CHEMISTRY MAJOR (2014 – 2015)
The Charles E. Schmidt College of Science
Bachelor of Arts (BA) or Bachelor of Science (BS)

FOUNDATIONS OF WRITTEN COMMUNICATION (Gordon Rule Writing (GRW), 6 credits required)
(A grade of “C” or higher is required in each course)

ENC 1101 .......................... College Writing I (REQUIRED)
ENC 1102+ .......................... College Writing II

THE FOLLOWING COURSES CAN BE SUBSTITUTED FOR ENC 1102:

__ ANT 1471+ .......... Cultural Difference in a Globalized Society
__ ENC 1939+ .......... Special Topic: College Writing II
__ HIS 2934+ .......... Writing History
__ NSP 1195+ ......... Being Cared For: Reflections from Other Side of Bed

Students must take four (4) GRW Courses. Two (2) must be taken from Foundations of Written Communications. §Two additional courses are REQUIRED.

FOUNDATIONS OF SOCIETY & HUMAN BEHAVIOR (6 credits required, select 2 courses from 2 different departments)

Anthropology Department
__ ANT 2000 & D ................. Introduction to Anthropology

Economics Department
__ ECO 2013# ........................ Macroeconomic Principles
__ ECO 2023# ........................ Microeconomic Principles
__ ECP 2002 ........................ Contemporary Economic Issues

Exceptional Student Education Department
__ EEX 2091 ........................ Disability and Society

Geosciences Department
__ EVR 2017 ........................ Environment and Society

Political Science Department
__ POS 2041 ........................ Government of the United States

Psychology Department
__ PSY 1012 ........................ General Psychology

Public Administration Department
__ PAD 2258 ........................ Changing Env. of Soc., Bus., & Government

Sociology Department
__ SYG 1000 ........................ Sociological Perspectives
__ SYG 2010 ........................ Social Problems

Urban & Regional Planning Department
__ URP 2051 ........................ Designing the City

FOUNDATIONS OF SCIENCE & THE NATURAL WORLD (9 credits required, 2 courses from 2 different departments) (Labs and discussions are required)

................................. B.A. Degree requires the following: .................................

Chemistry Department
__ CHM 2045 & L† .................. General Chemistry I (4 credits Incl. Lab)

Physics Department
__ PHY 2045 & L** ................. General Physics I (5 credits incl. Lab)
__ PHY 2053*** ....................... College Physics I (4 credits)
__ PHY 2045 L** ..................... General Physics I Lab (1 credit)

................................. B.S. Degree requires the following: .................................

Chemistry Department
__ CHM 2045 & L† .................. General Chemistry I (4 credits incl. Lab)

Physics Department
__ PHY 2048 & L** .................. General Physics I (5 credits incl. Lab)

FOUNDATIONS OF MATHEMATICS & QUANTITATIVE REASONING (Grade of “C” or higher required. 6 - 8 credits required)

PRETEST IS REQUIRED BEFORE TAKING YOUR FIRST MATH CLASS

NOTE: Students must take at least one course with the prefix MAC from the list below

__ MAC 1105 ......................... College Algebra (BA only)
__ MAC 2233 ......................... Methods of Calculus (BA only)
__ MAC 2311 ......................... Calculus with Analytic Geometry I (4 cr)
__ MAC 2312 ......................... Calculus with Analytic Geometry II (4 cr)

Calculus requires a solid background in Algebra and Trigonometry. If you are not ready to take Calculus the following courses will provide the necessary background:

__ MAC 1105 ......................... College Algebra
__ MAC 1114 ......................... Trigonometry
__ MAC 1140 ......................... Precalculus Algebra
__ MAC 1147 ......................... Precalculus Algebra & Trigonometry (5 cr)

FOUNDATIONS IN GLOBAL CITIZENSHIP (Select 2 courses from 2 different departments) (6 cr. req.)

At least 1 course must be Global Perspectives – (GP)

Anthropology Department
__ ANT 2410 ........................ Culture and Society (GP)

Curriculum, Culture, & Educational Inquiry Department
__ EDF 2854 ........................ Educated Citizen in Global Context (GP)

Geography Department
__ GEA 2000 ........................ World Geography (GP)

History Department
__ AMH 2010 (P/F) ............... United States History to 1877
__ AMH 2020 (P/F) ............... United States History Since 1877
__ WHI 2012 & D++ ............... History of Civilization I (GRW) (GP)
__ WHI 2022 ......................... History of Civilization II (GP)

