

# **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, Rathburn, Sudman, Sanderford**  
**Assistant Professors: Higgins, Pfau**  
**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 Sciences. In addition, pre-professional programs are offered which include pre-medicine, pre-dentistry, pre-physical therapy, and pre-pharmacy. Secondary teaching certificates may be obtained with Science Certification or Life Science Certification. The curricula are designed to maximize career opportunities at each particular level 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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 291 for BIOL course descriptions.</b>	
<u>Courses Required for BS in General Biology</u>	
BIOL 120, 121, 303, 307	16
CHEM 105, <sup>1</sup> 108, <sup>1</sup> 201, PHYS 104, 105	20
MATH 109	3
<sup>1</sup> Satisfies lab science requirement.	
<b>Additional Required Courses</b>	
For Biology without Teacher Certification	
BIOL 306 or 315, 20 hours advanced BIOL electives	24
ENGL 309, PSY 101, MATH 350	10
Electives, 4 hours advanced	15
For Aquatic Freshwater Support Area	
BIOL 306 or 315; 349, 303, 401, 441	20
Advanced BIOL electives	4
CHEM 202 or 474	3-4
ENGL 309, PSY 101, MATH 350	10
GEOL 101, 105, E S 350	10
Electives	6

For Aquatic Marine Support Area	
BIOL 306 or 315; 349, 340, 401, 442	18
Advanced BIOL electives	6
CHEM 202 or 474	3-4
MATH 350, ENGL 309	7
PSY 101, GEOG 101	6
GEOL 105, E S 340	7
Electives	6
For Environmental Biology Support Area	
BIOL 304, 336, 349, 315, 401, 441, 485, 340 or 442	28
ENGL 309, MATH 350	7
GEOL 105, 107	8
For Molecular Biology Support Area	
CHEM 202, PSY 101	7
ENGL 309, MATH 350	7
BIOL 313, 302, 385, 395, 475, BIOL or CHEM 474, 478	25
BIOL electives, 4 hours advanced	8
Electives	7
For Teacher Certification: Life Science Certification <sup>1</sup>	
BIOL 315, 349, 401, 470	15
ENGL 309	3
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
Advanced electives	12
For Teacher Certification: Science Certification <sup>1</sup>	
BIOL 315, 349, 401, 470	15
ENGL 309	3
CHEM 4861, GEOL 105, 106, 486	10
PHYS elective	3
Advanced E S electives	6
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
<sup>1</sup> 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 Wildlife Biology Support Area	
BIOL 304, 306, 315, 401	16
Advanced BIOL electives	8
ENGL 309, MATH 350, PSY 101	10
R&RM elective	3
Electives, 8 hours advanced	16
For Pre-Physical Therapy	
BIOL 306, 460, 12 hours advanced BIOL electives	20
Advanced semester hours transferred from an accredited Physical Therapy School	25
ENGL 309	3
PSY 101, 201, SOC 201	9
MATH 350	4
MGMT 301	3

**Pre-Physical Therapy**

The pre-Physical Therapy (PT) support area at Tarleton prepares students for admission into a PT school. If the student is accepted into an accredited PT school, twenty-five hours are transferred back to Tarleton to complete requirements for a B.S. degree. Although the pre-PT support area is listed under the B.S. in Biology, students have the option to take coursework leading to a B.S. degree in Biomedical Science.

**THE BACHELOR OF SCIENCE DEGREE IN BIOMEDICAL SCIENCE**

Semester Hours

University Core Curriculum

47

See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. **See p. 291 for BIOL course descriptions.**

Courses Required for BS in Biomedical Science

BIOL 120, 121, 302, 303, 306, 307	24
ENGL 309	3
MATH 109, 120, 209	11
CHEM 105, <sup>1</sup> 108, <sup>1</sup> 201, 202	16
PHYS 104, 105 or 122, 242	8
Advanced electives	12

Other Required Courses

For Pre-Dental/Pre-Medical

BIOL 385, 460, 461, 485	13
BIOL 474 or CHEM 474	3

For BS in Biomedical Sciences (not pre-dental or pre-medical)

BIOL advanced electives	16
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<sup>1</sup> **This course counts toward the university core curriculum lab science requirement. See p. 280 for BIOL course descriptions.**

**PRE-PROFESSIONAL PROGRAMS**

Students entering professional school prior to completing a degree at Tarleton may meet the Bachelor of science degree requirement by (1) fulfilling the "Degree Requirements" as stated on pp. 43-46 and (2) transferring the necessary hours from an approved professional school of dentistry, medicine, or allied health for a minimum total of 128 hours.

