

COLLEGE OF SCIENCE & TECHNOLOGY

Dr. James Pierce, Dean

**Science Building, Room 119
(254) 968-9781**

The College of Science and Technology has three primary missions: first, to provide the courses in mathematics and natural and physical sciences that form an essential part of the core curriculum required of all University students; second, to provide supporting courses for students in other academic areas, such as education, business, and agriculture; and third, to provide the opportunity for students to concentrate their study in a major field of science, technology, or engineering. The College is strongly committed to excellence in teaching, research, and service to the University and to society.

Degree programs available in the College of Science and Technology feature considerable variety at both the undergraduate and graduate levels. The range of programs includes those areas that provide the foundation required for professional fields such as medicine, dentistry, optometry, and pharmacy as well as specialized programs that are professionally oriented and lead to specific careers such as clinical laboratory science and nursing. It also includes mathematics, various sciences, engineering, computer science, and technology. The college offers masters degrees in three areas: biology, environmental science and mathematics. The College of Science and Technology is organized into six departments:

- I. Biological Sciences
- II. Chemistry, Geosciences, and Environmental Science
- III. Clinical Laboratory Sciences
- IV. Engineering Technology
- V. Mathematics, Physics, and Engineering, including the Division of Hydrology
- VI. Nursing

Please consult the section on Undergraduate Degree Requirements on pp. 46-49 for information about undergraduate degree requirements.

Department of Biological Sciences

Dr. John S. Calahan, Jr., Head

Science Building, Room 203
Box T-0100
(254) 968-9159

Professors: Calahan, Keith, Konvicka
Associate Professors: Murray, Nelson, Pfau, Pierce, Rathburn,
Sanderford, Sudman
Assistant Professors: Higgins
Instructor: McReynolds

The Department of Biological Sciences offers two distinct four-year curricula that lead to the baccalaureate degree. These are the Bachelor of Science in Biology and the Bachelor of Science in Biomedical Science. In addition, pre-health professional programs are offered which include pre-medicine, pre-dentistry, pre-physical therapy, pre-pharmacy, and pre-veterinary medicine. Secondary teaching certificates may be obtained with Science Certification or Life Science Certification. The curricula are designed to maximize career opportunities and to prepare students for various graduate and professional school programs.

A Master of Science degree is also offered. For further information, see the graduate section of this catalog.

THE BACHELOR OF SCIENCE DEGREE IN BIOLOGY

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276	
<u>Courses Required for BS in General Biology</u>	
BIOL 120, 121, 303, 307, 353	19
CHEM 105 ¹ , 108 ¹ , 201, PHYS 104, 105	20
MATH 109 ¹ , ENGL 309	6

¹ Satisfies university core curriculum requirement.

Additional Required Courses

For BS in Biology—General Biology

Advanced BIOL electives	24
MATH 350	4
Electives, 3 hours advanced	15

For BS in Biology—Freshwater Ecology

BIOL 349, 401, 441, 462	16
Advanced BIOL electives	8
MATH 350	4
GEOL 105, E S 350, HYDR 110	9
Electives	6

For BS in Biology—Marine Ecology	
BIOL 340, 349 401, 442, 462	18
Advanced BIOL electives	6
MATH 350	4
GEOL 105, E S 340	6
Electives	9
For BS in Biology—Environmental Biology	
BIOL 315, 336, 349, 401, 441, 340 or 442	23
MATH 350	4
GEOL 105, E S 350	6
Electives, 3 advanced	10
For BS in Biology—Molecular Biology	
BIOL 313, 385, 395, 474, 475, 478	21
CHEM 202	4
MATH 350	4
Advanced BIOL electives	3
Electives, 3 hrs advanced	11
For BS in Biology—Life Science Teacher Certification ¹	
BIOL 315, 349, 401, 470	15
EDU 320, 330, 430, 435, 490	18
PSY 220 or 303, RDG 351	6
Advanced BIOL electives	4
For BS in Biology—Science Teacher Certification ¹	
BIOL 315, 349, 401, 470	15
CHEM 486(1), GEOL 105, 106, ES 210	11
Advanced E S electives	6
EDU 320, 330, 430, 435, 490	18
PSY 220 or 303, RDG 351	6
¹ A student who fails to complete certification requirements must complete the requirements of one of the non-certification support areas to graduate with a bachelor's degree in biology.	
For BS in Biology—Wildlife Biology	
BIOL 315, 401, 451, 430, 462	20
Advanced BIOL electives	4
MATH 350	4
R&RM or WLDM 221	3
R&RM or WLDM elective	3
Electives	9

THE BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL SCIENCE

Semester Hours

University Core Curriculum

42

See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. **Course descriptions begin on page 276**

Courses Required for BS in Biomedical Science

BIOL 120, 121, 303, 306, 307, 353, 460, 474, 485	31
CHEM 105 ¹ , 108 ¹ , 201	12
PHYS 104 or 122, 105 or 242	8

MATH 109 or 120 ¹ , 350	7-8
ENGL 309	3
For BS in Biomedical Science--General	
Advanced BIOL electives from BIOL 302, 313, 385, 395, 445, 461, 475, 478	10
Electives, 5 hrs advanced	17
For BS in Biomedical Science--Pre-Medical/Pre-Dental	
BIOL 385, 461	8
Advanced BIOL electives from BIOL 302, 313, 395, 445, 475, 478	3
CHEM 202	4
Electives, 4 hrs advance	12
For BS in Biomedical Science—Pre-Physical Therapy	
Advanced BIOL electives from BIOL 302, 313, 385, 395, 445, 461, 475, 478	10
PSY 101 ¹ , 307, SOC 201, MGMT 301	12
Electives	8
For BS in Biomedical Science—Pre-Veterinary	
BIOL 461, 475	7
Advanced BIOL electives from BIOL 302, 313, 385, 395, 445, 478	3
CHEM 202	4
ANSC 107, ANSC 309 or 406	6
Electives, 4 hrs advanced	7

¹ Satisfies university core curriculum requirement.

Important Information Regarding Health Professions Programs

The Pre-Medical/Pre-Dental, Pre-Physical Therapy, and Pre-Veterinary Support Areas in Biomedical Science are designed to meet or exceed the entrance requirements for medical, dental, physical therapy, and veterinary programs in Texas. Other health profession programs including, but not limited to, Physician Assistant, Pharmacy, Optometry, Chiropractic, Podiatry, Radiology Technician, and Dental Hygiene can vary considerably in terms of entrance requirements. Students interested in such programs are encouraged to earn a BS in Biomedical Science by following the General Biomedical Science Support Area. By allowing greater flexibility in elective courses, the General Biomedical Science Support Area can be easily adjusted to meet the entrance requirements of these health profession programs.

A program in Pre-Veterinary Medicine is also offered through the Department of Animal Science. Although the Pre-Veterinary programs offered through the Departments of Animal Science and Biological Sciences each meet all the requirements for admission to the Texas A&M College of Veterinary Medicine, a student is typically best suited for one program or the other. It is important that a student discuss with an advisor which program is best suited to his or her interests, skills, and goals.

It is important to know that health profession programs may change entrance requirements without notice. Therefore, it is the responsibility of the student to check these requirements and work closely with an advisor to ensure that all requirements are met. If all of the entrance requirements for a professional

program have been met, it is sometimes possible for a student to matriculate to the professional program prior to completing a degree at Tarleton. In this case, a student might meet the requirements of a Bachelor of Science degree at Tarleton by (1) fulfilling the "Degree Requirements" as stated on p. ??? and (2) transferring the necessary hours from an approved professional school to Tarleton for a minimum total of 120 hours.

