

Department of Mathematics, Physical Sciences and Engineering

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Faculty: Ambrose, Carlisle, Chen, Combs, Craig, Cruz, Davis, Fisher, Hunt, Issa, Lockwood-Cooke, Mitra, Moreland, Murty, Olsen, Palamara, Peppard, Ratheal, Van Doren, G. Walls, R. Walls, Woodyard.

The Department of Mathematics, Physical Sciences and Engineering combines the varied disciplines of chemistry, engineering, engineering technology, mathematics and physics. Commitment to excellence in classroom instruction designed for producing society-ready graduates in these disciplines is the primary goal of the department. The department has a broad range of talented faculty with expertise in specific areas of science and technology that demand quality graduates.

Students may pursue degree programs in the traditional scientific or technical disciplines within the department or they may pursue integrated programs in areas such as biochemistry, pre-medicine, pre-engineering or specific teaching fields. Secondary teacher certification in the areas of mathematics and physical science are a vital part of the departmental program. The department frequently integrates its programs with other programs within the University to produce a study track that will meet the individual student's desired educational goals.

Chemistry

The chemistry discipline provides excellent instruction and hands-on experience to a diverse group of majors. In addition to science and technology in the classroom, there is ample opportunity for laboratory research and special topic studies at the undergraduate level. Whether a student's final employment goal is chemistry, biochemistry, medical school, graduate school or industry, students will be well prepared with a degree in chemistry from this program. The chemistry program also offers courses to support secondary education certification in physical science.

Engineering Technology

The engineering technology curriculum combines an emphasis on understanding engineering and technical fundamentals with real-life applications in manufacturing and industry. Two options are available within the engineering technology degree program. The first option prepares students for careers in industry and manufacturing. The second option contains much of the same technical background but adds emphasis in management and marketing, thus preparing students for careers in industrial management and sales. Engineering technology majors can participate in a cooperative education program that combines classroom study with a planned program of related work experience with industry or government agencies in the Texas

Panhandle area. Students may also participate in industrial internships arranged through the engineering technology internship program.

Mathematics

Mathematics faculty are involved in both pure and applied mathematics research along with grant activities using inquiry-based mathematics instruction. Students pursuing traditional mathematics or mathematics education programs are encouraged to develop strong computer proficiencies to meet the mathematical needs of a technological society. For more information, refer to the "Division of Education" section of this catalog.

Mechanical Engineering

The mechanical engineering program prepares students for careers in industry involving design and development of mechanical systems. This curriculum provides the mathematics and physical science background required for all engineering programs, as well as specialization courses in mechanical engineering.

Pre-Engineering Program

The pre-engineering program prepares students for transfer to another four-year university to complete their degree in engineering disciplines other than mechanical engineering. Curriculum in pre-engineering emphasizes thorough grounding in mathematics, physics and chemistry, universally required by all engineering programs. Environmental science majors can structure their degree plan to include pre-engineering curriculum to pursue a degree in environmental engineering.

Physics

The physics program offers both algebra-based and calculus-based introductory physics courses that are required by several university degree programs. A full-range of upper-level physics courses taught by members of The Texas A&M University System can be taken to meet the bachelor of science degree in physics or as electives by majors in other technically demanding fields. The physics program also offers courses to support secondary education certification in physical science. For more information, refer to the "Division of Education" section of this catalog.

Faculty specializations include dielectric properties, physics education and astronomy. Physics majors may find employment, study and research opportunities at the internationally respected Alternative Energy Institute (AEI). AEI is located on the WTAMU campus and maintains a wind- and solar-energy test site north of the campus. Science education and physics majors interested in careers in teaching may gain experience both in traditional and technology-based instruction as undergraduate teaching assistants in physics laboratories.

Department of Mathematics, Physical Sciences and Engineering

Discipline	Course Prefix
Chemistry	CHEM
Engineering	ENGR
Engineering Technology	ET
Mathematics and Physical Science	MPS
Mathematics	MATH
Mechanical Engineering	MENG
Natural Sciences	NSCI
Physics	PHYS

NOTE: See the “Academic Courses and Abbreviations” and “Course Descriptions” sections of this catalog for a complete list of courses offered by the University.

Bachelor of Arts (B.A.)/ Bachelor of Science (B.S.) Degree

Requirements

May be either depending on option selected; see the “Requirement for Baccalaureate Degrees” section of this catalog.

Major in Chemistry (Major Code: 104)

A student must complete a minimum of 127 semester credit hours to include at least 36 advanced hours.

University Core Curriculum Requirements

Refer to the “University Core Curriculum” section of this catalog.

Option I—Professional Chemistry

This option follows course recommendations of the American Chemical Society and prepares students for positions in industry, government and education. It is recommended for students planning to do graduate study in chemistry or seeking employment as chemists in industry.

