# Bachelor of Science in Mathematics

## 2014 - 2015 Catalog

**The University of Texas-Pan American**

This document provides a list of the UTPA courses required for the major and their equivalent UTRGV courses.

A significant number of courses have changed their course prefix, number, and title.

For any additional information, please visit the Academic Advising Center.

## UTPA Courses

### A – GENERAL EDUCATION CORE – 43 HOURS

**Mathematics – 3 hours**

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1460 Calculus I (or MATH 1487 Honors) three-hour lecture</td>
<td>MATH 2413 Calculus I (or MATH 2487 Honors) three-hour lecture</td>
</tr>
</tbody>
</table>

### B – MAJOR REQUIREMENTS – 51 HOURS MINIMUM (36 advanced minimum)

#### 1 – Core Courses for the Major – 27 hours (18 advanced)

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1460 Calculus I (or MATH 1487 Honors) one-hour lecture</td>
<td>MATH 2413 Calculus I (or MATH 2487 Honors) one-hour lecture</td>
</tr>
<tr>
<td>MATH 1470 Calculus II (or MATH 1488 Honors)</td>
<td>MATH 2414 Calculus II (or MATH 2488 Honors)</td>
</tr>
<tr>
<td>MATH 2401 Calculus III</td>
<td>MATH 2415 Calculus III</td>
</tr>
<tr>
<td>MATH 3328 Introduction to Proofs</td>
<td>MATH 3350 Introduction to Mathematical Proof</td>
</tr>
<tr>
<td>MATH 3345 Applied Linear Algebra</td>
<td>MATH 2318 Linear Algebra</td>
</tr>
<tr>
<td>MATH 4339 Probability and Statistics I</td>
<td>MATH 4337 Probability and Statistics I</td>
</tr>
<tr>
<td>MATH 4351 Modern Algebra I</td>
<td>MATH 3363 Modern Algebra I</td>
</tr>
<tr>
<td>MATH 4357 Real Analysis</td>
<td>MATH 3372 Real Analysis</td>
</tr>
<tr>
<td>MATH 4390 Mathematics Project</td>
<td>MATH 4390 Mathematics Project</td>
</tr>
</tbody>
</table>

#### 2 – Concentrations – 24 hours minimum (18 advanced minimum)

##### a – Applied Mathematics – 32 hours (21 advanced)

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
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</thead>
<tbody>
<tr>
<td>MATH 3337 Applied Statistics I</td>
<td>MATH 3331 Applied Statistics I</td>
</tr>
<tr>
<td>MATH 3349 Differential Equations</td>
<td>MATH 3341 Differential Equations</td>
</tr>
<tr>
<td>MATH 3368 Numerical Methods</td>
<td>MATH 3349 Numerical Methods</td>
</tr>
<tr>
<td>CSCI 1380 or higher Computer Science or Computer Engineering</td>
<td>CSCI 1380 Computer Science I (or CSCI 1387 Honors)</td>
</tr>
</tbody>
</table>

Choose three:

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 3338 Applied Statistics II</td>
<td>MATH 3332 Applied Statistics II</td>
</tr>
<tr>
<td>MATH 3355 Linear Optimization</td>
<td>MATH 3345 Linear Optimization</td>
</tr>
<tr>
<td>MATH 4317 Complex Variables</td>
<td>MATH 4342 Complex Variables</td>
</tr>
<tr>
<td>MATH 4318 Boundary Value Problems</td>
<td>MATH 4344 Boundary Value Problems</td>
</tr>
<tr>
<td>MATH 4319 Integral Transforms</td>
<td>MATH 4346 Integral Transforms</td>
</tr>
<tr>
<td>MATH 4329 Elementary Cryptology</td>
<td>MATH 3347 Elementary Cryptology</td>
</tr>
<tr>
<td>MATH 4391 Mathematics Research</td>
<td>MATH 4391 Research Experience in Mathematics</td>
</tr>
<tr>
<td>MATH 4399 Special Topics in Math</td>
<td>MATH 3399 Special Topics in Mathematics</td>
</tr>
</tbody>
</table>

Choose 8 hours of additional Natural Science outside of the General Education Core.

Choose 3 hours of advanced Mathematics, except MATH 3373.

##### b – Economics – 24 hours (18 advanced)

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 2301 Principles Of Macroeconom</td>
<td>ECON 2301 Principles of Macroeconomics</td>
</tr>
<tr>
<td>ECON 2302 Principles Of Microecon</td>
<td>ECON 2302 Principles of Microeconomics</td>
</tr>
<tr>
<td>ECON 3341 Econometrics</td>
<td>ECON 3341 Econometrics</td>
</tr>
<tr>
<td>ECON 3351 Macroeconomic Theory</td>
<td>ECON 3351 Macroeconomic Theory</td>
</tr>
<tr>
<td>ECON 3352 Microeconomic Theory</td>
<td>ECON 3352 Microeconomic Theory</td>
</tr>
<tr>
<td>ECON 4340 Intro To Math Econ</td>
<td>ECON 4340 Introduction to Mathematical Economics</td>
</tr>
<tr>
<td>MATH 3349 Differential Equations</td>
<td>MATH 3341 Differential Equations</td>
</tr>
</tbody>
</table>

Choose 3 hours of advanced Mathematics.