Languages, Linguistics, & Comparative Literature Department
__ LAS 2000 ........................ intro to Caribbean & Latin American Studies
__ LIN 2607 ........................ Global Perspectives on Language (GP)

Philosophy Department
__ PHI 2010 & D++ ............... Introduction to Philosophy (GRW)

Political Science Department
__ INR 2002 ........................ Introduction to World Politics (GP)

Sociology Department
__ SYD 2790 ........................ Race, Class, Gender, and Sexuality
__ SYP 2450 ........................ Global Society (GP)

Social Work Department
__ SOW 1005 ........................ Global Perspectives of Social Services (GP)

FOUNDATIONS OF CREATIVE EXPRESSION (6 credits req., select 2 courses from 2 different departments)

Architecture Department
__ ARC 2208 ........................ Culture & Architecture

Visual Art & Art History Department
__ ARH 2000 (P/F) ............... Art Appreciation

School of Communication & Multimedia Studies
__ FIL 2000 & D ............... Film Appreciation

English Department
__ LIT 2100+ ....................... Interpretation of Fiction (GRW)
__ LIT 2103+ ....................... Interpretation of Poetry (GRW)
__ LIT 2040+ ....................... Interpretation of Drama (GRW)
__ LIT 2070+ ....................... Interpretation of Nonfiction (GRW)

Languages, Linguistics, & Comparative Literature Department
__ LIT 2100 ....................... Intro to World Literature

Music Department
__ MUL 2100 ........................ History & Appreciation of Music

Theatre & Dance Department
__ DAN 2100 ....................... Appreciation of Dance
__ THE 2000 ....................... Appreciation of Theatre
### B.A.

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<th>Credits</th>
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<td>Intellectual Foundations Program &amp; Foreign Language (w/out Science)</td>
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<td>Chemistry (17 of which are upper division)</td>
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<td>College of Science (Physics)</td>
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<td>28</td>
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### B.S.

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**NOTE:** See the catalog for specific requirements, course descriptions and additional information. The requirements for some Intellectual Foundations Program (I.F.P.) courses & other courses may be satisfied by passing the appropriate AP or CLEP exam. Check with your advisor and college.

The College of Science has the following requirements:

1. Any course work in the major field transferred from another institution must be approved by the major dept;
2. No major course may be taken pass/fail;
3. The maximum amount of credit which may be earned through co-op is 10 credits; some departments allow some of these credits to substitute for major courses, check with the department for specifics.

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**FOREIGN LANGUAGE** (4 - 8 credits, 1 or more courses in the same language) - **REQUIRED FOR MAJOR**

Students with more than one year of a foreign language in high school should enroll in the second half of the beginners foreign language class (ARA/CHI/FRE/GER/HBR/ITA/JPN/LAT/SPN 1121) or a higher level course. Proficiency for a first-level course can be earned by successfully completing a second-level course. For questions related to this requirement, consult an academic advisor. CLEP exam credits meet this requirement: see the catalog.

**NOTE:** Native Speakers of a foreign language must consult the Languages, Linguistics, & Comparative Literature Department regarding this requirement.

**NOTE:** Honors Seminars SHALL BE ACCEPTED AS MEETING THE GORDON RULE WRITING REQUIREMENT. See the University Advising Services Office for details.

**HONORS NOTE:** Students can apply for the PSYCHOLOGY HONORS PROGRAM after completion of 60 credits, and before completion of 105 credits. Students must have a 3.2 overall & Psychology GPA to be admitted and retained in the Honors track.

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**Legend**

- ENC 1101 is a prerequisite.
- Two Foundations of Written Communications classes are required before taking this class.
- Sophomore standing (30 credits earned) is required.
- MAC 2311 is a prerequisite for this class. If a lab is needed take General Physics 1 Lab (PHY 2048 Lab).
- MAC 1105 and MAC 1114 are prerequisites for this class. If a lab is needed take General Physics 1 Lab (PHY 2048 Lab).
- A corequisite of College Algebra (MAC 1105) or a prerequisite of Introductory Chemistry (CHM 1025).
- (WAC) Writing across the curriculum class.
- A course may be taken pass (P) or fail (F) or for a letter grade. Indicate your preferred grading option during registration.
- Native Speakers of a foreign language must consult the Languages, Linguistics, & Comparative Literature Department regarding this requirement.
- Honors Seminars SHALL BE ACCEPTED AS MEETING THE GORDON RULE WRITING REQUIREMENT. See the University Advising Services Office for details.
- We strongly recommend the two additional GRW courses come from Foundations of Global Citizenship and/or Foundations of Creative Expressions. Courses include: PHI 2010, WOH 2012, LIT 2010, LIT 2030, LIT 2040, & LIT 2070. See advisor for additional details.

