APPLIED MATHEMATICS 345001BS
Bachelor of Science

The following information has official approval of the **Department of Mathematics**, but is intended only as a supplemental guide. Official degree requirements are established at the time of transfer and admission to the degree-granting college. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

Italicized courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at http://www.uakron.edu/advising/docs/General_Education_Guide.pdf.

1st Year	**Fall Semester**	Credit Hours	Prerequisites
	English Composition I Requirement (Note d)	3	Appropriate placement by advisor
	Natural Science Requirement (Note a)	4	
7700:101	Beginning Language I **-OR-** American Sign Language I (Note c)	4 or 3	
3460:221	Analytic Geometry-Calculus I	4	3450:149 with a grade of C- or better or equivalent
Total		**14-15**	

1st Year	**Spring Semester**		
	English Composition II Requirement (Note d)	3	3300:111 or equivalent
7700:102	Beginning Language II **-OR-** American Sign Language II (Note c)	4 or 3	Beginning Language I **or** 7700:101
	Social Science Requirement (Note b)	3	
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3450:222	Analytic Geometry-Calculus II	4	3450:221 with a grade of C-or better or equivalent
Total		**16-17**	

2nd Year	**Fall Semester**		
3450:223	Analytic Geometry-Calculus III	4	3450:222 with a grade of C- or better
3470:461	Applied Statistics	4	3450:222 or equivalent
7700:201	Intermediate Language I **-OR-** American Sign Language III (Note c)	3	Beginning Language II **or** 7700:102
	Free Elective (Notes b, e)	3	
	Speech/Oral Communication Requirement	3	
Total		**17**	

2nd Year	**Spring Semester**		
7700:202 7700:222	Intermediate Language II **-OR-** American Sign Language IV **-AND** Survey of Deaf Culture in America (Note c)	3 or 3 2	Beginning Language II **or** 7700:201 Sign Language students only
3450:335	Introduction to Ordinary Differential Equations	3	3450:223 with a C- or better
3460:209	Computer Science I	4	3450:145 or 3450:149 or equivalent with a C- or better
	Natural Science Requirement (Note a)	4	
	Physical Education/Wellness Requirement	1	
	Free Elective (Notes b, e)	3	
Total		**18-20**	

3rd Year	Fall Semester		
3400:210 **or** 3400:221	*Humanities in the Western Tradition* ***-OR-*** *Humanities in the World Since 1300*	4	32 credits & 3300:112 or equivalent 32 credits & 3300:112 or equivalent
	Free Elective (Notes b, e)	3	
3450:425	Complex Variables	3	3450:223 with a C- or better
3450:312	Linear Algebra	3	3450:223 with C- or better or permission
xxxx:3xx/4xx	Upper Level Elective (Notes b, e)	3	
Total		**16**	

3rd Year	Spring Semester		
	Humanities Requirement	3	
3450:307	Fundamentals of Advanced Math	3	3450:223 with a grade of C- or better
xxxx:3/4xx	Upper Level Elective (Notes b, e)	3	
	Free Elective (Notes b, e)	3	
	Free Elective (Notes b, e)	3	
	Area Studies/Cultural Diversity Requirement	2	
Total		**17**	

4th Year	Fall Semester		
	Humanities Requirement	3	
3450:421	Advanced Calculus I	3	3450:223 with a grade of C- or better, 3450:307 is highly recommended
3450:427	Applied Numerical Methods I	3	3450:222 and 3460:209 with grades of C- or better or permission
xxxx:3/4xx	Upper Level Applied Area Elective (Notes b, e)	3	
	Free Elective (Notes b, e)	3	
Total		**15**	

4th Year	Spring Semester		
3450:428	Applied Numerical Methods II	3	3450:335 and 3450:427 with grades of C- or better or permission
3450:436	Mathematical Models	3	3450:335 with grade of C- and a six hour sequence in an approved applied area
xxxx:3/4xx	Upper Level Applied Area Elective (Notes b, e)	3	
	Free Elective (Notes b, e)	3	
	Area Studies/Cultural Diversity Requirement	2	
Total		**14**	

	Total Credits for Degree	**128 min**	

ALERT: 1) By the end of your first 48 credit hours attempted, you must have completed your General Education English, Math, and Communications (Speech) requirements; 2) By the end of your first 48 credit hours attempted, you must have declared a major and transferred to (been accepted by) a degree granting college at The University of Akron.

