MATHEMATICS-THEORETICAL EMPHASIS (STARTING IN MTH 110)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE DEGREE

THIS IS A **GENERAL** CURRICULUM GUIDE AND IS NOT APPLICABLE TO EVERY STUDENT. IT IS IMPORTANT TO MEET WITH YOUR ADVISOR.

Year One

[1]MTH 110 Algebra
    Prerequisite: MTH 097 or proficiency through math placement
	4	[1]MTH 124 Precalculus: Functions and Models [GE Math]
		    Prerequisite: MTH 110 or proficiency through math placement
		    SEE NOTE BELOW REGARDING OPTIONS FOR THIS COURSE
			5

Gen Ed [GE Art] or [2]WRT 120 (self-placement)	3	[2]WRT 130 or 150 [GE Writing]	3/4
Gen Ed [GE Physical/Life Science with Lab]	4	Gen Ed [GE Social/Behavioral]	3
Gen Ed [GE Historical Analysis]	3	[3]Elective	3
[3]Elective	1	[3]Elective (if necessary)	1
Total	15	*Total*	15-16*

Year Two

[1]MTH 201 Calculus I
    Prerequisites: MTH 122 and MTH 123, or MTH 124, or proficiency through math placement
	4	MTH 202 Calculus II
		    Prerequisite: MTH 201
			4

MTH 204 Linear Algebra I
    Prerequisites: MTH 122 and MTH 123, or MTH 124, or proficiency through math placement
	3	MTH 205 Linear Algebra II
		    Prerequisites: MTH 204 or 302)
			3

Gen Ed [GE Social/Behavioral]	3	[4]MTH 210 SWS Communicating in Mathematics Prerequisites: Gen Ed Foundations – Writing and MTH 201	4
Gen Ed [GE Philosophy and Literature]	3	[6]MTH Elective	3/4
[3]Elective	2/3		
Total	15-16*	*Total*	14-15

Year Three

MTH 203 Calculus III
    Prerequisite: MTH 202
	4	MTH 350 Modern Algebra
		    Prerequisites: MTH 210 and either MTH 204 or 225
			3

STA 312 Probability and Statistics
    Prerequisites: MTH 201
    OR STA 412 Computer Science I
    Prerequisites: MTH 202 and (STA 215 or STA 312)
	3/4	CIS 161 Computational Science (recommended)
		    Prerequisites: MTH 201
		    OR CIS 162 Computer Science I
		    Prerequisites: MTH 110
			3/4

[6]MTH Elective	3	[6]MTH Elective	3
Gen Ed [GE Physical/Life Science without Lab]	3	Gen Ed [GE US Diversity]	3
[3]Elective	1/2/3	[5]MTH Cognate	3
Total	14-16*	*Total*	15-16*

Year Four

MTH 408 Real Analysis I
    Prerequisites: (MTH 203 and one of the following: MTH 315, MTH 331, MTH 350, or MTH 431), or (MTH 210 and permission of instructor).
	3	MTH 495: The Nature of Modern Mathematics
		    Prerequisites: MTH 210, MTH 204, MTH 350, and at least one other 300-400 level mathematics courses
		    OR MTH 496 Senior Thesis
		    (Capstone) Prerequisites: 27 credits in major, major GPA of 3.0 or better, and permission of instructor
			3

[6]MTH Elective 400-level	3		
Issue	3		
Gen Ed [GE Global Perspectives]	3	Issue	3
[3]Elective	3	[3]Elective	3
		[3]Elective	3
		[3]Elective	3
Total	15	*Total*	15

* The block tuition rate is 12-15 credits. You will pay additional tuition for any credits over 15.

MTH 124 is designed for calculus-bound students as a replacement for MTH 122 & 123. While students can still fulfill the MTH 201 prerequisite by taking MTH 122 & 123, MTH 124 is strongly recommended for students who plan to major in mathematics.

