Mathematics (3450)

B.S. - Bachelor of Science and M.S. - Master of Science in Polymer Engineering

Major: Applied Mathematics (345021BS and 984021MSPE)

Buchtel College of Arts and Sciences

Learning Outcomes

Students will demonstrate a working knowledge of standard topics in: calculus, linear algebra, differential equations and advanced calculus (theory and analysis of basic rules of calculus).

Students will demonstrate a working knowledge of standard topics in: applied numerical methods, mathematical models and statistics.

Students will demonstrate a working knowledge of standard topics in an application area, such as applied mathematics, computer science, chemistry, physics, engineering, economics, etc.

Students will demonstrate an ability to communicate mathematical results in written form.

Students will be able to formulate, analyze and solve mathematical models.

Students will be able to apply mathematical theories to solving routine and non-routine mathematical models.

Year 1: Fall	Crs	Spring	Crs
3450:221 Analytic Geom Calc I	4	3450:222 Anal Geom Calc II	4
3150:151 Principles of Chemistry I	3	3150:153 Principles of Chem II	3
3150:152 Principles of Chemistry I Lab	1	3150:154 Qualitative Analysis	2
3300:111 English Composition I	3	2020:222 Tech Report Writing	3
7600:105 or 106 Oral Communication	3	3250:244 Intro. to Economic Analysis	3
Social Science Course (Not Economics)	3		
		Total	**15**
Total	**17**		
Year 2: Fall	**Crs**	**Spring**	**Crs**

3450:223 Analytic Geom Calc III	4	3450:335 Diff Equations	3
3150:263 Organic Chemistry I	3	3450:312 Linear Algebra	3
3650:291 Elementary Classical Physics I	4	3460:209 Comp Science I	4
4200:200 Material and Energy Balances	4	3650:292 E. Cl Physics II	4
Physical Education Courses	1	4200:225 Equil Thermodynamics	3
3400:210 Hum. Western Tradition	4		
			17
Total	**20**		
		Total	

Summer	**Crs**
Area Studies and Diversity	2
Area Studies and Diversity	2
Total	**4**

Year 3: Fall	**Crs**	**Spring**	**Crs**
3450:427 Applied Num Methods I	3	3450:428 App Num Meth II	3
3470:461 Applied Statistics I	4	**3450:539 Adv Eng. Math II	3
4200:321 Transport Phenomena	3	3450:436 MathModels	3
4300:201 Statics	3	4300:202 Intro Mech of Solids	3
3450:307 Fundamentals of Adv Math	3	Humanities Elective Course	4
		Total	
Total	**16**		**16**

Summer	**Crs**
Undergraduate Elective Credits	5
3150:264 Organic Chemistry II and 3150:265 Organic Chemistry Lab I are recommended	
	5
Total	

Year 4: Fall	**Crs**	**Spring**	**Crs**

3450:421 Advanced Calculus I	3	3450:422 Advanced Calculus II	3
Humanities Elective Course	3	**9841:550 Eng. Prop of Poly	3
9841:641 Polymer Mat'ls Engr Science	2	9841:661 Poly Reactor Eng.	3
9841:650 Basic Engineering for Polymer Engineers	3	300/400 Level Eng. or Sci Elec	3
9841:699 Master's Thesis	4	9841:699 Master's Thesis	3
Total	**15**	**Total**	**15**
Summer		**Crs**	
2000:301 Cooperative Education		0	
OR			
9841:699 Master's Thesis		1-6	
Year 5: Fall		**Spring**	
9841:601 Seminar: Poly Eng	1	9841:601 Seminar: Poly Eng	1
9841:611 Structural Characterization	2	9841:622 Anal and DesignOp I	3
9841:621 Rheology of Polymeric Fluids	3	*Undergrad Elect Credits	3
9841:651 Polymer Engr. Lab.	3	9841: 6xx Elective(s)	3
9841:699 Master's Thesis	1-6	9841:699 Master's Thesis	2
Total	**10-15**	**Total**	**12**

Note: Courses marked with * are possibly graduate level courses to be applied toward the elective requirement of the bachelor's degree. Courses marked with ** are to be applied to the elective requirements of **both** the bachelor's and master's degree. All general education and college requirements are satisfied in this accelerated five-year BS/MS program.

Degree Distribution Requirements

This curriculum guide is a recommended plan of study. Students with questions about degree requirements should contact an academic advisor.

300/400 Electives of which at least six credits are from some approved applied area such as Chemistry, Computer Science, Physics, Economics, Engineering, etc.

7700:101,102,201,202 & 222 may be substituted for Modern Language (35xx) courses.

The following credit hour requirements apply to this 5yr degree: Undergraduate - 122 minimum total credits; 32 credits in residence; the final 32 credits must be taken from The University of Akron. Graduate – 34 minimum total credits; 24 credits in residence.