

Northeast Texas Community College &  
Texas A&M University – Texarkana  
2020-2021 Guided Pathways

AS Chemistry to  
BS Chemistry with  
7-12 Chemistry Certification

NTCC		A&M-TEXARKANA	
COURSES	HOURS	COURSES	HOURS
ENGL 1301 (With C or Better)	3	ED 311	3
SPCH 1315 (or) SPCH 1321	3	CHEM 340	4
MATH 2413	4	CHEM 351	4
CHEM 1411	4	ED 321	3
CHEM 1412	4	CHEM 405	3
HIST 2321*	3	CHEM 440	4
ARTS 1301*	3	RDG 343	3
HIST 1301	3	CHEM 321	4
HIST 1302	3	CHEM 410	4
GOVT 2305	3	CHEM 479	3
GOVT 2306	3	CHEM 497	1-4
SOCI 1301*	3	BLOCK 1	
ENGL 2311 (With C or Better)	3	ED 495	3
PHYS 2425	4	ED 331	3
CHEM 2423	4	BLOCK 2	
CHEM 2425	4	ED 496	3
PHYS 2426	4	SPED 418	3
PHED* (or) CHEM 2289	2		
ADDITIONAL REQUIREMENTS:			
BIOL 1406	4		
MATH 2412	4		
BIOL 1407	4		
2.8 Minimum GPA			
TOTAL	72	TOTAL	122

\*Other Courses may Apply. See NTCC Degree Plan for Options  
46 Upper Division (UD) Hours Required for the BS Degree  
30 Hours of Residency Required

## Traditional Undergraduate Teacher Preparation Program

Applications for admission to the Teacher Preparation Program are accepted in September for the following spring semester and in February for the following fall semester.

1. Application to program submitted through [TK20](#), to include the following:
  - o Disposition Survey
  - o Code of Ethics Reflection Statement
  - o Completed FERPA form
  - o Payment of \$35.00 Application Fee
2. Overall GPA of 2.80 or higher
3. Completion of Pre-Content TExES, an Oral-Language Assessment, and a Writing Sample at required TPP Orientation
4. Completed hours in content area:< >For grades 4-8 or 7-12 Science or Math content area certifications, candidates must have 15 semester hours from content area with **no grade below "C"**. All other 4-8/7-12 certification candidates must have completed 12 semester hours in content area with **no grade below "C"**. For EC-6 certifications, 12 semester hours from the list below (**no grade below "C"**):
  - o 3 semester hours from ENG prefix (not [ENGL 1301](#) or [ENGL 1302](#))
  - o 3 semester hours from MATH prefix
  - o 3 semester hours from GOVT or HIST prefix
  - o 3 semester hours from BIOL, PHYS, or CHEM prefix
  - o 3 semester hours from Arts or Technology
5. Advisement by Assigned Faculty Advisors in the Teacher Preparation Program

### For Admission to Block #1 Semester

1. A Notice of Intent for Block #1 semester submitted in [TK20](#) in September for the following spring semester and in February for the following fall semester.
2. Completion of all appropriate coursework
3. Minimum of 2.80 GPA overall; no grade below "C" in upper-division courses

### For Admission to the Block #2 Co-Teaching Semester

1. Successfully complete all program requirements
2. Successful completion of Block #1 semester as determined by Director of Teacher Preparation Program
3. Maintain 2.80 cumulative GPA ; no grade below "C" in upper-division courses
4. Continued placement in assigned K-12 classroom

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**Texas A&M University – Texarkana**  
**Course Descriptions**

**CHEM 1311. General Chemistry I. 3 Hours.** This course covers the fundamental principles of chemistry. This course is the first of two general chemistry courses offered sequentially for majors in biological, health, and physical sciences. Topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Prerequisite: [MATH 1314](#) or [MATH 2412](#). Corequisite: [CHEM 1111](#).

**CHEM 1111. General Chemistry I (Lab). 1 Hour.** This course introduces students to basic laboratory experiments supporting theoretical principles presented in [CHEM 1311](#). The course introduces the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. Corequisite: [CHEM 1311](#).

**CHEM 1312. General Chemistry II. 3 Hours.** This course is the second course of the general chemistry sequence. Topics include chemical equilibrium, phase diagrams and spectrometry, acid-base concepts, thermodynamics, kinetics, electrochemistry, nuclear chemistry, and an introduction to organic chemistry and descriptive organic chemistry. Prerequisite: [CHEM 1111](#) and [CHEM 1311](#). Corequisite: [CHEM 1112](#).

**CHEM 1112. General Chemistry II (Lab). 1 Hour.** This course introduces students to basic laboratory experiments supporting theoretical principles presented in [CHEM 1312](#). Students will be introduced to the use of the scientific method in experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. Prerequisite: [CHEM 1111](#). Corequisite: [CHEM 1312](#).

**CHEM 2423. Organic Chemistry I. 4 Hours.** This course is the first of a comprehensive and somewhat rigorous survey of organic chemistry emphasizing nomenclature, structure, properties, synthesis, and reaction mechanisms of carbon compounds. Prerequisite: [CHEM 1312](#) with a grade of C or better.

