)

- KSU First Year Seminar (3 hrs) or Learning Community

**Overflow from MATH 1190 Calculus I in Area A or D**

**1 hr**

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1. **NEW** Students are required to take the online Math Advisement Placement Test (MAPT) available at [http://placement.kennesaw.edu](http://placement.kennesaw.edu). Students who start at MATH 1190 as their first MATH can apply for Advanced Standing for MATH 1113 in Area A or take MATH 1107 in Area D; if needed, MATH 1111 College Algebra can be used as a Free Elective.

2. Students with less than 15 hours are required to satisfy the First Year requirement.

3. As of SU’13, MATH 3390 Intro to Mathematical Systems must be used as an Upper Division Major Elective. As of SP’14, use MATH 2390 as an alternative for MATH 3390; if MATH 2390 is not taken as an Area F Elective, then it must be used as an Upper Division Major Elective; you cannot have both MATH 3390 and MATH 2390 to satisfy degree requirements.

4. **See comments on back of checklist.**

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**Student’s Signature & Date**

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**Advisor’s Signature & Date(s)**

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**MATH Checklist Revised 11/24/2015**
Pre-requisites Required Math Courses

- MATH 1190 Calculus I
- MATH 2202 Calculus II
- MATH 2203 Calculus III
- MATH 2390 Intro to Logic, Set Theory, & Proofs
- MATH 3260 Linear Algebra I
- MATH 3261 Ordinary Differential Equations
- MATH 3322 Graph Theory Discrete I
- or MATH 3324 Enumerative Combinatorics
- MATH 3332 Probability & Inference
- MATH 4361 Modern Algebra I
- MATH 4381 Real Analysis I
- or MATH 4700 Capstone Experience

Major Electives & Prereqs

- MATH 3000 Software of Mathematics
- MATH 3261 Numerical Methods I
- MATH 3204 Calculus IV
- MATH 3272 Intro. to Linear Programming
- MATH 3295 Math for Middle and Secondary Teachers
- MATH 3323 Comp. App. of Discrete Mod. (1 hr)

Req

- MATH 3390 Intro. to Math. Systems
- MATH 3395 Geometric Proofs & Applications
- MATH/STAT 3396 Cooperative Study
- MATH/STAT 3398 Internship
- MATH 3405 Prob. Foun. of Actuarial Science
- MATH 3495 Adv. Persp. on School Math I
- MATH 4212 3496 Elementary Number Theory
- MATH 3696 College Geometry
- MATH 4260 Linear Algebra II
- MATH 4310 Partial Differential Equations
- MATH 4322 Discrete Mathematics II
- MATH 4345 Numerical Methods II
- MATH 4362 Modern Algebra II
- MATH 4382 Real Analysis II
- MATH 4391 Complex Variables Analysis
- MATH/STAT 4400 Directed Study
- MATH/STAT 4490 Special Topics in Mathematics
- MATH 4495 Adv. Persp. on School Math II
- MATH 4596 Topology
- MATH/STAT 4699 Undergraduate Research
- STAT 3010 Comp. App. of Statistics
- STAT 3120 Statistical Methods I
- STAT 3125 Biostatistics
- STAT 3130 Statistical Methods II
- STAT 4025 Clinical Trial Design
- STAT 4030 Programming in R
- STAT 4120 Applied Experimental Design
- STAT 4125 Design & Analysis of Human Studies
- STAT 4210 Applied Regression Analysis
- STAT 4310 Statistical Data Mining
- STAT 4330 Applied Binary Classification

See catalog.kennesaw.edu for graduation requirements, general education details, additional pre-requisite options, course descriptions, and degree comments. If you have questions about the BS Mathematics program, please contact your advisor. Students are initially advised in the College of Science & Mathematics Advising Center, located on the Kennesaw campus in Science 204, email at math@kennesaw.edu.

Suggestions for Other Upper Division Electives

The Other Upper Division Electives section within the Mathematics major is intended for you to expand on or to complement your career interests. Some students use this area for additional MATH/STAT coursework or for the 3/4000-level coursework for a minor or double-major. Additionally, there are coursework suggestions for nine areas of concentration available at math.kennesaw.edu > Resources > Advising > Concentrations of Study. These ideas are not formal concentrations and will not appear on DegreeWorks nor will it be on your diploma.