Department of Chemistry, Geosciences, and Environmental Science

Dr. Carol Thompson, Head

SCPL, Room 117
(254) 968-9143

Professors: Murry, Low, Schultz, Walter
Associate Professors: Field, Rinard, Thompson
Assistant Professors: Bell

The Department of Chemistry, Geosciences, and Environmental Science offers programs of study leading to the Bachelor of science degree in Chemistry (without teacher certification, with teacher certification in Science (8-12), as biochemistry, with an interdisciplinary field, or as a pre-professional program) and the Bachelor of science degree in Geoscience, with support areas in Geology, Environmental Science, Earth Science, Hydrogeology, and teacher certification programs in Science (8-12). On the graduate level, a Master of Science degree in Environmental Science is offered. For further information about this program, see the graduate section of the catalog.

THE BACHELOR OF SCIENCE DEGREE IN CHEMISTRY

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BS in Chemistry</u>	
CHEM 105, 108, 201, 202, 307, 323, 408, 486 (Library Research)	29
MATH 120, 209 ²	8
PHYS 104, 105 or 122, 242	8
ENGL 309	3
CIS or C S elective	3
<u>Additional Courses Required for Support Areas</u>	
For BS in Chemistry – Professional Chemistry ^{1, 4}	
Foreign language	8
Advanced electives	5
BIOL 120, 121	8
CHEM 324, 427, 428, 474	13
Advanced CHEM electives ³	3
For BS in Chemistry with Teacher Certification, Chemistry (8-12)	
PSY 220 or 303, RDG 351, EDU 320, 330, 430, 435, 490	24
Advanced CHEM ³	6
GEOL 107	4
CHEM 486 (Lab Safety)	1
Electives	2
For BS in Chemistry with Teacher Certification, Physical Science (8-12)	
PSY 220 or 303, RDG 351, EDU 320, 330, 430, 435, 490	24
Advanced CHEM ³	6

MATH 306 or 333	3-4
PHYS 334; CHEM 486 (Lab Safety)	4
For BS in Chemistry – Forensic Chemistry ^{1,4}	
CHEM 427, 474	6
Advanced CHEM ³	2
BIOL 120, 307, 478	11
C J 131, 232, 235	9
From C J 305, 315, 416, 425	9
For BS in Chemistry - Interdisciplinary Chemistry ¹	
Supporting field, 14 hours advanced ⁵	21
Advanced elective	4
From GEOL 105, 106, 107, BIOL 120, 121	4
Advanced CHEM electives ³	8
For BS in Chemistry – Biochemistry	
CHEM 427 or 445, 474, 475	9
BIOL 120, 121, 303, 307, 313, 478	23
Advanced electives	5
For BS in Chemistry – Pre-Pharmacy ^{1,6,7}	
CHEM 445, 474	6
Advanced CHEM electives ³	2
BIOL 120, 121, 303, 307, 313	20
BIOL 475 or 478	3
MATH 300 or 350	3
PSY 101 or ECO 201 ³	3
For BS in Chemistry - Pre-Medical/Pre-Dental Program	
BIOL 120, 121, 306, 307	16
BIOL 385, 460, 461, 485	13
CHEM 445, 474	6
Advanced CHEM elective ³	2

¹ COMS 301 required for all support areas except Teacher Certification, Biochemistry, and PreMedical.

² MATH requirement satisfied by MATH 120, 209

³ See additional courses required for support areas for specific lab science requirements

⁴ Arts elective must be advanced hours for Professional Chemistry and Forensics support areas.

⁵ Possible support fields include biology, geoscience, hydrology, physics, business administration, and other fields approved by department heads involved.

⁶ Core Social and Behavioral Elective must be PSY 101 or ECO 201.

⁷ Check with specific pharmacy schools for details.

THE BACHELOR OF SCIENCE DEGREE IN GEOSCIENCE

Semester Hours

University Core Curriculum

42

See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. **Course descriptions begin on page 276.**

Courses Required for BS in Geoscience^{1,2}

CHEM 105, 108, HYDR 110, GEOL 105

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Additional Courses Required for Support Areas

For Geology support area	
BIOL 120, 121 or PHYS 104, 105 or PHYS 122, 242	8
Electives, 8 hours advanced	12
GEOL 106, 300, 305, 306, 310, 312, 313, 314, 320	31
GEOL 405, 411, 412, E S 220, 413	15
From MATH 118, 120, 209, 300, 350	8
For Environmental Science support area	
AGRN 301, AGRN 310 or 427, CHEM 201 or 307 or 408	11-12
GEOL 107, 300, 314, 405	14
From GEOL 310, 313, 320, 412	9-10
ES 220, 330, 340, 350, 413	15
From MATH 107, 109, 120, 209	6-8
MATH 300 or 350	3-4
BIOL 120, 121, 401, 441	16
For Earth Science support area	
BIOL 120, 121	8
GEOL 106, 107, 300, 310, 405	18
From GEOL 305, 306, 312, 313, 314, 320, 411, 412	9-11
E S 220, 320, 330, 340, 350, 413	18
MATH from 107, 109, 120, 209, 300, 350	6-8
AGRN 301	4
Advanced electives	11
For Teacher Certification, Science (8-12)	
ENGL 309	3
CHEM 201, 486	5
PHYS 104, 105	8
PHYS elective	3
GEOL 106, 107, 486	9
From E S 320, 330, 340, 350	9
BIOL 120, 121, 401, 470	15
From MATH 107, 109, 120, 209, 300, 350	6-8
PSY 303, RDG 351	6
EDU 320, 330, 430, 435, 490	18
For Hydrogeology	
PHYS 122, 242	8
AGRN 301, CHEM 201, 307, 408	12
GEOL 300, 306, 310, 313, 314, 320, 405, 412	27
HYDR 311	3
E S 350, 413	6
From MATH 118, 120, 209, 306, 333	11-12
MATH 300 or 350	3-4

¹ CHEM 105 and 108 satisfy core lab science requirements.

² See support areas for MATH requirements

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Department of Clinical Laboratory Sciences

Sally S. Lewis, Head

**Schaffer Building
1501 Enderly Place
Fort Worth, Texas 76104
from campus: 7-0221
from off campus (817) 926-1101**

**Associate Professor: Murray
Assistant Professors: Gunter, Lewis, Taylor
Instructors: Hoger, Hood, Reyes**

The Department of Clinical Laboratory Sciences offers one degree/ certificate program leading to a Bachelor of science in Clinical Laboratory Science and two degree/ certificate programs leading to Associate of Applied Science degrees in Histotechnology and Medical Laboratory Technology and a graduate certificate in molecular diagnostics.

THE BACHELOR OF SCIENCE DEGREE IN CLINICAL LABORATORY SCIENCE

The fourth year of the Clinical Laboratory Science degree/certificate program is completed at the Department of Clinical Laboratory Sciences, Terrell School of Medical Technology, located in Fort Worth, Texas. The certificate program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) 8410 W. Bryn Mawr Avenue, Suite 670, Chicago, IL 60631. The Department consists of a teaching center and numerous clinical affiliates located in the Dallas/Fort Worth Metroplex and surrounding areas. The teaching center is housed in the Schaffer Medical Technology Building in Fort Worth, which consists of six lecture rooms, six laboratories, a computer lab, and a library. A continuous 16-month professional laboratory curriculum is offered, totaling 54 semester hours, with 10 months in the teaching center and 6 months in the clinical affiliate.

Sixteen students are admitted to the certification program in early January and July of each year, with application deadlines of the preceding September 1 and March 1, respectively. Admission is on a competitive basis. An overall minimum GPA of 2.5/4.00, with a minimum of 2.8 in science and math, is necessary. NAACLS specifies that prerequisite college courses and numbers of credits required shall be those necessary to ensure admission of individuals prepared for the educational program. Prerequisite content area includes general chemistry, organic and/or biochemistry, general biological sciences, microbiology, and mathematics. Survey courses do not qualify as fulfillment of chemistry and biological science prerequisites. Remedial mathematics courses will not satisfy the mathematics requirements.

