

# Mathematics BA / Biostatistics BS

## Program Requirements

### General Education Requirements

CIVC 101	Introduction to Civic Engagement	1.0
COM 230	Techniques of Speaking	3.0
COOP 101	Career Management and Professional Development *	1.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
or ENGL 111	English Composition I	
ENGL 102	Composition and Rhetoric II: Advanced Research and Evidence-Based Writing	3.0
or ENGL 112	English Composition II	
ENGL 103	Composition and Rhetoric III: Themes and Genres	3.0
or ENGL 113	English Composition III	
UNIV S101	The Drexel Experience	1.0
UNIV S201	Looking Forward: Academics and Careers	1.0

### Computer Science Sequence

CS 150	Computer Science Principles	3.0
or CS 164	Introduction to Computer Science	
CS 171	Computer Programming I	3.0
CS 172	Computer Programming II	3.0

### Core Mathematics Requirements

MATH 121	Calculus I **	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 210	Differential Equations	4.0
MATH 220 [WJ]	Introduction to Mathematical Reasoning	3.0
MATH 331	Abstract Algebra I ***	3.0-4.0
or MATH 401	Elements of Modern Analysis I	

### Math Major Electives 30.0

Select a minimum of 30.0 credits from the following:

MATH 205	Survey of Geometry	
MATH 221	Discrete Mathematics	
MATH 222 [WJ]	Combinatorics	
MATH 235	Math Competition Problem Solving Seminar	
MATH 238	History of Mathematics	
MATH 250	Mathematics of Investment and Credit	
MATH 285	Differential Equations II	
MATH 300	Numerical Analysis I	
MATH 301	Numerical Analysis II	
MATH 305	Introduction to Optimization Theory	
MATH 311	Probability and Statistics I	
MATH 312	Probability and Statistics II	
MATH 313	Probability and Statistics III	
MATH 316	Mathematical Applications of Symbolic Software	
MATH 318 [WJ]	Mathematical Applications of Statistical Software	
MATH 319	Techniques of Data Analysis	
MATH 320	Actuarial Mathematics	
MATH 321	Vector Calculus	
MATH 322	Complex Variables	
MATH 323	Partial Differential Equations	
MATH 332	Abstract Algebra II	
MATH 387	Linear Algebra II	
MATH 401	Elements of Modern Analysis I ***	

or MATH 331 Abstract Algebra I

MATH 402	Elements of Modern Analysis II	
MATH 422	Introduction to Topology	
MATH 449	Mathematical Finance	
MATH 450	Introduction to Graph Theory	
MATH 475	Cryptography	
MATH 483	Introduction to Monte Carlo Methods	
MATH 489	Tensor Calculus	

### Undergraduate Electives

Free Electives	66.0
Humanities and Fine Arts Electives †	6.0
International Studies Electives	6.0
Science Electives ††	6.0
Social and Behavioral Sciences Electives ‡	6.0
Studies in Diversity Electives	6.0

### Required MS Biostatistics Courses

BST 551	Statistical Inference I	3.0
BST 553	Longitudinal Data Analysis	3.0
BST 555	Introduction to Statistical Computing	3.0
BST 557	Survival Data Analysis	3.0
BST 567	Statistical Consulting	3.0
BST 569	Linear Statistical Models	4.0
BST 570	Generalized Linear Models	4.0
BST 675	Statistical Consulting Lab	1.0
BST 701	Advanced Statistical Computing	3.0

### Required Epidemiology Course

EPI 570	Introduction to Epidemiology	3.0
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### Other Required Courses

BST 699	Data Analysis Project	6.0
MATH 510	Applied Probability and Statistics I	3.0
PBHL 501	Introduction to Public Health	0.0

### Graduate Electives 9.0

Any BST and EPI course at the 500-999 level

<b>Total Credits</b>	<b>229.0-230.0</b>
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\* Students not participating in co-op will take one additional credit of Free Elective instead of COOP 101. COOP 101 registration is determined by the co-op cycle assigned and may be scheduled in a different term. Select students may be eligible to take COOP 001 in place of COOP 101.

\*\* Math majors must pass MATH 121 with a grade of B or higher.

\*\*\* If a student takes both of MATH 331 and MATH 401, then one of these can count as a Mathematics Elective. Up to three mathematics-related courses from other departments may be substituted for Mathematics Electives with departmental permission. MATH special topics courses may be substituted for Mathematics Electives with departmental permission

† Any ARBC, CHIN, FREN, GER, JAPN, KOR, and SPAN courses at the 211-499 level.

Any ARTH, COM, ENGL, HIST, HUM, MUSC, PHIL, THTR, and WRIT courses at the 100-499 level.

PSY 213 or PSY 330.

†† Any BIO, CHEM, ENVS, GEO, NFS, PHEV, and PHYS courses at the 100-499 level, and PHIL 321, PHIL 341, and PHIL 361.

‡ Any ANTH, ECON, HIST, PSCI, PSY, and SOC courses at the 100-499 level.

## Sample Plan of Study

### 4+1, 1 co-op (Accelerated program completed in 5 years)

Students complete undergraduate requirements in four years, then convert to graduate status in the fifth and final year.

