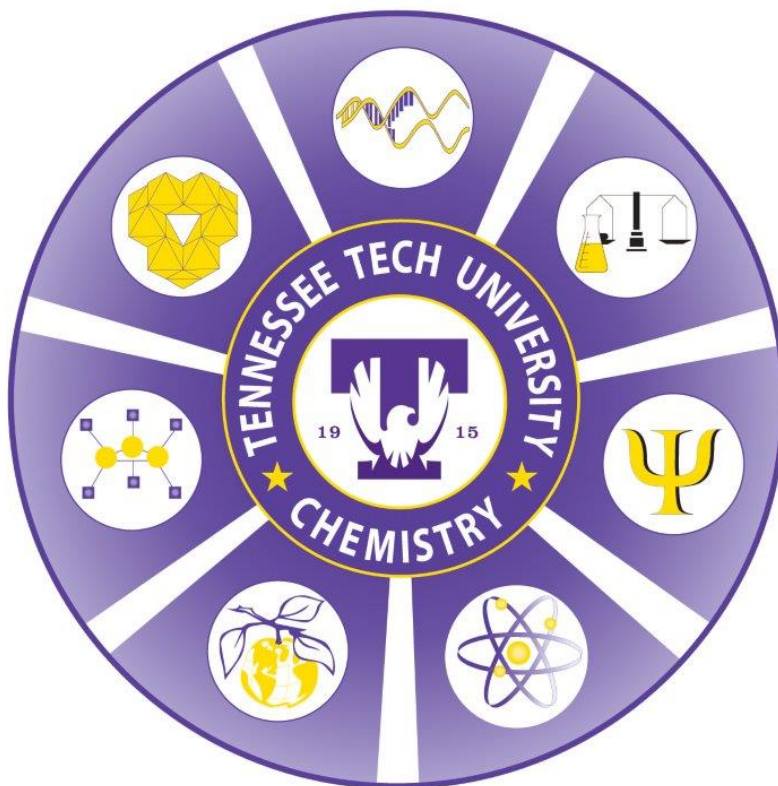


Undergraduate Programs of Study



Department of Chemistry

Tennessee Tech University

Fall '20

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Three Undergraduate Degree Programs

Chemistry students have a variety of goals for their future. Some wish to prepare for graduate study and future research careers, while others plan to seek immediate employment or advanced study in other scientific or technical fields. Recognizing this, we offer three paths leading to the bachelor of science degree:

Pure Chemistry Concentration

B. S. in chemistry for students preparing for graduate school or a career as a professional chemist. This curriculum exceeds the standards for certification set by the American Chemical Society.

Applied Chemistry Concentration

B. S. with a major in chemistry for students requiring the application of chemical knowledge to fields outside the mainstream of chemistry. It includes options in Business Chemistry, Environmental Chemistry, Forensic Chemistry, Health Sciences, and Industrial Chemistry, as well as a generic Chemistry option that possesses the flexibility to adapt to unique and unexpected student career goals.

Biochemistry Concentration

B. S. with a major in biochemistry for students whose interests lie in careers at the biology/chemistry interface.

A.C.S. Certification

A student in any chemistry concentration may attain certification by the American Chemical Society as determined by the Chemistry faculty. The Chemistry Department defines specific areas of certification including, but not restricted to, pure chemistry, biochemistry and environmental chemistry. The requirements for certification in these areas are outside the curricular requirements of the three major concentrations.

Student Organizations in the Chemistry Department

Student Members of the American Chemical Society (SMACS)

Do you love chemistry? Learn why chemistry is called the central science, how you can get involved in undergraduate research, and get to know others who share your love of chemistry. The ACS student members are not only a cohesive group of chemistry majors, but we have members from all different majors across campus. We are group active in outreach because we want to inspire others to see the value chemistry brings to their lives. As a member of SMACS, you'll also have the opportunity to become a national member of the ACS, the largest organization in the world dedicated to a single discipline. National members receive a subscription of the weekly magazine, Chemical and Engineering News. Our chapter is ranked as an Outstanding chapter which places us in the top level of student chapters both domestically and internationally. We achieve this awards status due to our number, diversity, and quality of outreach, professional development, and social activities. The many other benefits of membership (as well as a lot of great chemistry resources) can be found at the **ACS website**.

<https://www.acs.org/content/acs/en/education/students/college/studentaffiliates.html>).

Contact **Dr. Amanda Carroll** (acarroll@tntech.edu) or check out the SMACS Facebook page (<https://www.facebook.com/groups/SMACSTTU/>) for more information.

Student Chapter of the American Society of Biochemistry and Molecular Biology (ASBMB)

Are you interested in the cross-disciplinary field of Biochemistry and Molecular Biology? If so, then this club may be just for you! The ASBMB is a club that brings together students in Chemistry, Chemical Engineering, Biology and any other majors with interests in the molecular Biosciences. Local and regional speakers provide career advisement through the presentation of symposia, the offering of plant tours and academic curricular decision-making. Plus, it brings students together with similar interests and career goals. Student affiliates receive an online subscription to the Journal of Biological Chemistry, and many more opportunities as an ASBMB member. More information can be found at the **ASBMB** web site (<https://www.asbmb.org/>). Contact **Dr. Derek Cashman** (dcashman@tntech.edu) for more information. Or you may go to the Tennessee Tech Student Affiliates ASBMB Facebook site (<https://www.facebook.com/ttuasbmb/>).