Prerequisites for a degree in Clinical Laboratory Science:

Biological Sciences	
Freshman Biology	8 hours
Microbiology	4 hours
Immunology	4 hours
Physiology	4 hours

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Chemistry	
Freshman Chemistry	8 hours
Organic Chemistry	4 hours
Biochemistry	3 hours
Mathematics (6 hours minimum)	
College Algebra	3 hours
Trigonometry	3 hours
English	12 hours
U.S. History	6 hours
Political Science (Texas and National)	6 hours
Communications	3 hours
Electives	6 hours
Health Education	3 hours

Students entering the program from other universities must fulfill the degree requirements of their institution, and that institution must provide a statement of the acceptance of the 54 hours awarded by Tarleton State University for graduation requirements. By special arrangement prior to entrance, students may elect to receive the degree from their original college or university or from Tarleton State University.

Students who have already obtained a baccalaureate degree may also enter the program, provided they have met the NAACLS minimum requirements in biology, chemistry, and math.

Successful completion of courses will be determined with the maintenance of a grade of C or better in lecture and laboratory courses. All students are admitted on a probationary status and progressive academic achievement must be maintained.

Upon successful completion of the certificate program, the Bachelor of science degree may also be awarded. The student is also eligible to challenge national board/credential examinations offered by various professional associations. For further information concerning the Clinical Laboratory Science program, contact:

Department of Clinical Laboratory Sciences
1501 Enderly Place
Fort Worth, TX 76104
phone (817) 926-1101

**THE BACHELOR OF SCIENCE DEGREE
IN CLINICAL LABORATORY SCIENCE**

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BS in Clinical Laboratory Science</u>	
BIOL 120, 121, 312, 385, 460, 474 (or CHEM 474)	23
CLS 414, 415, 416, 424, 425, 426, 427, 428, 434, 435, 436, 437, 438, 444, 445, 446, 447, 448, 451, 452, 464, 465, 466, 467, 474, 475, 476, 477, 478, 479, 482, 491, 492, 493, 494, 495	48
CHEM 105, ¹ 108, ¹ 201	12
MATH 109	3

¹ Meets core curriculum lab science requirement.

Additional Courses Required for CLS/MT Certification

In addition to the 48 hours of CLS courses required for the BS degree, certification requires an additional 6 hours including CLS 502, 504, and 506.

ASSOCIATE OF APPLIED SCIENCE IN HISTOTECHNOLOGY

The A.A.S. in Histotechnology requires a total of 69-72 credit hours consisting of 32-35 credit hours of core curriculum and technical prerequisites, and 37 credit hours of technical program courses. Prerequisite courses may be taken at the university or any one of the thirteen consortium community colleges. The sophomore courses comprising the technical program will be taken in Fort Worth at the Schaffer Building and affiliated clinical hospital sites. Upon successful completion of the 69-72 hour program, students are eligible for the A. A.S Degree in Histotechnology awarded from Tarleton State University.

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 8410 W. Bryn Mawr Avenue, Suite 670, Chicago, IL 60631, 773-714-8880. After successful completion of the program students are eligible for the Histotechnician exam administered by the American Society for Clinical Pathology (ASCP) Board of Registry.

Prerequisite Courses for Histotechnology and Medical Laboratory Technology, Including Core Curriculum

These prerequisite courses may be taken at the university or any Texas Community College. Common academic course numbers are in parenthesis.

Prefix	Number	Course Name	Credit Hours
BIOL*	219 (2401)	Anatomy and Physiology I	4
	220 (2402)	Anatomy and Physiology II	4
BIOL			
Or			
BIOL *	120 (1411)	General Biology I	(4)
	121 (1413)	General Biology II	(4)
BIOL			
CHEM** and Allied Health or Science Elective	101 (1405)	Introduction to Applied Chemistry	4
	XXXX		1-4
Or			
CHEM** and CHEM	105 (1411)	General Chemistry I	(4)
	108 (1412)	General Chemistry II	(4)
BIOL	312 (2421)	Microbiology	4
ENGL	111 (1301)	English Composition	3
PSY	101 (2013)	Introduction to Psychology	3
COMS	101	Fundamentals of Speech Communication	3
	102	Or Public Speaking	
		Humanities and Fine Arts Elective	3

MATH	107 (1314)	College Algebra or higher	3
		Total	32-35 Hours

* Students must take either BIOL 219 and 220 or BIOL 120 and 121 (Take BIOL 120 and 121 if you have plans to articulate for BS degree)

** Students must take either CHEM 101 and an allied health/science elective or 105 and 108 (Take CHEM 105 and 108 if you have plans to articulate for BS degree)

Acceptance into the Histotechnology and Medical Laboratory Technology programs is on a competitive basis through an evaluation based on letters of recommendation and academic performance. Students must successfully complete core curriculum and technical prerequisites before the start of the technical program in Fort Worth. Applications may be obtained on the university Clinical Laboratory Sciences website at www.tarleton.edu/~clinlab/. Students are accepted into the program three times a year to begin in either August, January or June. Application deadlines are listed on the application.

Required Histotechnology Courses to be taken in Fort Worth and affiliated clinical sites:

First Semester: A student must enroll in the following courses during their first semester whether it is Fall, Spring or Summer term.

HLAB 282 ¹	Introduction to Medical Laboratory Sciences	1
HLAB 295	Clinical Histotechnology I	4

Second Semester: A student must enroll in the following courses during their second semester whether it is Fall, Spring or Summer term.

HLAB 296	Clinical Histotechnology II	4
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Fall Semester:

HLAB 214	Introduction to Histotechnology	4
HLAB 215	Histotechnology I	4

Spring Semester:

HLAB 224	Functional Histology II	4
HLAB 225	Histotechnology II	4

Summer Semester:

HLAB 234	Functional Histology I	3
HLAB 235	Histotechnology III	3

Final Semester: A student must enroll in the following courses during their final semester whether it is Fall, Spring or Summer term.

HLAB 285	Capstone Cases and Review	2
HLAB 297	Clinical Histotechnology III	4
		37

¹ See p 358 for HLAB course descriptions.

Students entering with an associates or baccalaureate degree, and who do not wish to earn the AAS in Histotechnology degree, must have the following prerequisites:

- Biology: 12 hours including Microbiology
- Chemistry: 4 hours
- Math: 3 hours
- English: 3 hours

Glenda Hood, HT Program Director
 Department of Clinical Laboratory Sciences
 1501 Enderly Place
 Fort Worth, Texas 76104
 817-926-1101
 hoye@tarleton.edu

ASSOCIATE OF APPLIED SCIENCE IN MEDICAL LABORATORY TECHNOLOGY

The A.A.S. in Medical Laboratory Technology requires a total of 69-72 credit hours consisting of 32-35 credit hours of core curriculum and technical prerequisites, and 37 credit hours of technical program courses. Prerequisite courses may be taken at the university or any one of the thirteen consortium community colleges. The sophomore courses comprising the technical program will be taken in Fort Worth at the Schaffer Building and affiliated clinical hospital sites. Upon successful completion of the 69-72 hour program, students are eligible for the AAS Degree in Medical Laboratory Technology awarded from Tarleton State University.

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 8410 W. Bryn Mawr Avenue, Suite 670, Chicago, IL 60631, 773-714-8880. After successful completion of the program students are eligible to take the Medical Laboratory Technician exam administered by the American Society for Clinical Pathology (ASCP) Board of Registry.

Acceptance into the Histotechnology and Medical Laboratory Technology programs is on a competitive basis through an evaluation based on letters of recommendation and academic performance. Students must successfully complete core curriculum and technical prerequisites before the start of the technical program in Fort Worth. Applications may be obtained on the university Clinical Laboratory Sciences website at www.tarleton.edu/~clinlab. Students are accepted into the program three times a year to begin in either August, January or May. Application deadlines are listed on the application.