**SUGGESTED CURRICULUM FOR PRE-PHARMACY<sup>1</sup>**

ENGL 111, 112, 6 hours soph literature	12
BIOL 120, 121, 219, 303,307 474	23
CHEM 105, 108, 201, 202	16
MATH 107, 109, 120, 350	14
PHYS 104	4
COMS 101, 102, or 301	3
HIST 201, 202	6
POLS 201, 202	6
PSY 101	3
ECO 201	3

<sup>1</sup> Requirements for different schools of pharmacy vary considerably. Students should seek counsel from the Pre-Pharmacy advisor in the Department of Biological Sciences prior to enrollment.

# Department of Chemistry, Geosciences, and Environmental Science

Dr. Carol Thompson, Head

SCPL, Room 117  
(254) 968-9143

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

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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. COMS 301 is required for Interdisciplinary Chemistry. Core lab science must be from GEOL 105, 106, 107 and BIOL 120, 121; must be BIOL for Pre-Medical Program and Biochemistry; must include GEOL 107 for Teacher Certification, Science 8-12. <b>See p. 294 for CHEM course descriptions.</b>	
<u>Courses Required for BS in Chemistry</u>	
CHEM 105, 108, 201, 202, 307, 323, 408, 486	29
MATH 120, 209	8
PHYS 104, 105 or 122, 242 <sup>1</sup>	8
ENGL 309	3
CIS or C S elective	3
<u>Additional Courses Required for Support Areas</u>	
For BS in Chemistry – Professional Chemistry	
Foreign language	8
Advanced electives	7
CHEM 324, 427, 428, 474	13
Advanced CHEM electives	3
For BS in Chemistry with Teacher Certification, Physical Science (8-12)	
PSY 220 or 303, RDG 351, EDU 330, 335, 430, 435, 490	24
Advanced CHEM	7
MATH 306 or 333	3-4
PHYS 334	3

For BS in Chemistry - Interdisciplinary Chemistry	
Supporting field, <sup>2</sup> 9 hours advanced	21
Advanced elective	4
Advanced CHEM electives	7
For BS in Chemistry – Biochemistry	
CHEM 427 or 445, 474, 475	9
BIOL 303, 307, 313, 478	15
Electives (3 advanced)	7
For BS in Chemistry - Pre-Medical/Pre-Dental Program	
BIOL 306, 307	8
BIOL 302, 385, 460, 461, 485	17
CHEM 474	3
Advanced CHEM elective	4

<sup>1</sup> **PHYS 122, 242 required for BS in Chemistry without certification and for Teacher Certification, Science (8-12).**

<sup>2</sup> **Possible supporting fields include Biology, Geoscience, Hydrology, Physics, Business Administration, and other fields approved by department heads involved.**