- CHEM 1411, 1412, 2523, 2525, 3511, 3521, 3522, 4411, 4323, 4223L, 4431, 4397.
- MATH 1316 or 1348, 2413, 2414, 3340.
- PHYS 2425, 2426 and two hours of 3095.
- Additional hours to meet the minimum University requirement for a degree.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option I			
Bachelor of Arts Degree			
First Year		Second Year	
Semester 1	Semester 2	Semester 1	Semester 2
CHEM 14114 hrs. MATH 13143 hrs. ENGL 13013 hrs. HIST 13013 hrs. PHED activity <u>1 hr.</u> 14 hrs.	CHEM 14124 hrs. MATH 1316 or 13483 hrs. ENGL 13023 hrs. SCOM 1315 or 13213 hrs. Visual/Performing arts core3 hrs. PHED 1111 <u>1 hr.</u> 17 hrs.	CHEM 25235 hrs. MATH 24134 hrs. ENGL 2371, HIST 2372 or PHIL 13013 hrs. HIST 13023 hrs. POSC 2305 <u>3 hrs.</u> 18 hrs.	CHEM 25255 hrs. CHEM 35115 hrs. MATH 24144 hrs. ENGL 2332 or 2333 <u>3 hrs.</u> 17 hrs.
Third Year		Fourth Year	
Semester 1	Semester 2	Semester 1	Semester 2
CHEM 35215 hrs. PHYS 2425 w/lab4 hrs. PHYS 30952 hrs. B.A. requirement ... <u>3-4 hrs.</u> 13-14 hrs.	CHEM 35225 hrs. PHYS 24264 hrs. MATH 33403 hrs. B.A. requirement ... <u>3-4 hrs.</u> 15-16 hrs.	CHEM 43233 hrs. CHEM 44314-5 hrs. CHEM 4223L2 hrs. POSC 23063 hrs. B.A. requirement ... <u>3-4 hr.</u> 15-17 hrs.	CHEM 43973 hrs. CHEM 44114 hrs. ANTH 2351, ECON 2301, GEOG 1302, PSYC 2301 or SOCI 23013 hrs. B.A. requirement ...3-4 hrs. Elective <u>2 hrs.</u> 15-16 hrs.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option I,			
Bachelor of Science Degree			
First Year		Second Year	
Semester 1	Semester 2	Semester 1	Semester 2
ENGL 13013 hrs. MATH 13143 hrs. HIST 13013 hrs. CHEM 14114 hrs. PHED activity <u>1 hr.</u> 14 hrs.	ENGL 13023 hrs. MATH 1316 or 13483 hrs. SCOM 1315 or 13213 hrs. Visual/Performing arts core3 hrs. CHEM 14174 hrs. PHED 1111 <u>1 hr.</u> 17 hrs.	ENGL 2371, HIST 2372 or PHIL 13013 hrs. HIST 13023 hrs. POSC 23053 hrs. MATH 24134 hrs. CHEM 2523 <u>5 hrs.</u> 18 hrs.	CHEM 25255 hrs. CHEM 35115 hrs. MATH 24144 hrs. ENGL 2332 or 2333 <u>3 hrs.</u> 17 hrs.
Third Year		Fourth Year	
Semester 1	Semester 2	Semester 1	Semester 2
CHEM 35215 hrs. PHYS 24254 hrs. PHYS 30952 hrs. Elective <u>3 hrs.</u> 14 hrs.	CHEM 35225 hrs. PHYS 24264 hrs. MATH 33403 hrs. Elective <u>3 hrs.</u> 15 hrs.	CHEM 43233 hrs. CHEM 44314 hrs. POSC 23063 hrs. Elective <u>4 hrs.</u> 16 hrs.	CHEM 43973 hrs. CHEM 44114 hrs. ANTH 2351, ECON 2301, GEOG 1302, PSYC 2301 or SOCI 23013 hrs. Elective <u>6 hrs.</u> 16 hrs.

Department of Mathematics, Physical Sciences and Engineering

Option II—General Chemistry

This option provides a background for students whose career goals are to enter education or chemistry-related fields.