- Actuarial
- Biological
- Discrete Mathematics & Computer Science
- Economics
- Finance
- Mathematics Education with Teacher Certification
- PreEngineering
- Preparation for Graduate Studies in Mathematics
- Statistics

Notes and Tips

1 See comments on front of checklist.
2 With approval from the Department of Mathematics Chair, students can receive credit for both MATH 3322 Discrete Mathematics I (if they took it at KSU up through SU’15) and MATH 3322 Graph Theory (if they take it at KSU F’15 or later).
3 As of F’13, MATH 4700 was discontinued. However, you must take a course to replace it; students typically substitute a MATH/STAT 4000-level course. You must obtain written approval from your assigned faculty advisor (via email) to use an alternate course as a Capstone Experience.
4 Per KSU graduation policies and Department of Mathematics By Laws: At most 9 combined total hours of credit can be given for Internship or Cooperative Study, and at most 3 of these hours can be used as Major Electives. The remaining hours (up to a combined total of 9) can be used as Other Upper Division Electives or Free Electives. Content in any Directed Study cannot substantially overlap an existing course in the curriculum. A maximum of 10 hours of Directed Study and 6 hours of Undergraduate Research can be used to satisfy degree requirements. Students must have a 3.0 KSU AGPA and major GPA to be eligible for Directed Study.
5 If you want the Applied Statistics and Data Analysis minor, up to two classes from the minor can go into the Major Electives; the other three classes for the ASDA minor can go into Other Upper Division Electives.
6 Due to the recent 2013 updates to the MATH curriculum and the 2015 consolidation with SPSU, substitutions for the old/recent/new courses may be necessary until the kinks are worked out; email or see advisor for assistance.
Please note that this course forecast is tentative and thus may have to be altered depending on availability of faculty, classrooms, and student demand. Furthermore, a course forecast is not an indicator of where these classes could be offered, only that these courses could be available at one or possibly both campuses at Kennesaw State University.

### 1000 Level

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<tr>
<th>NEW KSU COURSE #</th>
<th>TITLE</th>
<th>PREREQUISITE</th>
<th>Previous KSU COURSE #</th>
<th>Previous SPSU COURSE #</th>
<th>FALL</th>
<th>SPRING</th>
<th>SUMMER</th>
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<tr>
<td>MATH 1101</td>
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<td>College Trigonometry</td>
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<td>MATH 1160</td>
<td>Elementary Applied Calculus</td>
<td>[ at least a C in one of MATH 1111, 1112, or 1113 ]</td>
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<td>MATH 2240</td>
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<td>Calculus I</td>
<td>* [ at least a C in one of MATH 1112 or 1113 ]</td>
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<td>MATH 2253</td>
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### 2000 Level

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<td>MATH 2008</td>
<td>Foundations of Numbers and Operations</td>
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<td>MATH 2255</td>
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<td>Ordinary Differential Equations</td>
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<td>MATH 3310</td>
<td>MATH 2306</td>
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<tr>
<td>MATH 2332</td>
<td>Intro to Probability and Data Analysis</td>
<td>[ at least a C in MATH 1190 ]</td>
<td>MATH 2332</td>
<td>MATH 2260</td>
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<tr>
<td>MATH 2335</td>
<td>Numerical Methods for Engineers</td>
<td>* [ at least C's in MATH 2202 and one of CS 1301, CSE 1301 or 1311, or ECET 3830 or 3710 ]</td>
<td>MATH 2335</td>
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<td>Discrete Mathematics</td>
<td>[ at least a C in one of MATH 1112, 1113, or 1190 ]</td>
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<td>MATH 2390</td>
<td>Intro to Logic, Set Theory and Proofs</td>
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<td>MATH 3310</td>
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<tr>
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<th>SUMMER</th>
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<tbody>
<tr>
<td>MAED 3475</td>
<td>Modern and Historical Approaches to Mathematics</td>
<td>[ Adm to TE ]</td>
<td>MAED 3475</td>
<td>STS 3347</td>
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<tr>
<td>MATH 3000</td>
<td>Software of Mathematics</td>
<td>b [ at least C's in MATH 2202 and CS 1301 ]</td>
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<td>EVEN YEARS ONLY</td>
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<td>Calculus IV</td>
<td>[ at least a C in MATH 2203 ]</td>
<td>MATH 4407</td>
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<td>Linear Algebra I</td>
<td>[ at least a C in MATH 1190 ]</td>
<td>MATH 3260</td>
<td>MATH 3312</td>
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<td>✓</td>
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<tr>
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<td>Numerical Methods I</td>
<td>b [ at least C's in MATH 3260 and CS 1301 ]</td>
<td>MATH 3261</td>
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<td>✓</td>
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<tr>
<td>MATH 3272</td>
<td>Intro to Linear Programming</td>
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<td>EVEN YEARS ONLY</td>
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<td>MATH 3295</td>
<td>Mathematics for Middle Grades and Secondary Teachers</td>
<td>[ at least a C in MATH 1190 ]</td>
<td>MATH 2595</td>
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<tr>
<td>MATH 3316</td>
<td>Rational Numbers and Proportional Reasoning for Elementary Teachers</td>
<td>[ at least a C in MATH 2008 ]</td>
<td>MATH 3316</td>
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<td>MATH 3317</td>
<td>Geometry and Measurement for Elementary Teachers</td>
<td>[ at least a C in MATH 3316 and Adm to TE ]</td>
<td>MATH 3317</td>
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<td>MATH 3318</td>
<td>Algebra for Elementary Teachers</td>
<td>[ at least a C in MATH 3317 and Adm to TE ]</td>
<td>MATH 3318</td>
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(more 3000 and 4000 level options on the next page)
### 3000 level (continued)