Prerequisite Courses Including Core Curriculum:

See A.A.S in Histotechnology (32-35 credit hours)

Required Medical Laboratory Technology Courses to be taken in Fort Worth and affiliated clinical sites: (37 credit, hours)

First Semester:

MLAB 282 ¹	Introduction to Medical Laboratory Science	1
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Fall Semester:

MLAB 264	Introduction to Immunology/Serology	3
MLAB 244	Introduction to Immunohematology	4
MLAB 274	Laboratory Operations	4
MLAB 294	MLT Practicum I	1

Spring Semester:

MLAB 276	Introduction to Clinical Chemistry	5
MLAB 224	Introduction to Hematology	4
MLAB 228	Coagulation	2

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MLAB 295 MLT Practicum II 1

Summer Semester:

MLAB 234 Introduction to Medical Microbiology 5

MLAB 214 Introduction to Urinalysis 2

MLAB 293 MLT Practicum III 1

Final Session:

MLAB 292 MLT Practicum IV 2

MLAB 285 Advanced Topics and Capstone Review 2

¹ **Course descriptions begin on page 276.**

Students entering with an associates or baccalaureate degree must have the following prerequisites:

Biology: 12 hours including Microbiology

Chemistry: 4 hours

Math: 3 hours

English: 3 hours

Dr. Lynda Gunter, MLT Advisor
Department of Clinical Laboratory Sciences
1501 Enderly Place
Fort Worth, Texas 76104
817-926-1101
gunter@tarleton.edu

Certificate in Molecular Diagnostics

Requirements for entry:

1. Full or conditional admission to the College of Graduate Studies
2. MT(ASCP) or CLS (NCA) certification or categorical certification from ASCP or NCA or CT(ASCP) or approval of the Department Head
3. Completed Molecular Diagnostics Certificate application and \$25 fee.

Courses:

(17 credit hours)

CLS 520,521,525,530,531,550,551

Contact:

Sally Lewis, Molecular Diagnostics Advisor
Department of Clinical Laboratory Sciences
1501 Enderly Place
Fort Worth, Texas 76104
817-926-1101
slewis@tarleton.edu

Department of Engineering Technology

Dr. Tommy G. Barker, Head

**Engineering Technology Building Room 100
(254) 968-9010**

Professor: Barker

Associate Professor: Roderick

Assistant Professors: Fullingim, Mollick, Pippin, Smith

Instructor: Egger

The Department of Engineering Technology offers programs of study leading to a Bachelor of Science degree in Manufacturing Engineering Technology, a Bachelor of Science degree in Industrial Technology, a Bachelor of Science degree in Aviation Science, and a Bachelor of Applied Arts and Sciences degree in Industrial Occupations.

BACHELOR OF SCIENCE IN MANUFACTURING ENGINEERING TECHNOLOGY

The Bachelor of Science degree in Manufacturing Engineering Technology educates students in a wide range of manufacturing related areas: quality, ergonomics, production planning, management, control systems, productivity, automated systems, and computer modeling. The Manufacturing Engineering Technology courses are supplemented with a foundation of Industrial Technology courses and emphases in mathematics, statistics, and the sciences. A wide choice of electives compliments the degree, allowing the student maximum flexibility in the areas of business, science, mathematics, computer information systems, and pre-engineering.

BACHELOR OF SCIENCE IN INDUSTRIAL TECHNOLOGY

The Bachelor of Science degree in Industrial Technology provides a common core of courses and four emphasis areas from which to choose: General Industrial Technology, Industrial Design, Manufacturing Operations, and Technology Education. These emphasis areas provide students with the flexibility to tailor their degree programs to their particular interests.

I. GENERAL INDUSTRIAL TECHNOLOGY

This emphasis area provides a broad range of experiences designed to produce the maximum flexibility upon entering the workforce. A broad range of courses is used to introduce the maximum number of concepts in all areas of manufacturing and construction. Students may choose any minor that will complement their interests.

II. INDUSTRIAL DESIGN

This emphasis area provides extensive work in computer-aided design, computer-aided manufacturing, and computer programming to develop an integrated approach to mechanical and industrial design. The common core courses are supplemented with additional design and manufacturing experiences to provide a comprehensive understanding of design and its application to manufacturing.

III. MANUFACTURING OPERATIONS

This emphasis area provides an expanded minor in business administration that includes courses in accounting, management, statistics, international business and business law. Additional courses in manufacturing management, productivity, and quality management provide an excellent combination of business and manufacturing concepts.

IV. TECHNOLOGY EDUCATION (Secondary Teacher Certification)

This emphasis area provides students with the professional education courses that lead to state certification to teach Technology Education courses at the secondary level. This combination of courses provides an excellent range of concepts that students can apply in many educational and training fields.

BACHELOR OF SCIENCE IN AVIATION SCIENCE

The Bachelor of Science degree in Aviation Science provides students with a well-rounded curriculum with strong conceptual foundations in aviation, science, and management. Students have a choice of two emphasis areas in preparing for specific career fields within the aviation industry, government, and the commercial sector.

I. PROFESSIONAL PILOT

This emphasis area concentrates on aircraft flight operations and prepares students with qualifications as professional pilots with a science/technology orientation. The curriculum focuses on advanced aeronautical ratings complemented by business administration, management, and communication skills for professional pilots in the civil and military aviation industries.

II. AVIATION MANAGEMENT

This emphasis area provides opportunities to study business and management as they relate to the technology of aviation and prepares students for a variety of administrative and management positions in the aviation industry.

BACHELOR OF APPLIED ARTS AND SCIENCES IN INDUSTRIAL OCCUPATIONS

The Bachelor of Applied Arts and Sciences (BAAS) degree is designed for students who have training in a technical area. Education received at technical schools, community colleges, military technical schools, and employer-sponsored training schools may be applied toward the degree. With appropriate documentation, the technical training may be supplemented with a maximum of 15-21 semester credit hours for work experience. The degree allows students to choose between two emphasis areas.

I. INDUSTRIAL OCCUPATIONS

This emphasis area allows students to custom design their degree by supplementing their technical training with advanced courses from the Department of Engineering Technology and other departments on campus. The student will work with an advisor to select courses that meet the student's individual needs.

II. TECHNOLOGY EDUCATION (Secondary Teacher Certification)

This emphasis area provides students with the professional education courses that lead to state certification to teach Technology Education courses at the secondary level. This combination of courses provides an excellent range of concepts that students can apply in many educational and training fields.

**THE BACHELOR OF SCIENCE DEGREE
IN MANUFACTURING ENGINEERING TECHNOLOGY**

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Some emphasis areas specify the course that students should take to satisfy this core curriculum requirement. CHEM 105 and PHYS 122 are required for BS in MET. Course descriptions begin on page 276.	
<u>Courses Required for BS in Manufacturing Engineering Technology</u>	
MET 216, 326, 336, 386, 426, 436, 446, 476	24
MATH 109, 120, 209, 300	14
C S 110 or CIS 110	3
ENGR 303	3
I T 105, 117, 235, 303, 318, 324 or 325, 350, 495	24
CHEM 105 ¹ , PHYS 122 ¹	8
Approved electives, 3 hours advanced	9
¹ Meets core curriculum requirement	

**THE BACHELOR OF SCIENCE DEGREE
IN INDUSTRIAL TECHNOLOGY**

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BS in Industrial Technology</u>	
MATH 109 or higher	3
I T 105, 117, 235, 303, 317, 324, 345, 350	24
<u>Additional Courses Required for Emphasis Areas</u>	
General Industrial Technology Emphasis	
I T 106, 318, 320, 495	12
I T or MET electives	9
MET 216, 336	6
Electives from any field, 18 hours advanced ¹	24
Industrial Design Emphasis	
I T 318, 405, 450, 461, 495	15
I T or MET electives	9
MET 336	3
CIS 110, 240, 241, 315	12
Advanced CIS electives	6
Electives from any field, 3 hours advanced ¹	6

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Engineering Technology

Manufacturing Operations Emphasis

I T 318, 320, 495	9
I T or MET electives	6
MET 216, 386, 446	9
ENGR 303	3
Electives	6
ACC 203, MGMT 301, 303,	9
G B 311 or MATH 300	3
G B 432, 444	6

Secondary Teacher Certification Emphasis

I T 106, 314, 325, 393, 405	15
MET 216, 336	6
A EN 230, CIS 103, COMS 214, ENGL 309	12
EDU 320, 330, 430, 435, 490, RDG 351, PSY 303	24

¹ Some students may choose to use 18 hours of electives for a minor in any field other than I T or MET.