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CS 150 or 164	3.0 CIVC 101	1.0 COOP 101*	1.0 VACATION	
ENGL 101 or 111	3.0 CS 171	3.0 CS 172	3.0	
MATH 121	4.0 ENGL 102 or 112	3.0 ENGL 103 or 113	3.0	
UNIV S101 (UG) Science Elective	1.0 MATH 122	4.0 MATH 123	4.0	
	3.0 (UG) Science Elective	3.0 MATH 200	4.0	
		(UG) Social and Behavioral Science Elective	3.0	
	<b>14</b>	<b>14</b>	<b>18</b>	<b>0</b>

Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COM 230	3.0 (UG) Free Electives	10.0 MATH 210	4.0 (UG) Diversity Studies Electives	3.0
MATH 201	4.0 (UG) Humanities/ Fine Arts Elective	3.0 (UG) Free Elective	4.0 (UG) Free Electives	9.0
MATH 220	3.0 (UG) MATH Courses	6.0 (UG) Humanities/ Fine Arts Elective	3.0 (UG) MATH Courses	3.0
(UG) Diversity Studies Elective	3.0	(UG) MATH Course	3.0	
(UG) International Studies Elective	3.0	(UG) Social and Behavioral Science Elective	3.0	
	<b>16</b>	<b>19</b>	<b>17</b>	<b>15</b>

Third Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
MATH 401 or 331	3.0-4.0 UNIV S201	1.0 COOP EXPERIENCE	COOP EXPERIENCE	
(UG) Free Electives	6.0 (UG) Free Electives	8.0		
(UG) International Studies Elective	3.0 (UG) MATH Course	4.0		
(UG) MATH Course	3.0 BST 555	3.0		
BST 569	4.0 BST 570	4.0		
	<b>19-20</b>	<b>20</b>	<b>0</b>	<b>0</b>

Fourth Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
(UG) Free Electives	9.0 (UG) Free Electives	10.0 (UG) Free Electives	10.0 BA Degree Awarded	
(UG) MATH Course	4.0 (UG) MATH Course	3.0 (UG) MATH Course	4.0 Student converts to Graduate status	
BST 557	3.0 BST 551	3.0 BST 701	3.0	
MATH 510	3.0 BST 553	3.0 EPI 570	3.0	
	<b>19</b>	<b>19</b>	<b>20</b>	<b>0</b>

Fifth Year		
Fall	Credits Winter	Credits
BST 567	3.0 BST 699	3.0
BST 675	1.0 (GR) Graduate Electives	6.0
BST 699	3.0	
PBHL 501 (GR) Graduate Electives	0.0	3.0
	<b>10</b>	<b>9</b>

Total Credits 229-230

\* Co-op cycles may vary. Students are assigned a co-op cycle (fall/ winter, spring/summer, summer-only) based on their co-op program (4-year) and major.

COOP 101 registration is determined by the co-op cycle assigned and may be scheduled in a different term. Select students may be eligible to take COOP 001 in place of COOP 101.

### 4+1, no co-op (Accelerated program completed in 5 years)

Students complete undergraduate requirements in four years, then convert to graduate status in the fifth and final year.

First Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
CS 150 or 164	3.0 CIVC 101	1.0 CS 172	3.0 VACATION	
ENGL 101 or 111	3.0 CS 171	3.0 ENGL 103 or 113	3.0	
MATH 121	4.0 ENGL 102 or 112	3.0 MATH 123	4.0	
UNIV S101 (UG) Science Elective	1.0 MATH 122	4.0 MATH 200	4.0	
	3.0 (UG) Science Elective	3.0 (UG) Social and Behavioral Science Elective	3.0	
	<b>14</b>	<b>14</b>	<b>17</b>	<b>0</b>

Second Year				
Fall	Credits Winter	Credits Spring	Credits Summer	Credits
COM 230	3.0 (UG) Free Electives	9.0 MATH 210	4.0 VACATION	
MATH 201	4.0 (UG) Humanities/ Fine Arts Elective	3.0 (UG) Free Electives	7.0	

MATH 220	3.0 (UG) MATH Courses	6.0 (UG) Humanities/ Fine Arts Elective	3.0	
(UG) Diversity Studies Elective	3.0	(UG) MATH Course	3.0	
(UG) Free Elective	3.0	(UG) Social and Behavioral Science Elective	3.0	
(UG) Internationa Studies Elective	3.0			
	<b>19</b>	<b>18</b>	<b>20</b>	<b>0</b>

**Third Year**

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BST 569	4.0 BST 555	3.0 (UG) Free Electives	8.0 VACATION	
MATH 401 or 331	3.0-4.0 BST 570	4.0 (UG) MATH Course	4.0	
(UG) Diversity Studies Elective	3.0 UNIV S201	1.0		
(UG) Free Electives	9.0 (UG) Free Elective	3.0		
	(UG) International Studies Elective	3.0		
	(UG) MATH Courses	6.0		
	<b>19-20</b>	<b>20</b>	<b>12</b>	<b>0</b>

**Fourth Year**

Fall	Credits Winter	Credits Spring	Credits Summer	Credits
BST 557	3.0 BST 551	3.0 BST 701	3.0 BA Degree Awarded	
MATH 510	3.0 BST 553	3.0 EPI 570	3.0 Student converts to Graduate status	
(UG) Free Electives	9.0 (UG) Free Electives	9.0 (UG) Free Electives	10.0	
(UG) MATH Course	4.0 (UG) MATH Course	3.0 (UG) MATH Course	4.0	
	<b>19</b>	<b>18</b>	<b>20</b>	<b>0</b>

**Fifth Year**

Fall	Credits Winter	Credits
BST 567	3.0 BST 699	3.0
BST 675	1.0 (GR) Graduate Electives	6.0
BST 699	3.0	
PBHL 501	0.0	
(GR) Graduate Electives	3.0	
	<b>10</b>	<b>9</b>

**Total Credits 229-230**