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<th>PREREQUISITE</th>
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<th>Previous SPSU COURSE #</th>
<th>TENTATIVE COURSE FORECAST</th>
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<tr>
<td>MATH 3322</td>
<td>Graph Theory</td>
<td>[ at least a C in one of MATH 2345 or MATH 2390 ]</td>
<td>MATH 3322</td>
<td>see advisor</td>
<td>☑ ☑ varies</td>
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<tr>
<td>MATH 3324</td>
<td>Enumerative Combinatorics</td>
<td>[ at least a C in one of MATH 2345 or MATH 2390 ]</td>
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<td>MATH 3332</td>
<td>Probability and Inference</td>
<td>[ at least a C in MATH 2202 ]</td>
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<td>MATH 3268</td>
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<td>MATH 3390</td>
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<td>MATH 3395</td>
<td>Geometric Proofs and Applications</td>
<td>[ at least a C in one of MATH 2390 or 3390 ]</td>
<td>MATH 3395</td>
<td>see advisor</td>
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<td>Cooperative Study</td>
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<td>MATH 3398</td>
<td>Internship</td>
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<tr>
<td>MATH 3405</td>
<td>Probabilistic Foundations of Actuarial Science</td>
<td>[ at least C's in MATH 2203 and 3332 ]</td>
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<tr>
<td>MATH 3495</td>
<td>Advanced Perspectives on School Mathematics I</td>
<td>[ at least a C in MATH 3295 and at least a C in one of MATH 2390 or 3390 ]</td>
<td>MATH 3495</td>
<td>MAED 2010</td>
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<td>Elementary Number Theory</td>
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<td>MATH 4717</td>
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<td>MATH 3696</td>
<td>College Geometry</td>
<td>[ at least a C in MATH 2202 ]</td>
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<tr>
<td>STAT 3120</td>
<td>Statistical Methods I</td>
<td>[ at least a C in STAT 3010 and at least a C in one of STAT 3120 or 3125 ]</td>
<td>STAT 3120</td>
<td>MATH 3261</td>
<td>see STAT dept course forecast</td>
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#### 4000 level