THE BACHELOR OF SCIENCE DEGREE IN AVIATION SCIENCE

Semester Hours

University Core Curriculum

42

See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. See your academic advisor for assistance in selecting specific courses to satisfy the core curriculum requirements. **Course descriptions begin on page 276.**

Courses Required for Professional Pilot Emphasis Area

Lower-level requirements:

CIS 103, AVIM 2331	6
AIRP ² 1255, 1305, 1307, 1341, 1343, 1417	18
AIRP ² 1451, 2250, 2337, 2239	11

Upper-level requirements:

ASCI 301, 302, 303, 304, 401, 402, 408	21
G B 311 or MGMT 301, G B 312, MGMT 407, CIS 347	12
Approved advanced electives	10

Courses Required for Aviation Management Emphasis Area

Lower-level requirements:

AIRP ² 1305, 1417	7
ACC 203, 204, ECO 201, ¹ 202	12

Upper-level requirements:

ASCI 303, 304, 307, 308, 401, 408	18
G B 311, 312, 432, 433	12
MGMT 301, 302, 350, 406, 407, 421	18
CIS 300, 347	6
FIN 301, ECO 302	6

¹ Meets core curriculum requirement.

² Lower-level AIRP and AVIM course numbers shown are from the Workforce Education Course Manual. These courses are not offered at Tarleton State University but may be completed at any accredited college.

THE BACHELOR OF APPLIED ARTS AND SCIENCES DEGREE

IN INDUSTRIAL OCCUPATIONS

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for Emphasis Areas</u>	
<u>Industrial Occupations Emphasis</u>	
Occupational specialization ¹	36
Approved electives (not I T or MET)	12
Approved I T or MET electives	24
I T 318	3
MATH 109 or higher	3
<u>Secondary Teacher Certification – Grade 6-12 Emphasis</u>	
CIS 103, COMS 214	6
PSY 303, RDG 351, EDU 320, 330, 430, 435, 4906	24
I T 106, 117, 235, 303, 314, 324, 393	21
Occupational specialization ²	33
ENGL 309	3
MATH 109 or higher	3

¹ May include work from junior or technical colleges, employer-sponsored training, military schools, or a maximum of 21 semester credit hours for work experience.

² May include work from junior or technical colleges, employer-sponsored training, or a maximum of 15 semester credit hours for work experience.

Department of Mathematics, Physics, and Engineering

Dr. Javier Garza, Head

Mathematics Building, Room 142
(254) 968-9168
FAX (254) 968-9534

Professors: Kirby, Little, Littleton, McCoy, Snider, Winton
Associate Professors: Ahmad, Brawner, Garza, Hibbs, Marble,
Martin, Martinez, Reese, Riggs, White, Wyatt
Assistant Professors: Agapie, Crawford, K. Emmert, Goderya, Wang
Instructors: S. Emmert, Peters, Teague, J. Wood, K. Wood

The Department of Mathematics, Physics, and Engineering offers programs of study leading to the Bachelor of Science degree in Mathematics, Physics, Engineering Physics, Hydrology, Environmental Engineering, and Computer Science.

MATHEMATICS

The Bachelor of Science in Mathematics provides a program of study that prepares students who are: 1) seeking to teach mathematics at the secondary level; 2) seeking employment in industry; or 3) seeking to pursue graduate study in Mathematics. On the graduate level, the Master of Science in Mathematics provides a program of study that prepares students additionally (beyond the undergraduate level) for employment in industry. Students completing the M.S. in Mathematics also receive preparatory work for pursuing a doctoral degree in mathematics or mathematics education. For further information about the graduate program, see the graduate section of the catalog. For more information about the Mathematics, Physics, Engineering Physics, Environmental Engineering, Hydrology, and Computer Science programs, visit the departmental web site at <http://www.math.tarleton.edu>.

THE BACHELOR OF SCIENCE DEGREE IN MATHEMATICS

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276. See your academic advisor for assistance in selecting specific courses to satisfy these core curriculum requirements.	

Courses Required for BS in Mathematics

MATH 120, 131 ¹ , 209, 232, 307, 310, 311, 332, 409	29
PHYS 122 ¹	4
Approved C S electives, 3 hours advanced	6

Additional Required Courses

For BS in Mathematics with Secondary Certification ²	
MATH 301, 402, 404	9
6 hours from MATH 306, 333, 360, 420, 488, 490	6
EDU 320, 330, 430, 435, 490, PSY 220 or 303, RDG 351	24

ENGL 309	3
Electives	4
For BS in Mathematics without certification ²	
MATH 306, 333	7
9 hours from MATH 301, 360, 420, 488, 490	9
Electives, 3 hours advanced	6
Supporting field, 12 hours advanced ³	24
For BS in Mathematics with 8-12 Mathematics/Physics Certification	
MATH 301, 333, 402	10
MATH 404	3
PHYS 242, ² 334, 435	10
From Math 306 or advanced PHYS electives	6
EDU 320, 330, 430, 435, 490, PSY 220 or 303, RDG 351	24
ENGL 309	3

¹ May satisfy university core curriculum requirement.

² PHYS 122 and 242 are recommended for fulfillment of core Lab Science requirement.

³ Courses for supporting field are to be chosen from an academic area in which mathematics is applicable. Supporting field must be developed in consultation with the department heads involved.

ENGINEERING PHYSICS

The Engineering Physics program at Tarleton State University is an ABET accredited B.S. engineering degree program with emphases in selected areas of Electrical Engineering, Computer Engineering, and Materials Physics. Students are prepared for employment as an engineer and for engineering licensure, as well as for graduate studies in selected areas of Electrical Engineering, Computer Engineering or Physics. Extensive study in mathematics, engineering, and physics gives the Engineering Physics graduate the ability to design components, processes, and systems to meet specifications and the ability to work and communicate effectively in team-oriented, project-management-driven environments. Computer simulation and modern analytical tools are used to solve physical and electrical problems. Software development, hardware integration, and testing of microcomputers, microcontrollers, and design of microelectronic circuitry provide the graduate with the tools to apply computer and software-based solutions. Additional studies in ethics assure that the graduate understands engineers' special responsibilities to protect the health and well being of the general public. See more details at: <http://www.tarleton.edu/~Engineering>.

The first two years of the Engineering Physics program consist of the courses in the Engineering Program. In order to ensure that students have the solid foundation needed for success in upper level coursework, the student must complete designated courses in the Engineering Program with a grade of "C" or better before being admitted into upper level Engineering Physics coursework.

THE BACHELOR OF SCIENCE DEGREE IN ENGINEERING PHYSICS

Semester Hours

University Core Curriculum

42

See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. **Course descriptions begin on page 276.**

Courses Required for BS in Engineering Physics

(A grade of "C" or better in each required for graduation)

PHYS 122 ¹ , 242 ¹ , 334, 435	14
ENGR 111, 112, 221, 222, 223, 460	18
ENPH 225, 248, 314, 332, 343, 345, 430, 436, 441, 443	36
Advanced PHYS, ENGR, ENPH, or CS elective	9
MATH 120 ¹ , 209, 306, 333	15
CHEM 108	4

¹ Applies to University Core Curriculum

ENVIRONMENTAL ENGINEERING

The Environmental Engineering program at Tarleton State University is relatively unique in the State of Texas in preparing students to work as environmental engineers at the baccalaureate level. Students are prepared for employment as an engineer, for engineering licensure, as well as for graduate studies. Extensive study in math, engineering, physics, chemistry, biology, and environmental engineering gives the graduate the ability to design components, processes, and systems to meet specifications and the ability to work and communicate effectively in team-oriented, project-management-driven environments. Computer simulation and modern analytical tools are used to solve environmental engineering problems within the fields of water supply and resources, environmental systems modeling, environmental chemistry, wastewater management, solid waste management, hazardous waste management, atmospheric systems and air pollution control, and environmental and occupational health. Students will take a survey course covering all aspects of environmental engineering followed by more comprehensive studies in water resources, water and wastewater management, systems modeling and either air pollution monitoring and control or solid and hazardous waste management. Additional studies in ethics assure that the graduate understands engineers' special responsibilities to protect the health and well being of the general public. See more details at: <http://www.tarleton.edu/~Engineering>.