- CHEM 1411, 1412, 2523, 2525, 3511, three courses from 3521, 3522, 4411, 4323, 4223L, 4324, 4224L, 4431.
- MATH 1316 or 1348, 2413, 2414.
- PHYS 1401 or 2425, 1402 or 2426.
- Additional advanced hours to provide a minimum of 36 hours selected from chemistry, mathematics, biology, computer information systems, physics, environmental science or geology.
- Additional hours to meet the minimum University requirement for a degree.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option II Bachelor of Arts Degree			
First Year		Second Year	
Semester 1 CHEM 14114 hrs. MATH 13143 hrs. ENGL 13013 hrs. HIST 13013 hrs. PHED activity <u>1 hr.</u> 14 hrs.	Semester 2 CHEM 14124 hrs. MATH 1316 or 1348.....3 hrs. ENGL 13023 hrs. SCOM 1315 or 13213 hrs. Visual/Performing arts core3 hrs. PHED 1111 ... <u>1 hr.</u> 17 hrs.	Semester 1 CHEM 25235 hrs. MATH 24134 hrs. ENGL 2332 or 23333 hrs. HIST 13023 hrs. POSC 2305 <u>3 hrs.</u> 18 hrs.	Semester 2 CHEM 25255 hrs. CHEM 35115 hrs. MATH 24144 hrs. ANTH 24144 hrs. ECON 2301, GEOG 1302, PSYC 2301 or SOC 2301 <u>3 hrs.</u> 17 hrs.
Third Year		Fourth Year	
Semester 1 PHYS 1401 or 24254 hrs. ENGL 2371, HIST 2372 or PHIL 1301 ...3 hrs. POSC 23063 hrs. Adv. elective3 hrs. B.A. requirement ... <u>3-4 hrs.</u> 16-17 hrs.	Semester 2 CHEM*4-5 hrs. PHYS 1402 or 2426.....4 hrs. Elective***3-6 hrs. B.A. requirement ... <u>3-4 hrs.</u> 14-19 hrs.	Semester 1 CHEM*4-5 hrs. Adv. elective3 hrs. Adv. elective3 hrs. Elective**3 hrs. B.A. requirement ... <u>3-4 hrs.</u> 16-18 hrs.	Semester 2 CHEM*4-5 hrs. Adv. elective3 hrs. Adv. elective3 hrs. B.A. requirement ... <u>3-4 hrs.</u> 13-15 hrs.

*Choose three—CHEM 3521, 3522, 4411, 4323/4323L, 4323/4223L, 4431.
**Elective hours to be determined based on hours remaining to complete degree.
***May need to be advanced depending on other course selections.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option II Bachelor of Science Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. HIST 13013 hrs. CHEM 1411 w/lab4 hrs. PHED activity <u>1 hr.</u> 14 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 1348.....3 hrs. SCOM 1315 or 13213 hrs. Visual/Performing arts core3 hrs. CHEM 14124 hrs. PHED 1111 ... <u>1 hr.</u> 17 hrs.	Semester 1 ENGL 2332 or 23333 hrs. HIST 13023 hrs. POSC 23053 hrs. MATH 24134 hrs. CHEM 2523 <u>5 hrs.</u> 18 hrs.	Semester 2 CHEM 25255 hrs. CHEM 35115 hrs. MATH 24144 hrs. POSC 2306 <u>3 hrs.</u> 17 hrs.
Third Year		Fourth Year	
Semester 1 ENGL 2371, HIST 2372 or PHIL 13013 hrs. ANTH 2531, ECON 2301, GEOG 1302, PSYC 2301 or SOC 23013 hrs. PHYS 1401 or 24254 hrs. Elective3 hrs. Adv. elective3 hrs. Adv. elective <u>4 hrs.</u> 17-18 hrs.	Semester 2 CHEM*4-5 hrs. PHYS 1402 or 24264 hrs. Elective***3-6 hrs. Adv. elective <u>3 hrs.</u> 14-18 hrs.	Semester 1 CHEM*4-5 hrs. Adv. elective3 hrs. Adv. elective3 hrs. Elective** <u>2 hrs.</u> 12-13 hrs.	Semester 2 CHEM*4-5 hrs. Elective3 hrs. Elective3 hrs. Elective** <u>0-5 hrs.</u> 12-18 hrs.

*Choose three—CHEM 3521, 3522, 4411, 4323/4223L, 4324, 4224L, 4431.
**Elective hours to be determined based on hours remaining to complete degree.
***May need to be advanced depending on other course selections.

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Option III—Biochemistry

This option is for students planning careers using chemistry applied to medical science, including pre-medical students and other pre-professional students.

- CHEM 1411, 1412, 2523, 2525, 3511, 4323, 4223L, 4324, 4224L.
- BIOL 1406 or 1413, 1407 or 1411, 2572, 3301, 3402 and one course from 3440 or 4375.
- MATH 1316 or 1348, 2413.
- PHYS 1401 or 2425; 1402 or 2426.
- MATH 2414 is recommended.
- Additional advanced hours to provide a minimum of 36 hours selected from chemistry, mathematics, biology, computer information systems, physics, environmental science or geology.
- Additional hours to meet the minimum University requirement for a degree.

