

Why major in math?



Figure 1: Average Projected Salaries by Discipline – Bachelor's Degrees

Broad Category	2015 Average Salary
Engineering	\$62,998
Computer Science	\$61,287
Math & Sciences	\$56,171
Business	\$51,508
Agriculture & Natural Resources	\$51,220
Healthcare	\$50,839
Communications	\$49,395
Social Sciences	\$49,047
Humanities	\$45,042

Source: *Salary Survey January 2015*, National Association of Colleges and Employers

W&M Math major graduates

In May 2016, 70 students graduated from W&M (standard, applied and teaching) Mathematics major, and 5 graduated from CAMS major.

Job Placements

- ▶ Accounting/Consulting firms: Deloitte, Ernest-Young, etc.
- ▶ Financial/banking firms: Capital One, Wall Street, etc.
- ▶ Federal/State Government: Federal Trade Commission, Department of Defense
- ▶ IT companies: Google, Facebook, Microsoft
- ▶ Military: Navy Research Center,
- ▶ Secondary Teaching: high schools, middle schools in Virginia

Grad School

- ▶ Math: UC Berkeley, U Va, U Maryland, Rice, U Arizona, U NC
- ▶ Stat, Data Sci, OR: Yale, Cornell, Northwestern, NC St, Lehigh
- ▶ Physics, Economics: Harvard, UC Berkeley, Cal Tech, U Mich, Duke, Georgetown
- ▶ Engineering: Columbia, Harvard, Va Tech

Math Majors in W&M

1. Standard Concentration
2. Applied Mathematics Concentration
 - 2.1 Computational Mathematics
 - 2.2 Operations Research
 - 2.3 Probability and Statistics
 - 2.4 Scientific Applications
3. Pre-College Mathematics Teaching Concentration
4. Computational and Applied Mathematics and Statistics, Applied Statistics Track
5. Computational and Applied Mathematics and Statistics, Mathematical Biology Track

The Computational and Applied Mathematics and Statistics (CAMS) program is an inter-disciplinary program drawing from the expertise of faculty in Applied Science, Biology, Economics, and Mathematics departments.

<http://www.wm.edu/as/mathematics/undergrad/major/index.php>

<http://www.wm.edu/as/cams/>

Common Requirements for Math Majors

Basic requirement:

- ▶ Core courses: Math 111/131, 112/132, 211, 212/213, 214
- ▶ Writing Requirement: Math 300 (1 credit), **or** Math 495-496 (6 credits)
- ▶ Computing Requirement: CS 141 (also CS 241 for Appl. Math)
- ▶ Math 307 (abstract algebra) and (**or** for Appl. Math) Math 311 (elementary analysis)

Course requirement:

- ▶ (Standard Math) **three** other three-credit 400 level mathematics courses and **two** other three-credit mathematics course at the 300-400 level, which cannot include both Math 351 and Math 451
- ▶ (Applied Math) at least **six** distinct three-credit courses at the 300-400 level with at least five being chosen from the four applied areas listed below and meeting the breadth and depth requirement
- ▶ Math 495-496 can substitute one 300-400 level course

<http://www.wm.edu/as/mathematics/undergrad/major/standard/rd-catalog-requirements/index.php>

<http://www.wm.edu/as/mathematics/undergrad/major/appliedmath/rd-catalog-requirements/index.php>

300-400 Math Courses

- ▶ Algebra in depth (MATH 307): elective courses chosen from MATH 405, 408, 412, 430, and 432
- ▶ Analysis in depth (MATH 311): elective courses chosen from MATH 403, 405, 416, and 428
- ▶ Operations Research/Actuarial Science in depth: elective courses chosen from MATH 323, 413, 424, and 432
- ▶ Differential Equations in depth: elective courses chosen from MATH 302, 345, 441, 442
- ▶ Computational Mathematics in depth: elective courses chosen from MATH 408, 413, 414, CS 426
- ▶ Probability and Statistics in depth: elective courses chosen from MATH 352, 451, 452, 459, ECON 408, CS 616, CS 680
- ▶ Scientific Applications in depth: elective courses chosen from MATH 302, 345, 405, 408, 417, 441, 442, PHYS 301

Math major: DO NOT take MATH 106 or 351

What to take next?

After Math 211, 212/213, 214:

Math 302 (ODE), 307, 309 (intermediate linear algebra), 311, 323(OR), 332 (new, graph theory), 408 (advanced linear algebra), 412 (number theory), 413/414 (numerical analysis), 416 (geometry), 432 (combinatorics), 451 (probability)

After Math 307:

Math 430 (algebra II)

After Math 311:

Math 403 (intermediate analysis), 405 (complex analysis), 426 (topology), 428 (functional analysis)

After Math 302:

Math 417 (vector calculus), 441 (ODE II), 442 (PDE)

After Math 451:

Math 352 (data analysis), 424 (OR stochastic) 452 (Mathematical Statistics),

CAMS major

The Computational and Applied Mathematics and Statistics (CAMS) program is an inter-disciplinary program drawing from the expertise of faculty in Applied Science, Biology, Economics, and Mathematics departments. In CAMS, applications are the primary driver of the research agenda for scholarly activity, with the objective to develop skills in mathematical modeling, data analysis, and computer simulation. Upon completion of the CAMS program, students will be well prepared for a career in mathematics, industry, and the sciences.

CAMS Applied Statistics Track:

Math: Math 111/131, 112/132, 211, 212/213, 214, 451, 452, (two of 352, 424, 459)

CS: CS 141, 241, (three of 301, 303, 421, 426 or 6**)

Econ: Econ 101, 102, 303, (three of 308, 380, 400, 407, 408, 415)

CAMS Mathematical Biology Track:

Math: Math 111/131, 112/132, 211, 212/213, 345(or Biol 325), APSC 351 (or APSC 456), (two of 351, 352, 451, 452, Biol 327)

CS: CS 141, 241, (one of 303, 426, 520, Phys 256)

Biol: any two BIOL 300 level or above courses

more Math: two of APSC 327, 450, Chem 341, 414, Math 302, 413, 414, 441, 442, Phys 403

Conclusion

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- ▶ **Be a Math major!**
- ▶ If you want to go to graduate school (PhD level) in Math, Phys, Engineering, Econ/Finance, then choose standard or applied math.
- ▶ If you want to go to graduate school (MS level) in Stat, Data Sci, Finance, then choose standard, applied math or CAMS applied stat.
- ▶ If you want to go to graduate school (PhD/MS level) in Life Sci, Med Sci, Marine Sci, then choose standard, applied math or CAMS math biol.
- ▶ If you will join work force after graduation, then choose any of standard, applied math or CAMS applied stat, CAMS math biol.
- ▶ Form: https://www.wm.edu/offices/registrar/documents/degree/declaration_of_major_form.pdf
- ▶ Instruction: http://www.wm.edu/as/undergraduate/advising/for_students/exploring-majors/majors/index.php
- ▶ I can help you with declaring standard, applied math or CAMS math biol majors.