The first two years of the Environmental Engineering program consist of the courses in the Engineering Program. In order to ensure that students have the solid foundation needed for success in upper level coursework, the student must complete designated courses in the Engineering Program with a grade of "C" or better before being admitted into upper level Environmental Engineering coursework.

THE BACHELOR OF SCIENCE DEGREE IN ENVIRONMENTAL ENGINEERING

	Semester Hours
University Core Curriculum	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	

Courses Required for BS in Environmental Engineering

A grade of "C" or better is required in each for graduation.

BIOL 120	4
PHYS 122 ¹ , 242 ¹	8
ENGR 111, 112, 221, 222, 223, 303 ¹ , 460	21
ENPH 225	4
ENVE 210, 211, 300, 301, 310, 320, 402, 410, 420, 430	37
MATH 120 ¹ , 209, 306, 311, 333	18
CHEM 108, 201	8

¹ applies to University Core Curriculum

PHYSICS

Physics is the science that investigates and tries to understand the basic laws of nature. In this pursuit, it deals with the entire range of natural phenomena from the smallest domain of sub-nuclear particles to the largest domain of distant objects in the universe. This breadth of interests is reflected in the type of work pursued by physicists. Some are interested in research on problems that are at the frontiers of knowledge. Some apply this newly acquired knowledge to make practical advances in fields like engineering. Still others use the knowledge of physics as a basis for careers in medicine, law, teaching or administration. For students interested in teaching, secondary (grades 8-12) certification in either Physical Science or Math/Physics is also available.

THE BACHELOR OF SCIENCE DEGREE IN PHYSICS

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. See your academic advisor for assistance in selecting specific courses to satisfy these core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BS in Physics</u>	
PHYS 122, ¹ 242 ¹ , 331, 332, 334, 435	20
MATH 120 ¹ , 209, 306, 333	15
<u>Additional Required Courses</u>	
For BS in Physics Classical Track	
PHYS 333, 430, 488	8
PHYS electives, 6 hours advanced	9
Supporting field, 12 hours advanced	26
Electives	4
Approved C S elective	3
Math 232	3
For BS in Physics with Teacher Certification, Physical Science (8-12)	
EDU 320, 330, 430, 435, 490, PSY 220 or 303, RDG 351	24
PHYS electives, 6 hours advanced	9
PHYS 333, 430	6
MATH 404	3
ENGL 309	3
CHEM 105, 108, 201, 486	13
For BS in Physics with Teacher Certification, 8-12 Mathematics/Physics	
MATH 311, 402, 404	9
PHYS 333, 430	6
PHYS electives, 6 hours advanced	9
Elective	3
EDU 320, 330, 430, 435, 490, PSY 220 or 303, RDG 351	24
Approved C S elective	3
ENGL 309	3
For Medical Physics (Pre-Professional)	
CHEM 105, 108, 201, 202	16
BIOL 120, 121, 474, 475	14
PHYS 355, 432, 437, 455	12

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 Mathematics, Physics, and Engineering

MATH 232, 311	6
Advanced electives from C S, PHYS, CHEM, BIOL, ENGR, ENPH, or MATH	5
For Astronomy	
PHYS 103, 113, 333, 403, 430, 488	18
MATH 232	3
Advanced PHYS elective	3
Supporting field, 12 hours advanced	26
C S elective	3

¹ May be used to satisfy university core curriculum requirements.

COMPUTER SCIENCE

The Bachelor of Science Degree in Computer Science prepares graduates to enter the high-tech work force or to continue their studies in computer science or related disciplines at the graduate level. This program provides a strong foundation in computer science, mathematics, and general science that is aligned with curriculum standards as set forth within the discipline. Students are encouraged to also specialize in a complementary area, through the support field of study.

THE BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. See your academic advisor for assistance in selecting specific courses to satisfy these core curriculum requirements. Course descriptions begin on page 276.	

Courses Required for BS in Computer Science

MATH 131, ¹ 120, 209, 310	14
PHYS 122, ¹ 242 ¹	8
Technical electives from MATH 232, 332, 360, or approved advanced MATH/CIS or advanced C S	9
Support field, 12 hours advanced	24
C S 110, 221, 230, 241, 248, 343, 380, 389, 401, 451, 478	36
ENGL 309	3

¹ May satisfy university core curriculum requirements.

HYDROLOGY AND WATER RESOURCES

Tarleton State University offers the only Bachelor of Science in Hydrology & Water Resources in Texas, and is one of 13 such programs in the United States. The Hydrology degree program was developed after consultation with water resource specialists from throughout the nation and is designed to prepare students for professional positions in hydrology and water resource development. Hydrology is the study of the behavior of water in nature. Water is our most important natural resource. Without it, there would be no life on earth. Managing its use so we do not run out of water is a challenge for today and tomorrow. The water resources expert knows how to manage the water nature provides and how to distribute it to the places it is needed in the proper quantity and with the proper quality for the benefit of man.

One of the unique features of the Hydrology and Water Resources Program at Tarleton State University is that each student is required to complete an internship before graduation (see HYDR 440-Internship in the course offerings section of this catalog). The manner in which this requirement is met is for the

student to work from 9 to 13 weeks (generally 40 hours a week) for a company or agency that has some expertise in hydrology. Often this leads to full-time employment at the end of the internship. Departmental faculty will assist students in finding an appropriate internship sponsor. Enrollment in HYDR 440 requires advisor and department head approval. The student is required to receive a grade of C or higher in all required HYDR, BIOL, GEOL, CHEM, MATH, ENGR, ENPH, CS, ECO, AGRN, AEN, AEC, and PHYS courses for graduation.

THE BACHELOR OF SCIENCE DEGREE IN HYDROLOGY

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BS in Hydrology</u>	
HYDR 110, 211, 300, 310, 320, 410, 420, 430, 440, 450	33
PHYS 122 ¹ , 242, CHEM 108 ¹ , 201, GEOL 105	20
MATH 120 ¹ , 209, 311, 333	15
¹ This course satisfies a core curriculum requirement.	
<u>Courses required for Support Areas</u>	
For Agriculture	
A EN 318, AGRN 301, 312, 427	14
A EC 105, HYDR 311, 488, MATH 360	12
For Biology	
BIOL 120, 121, 307, 441	16
HYDR 311, 488, MATH 360	9
For Chemistry	
BIOL 121, CHEM 202, 314, 323, 324	19
HYDR 311, 488	6
For Computer Science	
HYDR 311, 488, MATH 360, CIS 331	12
C S 110, 221, 344, 401	12
For Economics	
ECO 201, 202, 301, 302, 304, 306	18
HYDR 311, 488	6
For Engineering	
HYDR 488, MATH 360	6
ENGR 111, 112, 221, 222, 303, 460 and ENPH 225 or 248	22
For Geosciences	
GEOL 106, 203, 310, 313	15
From GEOL 312, 314, 412, or E S 413	3
HYDR 311, 488	6

A student who wishes to be eligible to take the Engineering Fundamentals Examination as a graduate of an engineering-related science program should take the following courses:

ENGR 221 Principles of Engineering I ENGR 303 Engineering Economy

ENGR 222 Principles of Engineering II ENPH 225 Electrical Circuit Theory
ENGR 223 Principles of Engineering III ENPH 248 Introduction to Digital
MATH 306 Differential Equations Systems Design

A typical curriculum incorporating these courses may be obtained from the Division of Hydrology and Water Resources/Engineering. Completing these courses allows the student to minor in engineering.

