

Northeast Texas Community College &
Texas A&M University – Texarkana
2019-2020 Guided Pathways

Associate of Science in Mathematics to
Bachelor of Science in Mathematics

NTCC		A&M-TEXARKANA	
COURSES	HOURS	COURSES	HOURS
ENGL 1301	3	MATH 321	3
SPCH 1315 (or) SPCH 1321	3	MATH 334	3
MATH 2413	4	MATH 357	3
PHYS 2425*	4	MATH 380	3
PHYS 2426*	4	MATH 430	3
PHIL 1301 (or) PHIL 2306	3	MATH 437	3
ARTS 1301*	3	MATH 493	3
HIST 1301	3	UD Minor	18
HIST 1302	3	UD Electives	15
GOVT 2305	3	UD/LD Elective	3
GOVT 2306	3		
ECON 2301 (or) ECON 2302	3		
ENGL 2311 (or) ENGL 1302	3		
BIOL 1406 (or) CHEM 1411	4		
MATH 2414	4		
MATH 2415	4		
MATH 2318	3		
MATH 2320	3		
OTHER REQUIREMENTS:			
MATH 2305			
TOTAL	63	TOTAL	120

*Other Courses may Apply. See NTCC Degree Plan for Options

54 Upper Division (UD) Hours Required for the BS Degree

30 Hours of Residency Required

UD= Upper Division

LD= Lower Division

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MINORS

A minor requires a minimum of 18 SCH in a discipline, with the exception of the interdisciplinary studies minor that requires hours from more than one discipline.

Biology

Code	Title	Hours
BIOL 1306	Biology for Science Majors I	3
BIOL 1106	Biology for Science Majors I Lab	1
BIOL 1307	Biology for Science Majors II	3
BIOL 466	Evolutionary Biology	3
9 SCH UD Biology Electives		9
Total Hours		19

Biotechnology

Code	Title	Hours
BTEC 1340	Quality Assurance and Quality Control in Biotechnology	3
BTEC 2431 (or) BTEC 2441	Cell Culture Techniques Basic Molecular Biology Techniques	4
BTEC 310	Biotechnology Research Methods and Applications	4
BTEC 490	Advanced Biotechnology	4
Select 1 of the following:		4
BTEC 411	Protein Purification and Analysis	
BTEC 440	Advanced Bioinformatics	
BTEC 473	Fundamentals of DNA Forensics	
Total Hours		19

Chemistry

Code	Title	Hours
CHEM 1311	General Chemistry I	3
CHEM 1111	General Chemistry I (Lab)	1
CHEM 1312	General Chemistry II	3
CHEM 1112	General Chemistry II (Lab)	1
CHEM 2423	Organic Chemistry I	4
CHEM 2425	Organic Chemistry II	4
CHEM 410	Biochemistry I	4
Total Hours		20

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Communication

Code	Title	Hours
COMM 1311	Introduction to Communication Studies	3
COMM 1318	Interpersonal Communication	3
COMM 2335 (or) ENGL 2335	Argumentation and Advocacy	3
COMM 320	Communication in Organizations	3
COMM 325 (or) ENG 325	Persuasive Communication	3
MCOM 350 (or) COMM 350	Mass Communication Research Methods	3
Total Hours		18

Criminal Justice

Code	Title	Hours
Select at least 3 SCH from each of the following areas:		9
Area I		
CJ 320	Deviance and Deviant Behavior	3
CJ 325	Crime and Delinquency	3
CJ 480	Criminological Theories	3
Area II		
CJ 315	Law and Society	3
CJ 340	Criminal Law and Procedure	3
CJ 430	Constitutional Issues: Rights of Accused and Convicted Offenders	3
CJ 485	Seminar in Criminal Justice	3
Area III		
CJ 310	The Juvenile Justice System	3
CJ 330	Institutional Corrections, Theory, and Practice	3
CJ 360	Probation, Parole, and Community Corrections	3
CJ 380	Ethnic and Cultural Diversity in America	3
3 courses in upper division Criminal Justice		9
Total Hours		18