NOTES:

a. The student in Applied Mathematics should note the requirement of a 6 credit sequence at the 300/400 level in some approved applied area such as chemistry, physics, engineering, computer science, or economics. For this reason, these students are strongly urged to satisfy part of the social science requirement by taking 3250:200, Principles of Microeconomics or 3250:244, Economic Analysis. Students are also urged to satisfy the Natural Science Requirement with 3150:151, Principles of Chemistry I, or 3650:291, Elementary Classical Physics I, and the appropriate sequential course depending on the student's prospective applied area.

b. Electives can be tailored in an area of concentration such as, engineering, physics, chemistry, computer science, social science, economics or business.

c. Demonstration of ability to use another language by completion of the second year of a foreign language or sign language is required. See your advisor for placement. Please note that all four semesters must be completed in the SAME language and it's recommended you begin your first language class as soon as possible.

d. For English Composition I, 3300:111 (English Composition I) or 3300:113 (African-American Language and Culture I) are the recommended classes to the meet the General Education English requirement. 2020:121 (English) fulfills the English Composition I requirement. For English Composition II, 3300:112 (English Composition II) or 3300:114 (African-American Language and Culture II) are the recommended classes to the meet the General Education English requirement. 2020:222 (Technical Report Writing) fulfills the English Composition II requirement.

e. General electives can be any course not already required by your major and Upper Level (300/400) electives can be any course in or outside your major excluding General Education courses and workshops.

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IN GENERAL: The recent rise in the field of automation and computing has been a significant factor in the greatly increased need for mathematicians at the Bachelor's level and especially at the higher degree levels. The physical and engineering sciences have been traditionally dependent upon mathematics, and, due to recent developments, a similar situation exists with the biological, behavioral, and social sciences. The early emphasis in college mathematics is on problem-solving, but this is later subordinated to the more important task of formulation of problems in mathematical language and in dealing with mathematical structures and abstract ideas**.** Hence, prospective mathematicians should plan to pursue college and graduate training to the highest level of which they are capable; i.e., a student obtaining a B average should plan to study for a Master's degree.

JOB DESCRIPTION:
I. Teaching - Job openings in teaching exist in junior high and high schools, in community or junior colleges, and in colleges and universities. These three have different requirements as to degree levels and subject matter taken as electives.

II. Industry - Industrial mathematicians are in demand, and it is estimated that many of them need training beyond a Bachelor's degree. Many courses of a theoretical nature are needed, but the primary concern of a mathematician in industry is the actual solution of problems. Particular types of jobs include consulting, research, operations research (for management decisions), and computing; and it is very desirable to have additional background in such fields as engineering, physics, chemistry, or economics.

III. Government - Government service (or service at a university working on a government contract as a mathematician immediately after undergraduate school) usually has some computational aspect, i.e., finding numerical solutions to routine problems. The level of work becomes more difficult, and the responsibility increases with experience and positions. In general, jobs are similar to those in industry. Some government jobs demand a working knowledge of languages.

IV. Actuarial profession - This profession requires a competent mathematical and statistical ability, adequate economic and financial knowledge and wide social information. Most actuaries are hired by life insurance companies, and their primary concern is with calculating premium rates and preparing tables of death rates. However, there are casualty and fire actuaries and consulting actuaries/ the latter is often involved with pension plans, retirement, and welfare. A Bachelor's degree is very useful, and a broad business background is helpful

V. Salary Level - The starting salary range for various degree levels depends on the job category, the employer, and the job locale. It appears to fluctuate with the cost of living; there is no particular starting salary. The starting salary for mathematicians with the B.S. degree is approximately $50,000 per year.

TRANSFER TO COLLEGE OF ARTS & SCIENCES: Students should apply to the college upon the attainment of:

- ✓ a cumulative GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ a major GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ 30 credits completed including both required English composition courses and 3 credits of mathematics or statistics that meets the General Education requirement

Students can arrange inter-college transfers through an appointment with their academic advisor; advisor contact information is listed in "My Akron."

PLACEMENT: A student is encouraged to check with his/her major department and with the Career Center, Student Union 211, (330) 972-7747, regarding employment opportunities in the field.

COLLEGE OF ARTS & SCIENCES:

Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language or sign language and a minimum of 47 credits of 300/400 level courses (excluding workshops and General Education courses) consisting of either:

- Upper level (300/400) courses both in and outside the student's major
- Any courses outside the major department as specified in and approved by the student's major department chair (permission should be obtained prior to enrollment) except workshops and General Education courses

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