ENGINEERING PROGRAM

The Engineering Program at Tarleton State University prepares the student for further studies in specific engineering disciplines either at Tarleton State University or other colleges and universities. The Engineering Program comprises approximately one half of the course work required for a Bachelor of Science degree in Engineering and is the entry point for all students wishing to major in engineering. Entry into the Engineering Program requires registration in Trigonometry, Pre-calculus or higher. Once the designated Engineering courses in the table below have been completed with a "C" or better, the student may apply for admission into the upper level programs leading to a degree in an engineering discipline at Tarleton.

The student may instead choose to transfer to another engineering degree-granting college or university to complete the requirements for an engineering degree. For example, the Engineering Program is aligned with the current program at Texas A&M University for seamless transfer. Students wishing to transfer are encouraged to keep their advisor informed of their intentions, as requirements for different schools of engineering vary considerably.

Entering freshman Engineering students are evaluated for mathematics preparedness. The normal course progression calls for taking Mathematics 120 (Calculus I) as the first mathematics course. If the student is not prepared to take Calculus I as the first course, then he or she may be required to take MATH 107 (College Algebra), MATH 109 (Plane Trigonometry) or MATH 118 (Pre-Calculus) instead. It is strongly recommended that students who are not certain that they are well grounded in algebra and trigonometry come to Tarleton and take the placement tests early enough in the summer prior to first enrollment so they can take any necessary calculus preparatory courses in summer school if they wish.

SUGGESTED CURRICULUM FOR ENGINEERING¹

Courses from University Core Curriculum	Semester Hours
ENGL 111, 112	6
PHYS 122 ¹ , 242 ¹	8
MATH 120 ¹	4
HIST 201, 202	6
POLS 201, 202	6
HLTH 101	3
Other Required Courses	
CHEM 108	4
MATH 209 ¹ , 306, 333	11
ENGR 111 ¹ , 112 ¹ , 221 ¹ , 222 ¹ , 223, ENPH 225	19

¹ These courses must be completed with a grade of "C" or better before the student can make application to the upper level engineering programs at Tarleton State University

Please Note:

- 1) TAMU, UTA, Texas Tech and many other universities require all students who have not taken two years of the same foreign language in high school to take a minimum of six semester hours of the same foreign language in college.
- 2) The Agricultural Engineering courses listed elsewhere in this catalog are not intended for engineers and do not count toward accredited engineering degrees.

Department of Nursing

Dr. Elaine Evans, Head

**Nursing Center
Box T-0500
(254) 968-9139**

Associate Professor: Evans

**Assistant Professors: Duran, Glidewell, Kunce, Maness, Walker,
Woods**

**Instructors: Baker, Donwerth, Figueroa,
Glidewell, Kunce, Pehl, Winslow, Winton, Zapata**

Tarleton State University offers a Bachelor of Science Degree in Nursing (BSN). Upon successful completion of program requirements, a graduate is eligible to take the NCLEX-RN and apply for licensure as a registered nurse. Distinguishing features of this innovative multiple-entry program include: (1) pre-admission course for generic students; (2) availability of several educational pathways in one program (BSN, LVN to BSN, RN to BSN); (3) opportunity for concurrent enrollment in nursing and non-nursing courses throughout the program; (4) opportunity to attend full or part-time; (5) offering courses in the final semester of the program in which students synthesize and validate concepts presented in prior course work; (6) offering a transition course for RNs and LVNs entering the program; and (7) emphasis on rural health and rural nursing.

CLINICAL EXPERIENCES

Clinical experiences are an integral part of the nursing curriculum, and a complementary relationship exists between classroom and clinical components of the program. Hospitals and other clinical agencies in Brown, Bosque, Comanche, Eastland, Erath, Hood, Johnson, Palo Pinto, Parker, and Somervell Counties are used for student clinical experiences. The VA Hospital in Waco is also used to provide an in-patient psychiatric experience. All clinical experiences are under the supervision of a University nursing faculty member. Although a student's place of residence is considered when planning clinical experiences, the primary consideration is the learning needs of the student. Therefore, students are expected to travel to several clinical agencies during the program of study. Clinical experiences are scheduled during day and evening hours.

EDUCATIONAL MOBILITY OPTIONS FOR LVNs and RNs

Graduates of vocational, associate degree/diploma and baccalaureate nursing programs acquire a common core of knowledge, attitudes, and cognitive and psychomotor skills. However, there are distinct differences in the breadth, depth, scope of preparation, and knowledge presented to students in each type of program. A basic premise of Tarleton State University's innovative multiple entry-nursing program, is acknowledgement of previous learning in order to provide career mobility. This is, of course balanced against a concern for maintaining high quality in the educational program and assuring the public of the quality of the education of the graduate. Depending on the student's nursing educational background, credit for nursing courses may be awarded by substitution, examination, or advanced placement.

LVNs may receive advance placement credit for NUR 120 and 201 upon successful completion of a transition course.

RNs are admitted into junior-level nursing courses. Graduates of associate or diploma programs may receive credit for NUR 120, 201, 205, 302, 303, 309, 330 and 332 by substitution or advanced placement. Credits for these core nursing courses become part of the degree plan upon successful completion of a transition course.

ADMISSION INFORMATION

Application and admission to the nursing program are separate from and in addition to application and admission to the University. Nursing faculty serve as advisors for all nursing majors. Nursing majors should make an appointment with a nursing faculty advisor early in his or her course of study to prepare a tentative degree plan. This appointment should be made at a time other than the University's advising and registration periods and well in advance of the nursing program application deadline. An appointment can be made by contacting the Department of Nursing secretary at the Nursing Center Building; phone (254) 968-9139 or -9717.

ADMISSION REQUIREMENTS

Three points of program entry exist in this program: NUR 120 for generic students, sophomore year for LVNs, and junior year for RNs. Because the place of entry varies with each group, the number of courses required for program entry is greater for LVNs than for generic students and greater for RNs than for LVNs. The following criteria must be met for admission to the nursing program:

- A. Generic Students** - Those students with no previous nursing education. NUR 120 is a preadmission course and serves as the applicant pool for the program. Students may take NUR 120 as early as the second semester of their freshmen year or when the course prerequisite courses are completed. Generic students are officially admitted to the program (enter NUR 201 & 205) if the application process is completed by the appropriate deadline and the admission requirements are met.

Admission Requirements

1. Admission to Tarleton State University
2. Application and admission to NUR 120, Survey of Nursing Science
2. Application to the Department of Nursing when enrolled in NUR 1204
3. Completion of the following courses with a minimum grade of "C" (34 semester hours):

<u>Course</u>	<u>Credit Hours</u>
MATH 107 - College Algebra	3
ENGL 111, 112 - Rhetoric & Composition	6
CHEM 103 or 105 - Chemistry	4
BIOL 219, 220 - Anatomy & Physiology	8
BIOL 307 – Microbiology	4
PSY 101 - General Psychology	3
PSY 307 – Psychology of Human Development	3
SOC 201 – Introduction to Sociology	3
H S 210 - Nutrition	3
NUR 120 - Survey of Nursing Science	<u>4</u>
	34

4. Cumulative grade point average on courses required for the degree of 2.75 or higher.

5. Eligibility to take state board examination (NCLEX-RN) upon graduation¹.
¹ See eligibility requirements for licensure.

B. Licensed Vocational Nurses (LVN to BSN) Those graduates of practical or vocational nursing programs who hold a current license to practice nursing in Texas.

Admission Requirements

1. Admission to Tarleton State University
2. Current license to practice as a vocational nurse in Texas.
3. Completion of 55 of the 64 semester credit hours listed below with a minimum grade of "C". May delay taking up to 9 hours of courses marked with an asterisk until after program admission.

<u>Course</u>	<u>Credit Hours</u>
MATH 107 - College Algebra	3
*MATH - Statistics	3
ENGL 111, 112 - Rhetoric & Composition	6
ENGL - Sophomore course in Literature	3
CHEM 103 or 105 - Chemistry	4
BIOL 219, 220 - Anatomy & Physiology	8
BIOL 307 - Microbiology	4
PSY 101 - General Psychology	3
PSY 201 or 307 - Human Growth & Development	3
SOC 201 - Introduction to Sociology	3
*Visual and Performing Art (see catalog)	3
H S 210 - Nutrition	3
*HIST 201, 202 - US History	6
*POLS 201 - US Government	3
*POLS 202 - Texas Government	3
*COMS 101, 102, or 301 - Speech	3
HLTH 101 - Wellness	3

*Course may be taken after admission to program.