Chemical-Medical Sciences Club

Are you interested in a professional career in health sciences? Do you aspire to become a physician, a dentist or dental hygienist, an optometrist or pharmacist, or one of many other medical professionals? If this is your goal, then you simply must be a member of the Chem-Med Club. This club puts you in touch with the professionals you need to know if you are interested in a professional career. Medical professionals visit the Chem-Med Club meetings and share the ins and outs of their profession and help you understand what it takes to be successful, and what it takes to get into a professional graduate program as well! The club meets every 1st and 3rd Tuesday of the month at 11:00am in Foster Hall, Room 233. Contact **Ms. Ann Marie Carrick** (acarrick@tntech.edu) for more information.

41-Hour General Education Core

Communication – 9 hours

6 hours in English composition

ENGL 1010	English Composition I	3
ENGL 1020	English Composition II	3

3 hours in English oral presentational communication

COMM 2025	Fundamentals of Communication	3
PC 2500	Communicating in the Professions	3

Mathematics – 3 hours

MATH 1010	Math for General Studies	3
MATH 1130	College Algebra	3
MATH 1420	Geometry Concepts for Teachers	3
MATH 1530	Introductory Statistics	3
MATH 1630	Finite Mathematics	3
MATH 1710	Pre-Calculus Algebra	3
MATH 1720	Pre-Calculus Trigonometry	3
MATH 1730	Pre-Calculus Mathematics	5
MATH 1830	Applied Calculus	3
MATH 1910	Calculus I	4

History – 6 hours

HIST 2010	Early United States History	3
HIST 2020	Modern United States History	3

Humanities and/or Fine Arts – 9 hours

At least one literature course, selected from those marked with an asterisk (*) must be included in the 9 hours

ART 1035	Introduction to Art	3
*ENGL 2130	Topics in American Literature	3
*ENGL 2235	Topics in British Literature	3
*ENGL 2330	Topics in World Literature	3
FLST 2520 (3520)	The Cultures and Peoples of North Africa	3
FREN 2510	French Culture and Civilization	3
GERM 2520	German Culture and Civilization	3
HIST 2210	Early Western Civilization	3
HIST 2220	Modern Western Civilization	3
HIST 2310	Early World History	3
HIST 2320	Modern World History	3
HIST 1310	Science and World Cultures	3
MUS 1030	Music Appreciation	3
PHIL1030	Introduction to Philosophy	3

RELS 2010	Introduction to Religious Studies	3
SPAN 2510	Spanish Culture and Civilization	3
SPAN 2550	Latin American Culture and Civilization	3
THEA 1030	Introduction to Theater	3

Social/Behavioral Sciences – 6 hours

AGBE 2010	World Food and Society	3
ANTH 1100	Introduction to Anthropology	3
ECON 2010	Microeconomics	3
ECON 2020	Macroeconomics	3
ESS 1100	Introduction to Environmental Studies	3
EXPW 2015	Concepts of Health and Wellness	3
GEOG 1012	Cultural Geography	3
GEOG 1130	Geography of Natural Hazards	3
POLS 1030	American Government	3
PSY 1030	Introduction to Psychology	3
SOC 1010	Introduction to Sociology	3
WGS 2010	Women and Gender Studies	3

Natural Sciences – 8 hours

ASTR 1010	Introduction to Modern Astronomy I	4
ASTR 1020	Introduction to Modern Astronomy II	4
BIOL 1010	Introduction to Biology I	4
BIOL 1020	Diversity of Life	4
BIOL 1080	Concepts of Biology	3
BIOL 1113	General Biology I	4
BIOL 1123	General Biology II	4
BIOL 2010	Human Anatomy and Physiology I	4
BIOL 2020	Human Anatomy and Physiology II	4
BIOL 2310	General Botany	4
CHEM 1010	Introductory Chemistry I	4
CHEM 1020	Introductory Chemistry II	4
CHEM 1110	General Chemistry I	4
CHEM 1120	General Chemistry II	4
CHEM 1310	Concepts of Chemistry	3
GEOG 2100	Introduction to Meteorology	4
GEOL 1040	Physical Geology	4
GEOL 1045	Earth, Environment, Resources and Society	4
GEOL 1070	Concepts of Geology	3
PHYS 1310	Concepts of Physics	3
PHYS 2010	Algebra-based Physics I	4
PHYS 2020	Algebra-based Physics II	4
PHYS 2110	Calculus-based Physics I	4
PHYS 2120	Calculus-based Physics II	4

TENNESSEE TECH MATH PLACEMENT by Tenn. Tech Mathematics Department

QAS – Quantitative Reasoning, Algebra, and Statistics

AAF - Advanced Algebra and Function

Revised 12-13-18

ACT Math	OLD SAT Math Before 3/2016	NEW SAT Math	DSPM	Next Gen. ACCUPLACER Test		Course
				QAS (C34)	AAF (C35)	
<15	<350	<380	1	≤224	N/A	Remedial/Retest
15-16 Engr. must take Math 1000-L	350-390	380-450	2	225-237	N/A	Math 1000-L 1010-L, 1530-L
Non-Engr. 17-18	400-450	460-490	3	238-249	N/A	Math 1000, 1010-L, 1530-L
Non-Engr. SAILS	N/A	N/A	4	N/A	N/A	Math 1010, 1410, 1530
Non-Engr. (by discretion of Math Dept.) 17-18 or SAILS	400-450	460-490	3	238-249	N/A	Math 1130-L
Non-Engr. 19+ or SAILS+	460+	510+	4	250-300	N/A	Math 1010, 1130, 1410, 1530, 1630
Engineering 17-21 or SAILS	400-510	460-530	3/4	238-300	N/A	Math 1000
Branch to AAF at QAS score of 255				≤230	Place by QAS Score	
22-24 or SAILS+	520-560	540-580	N/A	N/A	231-250	Math 1710 & 1720
25-26	570-600	590-620	N/A	N/A	251-259	Math 1730
Non-Engr. 25	570-580	590-600	N/A	N/A	251	Math 1830
27+	610+	630+	N/A	N/A	260-300	Math 1910