## THE BACHELOR OF SCIENCE DEGREE IN GEOSCIENCE

	Semester Hours
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. BIOL 120 and 121 are required for support areas in Environmental Science, Earth Science (without teacher certification), and Teacher Certification, Science (8-12). BIOL 120 and 121 or PHYS 104 and 105 are required for the Geology support area. PHYS 104 and 105 or PHYS 122 and 242 are required for the Hydrogeology support area. <b>See p. 355 for GEOL course descriptions. See p. 326 for E S course descriptions.</b>	
<u>Courses Required for BS in Geoscience</u>	
CHEM 105, 108, HYDR 110, GEOL 105, 203	19
<u>Additional Courses Required for Support Areas</u>	
For Geology support area	
Electives, 16 hours advanced <sup>1</sup>	19-20
GEOL 106, 205, 305, 306, 312, 313, 411	24
From GEOL 310, 314, 320, 412	6
GEOL field course, junior or senior level <sup>2</sup>	6
BIOL 120 and 121 or PHYS 104 and 105	8
MATH 109 and 120 or 209 or 300 or 350	6-7
E S 220	3
For Environmental Science support area	
AGRN 301, AGRN 310 or AGRN 427, CHEM 201	11-12
POLS 310 or 410	3
GEOL 107, 205, 314	10
GEOL from 310, 313, 320, 412	9-10
ES 220, 350, 401	9
E S from 330, 340, 484	6
MATH from 107, 109, 120, 209, 300, 350	6-8
BIOL 120, 121, 312, 401	16
Advanced elective	3

For Earth Science support area	
CHEM 201	4
POLS 310 or 410	3
Advanced electives	15
GEOL 106, 205, 310	10
From GEOL 305, 306, 312, 313, 314, 320, 411, 412	8-9
E S 220, 330, 340, 350, 484 <sup>2</sup>	15
MATH from 107, 109, 120, 209, 300, 350	6-8
BIOL 120, 121	8
AGRN 301	4
For Teacher Certification, Science (8-12)	
ENGL 309	3
CHEM 201, 486	5
PHYS 104, 105, 206	11
GEOL 106, 107, 486	9
From E S 320, 330, 340, 350	9
Advanced GEOL or E S <sup>1</sup>	1-6
BIOL 120, 121, 401, 470	15
From MATH 107, 109, 120, 209, 300, 350	6-8
PSY 220 or 303, RDG 351	6
EDU 330, 335, 430, 435, 490	18
For Hydrogeology	
AGRN 301, CHEM 201, 202	12
GEOL 106, 306, 310, 313, 314, 320, 412	24
Hydrogeology Internship or Approved Field Course, junior or senior level	3-6
E S 220, 350, 413	9
From MATH 107, 109, 120, 209, 300, 350	17-18
PHYS 104, 105 or 122, 242	8

<sup>2</sup> Must have a total of 45 advanced hours.

<sup>3</sup> An approved Geology field course of 6 hours, to be taken during the summer at another approved university between the junior and senior years.

## **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  
Instructor: 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

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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 296 for CLS course descriptions.</b>	
<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, <sup>1</sup> 108, <sup>1</sup> 201	12
MATH 109	3

<sup>1</sup> 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/](http://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 <sup>1</sup>	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
		<u>37</u>

<sup>1</sup> 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](http://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 <sup>1</sup>	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
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

<sup>1</sup> See p. 389 for **MLAB** course descriptions.

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**

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

**Professor: Barker**

**Associate Professor: Roderick**

**Assistant Professors: Fullingim, Mollick, Pippin**

**Instructor: Smith**

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, CAD/CAM, 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, and computer information systems. 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, junior 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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 366 for MET course descriptions.</b> Some emphasis areas specify the course that students should take to satisfy this core curriculum requirement. CHEM 1054, and PHYS 1224, are required for BS in MET.	
<u>Courses Required for BS in Manufacturing Engineering Technology</u>	
MET 216, 326, 336, 346, 386, 426, 436, 446, 476	27
MATH 109, 120, 209, 300	14
C S 110 or CIS 110	3
I T 105, 117, 303, 324 or 325, 350, 361, 318, 495	24
Math or science elective	3-4
Approved electives	10-12

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

	Semester Hours
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 380 for I T course descriptions.</b>	
<u>Courses Required for BS in Industrial Technology</u>	
MATH 109 or higher	3
I T 105, 117, 215, 303, 317, 324, 350	21
<u>Additional Courses Required for Emphasis Areas</u>	
For General Industrial Technology	
I T 106, 318, 320, 495	12
I T or MET electives	9
MET 216, 336	6
Electives from any field, 21 hours advanced <sup>1</sup>	30
For Emphasis Area, Industrial Design	
I T 318, 361, 405, 450, 461, 495	18
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 <sup>1</sup>	9
For Emphasis Area, Manufacturing Operations	
I T 318, 320, 495	9
I T or MET electives	9