**CHEM 2425. Organic Chemistry II. 4 Hours.** This course is the second semester of Organic Chemistry sequence emphasizing the classes of aliphatic and aromatic compounds that contain oxygen and nitrogen. Prerequisite: [CHEM 2423](#).

**CHEM 340. Quantitative Chemical and Instrumental Analysis. 4 Hours.** This course covers fundamental theory and techniques in traditional chemical analysis. Topics include sampling and separation methods, measurements, statistics, equilibrium and pH studies, gravimetric and combustion analysis, electrochemical techniques, and introduction to instrumentation. Biology minors in Environmental Science require this course. Prerequisite: [CHEM 1312](#) with a grade of C or better.

**CHEM 410. Biochemistry I. 4 Hours.** Biochemistry I is the first semester of a one-year course. The first semester covers the structures and functions of amino acids, proteins, and simple and complex carbohydrates. This course also covers carbohydrate metabolism, including glycolysis, gluconeogenesis and signal cascades in carbohydrate metabolism. The course emphasizes understanding biochemistry

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from a biological point of view and on providing information on how biochemical events are regulated in living tissues. Prerequisite: [CHEM 2423](#) and [CHEM 2425](#) with a C or better in both courses.

**CHEM 351. Physical Chemistry I. 4 Hours.** This course is an introduction to quantum mechanics, solvable model problems, chemical kinetics, rigorous treatments of the first, second, and third laws of thermodynamics, as well as applications to gases (both ideal and real), liquids, solutions, and phase equilibria. Prerequisite: [MATH 2413](#), [PHYS 2325](#), and [PHYS 2326](#).

**CHEM 321. Inorganic Chemistry. 4 Hours.** This course focuses on descriptive inorganic chemistry. It covers bonding theories, redox chemistry, properties of main group and transition metals, ligand field theory, molecular magnetism, and electronic spectra in transition metal complexes. Prerequisites: [CHEM 1111](#), [CHEM 1112](#), [CHEM 1311](#), and [CHEM 1312](#).

**CHEM 497. Special Topics in Chemistry. 1-4 Hours.** This course provides instruction on special topics in an identified area of chemistry. Students may repeat the course for credit when topics vary. Prerequisite: Permission of instructor.

**BIOL 1306. Biology for Science Majors I. 3 Hours.** This course introduces the student to the nature of science and the application of science to contemporary issues. Content includes the chemistry of life, the cell, genetics, and mechanisms of evolution. Corequisite: [BIOL 1106](#).

**BIOL 1106. Biology for Science Majors I Lab. 1 Hour.** This course provides students with hands-on exploration in the biological sciences. Content includes the process of scientific inquiry, important concepts in biochemistry and genetics, and introduction to laboratory techniques. Corequisite: [BIOL 1306](#).

**BIOL 1307. Biology for Science Majors II. 3 Hours.** This course introduces the student to the nature of science and the application of science to contemporary issues. Content includes plant form and function, animal form and function, and ecology. Prerequisite: [BIOL 1306](#). Corequisite: [BIOL 1107](#).

**BIOL 1107. Biology for Science Majors II Lab. 1 Hour.** This course provides students with hands-on exploration in the biological sciences. Content includes a survey of plants, animals, and microorganisms as well as studies of basic biological processes such as digestion, circulation, and nervous system function. Corequisite: [BIOL 1307](#).

**PHYS 2325. University Physics I. 3 Hours.** This course is a calculus based physics sequence for students in pre-professional programs, biology, geology, or architecture who do not expect to do additional work in engineering or physics. Topics include elementary vector algebra, mechanics, heat, thermodynamics and sound. Prerequisite: [MATH 2413](#). Corequisite: [PHYS 2125](#).

**PHYS 2125. University Physics I Lab. 1 Hour.** Physics lab covers elementary vector algebra, mechanics, heat, thermodynamics and sound. Prerequisite or Corequisite: [MATH 2413](#). Corequisite: [PHYS 2325](#).

**PHYS 2326. University Physics II. 3 Hours.** This course is a calculus-based physics sequence for students in computer science and engineering programs. This course covers electricity and magnetism, light, and modern physics. Prerequisite: [PHYS 2325](#) or [PHYS 2425](#). Corequisite: [PHYS 2126](#).

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**PHYS 2126. University Physics II Lab. 1 Hour.** This lab covers electricity and magnetism, light, and modern physics. Prerequisite or Corequisite: [MATH 2413](#). Corequisite: [PHYS 2326](#).

**ED 311. Growth and Development for EC to Grade 12 (EL). 3 Hours.** This is an introductory education course which presents theories of children's growth and development along with their relationship to learning and teaching. Cultural, emotional, physical, intellectual, and learning differences are studied for their impact on learning and educational opportunity. Students must be considered in their junior year and will be required to participate in 8 hours of field experience. This course integrates the principles of Experiential Learning and meets the criteria of field work.