Bachelor of Science, Chemistry Major Pure Chemistry Concentration (CHMP)

CHEMISTRY (55 hrs)	
1110 General Chemistry I	4
1120 General Chemistry II	4
1500 1st Year Interactions	1
2010 Intro Inorganic Chem	3
3010 Organic Chemistry I	4
3020 Organic Chemistry II	4
3410 Quantitative Analysis	4
3510 Physical Chemistry I	4
3520 Physical Chemistry II	4
4110 Inorganic Chemistry	3
4150 Inorganic Laboratory	1
4210 Chemistry of Polymers	3
4520 Instrumental Analysis	4
4610 General Biochemistry I	3
4910 Chemistry Seminar	2
4991 Undergraduate Research	1
ADVANCED CHEMISTRY (6 hrs)	

MATHEMATICS (14-15 hrs)	
1910 Calculus I	4
1920 Calculus II	4
2110 Calculus III	4
Elective	2-3

PHYSICS (8 hrs)	
2110 Calculus-Based Physics I	4
2120 Calculus-Based Physics II	4

ENGLISH (6 hrs)	
1010 English Composition I	3
1020 English Composition II	3

HUMANITIES (9 hrs)	
Literature	3
	3
	3

HISTORY (6 hrs)	
2010 Early US History	3
2020 Modern US History	3

COMMUNICATION (3 hrs)	
	3

Social Science (6 hrs)	
	3
	3

ELECTIVES (12-13 hrs)	
TOTAL	120

Bachelor of Science, Chemistry Major Pure Chemistry Concentration (CHMP)

FRESHMAN YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	1110,1120	General Chemistry I,II	8
CHEM	1500	First-Year Connections/Advisement	1
MATH	1910,1920	Calculus I,II	8
ENGL	1010,1020	English Composition I,II	6
SS	-----	Social Science (Gen Ed)	6
		TOTAL	29

SOPHOMORE YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	2010	Introduction to Inorganic Chemistry	3
CHEM	3010,3020	Organic Chemistry I,II	8
MATH	2110	Calculus III	4
MATH	-----	Mathematics Elective*	3
PHYS	2110,2120	Calculus-Based Physics I,II	8
HUM	-----	Humanities (Gen Ed)	6
		TOTAL	32

JUNIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	3410	Quantitative Analysis	4
CHEM	3510,3520	Physical Chemistry I,II	8
HIST	2010,2020	Early and Modern US History	6
COM	-----	Communication (Gen Ed)	3
HUM	-----	Humanities (Gen Ed)	3
ELEC	-----	Elective	6
		TOTAL	30

SENIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	4110,4150	Inorganic Chemistry & Laboratory	4
CHEM	4210	Chemistry of Polymers	3
CHEM	4520	Instrumental Analysis	4
CHEM	4610	General Biochemistry	3
CHEM	4910	Chemistry Seminar	2
CHEM	4991	Undergraduate Research	1
CHEM	-----	Chemistry Electives**	6
ELEC	-----	Elective	6
		TOTAL	29

*Chosen from MATH 2010,2120,3070 or PHYS 2920.

**Chosen from CHEM 4310,4320,4410,4620,4650,4710,4720.

Bachelor of Science, Chemistry Major Biochemistry Concentration (CHMB)

CHEMISTRY (37 hrs)		
1110	General Chemistry I	4
1120	General Chemistry II	4
1500	1st Year Connections	1
3010	Organic Chemistry I	4
3020	Organic Chemistry II	4
3410	Quantitative Analysis	4
3420	Analytical Applications	3
3500	Elements of Physical Chem	3
4610	General Biochemistry I	3
4620	General Biochemistry II	3
4650	Biochemistry Lab	2
4910	Chemistry Seminar	2

BIOLOGY (26 hrs)		
1113	General Biology I	4
1123	General Biology II	4
3140	Cell Biology	4
3230	Microbiology	4
3810	General Genetics	4
4150	Molecular Genetics	3
4040 or 4060		3

MATHEMATICS (7 hrs)		
1910	Calculus I	4
3070	Statistical Methods	3

PHYSICS (8 hrs)		
2010	Algebra-Based Physics I	4
2020	Algebra-Based Physics II	4

ENGLISH (6 hrs)		
1010	English Composition I	3
1020	English Composition II	3

HUMANITIES (9 hrs)		
Literature		3
		3
		3

HISTORY (6 hrs)		
2010	Early US History	3
2020	Modern US History	3

SOCIAL SCIENCE (6 hrs)		
		3
		3

COMMUNICATION (3 hrs)		
		3

ELECTIVES (12 hrs)		
TOTAL		120

Bachelor of Science, Chemistry Major Biochemistry Concentration (CHMB)