For information about the master of science (M.S.) degree in chemistry, refer to the “Graduate School” section of this catalog.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option III, Biochemistry Bachelor of Arts Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. BIOL 1406 or 14134 hrs. CHEM 14114 hrs. B.A. requirement .. 3-4 hrs. 17-18 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. BIOL 1407 or 14114 hrs. CHEM 14124 hrs. PHED 11111 hr. 15 hrs.	Semester 1 BIOL 25725 hrs. MATH 24134 hrs. CHEM 25235 hrs. PHED activity1 hr. 15 hrs.	Semester 2 Humanities core3 hrs. BIOL 33013 hrs. CHEM 35115 hrs. CHEM 25255 hrs. 16 hrs.
Third Year		Fourth Year	
Semester 1 Humanities core3 hrs. BIOL 3402 w/lab4 hrs. Social/ Behavioral core3 hrs. PHYS 1401 or 24254 hrs. Adv. elective3 hrs. Visual/Performing arts core3 hrs. 17 hrs.	Semester 2 BIOL 3440 or 43753-4 hrs. Social/Behavioral core3 hrs. PHYS 1402 or 24264 hrs. Adv. elective3 hrs. SCOM 1315 or 13213 hrs. 16-17 hrs.	Semester 1 CHEM 43233 hrs. CHEM 4223L2 hrs. Social/Behavioral core3 hrs. Social/Behavioral core3 hrs. B.A. requirement3-4 hrs. 14-15 hrs.	Semester 2 CHEM 43333 hrs. CHEM 4224L2 hrs. B.A. requirement3-4 hrs. Social/Behavioral core3 hrs. Adv. elective*1-2 hrs. B.A. requirement3-4 hrs. 15-18 hrs.

*Elective hours to be determined based on hours remaining to complete degree.

Curriculum Guide (suggested course sequence)			
Major in Chemistry—Option III, Biochemistry Bachelor of Science Degree			
First Year		Second Year	
Semester 1 CHEM 14114 hrs. MATH 13143 hrs. BIOL 14064 hrs. ENGL 13013 hrs. PHED activity1 hr. 15 hrs.	Semester 2 CHEM 14124 hrs. MATH 1316 or 13483 hrs. BIOL 1407 or 14114 hrs. ENGL 13023 hrs. PHED 11111 hr. 15 hrs.	Semester 1 CHEM 25235 hrs. MATH 24134 hrs. BIOL 25725 hrs. Humanities core3 hrs. 17 hrs.	Semester 2 CHEM 25255 hrs. CHEM 35115 hrs. BIOL 33013 hrs. Humanities core3 hrs. 16 hrs.
Third Year		Fourth Year	
Semester 1 BIOL 34024 hrs. PHYS 1401 or 24254 hrs. Social/Behavioral core3 hrs. Visual/Performing arts core3 hrs. Adv. elective3 hrs. 17 hrs.	Semester 2 BIOL 3440 or 43753-4 hrs. PHYS 1402 or 24264 hrs. Social/Behavioral core3 hrs. Adv. elective3 hrs. SCOM 1315 or 23213 hrs. 16-17 hrs.	Semester 1 CHEM 43233 hrs. CHEM 4223L2 hrs. Social/Behavioral core3 hrs. Social/Behavioral core3 hrs. Elective**3 hrs. Adv. elective3 hrs. 17 hrs.	Semester 2 CHEM 43243 hrs. CHEM 4224L2 hrs. Social/Behavioral core3 hrs. Elective4 hrs. Adv. elective*1-2 hrs. 13-14 hrs.

*Elective hours to be determined based on hours remaining to complete degree.
***May need to be advanced depending on other course selections.

Department of Mathematics, Physical Sciences and Engineering

Major in Mathematics (Major Code: 115)

University Core Curriculum Requirements

Refer to the “University Core Curriculum” section of this catalog. A student must complete a minimum of 127 semester credit hours to include at least 36 advanced hours.

NOTE: MPS 4097 and 4398 may be applied to the major in physics. MPS 4393 is the honors course for the department.

- MATH 1316 or 1348, 2413, 2414 and 3306 or 3316.
- Mathematics majors seeking teacher certification must take MATH 3306, and those not seeking teacher certification must take MATH 3316.
- MATH—38 semester hours including core courses listed above, 3311, 4341 and 18 semester hours from 3321, 3340, 3342, 3343, 4310, 4340, 4361, 4362.
- PHYS 1401 or 2425; 1402 or 2426.

Curriculum Guide (suggested course sequence)			
Major in Mathematics Bachelor of Arts Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. Social/Behavioral core3 hrs. Visual/Performing arts core3 hrs. PHED activity <u>1 hr.</u> 13 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. Social/Behavioral core3 hrs. SCOM 1315 or 13213 hrs. Elective3 hrs. PHED 1111 ... <u>1 hr.</u> 16 hrs.	Semester 1 Humanities core3 hrs. Social/Behavioral core3 hrs. B.A. requirement ..3-4 hrs. MATH 24134 hrs. PHYS 1401 or 2425 w/lab <u>4 hrs.</u> 17-18 hrs.	Semester 2 Humanities core3 hrs. Social/Behavioral core 3 hrs. B.A. requirement ..3-4 hrs. MATH 24144 hrs. PHYS 1402 or 2426 w/lab <u>4 hrs.</u> 17-18 hrs.
Third Year		Fourth Year	
Semester 1 MATH 3306 or 33163 hrs. MATH 33113 hrs. B.A. requirement ..3-4 hrs. Adv. elective3 hrs. MATH*3 hrs. Social/Behavioral core <u>3 hrs.</u> 18-19 hrs.	Semester 2 MATH*3 hrs. MATH*3 hrs. B.A. requirement ..3-4 hrs. Adv. elective3 hrs. Elective <u>3 hrs.</u> 15-16 hrs.	Semester 1 MATH*3 hrs. MATH*3 hrs. Adv. elective3 hrs. Elective <u>6 hrs.</u> 15 hrs.	Semester 2 MATH 43413 hrs. MATH*3 hrs. Elective3 hrs. Elective** ... <u>3-7 hrs.</u> 12-16 hrs.
*Choose six courses—MATH 3321, 3340, 3342, 3343, 4310, 4340, 4361, 4362.			
**Elective hours to be determined based on hours remaining to complete degree.			