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<th>TITLE</th>
<th>PREREQUISITE</th>
<th>Previous KSU COURSE #</th>
<th>Previous SPSU COURSE #</th>
<th>TENTATIVE COURSE FORECAST</th>
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<tr>
<td>MAED 4000</td>
<td>Service Learning in Mathematics Education</td>
<td>[ 60 hours and Department Approval ]</td>
<td>MAED 4000</td>
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<td>as needed as needed as needed</td>
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<tr>
<td>MAED 4400</td>
<td>Directed Study in Mathematics Education</td>
<td>[ Professor and Department Approval ]</td>
<td>MAED 4400</td>
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<tr>
<td>MAED 4415</td>
<td>Teaching of Mathematics (6-12) I</td>
<td>[ Adm to TE; coreq: MATH 4345 ]</td>
<td>MAED 4415</td>
<td>EDUC 2020</td>
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<tr>
<td>MAED 4416</td>
<td>Teaching of Mathematics (6-12) II</td>
<td>[ at least C's in MATH 2395, MATH 3475, MATH 4416 and Adm to TE ]</td>
<td>MAED 4416</td>
<td>EDUC 4030</td>
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<td>MAED 4417</td>
<td>TOSS Practicum</td>
<td>[ Adm to TOSS; coreq: MATH 4416 ]</td>
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<td>Fall only, will be MAED 4650 starting F'17</td>
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<td>MAED 4475</td>
<td>Student Teaching in Secondary Mathematics</td>
<td>[ Varies, See Schedule of Classes ]</td>
<td>MAED 4475</td>
<td>EDUC 4406</td>
<td>Spring only, will be MAED 4660 starting SP '18</td>
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<td>MAED 4490</td>
<td>Special Topics in Mathematics Education</td>
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<td>MATH 4310</td>
<td>Partial Differential Equations</td>
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<td>Numerical Methods II</td>
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<td>MATH 4361</td>
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<td>[ at least C's in MATH 2390 and 3260 ]</td>
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<td>MATH 4400</td>
<td>Directed Study in Mathematics</td>
<td>[ Professor and Department Approval ]</td>
<td>MATH 4400</td>
<td></td>
<td>as needed as needed as needed</td>
</tr>
<tr>
<td>MATH 4490</td>
<td>Special Topics in Mathematics</td>
<td>[ Varies, See Schedule of Classes ]</td>
<td>MATH 4490</td>
<td>MATH X901-X905</td>
<td>as needed as needed as needed</td>
</tr>
</tbody>
</table>

(Note: 4000 level options continue on the next page.)
Please note that this course forecast is tentative and thus may have to be altered depending on availability of faculty, classrooms, and student demand. Furthermore, a course forecast is an NOT an indicator of where these classes could be offered, only that these courses could be available at one or possibly both campuses at Kennesaw State University.

<table>
<thead>
<tr>
<th>NEW KSU COURSE #</th>
<th>TITLE</th>
<th>PREREQUISITE</th>
<th>Previous KSU COURSE #</th>
<th>Previous SPSU COURSE #</th>
<th>FALL</th>
<th>SPRING</th>
<th>SUMMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 4495</td>
<td>Advanced Perspectives on School Mathematics II</td>
<td>[ at least a C in MATH 3495 ]</td>
<td>MATH 4495</td>
<td></td>
<td></td>
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<tr>
<td>MATH 4596</td>
<td>Topology</td>
<td></td>
<td></td>
<td>MATH 3596</td>
<td>EVEN YEARS ONLY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 4699</td>
<td>Undergraduate Research in Mathematics</td>
<td>[ Professor and Department Approval ]</td>
<td>MATH 4699</td>
<td>MATH 4451</td>
<td>as needed</td>
<td>as needed</td>
<td>as needed</td>
</tr>
</tbody>
</table>

Comments and exceptions regarding prerequisite coursework:

a The Mathematics Advising Placement Tests are a series of online assessments, available at [http://placement.kennesaw.edu](http://placement.kennesaw.edu), designed to help students know where to start their first MATH class if their academic goal is to eventually reach MATH 1190 Calculus I. If MAPT results recommend placement into MATH 1190 Calculus I, students should request a prereq override through [http://math.kennesaw.edu/resources/forms/prereq-bypass-request.html](http://math.kennesaw.edu/resources/forms/prereq-bypass-request.html). Students with credit in MATH 1111 or MATH 1112 should not take MATH 1113. MATH 1111 and MATH 1112 is a two-semester sequence of the one semester MATH 1113 course.

b CS 1301 Programming Principles I used to be CS 2301 at KSU and CSE 1301J at SPSU; the CSE 1301C and CSE 1301E courses from SPSU are acceptable alternative programming courses, which are renumbered as CSE 1301 and CSE 1311, respectively, as a result of the consolidation.

c MATH 2390 Intro to Logic, Set Theory, and Proofs started at KSU in Spring 2014; prior to this, students took MATH 3390 Intro to Mathematical Systems instead. Students with at least a C in KSU's MATH 3390 prior to SP'14 would qualify for courses where MATH 2390 is a prereq, if they also have at least a C in MATH 2202 Calculus II as well.
please note these changes for the **MATH degree**