##### c – Middle School Mathematics– 48 hours (40 advanced)

<table>
<thead>
<tr>
<th>UTPA Course</th>
<th>UTRGV Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAT 2306 Foundations Of Math I</td>
<td>MATH 1350 Fundamentals of Mathematics I</td>
</tr>
<tr>
<td>EMAT 2307 Foundations Of Math II</td>
<td>MATH 1351 Fundamentals of Mathematics II</td>
</tr>
</tbody>
</table>

Subject to change.
MMAT 3309 Found Of Math III-Inter
MMAT 3310 Measurement And Geometry I
MMAT 3311 Measurement And Geometry II
MMAT 3313 Algebraic Structures
READ 4351 Lrng Through Literacy In
SMAT 3330 Functions and Modeling
UTCH 1101 Inquiry Approaches to Teaching
UTCH 1102 Inquiry-Based Lesson Design
UTCH 3301 Knowing and Learning
UTCH 3302 Classroom Interaction
UTCH 3303 Project-Based Instruction
UTCH 4701 Apprentice Teaching

Choose two:

MATH 3303 History Of Mathematics
MATH 3333 Math in Computer Environ
MATH 3366 Discrete Mathematics
MATH 4302 Number Theory

Choose one:

MATH 4304 Modern Geometries
MATH 4302 Number Theory

Choose one:

MATH 3349 Differential Equations
MATH 3355 Linear Optimization
MATH 3366 Discrete Mathematics
MATH 3368 Numerical Methods

Choose 6 hours of advanced Mathematics (MATH 4000:4999).

Choose 3 hours of advanced Mathematics, except MATH 3373.

Choose 8 hours of additional Natural Science outside of the General Education Core.

e – Science and Engineering – 27 hours (21 advanced)

CSCI 1380 or higher Computer Science or Computer Engineering

Choose 3 hours of advanced Mathematics, except MATH 3373.

Choose 3 hours of BIOL, CHEM, CIS, CMPE, CSCI, ELEE, ENGR, ENSC, GEOL, GEOP, MECE, PHYS, PSCI, or SCIE.

Choose 18 hours of advanced BIOL, CHEM, CIS, CMPE, CSCI, ELEE, ENGR, GEOL, GEOP, MECE, PHYS, PSCI, and/or SCIE.

f – Secondary Mathematics– 53 hours (43 advanced)

MATH 3303 History Of Mathematics
MATH 3333 Math in Computer Environ
MATH 3366 Discrete Mathematics
MATH 4302 Number Theory
READ 4351 Lrng Through Literacy In
SMAT 3330 Functions and Modeling
SMAT 4311 Adv Study Secondary Geometry
SMAT 4312 Adv Study Secondary Algebra
UTCH 1101 Inquiry Approaches to Teaching
UTCH 1102 Inquiry-Based Lesson Design
UTCH 3301 Knowing and Learning

Choose two:

MATH 3303 History Of Mathematics
MATH 3333 Math in Computer Environ
MATH 3366 Discrete Mathematics
MATH 3361 Applied Discrete Mathematics
MATH 3368 Numerical Methods

MATH 4304 Modern Geometries
MATH 3352 Modern Geometry I

Choose one:

MATH 3349 Differential Equations
MATH 3355 Linear Optimization
MATH 3366 Discrete Mathematics
MATH 3361 Applied Discrete Mathematics
MATH 3349 Numerical Methods

Choose 6 hours of advanced Mathematics (MATH 4000:4999).

Choose 3 hours of advanced Mathematics, except MATH 3373.

Choose 18 hours of advanced BIOL, CHEM, CIS, CMPE, CSCI, ELEE, ENGR, GEOL, GEOP, MECE, PHYS, PSCI, and/or SCIE.

Subject to change.
Choose 8 hours of additional Natural Science outside of the General Education Core.

**g – Statistics – 27 hours (21 advanced)**

- MATH/STAT 2330 Elementary Statistical Methods (or MATH 2387 Honors)
- MATH/STAT 3337 Applied Statistics I
- MATH/STAT 3338 Applied Statistics II
- MATH/STAT 4336 Sampling
- MATH 3368 Numerical Methods
- MATH 4340 Probab And Statistics II
- MATH 4377 Applied Regression
- CSCI 1380 or higher Computer Science or Computer Engineering

Choose one:

- MATH 3303 History Of Mathematics
- MATH 3311 Organ Struct & Proc Math
- MATH 3333 Math in Computer Environ
- MATH 3349 Differential Equations
- MATH 3355 Linear Optimization
- MATH 3373 Discrete Structures
- MATH 4302 Number Theory
- MATH 4304 Modern Geometries
- MATH 4317 Complex Variables
- MATH 4318 Boundary Value Problems
- MATH 4319 Integral Transforms
- MATH 4329 Elementary Cryptology
- MATH 4360 Topology
- MATH 4364
- MATH 4379
- MATH 3000:4999

**TOTAL CREDIT HOURS FOR GRADUATION – 120 HOURS**

**TOTAL ADVANCED HOURS – 51 HOURS**

Subject to change.