Curriculum Guide (suggested course sequence)			
Major in Mathematics Bachelor of Science Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. Social/Behavioral core3 hrs. Visual/Performing arts core 3 hrs. PHED activity <u>1 hr.</u> 13 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. SCOM 1315 or 13213 hrs. Social/Behavioral core3 hrs. PHED 1111 ... <u>1 hr.</u> 13 hrs.	Semester 1 Humanities core3 hrs. Social/Behavioral core3 hrs. Elective3 hrs. MATH 24134 hrs. PHYS 1401 or 2425 w/lab <u>4 hrs.</u> 17 hrs.	Semester 2 Humanities core3 hrs. Elective3 hrs. Social/Behavioral core 3 hrs. MATH 24144 hrs. PHYS 1402 or 2426 w/lab <u>4 hrs.</u> 17 hrs.
Third Year		Fourth Year	
Semester 1 MATH 3306 or 33163 hrs. MATH 33113 hrs. MATH*3 hrs. Elective3 hrs. Elective3 hrs. Social/Behavioral core <u>3 hrs.</u> 18 hrs.	Semester 2 MATH*3 hrs. MATH*3 hrs. Elective3 hrs. Elective3 hrs. Elective <u>3 hrs.</u> 15 hrs.	Semester 1 MATH*3 hrs. MATH*3 hrs. Adv. elective3 hrs. Elective <u>4 hrs.</u> 16 hrs.	Semester 2 MATH 43413 hrs. MATH*3 hrs. Adv. elective3 hrs. Elective3 hrs. Elective <u>3 hrs.</u> 15 hrs.
*Choose six courses—MATH 3321, 3340, 3342, 3343, 4310, 4340, 4361, 4362.			
**Elective hours to be determined based on hours remaining to complete degree.			

Department of Mathematics, Physical Sciences and Engineering

Engineering Mathematics Option

- MATH 1316 or 1348, 2413, 2414, 3316, 3321, 3340, 3311, 3342, 4340, 4341, 4361, 4362.
- CHEM 1411, 1412.
- Two advanced CIS courses.
- ENGR 1304.
- PHYS 1401 or 2425; 1402 or 2426 and six hours from advanced physics.

For more information about the master of science (M.S.) degree in mathematics, refer to the “Graduate School” section of this catalog.

Curriculum Guide (suggested course sequence)			
Major in Mathematics—Engineering Mathematics Option			
Bachelor of Arts Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. ENGR 13043 hrs. Social/Behavioral core3 hrs. CHEM 14114 hrs. PHED activity1 hr. 17 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. SCOM 1315 or 13213 hrs. Social/Behavioral core3 hrs. CHEM 14124 hrs. PHED 11111 hr. 17 hrs.	Semester 1 Humanities core3 hrs. CIS 1315 (prerequisite)3 hrs. Social/Behavioral core3 hrs. MATH 24134 hrs. PHYS 1401 or 24254 hrs. 17 hrs.	Semester 2 Humanities core3 hrs. Social/Behavioral core3 hrs. MATH 24144 hrs. PHYS 1402 or 24264 hrs. 17 hrs.
Third Year		Fourth Year	
Semester 1 MATH 33163 hrs. MATH 33423 hrs. Adv. CIS3 hrs. Adv. PHYS3 hrs. MATH 4340 or 43623 hrs. 15 hrs.	Semester 2 MATH 33403 hrs. Adv. CIS3 hrs. Adv. PHYS3 hrs. MATH 3321 or 43613 hrs. Visual/Performing arts core3 hrs. 15 hrs.	Semester 1 MATH 33113 hrs. MATH 4340 or 43623 hrs. B.A. requirement ..3-4 hrs. Social/Behavioral core6-8 hrs. 15-17 hrs.	Semester 2 MATH 3321 or 43613 hrs. MATH 43413 hrs. B.A. requirement ..6-8 hrs. 15-17 hrs.
Elective hours to be determined based on hours remaining to complete degree.			

