

**Recommended Academic Plan for Bachelor of Science Mathematics, Applied Mathematics Option (MTHBD at Penn State Erie) – Effective Spring 2009.**

<b>Semester 1</b>		<b>Credits</b>	<b>Semester 2</b>		<b>Credits</b>
<i>MATH 140(GQ) Calculus with Analytic Geometry I</i>		4	<i>MATH 141(GQ) Calculus with Analytic Geometry II</i>		4
ENGL 15 or 30 (GWS)		3	<i>MATH 220 (GQ) Matrices</i>		2
NATURAL SCIENCE (GN)		4	NATURAL SCIENCE (GN)		4
<i>CSE 121 (GQ) Introduction to Programming Techniques</i>		3	<b>CSE 122-Intermediate Programming Techniques</b>		3
First-Year Seminar		1	ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3
Total Credits:		15	Total Credits:		16
<b>Semester 3</b>		<b>Credits</b>	<b>Semester 4</b>		<b>Credits</b>
CAS 100 A, B, or C (GWS) Effective Speech		3	MATH 311W Concepts of Discrete Mathematics		4
<b>MATH 230 Calculus and Vector Analysis</b>		4	<b>MATH 251 Ordinary and Partial Differential Equations</b>		4
STAT 301-Statistical Analysis I		3	STAT 401-Experimental Methods		3
Health and Physical Activity (GHA)		1.5	NATURAL SCIENCE (GN)		3
ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3	Health and Physical Activity (GHA)		1.5
Total Credits:		14.5	Total Credits:		15.5
<b>Semester 5</b>		<b>Credits</b>	<b>Semester 6</b>		<b>Credits</b>
MATH 312 Concepts of Real Analysis		3	MATH or STAT course from group (1)		3
MATH or STAT course from group (1)		3	Computer course from group (3)		3
MATH or STAT course from group (1)		3	MATH or STAT course from group (1)		3
MATH course from group (2)		3	ENGL 202C (GWS) Effective Writing: Technical		3
ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3	ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3
Total Credits:		15	Total Credits:		15
<b>Semester 7</b>		<b>Credits</b>	<b>Semester 8</b>		<b>Credits</b>
MATH or STAT course from group (1)		3	Select 3 credits of supporting courses from the School approved list.		3
Computer course from group (3)		3	Select 3 credits of supporting courses from the School approved list.		3
ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3	ARTS (GA), HUMANITIES (GH) or SOCIAL SCIENCE (GS)		3

MATH course from group (2)	3	Elective course	3		
Select 3 credits of supporting courses from the School approved list.	3	Elective course	3		
Total Credits:		15	Total Credits:		15

- **Bold type** indicates courses requiring a quality grade of C or better.
- *Italics* indicate courses that satisfy both major and General Education requirements.
- ***Bold Italics*** indicate courses requiring a quality grade of C or better and that satisfy both major and General Education requirements.
- GWS, GHA, GQ, GN, GA, GH, and GS are codes used to identify General Education requirements.
- US, IL, and US;IL are codes used to designate courses that satisfy University United States/International Cultures requirements.
- W is the code used to designate courses that satisfy University Writing Across the Curriculum requirement.

### Scheduling patterns:

- Some courses are offered only in the fall or in the spring semester, and some upper-level courses are offered in alternate year pattern. Consult the advisor for suggestions on scheduling them.

### Notes:

- In order to be eligible for entrance to the mathematics major, a student must have attained at least a 2.00 cumulative GPA and completed MATH 140 and 141 earning a grade of C or better in both courses.
- Students graduating from this major must achieve a minimum grade-point average of 2.00 and earn a grade of C or better in all 300- and 400-level courses within the Prescribed, Additional, and Supporting courses as specified in Senate Policy 82-44. If a student receives a grade below C, s/he must repeat that course or a School approved alternative, and earn a grade of C or better.
- Students should learn if they can apply their area of application courses towards a minor in that area.
- Courses with a US/IL designation may also be used to satisfy a GA/GH/GS/GN requirement. A course with a US and IL designation may not be used to satisfy both US and IL courses.
- A student needs at least one course with the US designation and one course with the IL designation.
- A student must earn at least a total of 120 credits for graduation.

Group (1): MATH 310, 403, 412, 449, 455, 456, 482 STAT 414, 415, 461, 464

Group (2): MATH 421, 427, 429, 435, 436, 465

Group (3): CMPSC 221, 312, 335, 431, 458, 474, MATH 455, 456