**ED 321. Foundations of Education for Secondary (EL). 3 Hours.** This course provides students seeking certification in grades 4-8 and 7-12 skills for designing instruction and assessment that promote a growth mindset and create a positive, productive classroom environment. Students will apply skills and knowledge in lesson and unit planning as well as content pedagogy specific to area of certification. Traditional as well as innovative technologies will be addressed. State of Texas Assessments of Academic Readiness (STAAR) and End of Course Exams (EOC) effective content pedagogy will be emphasized in this course. This course integrates the principles of Experiential Learning and meets the criteria for field work.

**ED 331. Classroom and Behavior Management. 3 Hours.** This course presents best practices in classroom and behavior management including management of time, materials, and space. Additionally, the course examines strategies for managing individual and large-group student behaviors, transitions, lab activities, and other arrangements for classrooms in general and special education. Prerequisite: Admitted to the Teacher Preparation Program.

**ED 435. Secondary Content Pedagogy. 3 Hours.** This course provides students seeking certification in grades 4-8 and 7-12 with pedagogical best-practices. Students will learn lesson planning, assessment, and available resources for their specific content area. Methods for accessing and processing information through traditional as well as new technologies will be addressed. Prerequisite: Admission to the Teacher Preparation Program.

**ED 495. Block 1 - Co-Teaching Practicum for Certification Candidates (EL). 3 Hours.** This course provided clinical experience in the public school setting as part of the field experience requirements for the undergraduate Teacher Preparation Program. The Teacher Candidate is required to spend six hours per week for 12 weeks in an assigned classroom. A university field supervisor in conjunction with the cooperating teacher supervises the Clinical Teacher. Block 1 is the first semester of the co-teaching assignment (2 semesters) in which the Teacher Candidate and Cooperating Teacher are considered co-teachers for the class. Course is graded on a Satisfactory (S) or Unsatisfactory (U) basis for 3 SCH. This course integrates the principles of experiential learning and meets the criterion for internship. Prerequisite: Met admission requirements to undergraduate field based placement guidelines.

**ED 496. Block 2 - Co-Teaching Practicum for Certification Candidates (EL). 3 Hours.** This course provided clinical experience in a public school setting as part of field experience requirements for the undergraduate Teacher Preparation Program. The Teacher Candidate is required to spend 72 complete instructional days in an assigned classroom. A university field supervisor in conjunction with the cooperating teacher supervises the Clinical Teacher. Block 2 is the second semester of the co-teaching assignment (2 semesters) in which Teacher Candidate and Cooperating Teacher are co-teachers for the

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public school class. Course graded on Satisfactory (S) or Unsatisfactory (U) basis for 3 SCH. This course integrates the principals of experiential learning and meets the criterion for internship. Prerequisite: successful completion of [ED 495](#), continued acceptance in the public school classroom, and completion of program requirements.

**ITED 350. Technology and Digital Literacy. 3 Hours.** This course is designed to assist students with developing skills for using web applications and mobile computing. The activities in the course assist students with promoting critical thinking and problem-solving skills by engaging them with digital tools being used in daily life. Topics covered include: technology in society, computers and digital components, the internet- how it works and making the most of web resources, applications for work and play, and systems software- operating systems, utilities and file management, information technology ethics, understanding and assessing hardware, digital devices and media and protection, information technology careers, software programming, databases and information systems, networking and security. There is an emphasis on using the Microsoft Office Suite of Products in this course including Word, Excel, PowerPoint, and Access.

**MATH 2413. Calculus I. 4 Hours.** This course provides a rigorous study of the concepts and applications of limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental function, with an application to calculation of areas. Appropriate computer software and hand held technologies will be utilized. Prerequisite: [MATH 1314](#) and [MATH 1316](#) with a C or better, or [MATH 2412](#) with a C or better. Placement will also be determined by the Math Placement Exam score.

**RDG 343. Reading Beyond the Primary Grades. 3 Hours.** This course teaches content area teachers how to help their students learn from textbooks, including techniques for evaluating both textbooks and students. Coping with the reading, demands of textbooks, and study skills will be learned.

**SPED 410. Introduction to Individual with Exceptionalities. 3 Hours.** This course develops students' foundational knowledge of historical perspectives, educational principles, laws, and professional ethics and roles in the fields of special education and English Language Learners (ELL). It focuses on the learning and behavioral characteristics of diverse learners, including students with exceptionalities (which includes disabilities, Attention Deficit Hyperactivity Disorders, Dyslexia, and Gifted/Talented) students who are ELL and students who are Culturally and Linguistically Diverse Exceptional (CLDE) learners. Additionally, this course introduces instructional strategies, appropriate curriculum, accommodations, modifications, and assistive technology to ensure the success of all learners.

**SPED 418. Research, Trends, and Issues in Education. 3 Hours.** This course presents current research, issues, and trends in education, specifically emphasizing the teaching-learning process to meet specific student learning needs. Emphasis is placed on teacher candidates integrating best practices in the teaching-learning process including: 1) Strength-based strategies, 2) Understanding by Design, 3) Differentiation, 4) Differentiation for Neurodiversity, 5) State Accountability Testing, and 6) Teacher Evaluation. Prerequisite: Admission to the Teacher Preparation Program.

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