Curriculum Guide (suggested course sequence)			
Major in Mathematics—Engineering Mathematics Option			
Bachelor of Science Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13143 hrs. ENGR 13043 hrs. Social/Behavioral core3 hrs. CHEM 14114 hrs. PHED activity1 hr. 17 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. SCOM 1315 or 13213 hrs. Social/Behavioral core3 hrs. CHEM 14124 hrs. PHED 11111 hr. 17 hrs.	Semester 1 Humanities core3 hrs. CIS 1315 (prerequisite)3 hrs. Social/Behavioral core3 hrs. MATH 24134 hrs. PHYS 1401 or 2425 w/lab4 hrs. 17 hrs.	Semester 2 Humanities core3 hrs. CIS 2330 (prerequisite)3 hrs. Visual/Performing arts core3 hrs. MATH 24144 hrs. PHYS 1402 or 24264 hrs. 17 hrs.
Third Year		Fourth Year	
Semester 1 MATH 33163 hrs. MATH 33423 hrs. Adv. CIS3 hrs. Adv. PHYS3 hrs. MATH 4340 or 43623 hrs. 15 hrs.	Semester 2 MATH 33403 hrs. adv. CIS3 hrs. Adv. PHYS3 hrs. MATH 3321 or 43613 hrs. Elective3 hrs. 15 hrs.	Semester 1 MATH 33313 hrs. MATH 4340 or 43623 hrs. Social/Behavioral core3 hrs. Elective6 hrs. 15 hrs.	Semester 2 MATH 3321 or 43613 hrs. MATH 43413 hrs. Social/Behavioral core3 hrs. Elective6 hrs. Elective**2 hrs. 17 hrs.
Elective hours to be determined based on hours remaining to complete degree.			

Department of Mathematics, Physical Sciences and Engineering

Major in Physics (Major Code: 118)

A student must complete a minimum of 127 semester credit hours to include at least 36 advanced hours.

University Core Curriculum Requirements

Refer to the "University Core Curriculum" section of this catalog.

Physics Requirements

- PHYS 2425, 2426, 2427, 3310, 3320, 3330, 3340, 4320, 4330, 4340.
- Nine hours from PHYS 3342, 3450, 4310, 4350, 4360, 4370 and 4380.
- MATH 2413, 2414, 3340, 3342.
- CIS 1315.

Recommended Courses

- MATH 3311, 4310.

Curriculum Guide (suggested course sequence)			
Major in Physics Bachelor of Arts Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 24133 hrs. CHEM 14114 hrs. Social/Behavioral core3 hrs. Visual/Performing arts core3 hrs. PHED 11111 hr. 17 hrs.	Semester 2 ENGL 13023 hrs. MATH 24144 hrs. CHEM 14124 hrs. PHYS 24254 hrs. 15 hrs.	Semester 1 Humanities core3 hrs. CIS 13153 hrs. SCOM 1315 or 13213 hrs. PHYS 24264 hrs. MATH 33423 hrs. PHED activity1 hr. 17 hrs.	Semester 2 Humanities core3 hrs. MATH 33403 hrs. PHYS 24274 hrs. PHYS 33203 hrs. Social/ Behavioral core3 hrs. 16 hrs.
Third Year		Fourth Year	
Semester 1 B.A. requirement ..3-4 hrs. PHYS 33303 hrs. PHYS 33403 hrs. MATH 3311**3 hrs. Social/ Behavioral core3 hrs. 15-16 hrs.	Semester 2 PHYS 4330***3 hrs. PHYS 4340***3 hrs. B.A. requirement ..3-4 hrs. MATH 4310*3 hrs. Social/ Behavioral core3 hrs. 15-16 hrs.	Semester 1 PHYS 3310***3 hrs. PHYS**3 hrs. Elective1 hr. Social/ Behavioral core3 hrs. 10 hrs.	Semester 2 PHYS 4310***3 hrs. PHYS 4320***3 hrs. PHYS**3 hrs. B.A. requirement ..3-4 hrs. Social/ Behavioral core6 hrs. 15-16 hrs.

*Recommended.
 **Choose three courses from PHYS 3342, 3450, 4310, 4350, 4360, 4370 and 4380.
 ***These courses are offered on a two-year rotation by TTVN. Check rotation schedule for courses to be offered during given semester.

Curriculum Guide (suggested course sequence)			
Major in Physics Bachelor of Science Degree			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 24133 hrs. CHEM 14114 hrs. Social/Behavioral core3 hrs. Visual/Performing arts core3 hrs. PHED 11111 hr. 17 hrs.	Semester 2 ENGL 13023 hrs. MATH 24144 hrs. CHEM 14124 hrs. PHYS 24254 hrs. 15 hrs.	Semester 1 Humanities core3 hrs. CIS 13153 hrs. SCOM 1315 or 13213 hrs. PHYS 24264 hrs. MATH 33423 hrs. PHED activity1 hr. 17 hrs.	Semester 2 Humanities core3 hrs. MATH 33403 hrs. PHYS 24274 hrs. PHYS 33204 hrs. Social/Behavioral core3 hrs. 16 hrs.
Third Year		Fourth Year	
Semester 1 MATH 33423 hrs. PHYS 33303 hrs. PHYS 33403 hrs. MATH 3311*3 hrs. Social/Behavioral core3 hrs. 17 hrs.	Semester 2 PHYS 4330**3 hrs. PHYS 4340**3 hrs. Elective3 hrs. MATH 4310*5 hrs. Social/Behavioral core3 hrs. 17 hrs.	Semester 1 PHYS 3310**3 hrs. PHYS***3 hrs. Elective3 hrs. Social/Behavioral core3 hrs. 12 hrs.	Semester 2 PHYS 4320**3 hrs. PHYS***3 hrs. PHYS***3 hrs. Elective3 hrs. Elective1 hr. 13 hrs.