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Drama

Code	Title	Hours
DRAM 1310	Introduction to Theatre	3
DRAM 1351	Acting I	3
DRAM 310	Myths, Mysteries, and Murders	3
DRAM 311	Manners, Modernity, and Masochism	3
DRAM 335	Playwriting I	3
DRAM 450	Studies in Genre (Drama)	3
Total Hours		18

English

Code	Title	Hours
ENGL 2360	Introduction to Literary Studies	3
DRAM 1310	Introduction to Theatre	3
MCOM 2370 (or) WGSS 1301	Introduction to American Film History Introduction to Women's, Gender, and Sexuality Studies	3
9 SCH Upper Division English		9
Total Hours		18

Environmental Science

Code	Title	Hours
BIOL 2406	Environmental Biology	3
BIOL 307	General Ecology	3
BIOL 450	Limnology	4
BIOL 420	Global Change (EL)	3
CHEM 405	Environmental Chemistry	3
Select one of the following:		3
BIOL 421	Endangered Ecosystems	
BIOL 422	Atmosphere and Biosphere	
BIOL 330	Introduction to Geographic Information Systems	
Total Hours		19

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Gender Studies

Code	Title	Hours
18 SCH from the following:		
CJ 350	Types of Crime	
ENG 430	Studies in Women's Literature	
HIST 416	Sex, Swords, & Sorcery: The Medieval World in Anglo-American Film	
HIST 419	American Social and Intellectual History	
HONR 345	Advanced Academic Argument Seminar/Continental Philosophy	
PSCI 305	Introduction to Political Ideologies	
PSCI 410	American Political Theory	
PSCI 426	Civil Rights and Civil Liberties	
PSCI 450	Politics and Gender	
PSY 320	Psychology of Interpersonal Interaction	
PSY 445	Human Sexual Behavior	
SOCI 2301	Marriage and Family	
Total Hours		18

History

Code	Title	Hours
HIST 1301	United States History I	3
HIST 1302	United States History II	3
Upper-division History Electives		12
Total Hours		18

Humanities

Code	Title	Hours
HUMA 1301	Introduction to the Humanities I	3
ARTS 1304	Art History II	3
ARTS 1316 (or) MCOM 1318	Drawing I Digital Photography I	3
MCOM 301		3
HUMA 497	Special Topics in the Humanities	3
ART 415 (or) ART 420	Impressionism and Post-Impressionism Art European Art History	3
Total Hours		18

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Interdisciplinary Studies

Code	Title	Hours
Lower-division courses outside of major		9
Upper-division courses outside of major		9
Total Hours		18

International Studies

Code	Title	Hours
College-level Foreign Language		6
Select 12 SCH from the following:		12
ENG 450	Studies in Genre	
ENG 472	Advanced British Literature	
HIST 451	Modern Latin America	
HIST 454	The Culture and History of Mexico	
HIST 352	Europe, 1920 to the Present	
HIST 470	Twentieth Century Asia	
PSCI 340	Introduction to Comparative Politics	
PSCI 350	Introduction to International Relations	
PSCI 442	Disputes in International Relations	
SOC 385	Globalization and Social Change	
SOC 485	Religion and Society	
Total Hours		18

Kinesiology

Code	Title	Hours
BIOL 2401	Human Anatomy and Physiology I	4
BIOL 2402	Human Anatomy and Physiology II	4
Choose 4 courses from the following:		12
KINE 331	Motor Development	
KINE 334	Test and Measurement in Kinesiology	
KINE 343	Exercise Physiology	
KINE 1354	Concepts of Physical Activity	
KINE 432	Kinesiology and Biomechanics	
KINE 436	Motor Skills for Special Populations	
KINE 443	Exercise Testing and Prescription	
Total Hours		20

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Leadership

Code	Title	Hours
LEAD 305	Introduction to Leadership: Concepts and Practices	3
LEAD 310	Leadership Theory and Practice	3
LEAD 400	Leadership and Gender Issues	3
LEAD 415	Organization Development and Change	3
LEAD 420	Community Leadership	3
Leadership Elective		3
Total Hours		18

Mass Communication

Code	Title	Hours
MCOM 1307	Introduction to Mass Communication	3
Sophomore Level Mass Communication Course		3
Select one of the following:		3
MCOM 305	Media Law and Ethics	
MCOM 300	Mass Communication Theory	
MCOM 350	Mass Communication Research Methods	
Upper Division Mass Communication elective courses		6
Mass Communication Elective (upper Division or lower Division)		3
Total Hours		18