[ effective for students on the Fall 2007 – Summer 2013 catalogs ]

**General Education Updates Since F’07**

- In F’08, the Mathematics Advising Placement Tests began. It is a series of tests that recommends where students start for their Area A Math on their path to MATH 1190 Calculus I. If needed, students can use the MATH 1111 College Algebra course in *Free Electives*. In F’12, MATH 1190 is officially added as an Area A MATH option; this means that you have a choice if you start with MATH 1190 in Area A— you can apply for Advanced Standing for MATH 1113 Pre-calculus or you can choose to take MATH 1107 Intro to Statistics in Area D.

- In F’11, CRJU 2105 Perspectives in Criminal Justice is added to the Area B1 options. As of SU’15, the automatic substitution of the three-hour introductory courses of PSYC 1101, SOCI 2201, ANTH 2201, GEOG 1101, and CRJU 1101 in Area B1 to serve as an alternate for one of the two-hour Contemporary Social Issues ANTH 2105, CRJU 2105, GEOG 2105, PSYC 2105, SOCI 2105, or STS 2105 courses are no longer an option. In F’15, Area B1 *Contemporary Social Issues* has an additional option of STS 2105 Perspectives in Science and Technology.

- In F’12, AMST 1102 American Identities is added to Area B2 options. In F’13, AADS 1102 Issues in African and African Diaspora Studies, GWST 1102 Love and Sex, LALS 1102 Understanding Latin America, PAX 1102 Understanding Peace and Conflict, and RELS 1102 Understanding Religious Studies are added to Area B2 options. In F’14, ASIA 1102 Intro to Asian Cultures is added to Area B2 options. As of SU’15, the automatic substitution of the three-hour COM 2129 Public Speaking course in Area B2 to count for the three-hour COM 1109 Human Communication is no longer an option either. In F’15, Area B2 *Cultural Perspectives* has renumbered COM 1109 to be COM 1100 Human Communication; there is also an additional option of POLS 2401 Global Issues.

- In F’15, Area C1 *Literature of the World* has nine new Literature options: ENGL 2110 World Literature, ENGL 2111 Early World Literature, ENGL 2112 World Literature mid-1600s to Present, ENGL 2120 British Literature, ENGL 2121 Early British Literature, ENGL 2122 British Literature late-1700s to Present, ENGL 2130 American Literature, ENGL 2131 Early American Literature, ENGL 2132 American Literature mid-1800s to Present, or ENGL 2300 African-American Literature.

- In F’11, DANC 1107 was added as a Fine Arts/Appreciation course option in Area C2.

- In F’11, GEOG 1112 Weather & Climate and GEOG 1113 Intro to Landforms were 4 hour classes added as Science options in Area D. In F’15, Area D *Science, Math, and Technology* now officially has BIOL 1107/L & BIOL 1108/L Biological Principles I & II as acceptable Gen Ed Science courses.

- Area E2 World History has renumbered HIST 1110 to be HIST 1100 Introduction to World History; there are also two new options of HIST 1111 Pre-Modern World History or HIST 1112 Modern World History.

- Area E3 *U.S. History* now officially has HIST 2111 United States History to 1877 and HIST 2112 United States History Since 1877 as options.

- In March 2015, Area E4 *Economics* now officially has ECON 1100 Global Economics and ECON 2100 Principles of Microeconomics as options in DegreeWorks. If students are at all interested in pursuing a minor or dual-degree for any of the programs within the Coles College of Business, they should take ECON 2100, as it will be a prereq for some courses in those programs.

- For F’15, the *institutional requirement* of HPS 1000 course is renamed as WELL 1000 Foundations for Healthy Living. However, students with majors in the Southern Polytechnic College of Engineering and Engineering Technology, the College of Architecture and Construction Management, or the College of Computing and Software Engineering (see attached) will NOT have an HPS/WELL 1000 graduation requirement. Mathematics, Computational & Applied Mathematics, or Mathematics Education majors will have to take HPS/WELL 1000.

- In F’10, the freshman seminars became required for students under 15 hours, and recommended for students between 15-30 hours. In F’11, Learning Communities became an alternative to the freshman seminars, though several LCs also have the FY seminars in them.