FRESHMAN YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	1110,1120	General Chemistry I,II	8
CHEM	1500	First-Year Connections/Advisement	1
BIOL	1113,1123	General Biology I,II	8
MATH	1910	Calculus I	4
ENGL	1010,1020	English Composition I,II	6
SS	-----	Social Science (Gen Ed)	3
		TOTAL	30
SOPHOMORE YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	3410,3420	Quant.Analysis, Analytical Appl'ns	7
BIOL	3810	General Genetics	4
BIOL	3230	Health Science Microbiology	4
PHYS	2010,2020	Algebra-Based Physics I,II	8
HUM	-----	Humanities (Gen Ed)	6
SS	-----	Social Science (Gen Ed)	3
		TOTAL	32
JUNIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	3010,3020	Organic Chemistry I,II	8
CHEM	3500	Elements of Physical Chemistry	3
BIOL	3140	Cell Biology	4
HIST	2010,2020	Early and Modern US History	6
COM	-----	Communication (Gen Ed)	3
HUM	-----	Humanities (Gen Ed)	3
ELEC	-----	Elective	3
		TOTAL	30
SENIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	4610,4620	General Biochemistry	6
CHEM	4650	Biochemistry Laboratory	2
CHEM	4910	Chemistry Seminar	2
BIOL	4150	Molecular Genetics	3
BIOL	4040 or 4060	Immunology or Hormones	3
MATH	3070	Statistical Methods I	3
ELEC	-----	Elective	9
		TOTAL	28

Bachelor of Science, Chemistry Major

Applied Chemistry Concentration (CHMN)

CHEMISTRY (41 hrs)	
1110 General Chemistry I	4
1120 General Chemistry II	4
1500 1st Year Connections	1
2010 Intro Inorganic Chemistry	3
3010 Organic Chemistry I	4
3020 Organic Chemistry II	4
3410 Quantitative Analysis	4
3420 Analytical Applications	3
3500 Elements of Physical Chem	3
4910 Chemistry Seminar	2
Approved Chemistry Courses*	9

BIOLOGY (8 hrs)	
1113 General Biology I	4
1123 General Biology II	4

MATHEMATICS (7 hrs)	
1530 Introductory Statistics	3
1910 Calculus I	4

PHYSICS (8 hrs)	
2010 Algebra-Based Physics I	4
2020 Algebra-Based Physics II	4

ENGLISH (6 hrs)	
1010 English Composition I	3
1020 English Composition II	3

HUMANITIES (9 hrs)	
Literature	3
	3
	3

HISTORY (6 hrs)	
2010 Early US History	3
2020 Modern US History	3

SOCIAL SCIENCE* (6 hrs)	
	3
	3

COMMUNICATION (3 hrs)	
	3

Technical Requirements*(14-16 hrs)	
Electives (10-12 hrs)	
TOTAL	120

*See Options table on page 12.

Bachelor of Science, Chemistry Major

Applied Chemistry Concentration (CHMN)

FRESHMAN YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	1110,1120	General Chemistry I,II	8
CHEM	1500	First-Year Connections/Advisement	1
BIOL	1113,1123	General Biology I,II	8
MATH	1530	Introductory Statistics	3
ENGL	1010,1020	English Composition I,II	6
HUM	-----	Humanities (Gen Ed)	3
		TOTAL	29
SOPHOMORE YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	2010	Introduction to Inorganic Chemistry	3
CHEM	3410,3420	Quant.Analysis, Analytical Appl'ns	7
DTR	-----	Technical Requirement*	3
PHYS	2010,2020	Algebra-Based Physics I,II	8
MATH	1910	Calculus I	4
SS	-----	Social Science (Gen Ed)*	6
		TOTAL	31
JUNIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	3010,3020	Organic Chemistry I,II	8
CHEM	3500	Elements of Physical Chemistry	3
COM	-----	Communication (Gen Ed)	3
HIST	2010,2020	Early and Modern US History	6
HUM	-----	Humanities (Gen Ed)	3
DTR	-----	Technical Requirements*	7
		TOTAL	30
SENIOR YEAR			
DISC	NUMBER	SUBJECT	HOURS
CHEM	4910	Chemistry Seminar	2
CHEM	-----	Advanced CHEM courses*	9
HUM	-----	Humanities (Gen Ed)	3
DTR	-----	Technical Requirements*	4-6
ELEC	-----	Elective	10-12
		TOTAL	30

*See Options table on page 12.

Specific Requirements for Applied Chemistry Options			
Option	Social Science (6 hrs)	Advanced Chemistry (9 hrs)	Directed Technical Requirements (14-17 hrs)
Business Chemistry	ECON 2010 ECON 2020	9 hours approved by advisor	ACCT 3720 BMGT 3510 FIN 3210 MKT 3400 DS 3620 or LAW 3810
Environmental Chemistry	See Gen Ed List	CHEM 4710 CHEM 4720 3 hours approved by advisor	BIOL 3120 12 hours chosen from AGRN 3230, 4220, BIOL 4130, 4840, GEOG 4510, GEOL 4300, 4711
Forensic Chemistry	See Gen Ed List	CHEM 4410 CHEM 4610 CHEM 4650	CJ 2660 CJ 4250 BIOL 3330 BIOL 3810 BIOL 4150
Health Sciences	See Gen Ed List	CHEM 4610 CHEM 4620 3 hours approved by advisor	BIOL 2010, 2020 BIOL 3230 3 hours chosen from BIOL 3810, 4040, 4060, 4150
Industrial Chemistry	See Gen Ed List	CHEM 4210 CHEM 4520 CHEM 4710	COOP 2010, 2020, 2030 MET 1100, 2000, 3730 PC 3250 3 hours chosen from ACCT 3720, COOP 4010, 4020, 4030, ME 3110, MET 3080
Chemistry	See Gen Ed List	9 hours approved by advisor	Minimum 14 hours of complementary courses approved by advisor

ACS Certification Check List

Effective Fall 2019

These requirements apply only to ACS certification. The student must still meet the requirements specified for their particular concentration. Note that the **Pure Chemistry** concentration already meets ACS requirements.