MET 216, 346, 386, 446	12
Electives	6
ACC 203, MGMT 301, 303,	9
G B 311 or MATH 300	3
G B 432, 444	6

For Emphasis Area, Secondary Teacher Certification	
I T 106, 314, 325, 361, 393, 405	18
MET 216, 336	6
A EN 230, CIS 103, COMS 214, ENGL 309	12
EDU 330, 335, 430, 435, 490, RDG 351, PSY 303	24

<sup>1</sup> 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
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. See p. 289 for ASCI course descriptions. See your academic advisor for assistance in selecting specific courses to satisfy the core curriculum requirements.	

#### Courses Required for Professional Pilot Emphasis Area

Lower-level requirements:	
CIS 103, AVIM 2331	6
AIRP <sup>2</sup> 1315, 1255, 1305, 1307, 1341, 1343, 1417	21
AIRP <sup>2</sup> 1451, 2250, 2337, 2239, 2355	14
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	9

#### Courses Required for Aviation Management Emphasis Area

Lower-level requirements:	
AIRP <sup>2</sup> 1305, 1417	7
ACC 203, 204, ECO 201, <sup>1</sup> 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
Approved advanced electives (Business or CIS recommended)	6
FIN 301, ECO 302	6

<sup>1</sup> Meets core curriculum requirement.

<sup>2</sup> 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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 373 for I T course descriptions.</b>	
<u>Courses Required for Emphasis Areas</u>	
For Industrial Occupations Emphasis Area	
Occupational specialization <sup>1</sup>	48
Approved electives (not I T or MET)	12
Approved I T or MET electives	24
I T 318	3
MATH 109 or higher	3
For Secondary Teacher Certification – Grade 6-12 Emphasis Area	
CIS 103, COMS 214	6
PSY 303, RDG 351, EDU 330, 335, 430, 435, 4906	24
I T 106, 117, 303, 314, 324, 361, 393	21
Occupational specialization <sup>2</sup>	33
ENGL 309	3
MATH 109 or higher	3

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

<sup>2</sup> 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: El-Saidi, Kirby, Little, Littleton, McCoy,  
Snider, Winton**

**Associate Professors: Ahmad, Garza, Hibbs, Marble, Martin,  
White**

**Assistant Professors: Agapie, Brawner, Emmert, Goderya,  
Martinez, Reese, Riggs, Viveros-Rogel, Wyatt**

**Instructors: Jones, 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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 385 for MATH course descriptions.</b> See your academic advisor for assistance in selecting specific courses to satisfy these core curriculum requirements.	
<u>Courses Required for BS in Mathematics</u>	
MATH 120, 131 <sup>1</sup> , 209, 307, 310, 311, 332, 409	26
PHYS 122 <sup>1</sup>	4
Approved C S electives, 3 hours advanced	6
<u>Additional Required Courses</u>	
For BS in Mathematics with Secondary Certification <sup>2</sup>	
MATH 301, 402, 404	9

6 hours from MATH 306, 333, 360, 420, 490	6
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
ENGL 309	3
Approved science elective	3
Electives	7
For BS in Mathematics without certification <sup>2</sup>	
MATH 306, 333	7
9 hours from MATH 301, 360, 420, 490	9
Electives, 6 hours advanced	12
Supporting field, 9 hours advanced <sup>3</sup>	21
Approved science elective	3
For BS in Mathematics with 8-12 Mathematics/Physics Certification	
MATH 301, 333, 402	10
MATH 404 or PHYS 404	3
PHYS 242, <sup>2</sup> 334, 435	10
From Math 306 or advanced PHYS electives	6
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
ENGL 309	3

<sup>1</sup> May satisfy university core curriculum requirement.

<sup>2</sup> PHYS 122 and 242 are recommended for fulfillment of core Lab Science requirement.