**Area F Lower Division Major Updates and DegreeWorks Practices Since Fall 2007**

- In F’07 catalog, the Area F Electives have the following note: *The 6 hours of Area F Electives are 2000-level Lower Division concentration-based courses. It is recommended that these courses will be chosen from among those that are specified for one of the specific concentration areas described at math.kennesaw.edu/resources/advising/concentrations.* The Lower-Division Major Requirements (Area F) had a Math overflow from Area D as 1 hour, so students really only needed 5 hours of Area F electives.
In F’08, the three-hour CSIS 2301 course was changed to the CS 2301. In F’09, CS 2301 became a four-hour class, so with the extra hour of MATH 1190 overflow from Area D, students would only need 4 hours of Area F electives at the 2000-level. In F’15, CS 2301 Programming Principles I (a Java course, part 1 of 3) is renumbered as CS 1301; with the consolidation, two alternative programming courses are also acceptable as prereqs where CS 1301 would be used: CSE 1301 Programming & Problem Solving I (a C++ course), and CSE 1311 C++ for Engineers.

In DegreeWorks, the overflow hours from Gen Ed courses are not handled in the way the catalog describes it; the overflow hours are typically adjusted by lowering the hours required in Free Electives, so the checklists reflect that students need 6 hours of Area F Lower-Division Electives at the 2000-level.

**Upper Division Major Requirements Updates and DegreeWorks Practices Since Fall 2007**

- MATH 4700 Capstone Experience has the following note in the F’07 catalog: *The capstone experience might be an internship, faculty-directed research project, or special topics course. All Capstone experiences require pre-approval by the department curriculum committee. This approval process must be initiated by the student (through his or her advisor) at least once semester before the capstone experience is to be undertaken.*

- With the implementation of the designed MATH program requirements in F’13, the last Capstones are completed in SU’13. After that point, students must take an appropriate MATH/STAT course to replace the hours from MATH 4700; with direction and approval from their faculty advisor, students typically substitute a MATH/STAT 4000-level course. You must obtain written approval from your assigned faculty advisor (via email) to use an alternate course as a Capstone Experience. The prereq of MATH 4361 Modern Algebra I becomes MATH 2390 Intro to Logic, Set Theory, and Proofs and MATH 3260 Linear Algebra I; the prereq of MATH 4381 Real Analysis I becomes MATH 2390. Mathematics Education majors have an alternative course of MATH 3390 Intro to Mathematical Systems that is also acceptable as MATH 2390.

- In F’15, MATH 3310 was renamed and renumbered to MATH 2306 Ordinary Differential Equations. MATH 3322 Graph Theory and MATH 3324Enumerative Combinatorics are redesigned courses from the previous MATH 3322 Discrete Mathematics I & MATH 4322 Discrete Mathematics II courses offered at both KSU and the previous MATH 2345 Discrete Mathematics and MATH 3396 Combinatorics courses offered at SPSU. The prereqs for both of these new/redesigned MATH 3322 & MATH 3324 courses are either MATH 2345 Discrete Mathematics or MATH 2390 Intro to Logic, Set Theory, & Proofs. Students can receive credit for both MATH 3322 Discrete Mathematics I (if they took it at KSU up through SU’15) and MATH 3322 Graph Theory (if they take it at KSU F’15 or later). As an alternative to MATH 3322 Discrete Mathematics I, students can take either MATH 3322 Graph Theory or MATH 3324 Enumerative Combinatorics in its place; the unused option becomes an additional choice for a Major Elective. MATH 3332 Probability & Inference has a new name.

**Major Electives and Other Upper-Division Electives Updates and DegreeWorks Practices Since Fall 2007**

- In DegreeWorks, the Upper Division Concentration-Based Electives were renamed as Major Upper-Division Electives or Major Electives (depending on your catalog year). The F’07 catalog defines Major Electives as “15 hours of any 3000 or 4000 level MATH or STAT course except for those MATH courses noted in the catalog as being intended only for Early Childhood Education majors, and also has the following note: It is recommended that these courses will be chosen from among those that are specified for one of the specific concentration areas described at math.kennesaw.edu/resources/advising/concentrations. A minimum of 24 of the 27 hours of upper division concentration-based electives must be courses at the 3000 or 4000 level. Up to 3 hours of upper level concentration-based electives can be satisfied using “overflow” hours that have been accumulated from science courses taken in Area D.” Therefore, it is implied that 12 hours would then be Other Upper-Division Electives, except that 3 hours can be from overflow from Area D Sciences not already accounted for in Area F overflow.