Introductory Chemistry				In-Depth Courses/Specific Areas			
Class	Title	Hrs	Lab	Class	Title	Hrs	Lab
1110	General Chem I	4	(1)	Biochemistry			
1120	General Chem II	4	(1)	4620	Biochemistry II	3	0
1500	First Year	1		4650	Biochemistry Lab	2	2
				4xxx	Elective	3	1
Foundation Courses							
Class	Title	Hrs	Lab				
2010	Intro to Inorganic	3	0				
3010	Organic Chem I	4	1				
3410	Quantitative Anal.	4	2	Environmental Chemistry			
3510	Physical Chem I *	4	1	4710	Environ'l Chem	3	0
4610	Biochemistry I	3	0	4720	Adv. Env. Chem	3	1
				4650	Biochemistry Lab	2	2
Required In-Depth Courses							
Class	Title	Hrs	Lab	Health Sciences Chemistry			
3020	Organic Chem II	4	1	4620	Biochemistry II	3	0
4210	Chem of Polymers	3	0	4650	Biochemistry Lab	2	2
4520	Instrumental Anal. *	4	1	4xxx	Elective	3	1
4910	Seminar	2	0				
4991	Intro to Research	1	1	Forensic Chemistry			
				4410	Forensic Chem	4	1
Mathematics				4650	Biochemistry Lab	2	2
1910	Calculus I	4		4xxx	Elective	3	0
1920	Calculus II	4					
Physics							
2110 or 2010		4					
2120 or 2020		4					
* CHEM 3510 & 4520 replace 3500 & 3420 in Applied & Biochemistry curricula.							

Typical First Year Schedules

Pure Chemistry Curriculum

CHEM 1110	4	CHEM 1120	4
CHEM 1500	1	MATH 1920	4
MATH 1910	4	ENGL 1020	3
ENGL 1010	3	General Education	3
General Education	3	General Education	3
TOTAL	15*	TOTAL	17

Biochemistry Curriculum

CHEM 1110	4	CHEM 1120	4
CHEM 1500	1	BIOL 1123	4
BIOL 1113	4	ENGL 1020	3
ENGL 1010	3	MATH 1910	4
General Education or Math	3	General Education	3
TOTAL	15*	TOTAL	18

Applied Chemistry Curriculum

CHEM 1110	4	CHEM 1120	4
CHEM 1500	1	MATH 1530	3
BIOL 1113	4	BIOL 1123	4
ENGL 1010	3	ENGL 1020	3
General Education or Math	3		
TOTAL	15*	TOTAL	14*

*For lottery scholarship purposes, total load should probably be at least 16 hours.

Reading a Course Schedule

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
CHEM	1110	001	80341	General Chemistry I	LEC	4	MWF	08:00 AM	08:55 AM	SLH 126	75	25	100	STAFF
CHEM	1110	002	80342	General Chemistry I	LEC	4	MWF	09:05 AM	10:00 AM	SLH 126	91	5	96	A Carroll
CHEM	1110	101	80348	General Chemistry I	LAB	0	M	08:00 AM	08:55 AM	FOST 201	4	30	34	G Mullins
CHEM	1110	101	80348	General Chemistry I	LAB	0	M	09:00 AM	10:50 AM	FOST 229	4	30	34	G Mullins
CHEM	1110	103	80349	General Chemistry I	LAB	0	M	01:20 PM	03:10 PM	FOST 229	49	11	60	STAFF
CHEM	1110	103	80349	General Chemistry I	LAB	0	M	12:20 PM	01:15 PM	FOST 220	49	11	60	STAFF