*Recommended.
 **Choose three courses from PHYS 3450, 4310, 4350, 4360, 4370 and 4380. These courses are offered on a two-year rotation by TTVN. Check rotation schedule for courses to be offered during a given semester.
 ***Choose two courses—PHYS 3342, 4310, MPS 4398.

Department of Mathematics, Physical Sciences and Engineering

Bachelor of Science (B.S.) Degree

Major in Engineering Technology (Major Code: 112)

A student must complete a minimum of 127 semester credit hours to include at least 36 advanced hours.

University Core Curriculum Requirements

Refer to the “University Core Curriculum” section of this catalog. Students must take PHYS 1401 and 1402, and MATH 1314 (Option I) or 1324 (Option II).

Option I—Industrial/Manufacturing

- ENGR 1301, 1304, 1375, 2301, 2302.
- ET 2371, 2372, 2375, 3301, 3360, 4314, 4370, 4380 and four courses from 3315, 3330, 4301, 4311, 4325, 4330.
- CHEM 1411, 1412; ENGL 2311; MATH 1316 or 1348, MATH 2413.
- Select four courses from upper-level ET electives (or math, CIS, management, ENGR or other courses after consulting with an adviser).
- Additional hours to meet the minimum University requirement for a degree.

Option II—Distribution

- ENGR 1301, 1304, 1375, ET 2371, 2372, 4380.
- ET 3301, 3360, 4311, 4314, 4340, 4370 and four courses from 3315, 3330, 4301, 4325, 4330.
- CHEM 1411, 1412; ENGL 2311; MATH 1325.
- Select four courses from MGT 3330, 4311, 4330, MKT 3340, 3342, 3350, 4340, 4346.
- Additional hours to meet the minimum University requirement for a degree.

Teacher Certification

Consult the “Division of Education” section of this catalog for general education and certification major requirements related to programs offered by this department.

For information about the master of science (M.S.) degree in engineering technology, refer to the “Graduate School” section of this catalog.

Curriculum Guide (suggested course sequence)			
Major in Engineering Technology—Option I			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 1314 or 13243 hrs. ENGR 13753 hrs. ENGR 13043 hrs. CHEM 14114 hrs. 16 hrs.	Semester 2 ENGL 13023 hrs. MATH 1316 or 13483 hrs. ENGR 13013 hrs. CHEM 14124 hrs. Visual/Performing arts3 hrs. 16 hrs.	Semester 1 MATH 24134 hrs. SCOM 13153 hrs. ET 23713 hrs. Social/Behavioral core3 hrs. PHYS 14014 hrs. 17 hrs.	Semester 2 ET 23753 hrs. ENGL 23113 hrs. ET 23723 hrs. PHYS 14024 hrs. Humanities core3 hrs. PHED 11111 hr. 17 hrs.
Third Year		Fourth Year	
Semester 1 ET 33603 hrs. ET*3 hrs. Specialization**3 hrs. ENGR 23013 hrs. Social/Behavioral core3 hrs. PHED activity1 hr. 16 hrs.	Semester 2 ET 33013 hrs. ET*3 hrs. Specialization**3 hrs. ENGR 23023 hrs. Humanities core3 hrs. 15 hrs.	Semester 1 ET 43143 hrs. ET*3 hrs. Specialization**3 hrs. Social/Behavioral core6 hrs. 15 hrs.	Semester 2 ET 43703 hrs. ET 43803 hrs. ET*3 hrs. Specialization**3 hrs. Social/Behavioral core3 hrs. 15 hrs.

*Choose from ET 3315, 3330, 4301, 4311, 4325, 4330.
**Choose from ET, MATH, CIS, MGT advanced elective by advisement.