Political Science

Code	Title	Hours
PSCI 2301	American Government I: Federal & Texas Constitutions	3
PSCI 2302	American Government II: Federal & Texas Political Behavior	3
Upper Division Political Science Elective		12
Total Hours		18

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Pre-Health (available for Biology Majors only)

Code	Title	Hours
MATH 1342	Elementary Statistical Methods	3
BIOL 2401	Human Anatomy and Physiology I	4
BIOL 2402	Human Anatomy and Physiology II	4
BIOL 311	General Microbiology	4
Select 1 of the following courses:		3-4
BIOL 332	Molecular Pharmacology and Toxicology	
BIOL 335	Medical Terminology	
BIOL 445	Virology	
BIOL 446	Survey of Human Disease and Pathophysiology	
CHEM 410	Biochemistry I	
Total Hours		18-19

Psychology

Code	Title	Hours
PSYC 2301	General Psychology	3
PSYC 2314	Lifespan Growth and Development	3
PSY 316	Abnormal Psychology	3
PSY 317 (or) PSY 350	Psychology of Personality Learning and Behavior	3
PSY 426	Introduction to Clinical and Counseling Psychology	3
Psychology Elective		3
Total Hours		18

Social Studies

Code	Title	Hours
ECON 2301	Principles of Macroeconomics	3
GEOG 1303	World Regional Geography	3
GEOG 413	Cultural Geography	3
PSCI 2301	American Government I: Federal & Texas Constitutions	3
PSCI 340 (or) PSCI 350	Introduction to Comparative Politics Introduction to International Relations	3
PSCI 427 (or) PSCI 428	Public Law (EL) Intergovernmental Politics	3
Total Hours		18

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Social Work

Code	Title	Hours
SOCI 2350	Introduction to Social Work	3
SOCW 360	Working with Diverse Populations	3
SOCW 365	Social Work Practice with Individuals and Families	3
SOCW 370	Social Welfare Policy	3
SOC 495	Sociology Internship	3
3 SCH Upper Division Elective		3
Total Hours		18

Sociology

Code	Title	Hours
SOCI 1301	Introduction to Sociology	3
SOC 320	Deviance and Deviant Behavior	3
SOC 323	Social Stratification	3
SOC 380	Ethnic and Cultural Diversity in America	3
SOC 485	Religion and Society	3
Upper-division approved Sociology elective		3
Total Hours		18

Spanish

Code	Title	Hours
Required Lower Division Language Courses		
SPAN 1311	Beginning Spanish I	3
SPAN 1312	Beginning Spanish II	3
SPAN 2311	Intermediate Spanish I	3
SPAN 2312	Intermediate Spanish II	3
Required Upper Division Language Courses		
SPAN 303 (or) SPAN 497	Spanish Composition and Conversation Special Topics	3
Interdisciplinary Course Requirements		
Select one of the following:		3
HIST 450	Latin America-The Colonial Era	
HIST 451	Modern Latin America	
HIST 454	The Culture and History of Mexico	
Total Hours		18

The minor advisor may approve the substitution of other courses which have the Latin America as their primary focus.

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Prior to enrolling in Spanish courses, students must complete the following:

- Pass a Spanish Proficiency Exam at a level of 300
- Complete an oral interview with the Spanish instructor
- Receive permission from the Spanish instructor to enroll in course

Women's Gender and Sexuality Studies

Code	Title	Hours
WGSS 1301	Introduction to Women's Gender, and Sexuality Studies	3
WGSS 497		3
12 Credits from the following:		12
CJ 350	Types of Crime	
ENG 430	Studies in Women's Literature	
HIST 416	Sex, Swords, & Sorcery: The Medieval World in Anglo-American Film	
HIST 419	American Social and Intellectual History	
HONR 345	Advanced Academic Argument Seminar/Continental Philosophy	
PSCI 305	Introduction To Political Ideologies	
PSCI 410	American Political Theory	
PSCI 426	Civil Rights and Civil Liberties	
PSCI 450	Politics and Gender	
PSY 320	Psychology of Interpersonal Interaction	
PSY 445	Human Sexual Behavior	
SOCI 2301	Marriage and Family	
Total Hours		18

