

CHEMISTRY - BS, MATERIALS CHEMISTRY TRACK

Overview

The Department of Chemistry offers a Bachelor of Science in Chemistry with a Materials Chemistry Track.

Program Requirements

First Year

Fall		Semester Credit Hours
CHEM 100	Horizons in Chemistry	1
Select one of the following:		4
CHEM 101 & CHEM 111	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I	
CHEM 107 & CHEM 117	General Chemistry for Engineering Students and General Chemistry for Engineering Students Laboratory	
ENGL 104	Composition and Rhetoric	3
HIST 105	History of the United States ¹	3
MATH 151 or MATH 171	Engineering Mathematics I or Analytic Geometry and Calculus	4
Semester Credit Hours		15

Spring

CHEM 102	Fundamentals of Chemistry II	3
CHEM 112	Fundamentals of Chemistry Laboratory II	1
HIST 106	History of the United States ²	3
MATH 152 or MATH 172	Engineering Mathematics II or Calculus	4
PHYS 218	Mechanics	4
Semester Credit Hours		15

Second Year

Fall		Semester Credit Hours
CHEM 227	Organic Chemistry I ²	3
CHEM 231	Techniques of Organic Chemistry	2
Select one of the following		4
MATH 221	Several Variable Calculus	
MATH 251	Engineering Mathematics III	
MATH 253	Engineering Mathematics III	
PHYS 208	Electricity and Optics	4
Semester Credit Hours		13

Spring

CHEM 228	Organic Chemistry II ¹	3
CHEM 234	Organic Synthesis and Analysis IV ³	3
CHEM 362	Descriptive Inorganic Chemistry	3
Select one of the following:		3
MATH 304	Linear Algebra	
MATH 308	Differential Equations	
STAT 211	Principles of Statistics I	

MATH course approved by chemistry advisor (<http://catalog.tamu.edu/undergraduate/course-descriptions/math>)

STAT course approved by chemistry advisor (<http://catalog.tamu.edu/undergraduate/course-descriptions/stat>)

Materials chemistry elective ⁴	3
Semester Credit Hours	15

Third Year

Fall

CHEM 315	Fundamentals of Quantitative Analysis	3
CHEM 318	Quantitative Analysis Laboratory	1
CHEM 327	Physical Chemistry I	3
CHEM 433	Advanced Inorganic Chemistry Laboratory	2
CHEM 468	Materials Chemistry of Inorganic Materials	3
POLS 206	American National Government	3
Semester Credit Hours		15

Spring

CHEM 325	Physical Chemistry Laboratory I	1
CHEM 328	Physical Chemistry II	3
POLS 207	State and Local Government	3
CHEM 466	Polymer Chemistry	3
Materials chemistry elective ⁴	3	
Select one of the following: ⁵	3	

Communication (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication>)

Language, philosophy and culture (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture>)

Creative arts (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts>)

Social and behavioral sciences (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences>)

International and cultural diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements>)

Semester Credit Hours	16
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Fourth Year

Fall

CHEM 326	Physical Chemistry Laboratory II	1
CHEM 415	Analytical Chemistry	3
CHEM 491	Research ⁶	3
Materials chemistry elective ⁴	3	
Select two of the following: ^{5,7}	6	

Communication (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication>)

Language, philosophy and culture (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture>)

Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts)		
Social and behavioral sciences (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences)		
International and cultural diversity (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements)		
Semester Credit Hours		
16		
Spring		
CHEM 434	Analytical Instrumentation Laboratory	2
CHEM 481	Seminar ³	2
CHEM 491	Research ⁶	3
Materials chemistry elective ⁴		3
General elective		2
Select one of the following: ⁵		3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication)		
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture)		
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts)		
Social and behavioral sciences (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences)		
International and cultural diversity (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements)		
Semester Credit Hours		
15		
Total Semester Credit Hours		
120		

- ⁵ These electives must include 12 hours of courses which meet the language, philosophy and culture (3 hours), creative arts (3 hours), social and behavioral science (3 hours) and communication (3 hours) requirements of the University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum>). (See page 17). In addition, 6 hours of courses must be in the area of International and Cultural Diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements>). These may be in addition to the previous 12 hours of University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum>) courses, or if a course in this category satisfies an area of the Core, it can be used to meet both requirements. Electives should be chosen in consultation with the chemistry advisor. Electives should be chosen in consultation with the chemistry advisor and should be selected to meet the residency requirement (36 hours at 300-400 level must be taken at TAMU). Electives recommended in the various track programs should be strongly considered.
- ⁶ The total hours of CHEM 485 and CHEM 491 taken by BS chemistry majors on a graded (A–F) basis may not exceed 15. Additional hours of these courses may be taken on a satisfactory/unsatisfactory basis.
- ⁷ Students wishing to complete an American Chemical Society certified degree program must take at least one semester of biochemistry (i.e., BICH 410 or BICH 440).

- ¹ Students may substitute any 6 hours of American history courses approved by the University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum>) to fulfill this requirement, but no more than 3 hours may be in Texas history. Students seeking teacher certification must take HIST 105 and HIST 106.
- ² Select a section designated for chemistry majors.
- ³ This is a designated C- or W-course.
- ⁴ In consultation with an advisor, choose 12 hours from among CHEM 220/MSEN 220; CHEM 462; CHEM 470; MEEN 222/MSEN 222 OR BMEN 343, MEEN 458