

**Checksheet: B.S. in Mathematics, Applied Option**

**Part 1 General Requirements [45-49 credits]**

**First Year Experience Course [1 credit]**

SCI	I120	1	
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(Not required if student transfers with 18 or more credit hours.)

**English and Communication [9 credits]**

ENG	W131 or W140 (honors)	3	
ENG		3	
COMM	R110	3	

Grade of C or better required for each composition (ENG) course. For second ENG course select from: ENG W270, W231, W230, W320; or TCM 22000 or 32000.

**Modern Foreign Language [8 credits]**


American Sign Language is acceptable.

**Arts & Humanities [3 credits]**

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See General Education Common Core Course Options for Math Majors list for acceptable courses.

**Social Sciences [3 credits]**

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See General Education Common Core Course Options for Math Majors list for acceptable courses.

**Additional Arts & Humanities or Social Sciences [3 credits]**

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See General Education Common Core Course Options for Math Majors list for acceptable courses.

**Cultural Understanding [3 credits]**

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May be satisfied through Modern Foreign Language Requirement. See General Education Common Core Course Options for Math Majors list for acceptable courses.

**Computer Science [3-4 credits]**

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Grade of C or better required. Course must be in a higher level programming language. Approved courses include CSCI 23000, N305, N311, N331, N335, N345. CSCI 23000 recommended. See advisor for approval of course not on list.

**Life and Physical Sciences [15 credits]**

PHYS	15200	4	
PHYS	25100	5	

At least 4 courses selected from BIOL, CHEM, GEOL, PHYS, or AST.  
 PHYS 15200 and 25100 (or more advanced physics courses) must be 2 of the 4 required science courses. At least 1 course must contain a laboratory. See General Education Common Core Course Options for Math Majors list for acceptable courses.  
 Grade of C- or better required in each course, except for at most one grade of D+ or D.  
 The following courses are NOT acceptable: all AGR courses; AST A130; BIOL N100, N120, N200; CHEM C100, C101, C102, C110; GEOL G130; PHYS 01000, 10000, 14000, 20000, 21800, 21900.

Except for laboratory courses combined with corresponding lecture courses, 1 credit hour and, in general, 2 credit hour courses do not apply in this area.

A minimum of 120 credits must be completed for graduation. This total must include residence of at least 2 semesters at IUPUI and completion of at least 32 credits at IUPUI in courses at the 300-level or above.

**Want to learn more about careers in applied math? [www.ams.org/careers/](http://www.ams.org/careers/)**

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## Part 2 Applied Mathematics Option Requirements

**Major Area:** A grade of C or better is required in each course.

G.P.A. in major courses must be 2.5 or above.

### Core Courses [33 credits]

MATH 16500 (F, S, SSI)	Anal. Geom. & Calculus I (P: 15400 or 15900)	4	
MATH 16600 (F, S, SSII)	Anal. Geom. & Calculus II (P: 16500)	4	
MATH 17100 (F, S, SSI, SSII)	Multidimensional Math (P: 15400 or 15900)	3	
MATH 26100 (F, S, SSI)	Multivariate Calculus (P: 16600 and 17100)	4	
MATH 26600 (F, S, SSII)	Differential Equations (P: 16600 & 17100, C: 26100)	3	
MATH 35100 (F, S)	Linear Algebra (P: 26100)	3	
MATH 41400 (F)	Numerical Methods (P: 26600 & a high-level programming course)	3	
MATH 42100 (F odd) OR MATH 42300 (F even)	Linear Prog & Opt Tech (P: 26100 & 35100) OR Discrete Mod (P: 26600 & 35100)	3	
MATH 42600 (S)	Applied Modeling (P: 26600 & PHYS 15200)	3	
MATH 44400 (F)	Foundations of Analysis I (P: 26100, 30000)	3	

### Required Advanced Electives [12 credits]

MATH 30000 (F, S)	Logic & Fnd of Alg (P: MATH 16500, 17100)	3	

MATH 30000 is a prerequisite for advanced mathematics courses. Courses in CSCI or other School of Science departments that have an appropriate mathematical content may be selected with advisor's approval. Normally, no more than 6 credits of non-math/stat courses will be approved.

**The 45 credit hours of math must include at least two 2-course sequences (6 cr hrs each) from the list below.**

**At least one \* sequence** must be chosen as one of the two course sequences. No overlaps allowed.

Generally, students may not select both Scientific Computing & Theoretical Computer Science.

*Abstract Algebra* - MATH 45300 & 45400

*Algebra & Number Theory* - MATH 45600 & 45300

\**Biomathematics* - Biomathematics crse & STAT 35000 or higher

*Comp Analysis and Diff Equations* - MATH 42500 & 52000

*Differential Geometry* - MATH 46200 & 56200

*Foundations of Analysis* - MATH 44400 & 44500 or higher

*Linear Algebra* - MATH 35100 & 35300

*Topology* - MATH 32101 & 57100

\**Differential Equations* - MATH 52000 & 52200

\**Numerical Analysis* - MATH 41400 & CSCI 52000

\**Probability & Stat* - Two STAT courses, 35000 or higher

\* *Scientific Computing* - CSCI 47500 & 47600

\**Theoretical Computer Science* - CSCI 34000 & 48400

### Capstone Experience [2 -3 credits]

MATH	49200		
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### Secondary Area of Concentration [18 credits]


At least 3 courses beyond the introductory level. A secondary area of concentration in one of the physical sciences or in a subject which makes serious use of mathematics, such as physics, computer science or economics is desirable.

### General Electives [7-10 credits]


Courses taken outside the School of Science and Liberal Arts must receive advisor's approval. No more than 6 credits of clinical, athletic, or performing arts courses will be approved.

Independent Study (correspondence) courses for general electives up to a maximum of 12 credits may be taken with the permission of the Associate Dean for academic programs in the School of Science.

Courses taken on a pass/fail option will be applied only as general electives and not toward degree area requirements of the school or department.