<sup>3</sup> 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
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 402 for course descriptions in PHYS, p. 338 for ENGR, and p. 339 for ENPH.</b>	

Courses Required for BS in Engineering Physics

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

PHYS 122 <sup>1</sup> , 242 <sup>1</sup> , 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 <sup>1</sup> , 209, 306, 333	15
CHEM 108	4

<sup>1</sup> Applies to University Core Curriculum**ENVIRONMENTAL ENGINEERING**

The Environmental Engineering program at Tarleton State University is unique in the State of Texas in that it provides baccalaureate level preparation for students to work as environmental engineers. Students are prepared for employment as an engineer and for engineering licensure, as well as for graduate studies. Extensive study in mathematics, engineering, physical sciences, and environmental engineering gives the Environmental Engineering 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
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 402 for course descriptions in PHYS, p. 338 for ENGR, and p. 339 for ENPH.</b>	

**Courses Required for BS in Environmental Engineering**

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

PHYS 122*, 242*	8
ENGR 111, 112, 221, 222, 223, 303, 460	21
ENPH 225	4
ENVE 210, 211, 300, 301, 310, 320, 402, 410, 420, 430	37
MATH 120*, 209, 306, 333	15
CHEM 108, 201	8
Advanced ENVE, HYDR, CS, CHEM, GEOL, BIOL, PHYS elective or one of the following: MATH 300, MATH 350, POLS 310, POLS 410	3

\* 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>	47
See pp. 47-48 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. <b>See p. 402 for course descriptions in PHYS.</b>	
<u>Courses Required for BS in Physics</u>	
PHYS 122, <sup>1</sup> 242 <sup>1</sup> , 331, 332, 333, 334, 430, 435	26
MATH 120, <sup>1</sup> 209, 306, 333	15
PHYS electives, 6 hours advanced	9
<u>Additional Required Courses</u>	
For BS in Physics (without certification)	
Supporting field, 9 hours advanced	26
Electives, 6 hours advanced	10
Approved C S elective	3
Math 332	3
For BS in Physics with Teacher Certification, Physical Science (8-12)	
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
PHYS 404	3
ENGL 309	3
CHEM 105, 108, 201, 486	13
For BS in Physics with Teacher Certification, 8-12 Mathematics/Physics	
MATH 302, 311	6
PHYS 404 or MATH 404	3

Elective	3
EDU 330, 335, 430, 435, 490, PSY 220 or 303, RDG 351	24
Approved C S elective	3
ENGL 309	3

<sup>1</sup> 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>	47
See pp. 47-48 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. <b>See p.317 for C S course descriptions.</b>	
<u>Courses Required for BS in Computer Science</u>	
MATH 131, <sup>1</sup> 120, 209, 310	14
PHYS 122, <sup>1</sup> 242 <sup>1</sup>	8
Science/engineering electives	
From MATH 118, 306, 332, 360, ENPH 441, 443, advanced C S	
or science elective	12-14
Supporting field	12
Advanced supporting field	9
C S 110, 221, 230, 241, 248, 343, 380, 389, 401, 451, 478	36
Advanced C S electives	6
<sup>1</sup> May satisfy university core curriculum requirements.	

### HYDROLOGY AND WATER RESOURCES

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. The student is expected to have received a grade of C or higher in all required courses (specifically, HYDR, BIOL, GEOL, CHEM, MATH, and PHYS courses) that have been completed at the point of the proposed internship enrollment. Departmental faculty will assist students in finding an appropriate internship sponsor. Enrollment in HYDR 440 requires advisor and department head approval.

### THE BACHELOR OF SCIENCE DEGREE IN HYDROLOGY

	Semester Hours
<u>University Core Curriculum</u>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 372 for HYDR course descriptions.</b>	

Courses Required for BS in Hydrology

HYDR 110, 211, 300, 310, 320, 410, 420, 430, 440, 450	34
PHYS 122, <sup>1</sup> 242, CHEM 201 <sup>2</sup> , GEOL 105	16
MATH 209, 300, 333	11
C S 344	3
Advised elective <sup>3</sup>	3

<sup>1</sup> This course satisfies a core curriculum requirement.