- A. SUBJECT – This 3 or 4 letter term describes the general subject or department that houses the course.
- B. COURSE NUMBER – This 4-digit number represent a specific course. Courses with 1000 numbers are typically freshman or introductory courses. Increasing numbers represent higher level courses, 2000 (sophomore), 3000 (junior) and 4000 (senior).
- C. SECTION – This 3-digit number designated a particular class for the course indicated. Most course offer multiple sections, representing different times and places. Numbers beginning with “0” indicate a lecture section. Those starting with “1” are laboratory sections. Most science classes require enrollment in one lecture and one lab. Other section types are “5” TTU online lectures, “6” off-campus classes, “8” honors classes, and “R” TN eCampus courses.
- D. CRN – Course registration number. This 5-digit number correlates to the course and section. It is entered into Eagle Online when enrolling in the designated class.
- E. TITLE – This title describes the course and correlates to the “Course Number”.
- F. TYPE – This indicates the primary activity for the given section. Possible values are lecture (LEC), laboratory (LAB), recitation (REC), seminar (SEM) and independent study (IND).
- G. CREDIT HRS – The number of credit hours assigned for the course in question. Values can usually range from 1-5 hours, depending upon the nature of the course. Lecture courses account for the largest credit hours, with the value roughly corresponding to the amount of meeting time per week. The most common value is “3”, which would be typical of a course that meets for 55 min/period, 3 periods/week. A lab section displaying 2-4 actual “clock hours” would be equivalent to 1 credit hour, since it is an activity. The credit is usually folded into the corresponding lecture and the lab is assigned “0” credit hours.
- H. DAYS – The days when the class actually meets. Abbreviations are Monday (M), Tuesday (T), Wednesday (W), Thursday (R) and Friday (F).
- I. BEGIN TIME – The time at which the section starts. Most lecture classes run 55 minutes. With a 10-minute break between classes, the next period starts 5 minutes later than the preceding one. As the day goes by, the begin times get later and later.
- J. END TIME – The time when the class should end. This assumes a 55-minute period for a 3-credit class occurring 3 days/week. Some classes may be MW or TR and run for 80 minutes per period, but for only 2 days/week.
- K. LOCATION - The building and room where the class meets. Consult the campus map for the meaning of the abbreviations.
- L. ENROLLMENT – The number of students enrolled in the given section.
- M. AVAILABLE SEATS – The number of open seats in the section. If this number is 0 or (-), then the section is considered closed.
- N. MAX SEATS - The total number of seats allowed for a given section.
- O. INSTRUCTOR – The faculty member responsible for the given section. Sections listed as STAFF, are typically assigned an instructor at a later date.

Last Name		First		Middle		email :
Class Meeting Times	List Course (Ex. ENGL 1010) for each period					
	MON	TUE	WED	THUR	FRI	
8:00-8:55		8:00				
9:05-10:00		9:00				
		9:30				
10:10-11:05		10:00				
11:15-12:10		11:00 Dead Hour		Dead Hour		
12:20-1:15		12:00				
1:25-2:20		1:00				
		1:30				
2:30-3:25		2:00				
3:35-4:30		3:00				
4:40-5:35		4:00				
		4:30				
		5:00				
6:00-6:50						
7:00-7:50						
8:00-8:50						

EAGLE ONLINE INFORMATION AND REGISTRATION WORKSHEET

NAME: _____ TERM: _____

T# _____ ALTERNATE PIN: _____

Access the internet at <https://www.tntech.edu/studyabroad/exchange-students/class-registration.php> . You will be guided through the registration process. Your Appointment Day/Time and Alt PIN are obtained from your academic advisor.

TRIAL SCHEDULE						
CRN	DISC	NUMBER	SECTION	DAYS	TIME	CR HRS

ALTERNATE COURSES						

Course Listing

CHEM 1000. Chemistry Problem Solving. Lec. 3. Credit 3. An introductory course for students without sufficient high school background in chemistry. Topics include metric system, atomic structure, bonding stoichiometry, solutions and some descriptive chemistry. Not degree credit as Chemistry course. May be used for elective credit in some programs.

CHEM 1010-20. Introductory Chemistry. Fall, Spring. Lec. 3. Lab. 3. Credit 4. Prerequisites: CHEM 1010 is a prerequisite to 1020. Overview of chemical principles and applications. Laboratories emphasize general principles of chemistry.

CHEM 1050. Foundations of Chemistry Laboratory. Lab. 2. Credit 1. Corequisite: CHEM 1000. Selected experiments to complement lecture material in CHEM 1000.

CHEM 1110-20. General Chemistry. Fall, Spring. Lec. 3. Lab. 3. Credit 4. Prerequisites: CHEM 1110, with a grade of C or better, is a prerequisite to 1120. Basic course in general chemistry for curricula requiring more than one year of chemistry. Laboratory includes qualitative analysis procedures.

CHEM 1111. General Chemistry I Honors Recitation. Rec. 1. Credit 0.
Co-requisite: CHEM 1110. An ACT score of 30 or higher is also recommended. Selected topics to add depth to the understanding of the material in CHEM 1110. Honors students can receive honors credit for CHEM 1110 by satisfactorily completing both CHEM 1110 and CHEM 1111.

CHEM 1121. General Chemistry II Honors Recitation. Rec. 1. Credit 0.
Co-requisite: CHEM 1120. A grade of "A" or "B" in CHEM 1110 is also recommended. Selected topics to add depth to the understanding of the material in CHEM 1120. Honors students can receive honors credit for CHEM 1120 by satisfactorily completing both CHEM 1120 and CHEM 1121.

CHEM 1210. Chemistry for the Life Sciences. Fall. Lec. 4. Lab. 0. Credit 4. Introduction to chemical principles and their applications to health and disease, which will include chemical structures, moles, organic chemistry, and biochemistry. A knowledge of general mathematics is needed for the use of conversion factors, making of solutions, calculation of dosages, and dilutions. This course will not count as part of a chemistry sequence. (This course is specifically designed for nursing students.)

CHEM 1310. Concepts of Chemistry. Lec. 2. Lab. 2. Credit 3. Basic principles of chemistry including atomic structure, chemical bonding, basic stoichiometry, organic and inorganic compounds, and kinetic theory. Will not count as part of a chemistry sequence.

CHEM 1500. First Year Interactions and Advisement. Lec. 1. Act. 1. Credit 1. This course engages the student in meaningful classroom and out-of-the classroom activities. This is intended for chemistry majors and emphasizes information, activities and requirements important to becoming an active and competent chemist.