[1] **Students must fulfill MTH 110, MTH 122, and MTH 123, or MTH 124 or waive the requirement through math placement. These courses do not count towards the completion of the Mathematics major.**

[2] Students who self-place into WRT 120 should take this course in the fall semester and then take WRT 130 in the winter semester of their first year. Students who self-place into WRT 150 can take in either semester during their first year. Students will not need to take WRT 150 if they have earned credit for the course through AP/Dual Enrollment. A grade of C or better is required in WRT 130 or 150 in order to satisfy the WRT requirement at GVSU.

[3] Elective refers to any course to help you earn the required 120 credits to graduate.

[4] Students must complete a total of two courses with an SWS attribute

[5] Mathematics students must complete three Math Cognate Courses. These courses are listed on the back.

[6] Mathematics students must complete a total of 13 courses in Math. These electives are listed on the back.

[7] For prior engineering majors, MTH 302 can replace MTH 204 and MTH 304 with one additional course needed upon approval from advisor.

[8] For CIS/MTH double majors or prior CIS majors, 225 and 325 together count for 210 & 315 upon approval from advisor.

It is imperative to meet with your faculty advisor and an advisor in the CLAS Academic Advising Center regularly.

The CLAS Academic Advising Center is located in C-1-140 MAK, 616-331-8585.

Online at: http://www.gvsu.edu/clasadvising

Degree Requirements
Mathematics students can pursue a Bachelor of Arts or Bachelor of Science degree. Students who wish to obtain a BA must fulfill 3rd semester proficiency in a foreign language (201 level). The BS requirements are incorporated into the major requirements and include MTH 201, MTH 202, and STA 312.

To earn a degree from GVSU, all students must complete the following: 120 total credits, all major/minor requirements, all general education requirements, at least 58 credits from a 4-year institution, and the last 30 credits of the degree completed through GVSU.

Declaring the Mathematics – Theoretical Major:
1. Log into myBanner from the GVSU homepage
2. Once logged in, select "Student," "Student Records," and then "Change Major"
3. Click on the "Change Major 1/Program" box
4. Click on the down arrow in the box next to "New Major 1/Program"
5. From here scroll down and find "Mathematics - Theoretical." There are two options BA or BS. Click on the option you prefer.
6. Click "Submit" and then click "Change to New Program"

General Education Categories fulfilled by the Mathematics Major:
Mathematical Sciences: MTH 201
Option of choosing HSC 201 as Historical Analysis GE

Additional Courses
Choose from the following list for a total of 13 courses in mathematics, with at least 12 in mathematics (with at least one additional 400-level MTH course besides the required courses above)

(MTH 300 Vector Analysis) **OR** (MTH 401 Math for the Physical Sciences)	MTH 409 Real Analysis II
MTH 304 Analysis of Differential Equations	MTH 431 Non-Euclidean Geometry
MTH 305 Mathematical Modeling	MTH 441 Topology
MTH 315 Discrete Mathematics[6]	MTH 450 Modern Algebra II
MTH 360 Operations Research	MTH 465 Automata and Theory of Computation
MTH 402 Complex Variables	MTH 495 Nature of Modern Math (if MTH 496 is taken as capstone)
MTH 405 Numerical Analysis	MTH 496 Senior Thesis (if MTH 495 is taken as capstone)
MTH 406 Linear Algebra III	MTH 498 Project-Based Applied Mathematics
	STA 412 Mathematical Statistics I (Can only count in one place)
With unit head permission: MTH 380, 399, 480, and 499	

Courses not applicable as Math electives are: MTH 302[5], 312, 322, 323, 324, 325[6], 329, 331, and 490

MTH Cognate Courses		
Required	**Pick ONE of the following**	
CIS 161 Computational Science	BIO 355 Human Genetics	HSC 201 The Scientific Revolution
Or	BIO 375 Genetics	PHI 203 Intermediate Logic
CIS 162 Computer Science I	CHM 351 Introduction to Physical Chemistry	PHY 230 Principles of Physics I
And	CMB 451 Bioinformatics	PSY 300 Research Methods in Psychology
STA 312 Probability and Statistics	CMB 452 Computational Biology	STA 314 Statistical Quality Methods
OR	ECO 400 Econometrics and Forecasting	STA 412 Mathematical Statistics I
STA 412 Mathematical Statistics I (Can only count in one place)	GEO 470 Geophysics	