Curriculum Guide (suggested course sequence)			
Major in Engineering Technology—Option II			
First Year		Second Year	
Semester 1 ENGL 13013 hrs. MATH 13243 hrs. ENGR 13753 hrs. CHEM 14114 hrs. Social/Behavioral core3 hrs. 16 hrs.	Semester 2 ENGL 13023 hrs. MATH 13253 hrs. ENGR 13013 hrs. ENGR 13043 hrs. CHEM 14124 hrs. 16 hrs.	Semester 1 Social/Behavioral core3 hrs. SCOM 13153 hrs. ENGL 23113 hrs. ET 23713 hrs. PHYS 14014 hrs. PHED activity1 hr. 17 hrs.	Semester 2 Social/Behavioral core3 hrs. Visual/Performing arts core3 hrs. ET 23723 hrs. ET 33013 hrs. PHYS 1402 w/lab4 hrs. PHED 11111 hr. 17 hrs.
Third Year		Fourth Year	
Semester 1 ET 33603 hrs. ET*3 hrs. MGT/MKT**3 hrs. Humanities core3 hrs. Social/Behavioral core3 hrs. 15 hrs.	Semester 2 ET 43113 hrs. ET*3 hrs. MGT/MKT**3 hrs. Humanities core3 hrs. Elective3 hrs. 15 hrs.	Semester 1 ET 43143 hrs. ET 43403 hrs. ET*3 hrs. MGT/MKT**3 hrs. Elective3 hrs. 15 hrs.	Semester 2 ET 43703 hrs. ET 43803 hrs. ET*3 hrs. MGT/MKT**3 hrs. Social/Behavioral core3 hrs. 15 hrs.

*Choose four courses—ET 3315, 3330, 4301, 4325, 4330.
**Choose four courses—MGT 3330, 3332, 3335, 4311 or MGT 3330, MKT 3340, 3342, 4340, 4346.

Department of Mathematics, Physical Sciences and Engineering

Major in Mechanical Engineering (Major Code: 129)

University Core Curriculum Requirements

Refer to the "University Core Curriculum" section of this catalog.

Core curriculum elections for mechanical engineering majors:

- PHYS 2425, 2426 from natural sciences.
- MATH 2413 from mathematics.

Mechanical Engineering Requirements

- ENGR 1301, 1304, 1375, 2301, 2302, 3302; MENG 3320, 3340, 3360, 4304, 4360, 4362, 4380.
- CHEM 1411, CIS 1315, ENGL 2311, ET 2371 or 2372, MATH 2414, 3340, 3342, 4361.
- 15 hours from CHEM, CIS, CS, ENGR, ET, MATH, MENG, PHYS; including at least nine hours from MENG and at least two laboratory hours and at least nine hours upper level.

Admission Requirements for Pre-Engineering and Mechanical Engineering

All mechanical engineering students must meet West Texas A&M University admission. Upon admission to the University, all WTAMU students would be eligible to engage in and complete the first two years of the engineering program. In the semester during which the student would complete the pre-engineering sequence (cited below), the student may petition for admittance into the mechanical engineering program. Every student enrolled in upperlevel mechanical engineering courses must first be admitted into the mechanical engineering program or receive special permission from the Engineering Program Coordinator.

Criteria for admission into the Mechanical Engineering Program:

- Overall GPA of at least 2.25.
- GPA in mathematics/physics/engineering courses of at least 2.75.
- Completion of the pre-engineering sequence—MATH 2413, 2414, PHYS 2425, 2426, ENGR 1301, 2301, 2302.
- Successfully complete the entrance interview.

Students pursuing a mechanical engineering degree who do not meet the aforementioned criteria are to be listed as pre-engineering (Major Code 128) students.

Students may appeal Admissions Committee decisions, first to the committee and then to the Engineering Program coordinator. Exceptions, resulting in conditional admission, will be considered on an individual basis by the head of the Engineering Program coordinator.

Curriculum Guide (suggested course sequence)			
Major in Mechanical Engineering Bachelor of Science Degree			
First Year		Second Year	
Semester 1	Semester 2	Semester 1	Semester 2
ENGR 13753 hrs. ENGR 13043 hrs. MATH 24134 hrs. ENGL 13013 hrs. POSC 23053 hrs. PHED 11111 hr. 17 hrs.	ENGR 13013 hrs. MATH 24144 hrs. PHYS 24254 hrs. ENGL 13023 hrs. POSC 23063 hrs. 17 hrs.	ENGR 23013 hrs. MATH 33423 hrs. PHYS 24264 hrs. ET 23713 hrs. HIST 13013 hrs. PHED activity1 hr. 17 hrs.	ENGR 23023 hrs. MATH 33403 hrs. ENGL 23113 hrs. CHEM 14114 hrs. HIST 13023 hrs. 16 hrs.
Third Year		Fourth Year	
Semester 1	Semester 2	Semester 1	Semester 2
MENG 33603 hrs. MENG elective3 hrs. MENG 33203 hrs. CS 23153 hrs. SCOM 13153 hrs. 15 hrs.	ENGR 33023 hrs. MENG 33403 hrs. MENG 43603 hrs. MATH 43613 hrs. Humanities core3 hrs. 15 hrs.	MENG 43043 hrs. MATH 43623 hrs. Elective**3 hrs. Elective**3 hrs. Visual/Performing arts core3 hrs. 15 hrs.	MENG 43803 hrs. MENG elective3 hrs. Elective**3 hrs. Humanities core3 hrs. Social/Behavioral core3 hrs. 15 hrs.
**Choose from CHEM, CIS, CS, ENGR, ESC, ET, MATH, MENG or PHYS. Must include at least two laboratory hours. Must include at least three hours from MENG.			