CHEM 1971, 1972, 1973. Special Topics in General Chemistry. Fall, Spring. Lec. 0-3. Lab. 0-3. Credit 1, 2, 3. Prerequisites: Consent of chair and instructor. Timely topics in chemistry. Course may be taken for credit more than once.

CHEM 2010. Introduction to Inorganic Chemistry. Fall. Lec. 3. Credit 3. Prerequisite: CHEM 1120. Introduction to the basic principles of inorganic chemistry including bonding, nomenclature, coordination chemistry, molecular orbital theory and basic transition metal organometallic chemistry.

CHEM 2720. Clinical Pharmacology. Fall. Lec. 2. Credit 2. Prerequisite: CHEM 3010. Principles of pharmacology including chemical structures, actions, and reactions of drugs. Does not count as technical elective in chemistry.

CHEM 2910. Undergraduate Research Methods. Fall. Lec. 1. Credit 1. Prerequisite: Permission of the instructor. This course is designed to introduce undergraduate students to the methods used in conducting research. The course is designed to teach students key skills utilized in a research setting, methods of data analysis, as well as how to disseminate information obtained through research. Upon completion of this course, students will be prepared to work effectively in a chemistry department research lab.

CHEM 3005. Elementary Organic Chemistry. Fall, Spring. Lec. 3. Lab. 3. Credit 4. Prerequisite: CHEM 1020 or 1120. Aliphatic and aromatic organic chemistry for students in agriculture, home economics, and pre-medical technology. Not for chemistry majors.

CHEM 3010. Organic Chemistry I. Fall, Spring. Lec. 3. Lab. 3. Credit 4. Prerequisite: CHEM 1120 with a grade of "C" or better. Study of carbon containing-compounds using the functional group approach and an emphasis in simple mechanisms of aliphatic and aromatic compounds.

CHEM 3020. Organic Chemistry II. Fall, Spring. Lec. 3. Lab. 3. Credit 4. Prerequisite: CHEM 3010 with a grade of "C" or better. Study of carbon containing-compounds using the functional group approach and an emphasis in simple mechanisms of aliphatic and aromatic compounds.

CHEM 3410. Quantitative Analysis. Fall. Lec. 2. Lab. 6. Credit 4. Prerequisite: CHEM 1120. Introduction to chemical analysis including titrimetric and gravimetric methods involving acid-base, oxidation-reduction and complexometric techniques. Application of mass action, equilibria, and indicators to chemical analysis. Introduction to instrumental analysis including electrochemical and spectroscopic methods.

CHEM 3420. Analytical Applications. Spring. Lec. 2. Lab. 6. Credit 4. Prerequisite: CHEM 3410. The application of wet chemical and instrumental methods of analysis to real problems in chemistry, biochemistry, and the environment.

CHEM 3500. Elements of Physical Chemistry. Spring. Lec. 3. Credit 3. Prerequisite: CHEM 1120 and MATH 1830 or 1910. Survey of physical chemistry designed for those desiring the B.S. degree with a major in chemistry, education, pre-professional studies, biology, or students in general.

CHEM 3510. Physical Chemistry I. Fall, Lec. 3. Lab. 3. Credit 4. Prerequisites: CHEM 1120, MATH 1920 and PHYS 2020 or 2110 (2110 may be taken concurrently). Introduction to modern, molecular approach to physical chemistry. A moderately rigorous introduction to quantum chemistry covering symmetry, bonding, molecular spectroscopy and statistical mechanics to set a stage for the molecular treatment of thermodynamics and kinetics in CHEM 3520. Lectures are reinforced by a systematic set of modern spectroscopy laboratory experiments.

CHEM 3520. Physical Chemistry II. Spring, Lec. 3. Lab. 3. Credit 4. Prerequisite: CHEM 3510. Kinetic theory of gases and Boltzmann distribution, Classical thermodynamics, adiabatic changes and Maxwell equations, heat capacity and equipartition theorem, thermodynamic and statistical entropy, chemical equilibrium, Electrochemistry, Phase transitions and thermodynamic aspects of phases, introduction to chemical kinetics and reaction dynamics. Lectures are reinforced by a systematic set of classical experiments in thermodynamics and kinetics.

CHEM 3990. Special Problems in Chemical Education. Lab. 1. Credit 1. Prerequisites: CHEM 1110, 1120, six additional hours of chemistry, and consent of a faculty research mentor and the departmental chairperson. Independent study of special topics in chemical education under the direction of a faculty mentor. Must be taken twice, preferably in consecutive semesters. Restricted to secondary education chemistry majors.

CHEM 4110/5110. Inorganic Chemistry. Fall. Lec. 3. Credit 3. Prerequisites: CHEM 2010 and CHEM 3500 or 3510. Correlation of physical and chemical properties of inorganic compounds and atomic structure.

CHEM 4150/5150. Inorganic Chemistry Laboratory. Lab. 3. Credit 1. Corequisite: CHEM 4110/5110. Synthesis, isolation, and characterization of inorganic compounds, using conventional as well as microscale and inert gas techniques.

CHEM 4210/5210. Chemistry of Polymers. Fall. Lec. 3. Credit 3. Prerequisites: CHEM 3020 and CHEM 3500 or 3510. Preparation, structure and physical and chemical properties of organic and inorganic polymers. Experimental determination of average molar mass and its correlation to physical properties. Thermal and viscoelastic behavior.