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**STUDENTS ASSUME RESPONSIBILITY FOR MEETING ALL GRADUATION REQUIREMENTS**

*Course selections should be made in consultation with an advisor*
MAJOR COURSES, COLLEGE REQUIREMENTS and ELECTIVES

BACHELOR OF ARTS DEGREE (B.A.) IN CHEMISTRY

The Bachelor of Arts is a liberal arts degree intended for students planning professional careers in chemistry-related professions; ex. health professions (medicine, dentistry, & pharmacy), environmental consulting, technical sales and secondary school teaching. In addition to the University and Charles E. Schmidt College of Science requirements, students seeking a Bachelor of Arts (B.A.) degree in Chemistry must complete the following program:

MATHEMATICS (6 credits minimum, 2 courses) (Gordon Rule, must get a “C” or better)
MUST TAKE A PLACEMENT TEST BEFORE REGISTERING FOR MATH COURSES
MAC 1105 College Algebra (3 credits) – REQUIRED for BA
MAC 2233 Methods of Calculus (3 credits) – REQUIRED for BA

CHEMISTRY (33 credits minimum, 9 or more courses plus labs)
CHM 2046 & L General Chemistry II and lab (3 + 1 = 4 credits)
CHM 3120 & L Quantitative Analysis - CHM 2045 & 2046 w/labs are prerequisites (2 + 2 = 4 credits)
CHM 2210 & D Organic Chemistry I with discussion - CHM 2045 & 2046 w/labs are prerequisites (3 credits)
CHM 2211 Organic Chemistry II - CHM 2210 is a prerequisite (3 credits)
CHM 2211 Lab Organic Chemistry II Lab - CHM 2210 is a prerequisite (2 credits)
BCH 3033 Biochemistry I - CHM 2210 & 2211 w/lab is a prerequisite (3 credits)
BCH 3103 L Biochemistry Laboratory BCH 3034 is a corequisite (3 credits)
CHM 3400 Introduction to Physical Chemistry - 8 credits of Gen Chem. are prerequisites (3 credits)
CHM 3609 & L Inorganic Chemistry & Lab - 8 credits of Gen Chem. are prerequisites (3 + 1 = 4 credits)

PHYSICS (10 credits, 2 lectures and 2 labs)
PHY 2054 College Physics II (4 credits)
and PHY 2049L General Physics Lab II (1 credit)

ELECTIVES (39 credits) - needed to meet the 120 credit minimum required for the degree
___ Upper Division Electives (28 credits)
___ Other Electives - (11 credits) Elective courses decided upon by student, advisor and department.

BACHELOR OF SCIENCE (B.S.) WITH MAJOR IN CHEMISTRY: COMPREHENSIVE PROGRAM

The Bachelor of Science degree is designed for students planning professional careers as chemists in industry, government, or academic research. Students interested in advanced graduate studies in chemistry, biochemistry, or related fields should also follow one of the B.S. degree programs. In addition to the University and Charles E. Schmidt College of Science requirements, the Comprehensive B.S. degree program requires the following courses:

MATHEMATICS (8 credits 2 courses) (Gordon Rule, must get a “C” or better)
MUST TAKE A PLACEMENT TEST BEFORE REGISTERING FOR MATH COURSES
MAC 1114 Trigonometry (3 credits) - Recommended if not ready for MAC 2311
MAC 2311 Calculus with Analytical Geometry I (4 credits) – REQUIRED for BS
MAC 2312 Calculus with Analytical Geometry II (4 credits) – REQUIRED for BS

PHYSICS (10 credits)
PHY 2048 & L General Physics I & Lab (4 + 1 = 5 credits)
PHY 2049 & L General Physics II & Lab (4 + 1 = 5 credits)

CHEMISTRY (32 credits – 45 credits upper division in major with ACS certified & 13 credits upper division electives)
CHM 2046 & L General Chemistry II and lab (3 + 1 = 4 credits)
CHM 3120 & L Quantitative Analysis - CHM 2045 & 2046 w/labs are prerequisites (4 credits)
CHM 2210 & D Organic Chemistry I with discussion - CHM 2045 & 2046 w/labs are prerequisites (3 credits)
CHM 2211 Organic Chemistry II - CHM 2210 is a prerequisite (3 credits)
CHM 2211 Lab Organic Chemistry II Lab - CHM 2210 is a prerequisite (2 credits)
CHM 3060 Chemical Literature (1 credit)
BCH 3033 Biochemistry I (3 credits)
CHM 3609 & L Inorganic Chemistry and lab (3 + 1 = 4 credits)
CHM 3410 & L Physical Chemistry I and lab (3 + 2 = 5 credits)
CHM 3411 & L Physical Chemistry II and lab (3 + 2 = 5 credits)
CHM 4139 & L Bioanalytical Instrumentation and lab (2 + 2 = 4 credits)
CHM 4905 Directed Independent Study (3 credits)
BACHELOR OF SCIENCE (B.S.) WITH MAJOR IN CHEMISTRY: ACS Approved PROGRAM