Writing Studies

Code	Title	Hours
ENGL 2340	Writing Across the Curriculum	3
ENGL 2351	Introduction to Creative Writing	3
MCOM 2310		3
Select 3 of the following courses:		9
ENG 340	Advanced Expository Writing (EL)	
ENG 345	Advanced Composition for Educators	
ENG 350	Technical Writing (EL)	
ENG 424	History and Grammar of the English Language	
ENG 497	Special Topics	
MCOM 410	Feature Writing	
MCOM 415		
Total Hours		18

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COURSE DESCRIPTIONS

MATH 289. Independent Study in Mathematics. 1-4 Hours. This course provides an option for individualized instruction and research. It may be repeated when topics vary. Prerequisite: Instructor approval.

MATH 321. College Geometry. 3 Hours. This course provides a rigorous study of the concepts and applications of the properties of finite geometrics and of points, lines, triangles, and circles in Euclidean geometry. Non-Euclidean geometries will also be studied and contrasted. This course will be taught with a discovery approach in which students scaffold their comprehension through careful axiomatic study. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2413](#) with a C or better.

MATH 334. Introduction to Abstract Algebra. 3 Hours. This course provides a rigorous study of the concepts and applications of the properties of the integers, permutations, groups, rings, integral domains, and fields. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2414](#) with a C or better.

MATH 352. Math Foundations and Applications. 3 Hours. This course provides a rigorous study and review of the concepts of algebra, geometry, probability, statistics, trigonometry, and calculus. Other topics may include elements from number theory, linear algebra, and abstract algebra. This course will be driven by applications of real-world problems with an emphasis on problem-solving skills. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2413](#) with a C or better.

MATH 357. Probability and Statistics. 3 Hours. This course provides a rigorous study of the concepts and applications of probability, discrete and continuous distribution, estimation, and hypothesis testing using concepts from calculus. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2414](#) with a C or better.

MATH 426. Problem Solving. 3 Hours. Effective problem solving strategies will be applied to various examples from areas such as algebra, geometry, probability, calculus, trigonometry, number theory, discrete math, linear algebra, and logic. The scope and sequence will be formative in nature and use a discover approach to allow students to scaffold their critical thinking skills into a mathematical problem solving rubric. Logical reasoning will be emphasized in all strategies to distinguish the importance of the process of problem solving rather than just finding the answer. Appropriate computer software and hand held technologies will be utilized. With pre-service math teachers in mind, this course will also focus on the pedagogy of teaching these skills to 7-12 grade mathematics students. Prerequisite: [MATH 2414](#) with a C or better.

MATH 430. Mathematical Modeling. 3 Hours. This course provides a rigorous study of the concepts and applications of techniques used to model data related to real-world systems and scenarios from areas such as physics, biology, pharmacology, chemistry, ecology, sociology,

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astronomy, and archeology. Discrete and continuous models, theoretical and empirical models, deterministic and probability models and analytic and simulation models will be considered. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2414](#) with a C or better.

MATH 437. Number Theory. 3 Hours. This course provides a rigorous study of the concepts and applications of the properties of integer representations and operations, analysis and complexity of algorithms, mathematical induction, divisibility, primes and composites, congruences and systems, the Fundamental Theorem of Arithmetic, Pythagorean triples, multiplicative functions, and cryptology. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 2414](#) with a C or better.

MATH 493. Capstone in Mathematics. 3 Hours. This is the conclusion of preparation of a portfolio of mathematical experiences composed of artifacts from throughout a student's time in upper-level mathematics classes. Presentation of a selected portfolio artifact will be required. Students will be graded on Satisfactory (S) or Unsatisfactory (U) basis. Prerequisite: Senior standing and instructor permission.

MATH 499. Independent Research. 1-6 Hours. This is an independent research in Math conducted by a student under the guidance of a faculty member of his or her choice. The student is required to maintain a research journal and submit a project report by the end of the semester and potentially make an oral presentation on the project. SCH and hours are by arrangement and, with a change in content, this course may be repeated for credit. Prerequisite: Consent of instructor.

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