CHEM 4310/5310. Nuclear Chemistry and Radiochemistry. Spring. Lec. 2. Lab. 3. Credit 3. Prerequisite: CHEM 3500 or 3510 (may be taken concurrently). Introduction to theory of nuclear stability and decay processes. The laboratory emphasizes the detection, safe handling, and use of radioisotopes in chemical investigations.

CHEM 4320/5320. Spectrometric Identification of Organic Compounds. Spring. Lec. 2. Lab. 2. Credit 3. Prerequisites: CHEM 3020 and CHEM 3500 or 3510. The isolation and identification of organic compounds by both chemical and physical means with emphasis on spectroscopic methods.

CHEM 4410/5410. Forensic Chemistry. Lec. 3 Lab. 1. Credit 4. Prerequisites: CHEM 1120, 3020 and 3410. This course will examine the application of chemical concepts and methods to the analysis of crime scene evidence.

CHEM 4500. Nutritional Biochemistry. Spring. Lec. 3. Lab. 0. Credit 3. Prerequisite: CHEM 3005. Introductory survey course of the chemistry of proteins, lipids, carbohydrates and nucleic acids as related to the study of metabolism, nutrition, and physiological function. Not for chemistry majors.

CHEM 4520/5520. Instrumental Analysis. Fall. Lec. 3. Lab. 3. Credit 4. Prerequisites: CHEM 3410, 3510. Theory and practice of atomic spectroscopy, chromatography, and electroanalysis; discussion of selected instrumental techniques for analysis of surfaces, molecules, and particles.

CHEM 4610/5610. General Biochemistry I. Fall, Spring. Lec. 3. Credit 3. Prerequisite: CHEM 3010 and 3020 or consent of instructor. Chemistry of proteins, lipids, carbohydrates, and nucleic acids. Includes study of pH, buffer system, and biological separation methods.

CHEM 4620/5620. General Biochemistry II. Spring. Lec. 3. Credit 3. Prerequisite: CHEM 4610/5610. Intermediary metabolism and its regulation, bioenergetics and photosynthesis, biosynthesis of proteins and nucleic acids.

CHEM 4650/5650. General Biochemistry Laboratory. Spring. Lab 6 Credit 2. Prerequisite: CHEM 4610/5610 or 4300. Laboratory techniques associated with contemporary general biochemistry to include buffer preparation, pKa determination, amino acid analysis, protein expression, separation and purification techniques, protein determination, Enzymology, equilibrium and binding constant determinations and carbohydrate analysis. CHEM 5650 students will be subjected to more involved procedures in some of the experiments.

CHEM 4710/5710. Environmental Chemistry. Lec. 3. Credit 3. Prerequisites: CHEM 3005 or 3010, and CHEM 3410 or 3500 or 3510 (courses from the latter group may be taken concurrently. Basic concepts of environmental chemistry.

CHEM 4720/5720. Advanced Environmental Chemistry. Lec. 3. Credit 3. Prerequisites: CHEM 4710/5710. Advanced topics within environmental chemistry including emphasis on organic, inorganic and analytical environmental chemistry. Case studies and contemporary literature in the field will be discussed.

CHEM 4910. Chemistry Seminar. Fall. Lec. 2. Credit 2. Prerequisite: One year of chemistry. Chemical literature, report writing, statistics, computers in chemistry, employment and interviewing.

CHEM 4940. Internship in Chemistry. Credit 6. Prerequisites: 18 hrs of chemistry, Junior-Senior standing and consent of the chair. Supervised chemical work experience in a private or public agency that is related to the student's career goals. A minimum equivalent to ten weeks of half-time employment is required. Cannot be used to replace core or required elective CHEM courses within the major requirements.

CHEM 4970/5970. Special Topics. Lec. 1-3. Lab.0-3. Credit 1-4. Prerequisite: Consent of instructor. Timely topics in chemistry. Course may be taken for credit more than once.

CHEM 4980. Distinction in Chemistry Research. Lec. 0. Credit 1. Dissemination of independent research conducted with a Chemistry Faculty advisor through participation in meetings (national meetings, state meetings and/or TTU Student Research Day), departmental seminar and mini-thesis.

CHEM 4991, 4992, 4993. Undergraduate Research. Lab. 3,6,9. Credit 1,2,3. Prerequisite: Consent of the instructor and departmental chairperson. Study in chemical research; to provide experience in methodology of experimental investigation. (Maximum credit toward degree is four hours.) May not be repeated to improve grade.

Information Release Authorization

Student's Full Name (Please Print) _____

Student ID (T #) _____

I give my TTU academic advisor _____ permission to release any
(advisor name)

information regarding my academic record to the following people:

_____ Name	_____ Relationship
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_____ Name	_____ Relationship
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_____ Name	_____ Relationship
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I also give my above advisor permission to release my academic information in the form of recommendation or reference letters for the purpose of applications to employment or post-graduate education.

I understand that the above Release Authorization pertains to all periods of enrollment. I further understand that I may void this authorization at any time in writing by fax or mail.

_____ Student Signature	_____ Date
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Photo/Video Image Release Authorization

I hereby give the Chemistry Department of TTU permission to use my photo/video for promotional purposes as they see fit. I understand that I will not be compensated for allowing the Department to use my name and likeness.

I understand that the above Release Authorization pertains to all periods of enrollment. I further understand that I may void this authorization at any time in writing by fax or mail.

_____ Student Signature	_____ Date
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