4. Cumulative grade point average on required courses for the degree of 2.75 or above.
5. Eligibility to take state board examination (NCLEX-RN) upon graduation¹.

¹ See eligibility requirements for licensure.

Eligibility Requirements for Licensure As A Registered Nurse

Eligibility to take the NCLEX-RN upon graduation or current licensure as a registered nurse is a requirement for program entry at Tarleton State University. The Board of Nurse Examiners has identified certain circumstances that may render a potential candidate ineligible for licensure as a registered nurse in the State of Texas (see eligibility questions below). However, the Board provides individuals with the opportunity to petition the Board for a Declaratory Order as to their eligibility in accordance with Section 301.257 of the Nursing Practice Act. This petition should be made before a person begins a nursing program. Processing the petition usually takes 6 to 9 months, but, may be longer in some circumstances. Information and a "Request for a Declaratory Order Petition" packet may be obtained from the Texas Board of Nurse Examiners at www.bne.state.tx.us.

The Texas Board of Nursing requires a FBI criminal background check as part of the application for licensure process. The application for licensure takes place during the final semester of the program.

Upon application to the program and prior to graduation, you will be asked to answer the following questions. If you must answer yes to one or more of the questions, you should complete the Declaratory Order Process.

1. Have you been arrested in any state, territory, or country, including expunged offenses and deferred adjudication with or without prejudice of guilt for anything other than a minor traffic violation? (DUIs, DWIs, and PIs must be reported and are not considered minor traffic violations).
2. Have you ever been convicted, adjudged guilty by a court, pled guilty or pled nolo contendere to any crime (felony or misdemeanor) whether or not a sentence was imposed (excluding minor traffic violations)?
3. Do you have any criminal charges pending against you in any court?
4. Has any licensing authority refused to issue you a license or ever revoked, annulled, cancelled, accepted surrender of, suspended, placed on probation, refused to renew a professional license or certificate held by you now or previously, or ever fined, censured, reprimanded or otherwise disciplined you?
5. Within the past five (5) years have you been addicted to and/or treated for the use of alcohol or any other drug?*
6. Within the past five (5) years have you been diagnosed with, treated, or hospitalized for schizophrenia and/or psychotic disorders, bipolar disorder, paranoid personality disorder, antisocial personality disorder, or borderline personality disorder?*

* If you are licensed as an LVN in the State of Texas and are currently participating in the Texas Peer Assistance Program for Nurses you may answer "NO" to questions #5 and #6.

- C. RNs (RN to BSN)** - Those graduates of diploma or associate degree nursing programs who hold a current license to practice as a registered nurse in Texas.

Admission Requirements

1. Admission to Tarleton State University
2. Current license to practice as a registered nurse in Texas.
3. Passing score on the Tarleton Writing Proficiency Examination
4. Completion of the 58 of the 64 semester credit hours listed below with a minimum grade of "C". May delay taking up to 6 hours of courses marked with an asterisk until after program admission.
5. Completion of the following courses with a minimum grade of "C".

<u>Course</u>	<u>Credit Hours</u>
MATH 107 - College Algebra	3
*MATH - Statistics	3
ENGL 111, 112 - Rhetoric & Composition	6
ENGL - Sophomore course in Literature	3
CHEM 103 or 105 - Chemistry	4
BIOL 219, 220 - Anatomy & Physiology	8
BIOL 307 Microbiology	4
PSY 101 - General Psychology	3
PSY 201 or 307 - Human Growth & Development	3
SOC 201 - Introduction to Sociology	3
*Visual and Performing Art (see catalog)	3

H S 210 - Nutrition	3
*HIST 201, 202 - US History	6
*POLS 201 - US Government	3
*POLS 202 - Texas Government	3
*COMS 101, 102, or 301 - Speech	3
HLTH 101 - Wellness	3

*Course may be taken after admission to program.

- Cumulative grade point average on required courses for the degree of 2.75 or above.

APPLICATION PROCEDURE

- Obtain an application packet from the nursing office.
- Submit the following required application materials to the nursing office by the appropriate deadline:
 - Application
 - Official transcripts from each college or university attended and or high school transcript if you have less than 30 semester hours of college credit
 - Personal Information Card
 - Three reference forms, completed as directed in the guidelines on the application (NUR 120 students do not have to submit reference forms).
- Carefully review the previous section, "Eligibility Requirements for Licensure as a Registered Nurse"
- Deadlines for application to the nursing program are as follows:

Admission Semester	Student Category	Application Deadline
Fall	Generic Student, LVN, RN	March 1
Spring	Generic Student	October 1

Note: All information on the application and other documents must be furnished accurately and completely. Falsification of any part of the application and other required forms is cause for not being admitted to, or for dismissal from, the nursing program.

PROCEDURE FOR REVIEW OF APPLICANTS

Qualified applicants are those completing the application procedure by the appropriate deadline and who meet admission requirements. The Department of Nursing application form, references, and transcripts constitute the core factors for admission.

Following the review of applicant process, students are notified by mail of the status of their application to the nursing program. Those students admitted to the program receive information about requirements to be completed prior to the beginning of the first nursing course: a health examination, completion of a personal health history, CPR certification, immunizations, and malpractice insurance requirement.

TRANSFER STUDENT APPLICATION PROCEDURE

Students taking required non-nursing courses at other colleges or universities may apply for admission to the nursing program at Tarleton. Transfer students must meet the same admission requirements as those students enrolled at Tarleton. Transfer students are required to

- Complete the same nursing program application procedure as currently enrolled students.

2. Submit the required set of application papers to the Tarleton State University Admissions Office by the appropriate nursing program deadline.
3. Gain official acceptance to the University prior to the time of notification of acceptance to the nursing program.

Transfer students should make an appointment with a nursing faculty advisor early in their course of study to prepare a tentative degree plan. This appointment should be at a time other than Tarleton's registration and advising periods and well in advance of the nursing program application deadline. An appointment may be made by contacting the Department of Nursing secretary (Nursing Center Building; phone (254) 968-9139 or -9717).

Transfer Nursing Students - Those students who have been enrolled in but have not completed a nursing program other than Tarleton.

Transfer of credit from one nursing program to another is often difficult because of differences in curricula. Therefore, the Student Affairs Matriculation and Academic Standards Committee (SAMUS) will evaluate transfer of nursing credits on an individual basis. Students should provide this committee with nursing course descriptions from the college catalog and the course syllabi (must have at least the course objectives, course outline and a list textbooks used). The student should also submit a letter from the Dean or Director of transferred nursing program. Send this material to:

Chair, SAMUS Committee
Department of Nursing
Box T-0500
Stephenville, TX 76402

THE BACHELOR OF SCIENCE DEGREE IN NURSING

	Semester Hours
<u>University Core Curriculum</u>	42
See pp. 71-72 for additional information about the Tarleton State University core curriculum requirements. Course descriptions begin on page 276.	
<u>Courses Required for BSN in Nursing (all students)</u>	
BIOL 219, ¹ 220 ¹ , 307	12
SOC 201 ¹	3
CHEM 103 or 105	4
PSY 201, 307	6
H S 210	3
MATH 300 or 350	3-4
<u>Nursing Courses Required²</u>	
For Generic Student Program Entry	
NUR 120, 201, 205, 215, 301, 302, 303, 309, 330, 332, 409, 410, 411, 425, 430, 435	64
For LVN Program Entry	
NUR, 301, 302, 303, 305, 307, 309, 316, 409, 410, 411, 425, 430, 435	49
For RN Program Entry	
NUR 301, 305, 307, 409, 410, 411, 425, 430, 435	32
¹ These courses count toward core curriculum requirements.	