<sup>2</sup> Prerequisite CHEM 105 and 108 are taken to meet Core requirements for Laboratory Science.

<sup>3</sup> Chemistry track students may take BIOL 120 as the advised elective.

Courses required for Support Areas

For Classical	
BIOL 120, 121, 312, 441	16
ENGL 309	3
For Agriculture	
A EN 318, AGRN 301, 420	10
R&RM 301, 320, AGRN 105, 427; or ECO 201, 202, A EC 301, 425	12
For Biology	
BIOL 120, 121, 312, 441	16
2 electives from BIOL 340, 401, 442, CHEM 202	6-8
For Chemistry	
BIOL 121, 441, CHEM 202, 323	16
2 electives from CHEM 324, 427 or 428, 307 or 408	7-8
For Engineering	
MATH 306	3
ENGR 111, 112, 221, 222, 223, 486 and ENPH 225	22
For Geosciences	
GEOL 106, 203, 310, 313, 314, 412	21
For Computer Science	
MATH 306, 360, 420	9
C S 110, 115, 241, 361, 401	15

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 ENGINEERING<sup>1</sup>**

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

<sup>1</sup> 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: Sneed, Walker, Woods  
Instructors: Baker, Faulk Manness, Figueroa,  
Glidewell, Gramtham, Kunce, Marin, McNeill, Neff, Pehl, Winton**

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, 210, 302, and 303 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 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
PSY 101 - General Psychology	3
HLTH 101 - Wellness	3
H S 210 - Nutrition	3
NUR 120 - Survey of Nursing Science	4
	<u>34</u>

4. Cumulative grade point average on courses required for the degree of 2.5 or higher.
5. Eligibility to take state board examination (NCLEX-RN) upon graduation<sup>1</sup>.

<sup>1</sup>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 the 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 312 - 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 2.5 or above.
5. Eligibility to take state board examination (NCLEX-RN) upon graduation<sup>1</sup>.

<sup>1</sup>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](http://www.bne.state.tx.us).

The Board of Nurse Examiners 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".

<b><u>Course</u></b>	<b><u>Credit Hours</u></b>
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 312 - 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.

6. Cumulative grade point average on required courses for the degree of 2.5 or above.

#### **APPLICATION PROCEDURE**

1. Obtain an application packet from the nursing office.
2. Submit the following required application materials to the nursing office by the appropriate deadline:
  - a. Application

- b. Official transcripts from each college or university attended and or high school transcript if you have less than 30 semester hours of college credit
  - c. Personal Information Card
  - d. Three reference forms, completed as directed in the guidelines on the application (NUR 120 students do not have to submit reference forms).
3. Carefully review the previous section, "Eligibility Requirements for Licensure as a Registered Nurse"
  4. Deadlines for application to the nursing program are as follows:

Admission Semester	Student Category	Application Deadline
Fall 2004	Generic Student, LVN, RN	March 1, 2004
Spring 2005	Generic Student, LVN, RN	October 1, 2004

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

1. 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>	47
See pp. 47-48 for additional information about the Tarleton State University core curriculum requirements. <b>See p. 395 for NUR course descriptions.</b>	

<u>Courses Required for BSN in Nursing (all students)</u>	
BIOL 219, <sup>1</sup> 220 <sup>1</sup> , 307	12

SOC 201 <sup>1</sup>	3
CHEM 103 or 105	4
PSY 201, 307	6
H S 210	3
MATH 300 or 350	3-4

Nursing Courses Required<sup>2</sup>

For Generic Student Program Entry

NUR 120, 201, 205, 215, 301, 302, 303, 309, 330, 332, 409, 410, 411, 425, 430, 435	59
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For LVN Program Entry

NUR 210, 301, 302, 303, 305, 306, 307, 315, 321, 410, 411, 430, advanced NUR elective	55
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For RN Program Entry

NUR 301, 305, 307, 409, 410, 411, 425, 430, 435	32
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<sup>1</sup> **These courses count toward core curriculum requirements.**