

CHEMISTRY - BS, MATERIALS CHEMISTRY TRACK

The Materials Chemistry track for the Bachelor of Science in Chemistry includes a breadth of coverage in both hard and soft materials and prepares students for further study in materials chemistry or employment in a variety of industries.

Program Requirements

First Year

		Semester Credit Hours
Fall		
CHEM 100	Horizons in Chemistry	1
CHEM 119	Fundamentals of Chemistry I ¹	4
Select one of the following:		3
ENGL 103	Introduction to Rhetoric and Composition	
ENGL 104	Composition and Rhetoric	
ENGL 210	Technical and Professional Writing	
MATH 151	Engineering Mathematics I	4
or MATH 171	or Calculus I	
American history (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history)		3
Semester Credit Hours		15

Spring		
CHEM 120	Fundamentals of Chemistry II ¹	4
MATH 152	Engineering Mathematics II	4
or MATH 172	or Calculus II	
PHYS 206	Newtonian Mechanics for Engineering and Science	3
PHYS 226	Physics of Motion Laboratory for the Sciences	1
American history (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history)		3
Semester Credit Hours		15

Second Year

		Semester Credit Hours
Fall		
CHEM 227	Organic Chemistry I ¹	3
CHEM 231	Techniques of Organic Chemistry	2
PHYS 207	Electricity and Magnetism for Engineering and Science	3
PHYS 227	Electricity and Magnetism Laboratory for the Sciences	1
Select one of the following:		3-4
MATH 221	Several Variable Calculus	
MATH 251	Engineering Mathematics III	
MATH 253	Engineering Mathematics III	
Semester Credit Hours		13

Spring		
CHEM 228	Organic Chemistry II ¹	3
CHEM 234	Organic Synthesis and Analysis ²	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	
Materials chemistry elective ³		3
Semester Credit Hours		15

Third Year

		Semester Credit Hours
Fall		
CHEM 315	Fundamentals of Quantitative Analysis ¹	3
CHEM 318	Quantitative Analysis Laboratory	1
CHEM 327	Physical Chemistry I	3
CHEM 433	Advanced Inorganic Chemistry Laboratory	2
CHEM 466	Polymer Chemistry	3
CHEM 491	Research	3
Semester Credit Hours		15

Spring

CHEM 325	Physical Chemistry Laboratory I	1
CHEM 328	Physical Chemistry II	3
CHEM 491	Research	3
POLS 207	State and Local Government	3
Communication (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication)		3
Materials chemistry elective ³		3
Semester Credit Hours		16

Fourth Year

		Semester Credit Hours
Fall		
CHEM 326	Physical Chemistry Laboratory II	1
CHEM 415	Analytical Chemistry	3
CHEM 468	Materials Chemistry of Inorganic Materials	3
Creative arts (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts)		3
Language, philosophy and culture (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture)		3
Materials chemistry elective ³		3
Semester Credit Hours		16

Spring

CHEM 434	Analytical Instrumentation Laboratory	2
CHEM 481	Seminar ²	2
POLS 206	American National Government	3
Social and behavioral sciences (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences)		3
Materials chemistry elective ³		3
General elective ⁵		2-3
Semester Credit Hours		15
Total Semester Credit Hours		120

¹ Select a section designated for chemistry majors.

² This is a designated oral communication (C) or writing (W) course.

³ In consultation with an advisor, select 12 hours from among CHEM 220; CHEM 462; CHEM 470; MEEN 222/MSEN 222 or BMEN 343, MEEN 458.

⁴ Three hours of CHEM 484 may be substituted for 3 hours of CHEM 491 in consultation with an advisor.

⁵ Select any course 100-499 not used elsewhere except AERS 100-299 (<https://catalog.tamu.edu/undergraduate/course-descriptions/aers/>); CHEM 222, CHEM 242; MATH 102, MATH 140, MATH 142, MATH 167, MATH 168; MLSC 100-299 (<https://catalog.tamu.edu/undergraduate/course-descriptions/mlsc/>); NVSC 100-299 (<https://catalog.tamu.edu/undergraduate/course-descriptions/nvsc/>); PHYS 201, PHYS 202, PHYS 205.

Graduation requirements include a requirement for 3 hours of International and Cultural Diversity (<https://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) courses and 3 hours of Cultural Discourse (<https://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy this requirement.

The total hours of CHEM 484, 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.

Electives should be chosen in consultation with the chemistry advisor and should be selected to meet the residency requirement. (<https://catalog.tamu.edu/undergraduate/general-information/degree-information/#requirementsforabaccalaureatedegree>)