- However, in DegreeWorks since F’08, the overflow hours are not coded to work out in the way the catalog describes it; with approval from the Department of Mathematics, the DegreeWorks practice is that the overflow hours obtained from any place within the degree are typically adjusted by lowering the hours required in Free Electives. The checklists reflect this practice: students need 6 hours of Area F Lower-Division Electives at the 2000-level, there are 12 hours of Major Upper-Division Electives that have to be appropriate for the MATH/STAT 3/4000-level, there are 15 hours of Other Upper-Division Electives that can be any 3/4000-level courses, there is 1 hour of overflow from MATH 1190 in Area D that lowers the remaining Free Electives needed to 11 hours instead.

- If students don’t have MATH 3390 in Major Electives by the end of F’13, then as of SP’14, they will have to take MATH 2390 in Area F or use MATH 2390 as a substitution for MATH 3390.
In F’13, there are six new MATH/STAT elective options: MATH 3405 Probabilistic Foundations of Actuarial Science; the prereqs are MATH 2203 Calc III and MATH 3332 Probability & Inference. MATH 4310 Partial Differential Equations; the prereqs are MATH 2203 Calc III and MATH 2306 Ordinary Diff EQ; MATH 3396 Cooperative Study; the prereq is Department Approval; MATH 4699 Undergraduate Research; the prereq is Professor & Department Approval; MATH 4717 Elementary Number Theory; the prereq is MATH 3260. STAT 4030 Programming in R; the prereqs is STAT 3120 or STAT 3125; STAT 4400 Directed Study; the prereq is Professor & Department Approval.

In F’15, with the consolidation, there are five new courses and a lot of updates to courses, names, numbers, titles, descriptions, and prereqs: MATH 3000 Software of Mathematics prereqs are CS 1301 and MATH 2202 Calculus II. MATH 3204 Calculus IV is a new course; the prereq is MATH 2203 Calculus III. MATH 3332 Graph Theory replaced MATH 3322 Discrete I; the prereq is MATH 2390 Proofs or MATH 2345 Discrete. MATH 3324 Enumerative Combinatorics replaced MATH 4322 Discrete II; the prereq is MATH 2390 Proofs or MATH 2345 Discrete. MATH 3496 Elementary Number Theory is renumbered from MATH 4717; the prereq is MATH 2390 Proofs. MATH 3696 College Geometry is a new course; the prereq is MATH 2202 Calculus II. MATH 4391 Complex Analysis has a new name. MATH 4596 Topology is a new course; the prereq is MATH 2390 Proofs. STAT 4030 Programming in R prereq is STAT 3010 Computer Applications of Statistics or STAT 3125 Biostatistics. MATH 4322 Discrete Mathematics II and MATH 3323 Computer Applications of Discrete Modeling are discontinued; if you had credit at KSU for either of these prior to F’15, then of course, you can still use it towards your degree requirements.

Other Updates, Notes, and Changes

In July 2014, the Department of Mathematics and Statistics split and became the Department of Mathematics (still at math.kennesaw.edu) and the Department of Statistics and Analytical Sciences (See stats.kennesaw.edu). The College of Science and Mathematics Advising Center was restructured in a way that the CSMAC advisors left their ‘home’ departments to report under the CSM Dean and CSM Associate Dean of Student Success (See science.kennesaw.edu/advising).

In F’15, the Department of Mathematics and the two MATH majors are officially housed on the Marietta campus, while the MATH ED major will be chiefly on the Kennesaw campus. This means it is likely that some MATH classes will frequently only be available on the Marietta campus, so students should be careful about planning their track/minor coursework that may end up being on the Kennesaw campus. There will be a shuttle between the two campuses.

As of March 2015, KSU policies and Department of Mathematics policies for Internships, Directed Study, and Undergraduate Research are included on the checklists.

Due to the recent 2013 updates to the MATH curriculum and the 2015 consolidation, substitutions for the old/recent/new courses may be necessary until the kinks are worked out; email math@kenensaw.edu or see advisor for assistance.