The ACS-approved B.S. program offers similar rigorous training in all aspects of chemistry as the basic track, but includes some additional requirements corresponding with the certification guidelines of the Committee on Professional Training of the American Chemical Society (ACS). An ACS-certified degree can offer advantages in job placement and graduate school admission. The ACS approved program requires all courses in the Comprehensive program, plus one of the following courses:

- BCH 3034 Biochemistry II (3 credits)
- CHM 4422 Advanced Physical Chemistry (3 credits)
- CHM 4220 Advanced Organic Chemistry (3 credits)
- CHM 4610 Advanced Inorganic Chemistry (3 credits)

BACHELOR OF SCIENCE DEGREE WITH MAJOR IN CHEMISTRY: BIOCHEMISTRY PROGRAM (B.S.)

The Biochemistry program is designed for students pursuing careers in biochemistry and related disciplines such as molecular biology, biophysics, and pharmacology. Additionally premedical students who wish to pursue a research-oriented curriculum might be interested in it. In addition to the University and Charles E. Schmidt College of Science requirements, the B.S. in Chemistry (Biochemistry) degree program requires the following courses:

**MATHEMATICS** (8 credits - 2 courses) Gordon Rule - must get a “C” or better

**MUST TAKE A PLACEMENT TEST BEFORE REGISTERING FOR MATH COURSES**

- MAC 1114 Trigonometry (3 credits) - Recommended if not ready for MAC 2311
- MAC 2311 Calculus with Analytical Geometry I (4 credits) – REQUIRED for BS
- MAC 2312 Calculus with Analytical geometry II (4 credits) – REQUIRED for BS
- MAC 2313 Calculus with Analytical geometry III (4 credits) – REQUIRED for BS

**BIOCHEMISTRY AND BIOLOGY COURSES** (20 credits)

- BSC 1010 & L Biological Principles & Lab (4 credits)
- BCH 3033 Biochemistry I (3 credits)
- BCH 3034 Biochemistry II (3 credits)
- BCH 3103L Biochemistry Lab (3 credits)
- BCH 4035 Advanced Biochemistry (3 credits)
- CHM 4139 & L Bioanalytical Instrumentation & lab (2 + 2 = 4 credits)

**PHYSICS** (10 credits)

- PHY 2048 & L General Physics I & Lab (5 credits) - Prerequisite of a “C” in MAC 2311 or MAC 2253
- PHY 2049 & L General Physics II & Lab (5 credits)

**CHEMISTRY** (34 credits)

- CHM 2045 & L General Chemistry I & Lab (4 credits)
- CHM 2046 & L General Chemistry II & Lab (4 credits)
- CHM 3120 & L Quantitative Analysis I & Lab (4 credits)
- CHM 2210 & D Organic Chemistry I with discussion (3 credits)
- CHM 2211 Organic Chemistry II - **CHM 2210 is a prerequisite** (3 credits)
- CHM 2211 Lab Organic Chemistry II Lab - **CHM 2210 is a prerequisite** (2 credits)
- CHM 3060 Chemical Literature (1 credit)
- CHM 3410 & L Physical Chemistry I & Lab (5 credits)
- CHM 3411 & L Physical Chemistry II & Lab (5 credits)
- CHM 4905 Directed Independent Study (3 credits or approved substitute)

Biology/Biochemistry Elective - Choose one (1) of the following courses (3 credits).

- MCB 3020 General Microbiology (3 credits)
- PCB 4023 Cell Biology (3 credits)
- BCH 5415 Biochemistry of the Gene (3 credits)

**PREMEDICAL/PREPROFESSIONAL COURSES FOR CHEMISTRY MAJORS**

- BSC 1011 & L Biodiversity & Lab (4 credits)
- BSC 1010 & L Biological Principles (4 credits)
- BCH 3034 Biochemistry II (3 credits)
- MCB 3020 & L General Microbiology & Lab (3 credits)

And ONE of the following:

- ZOO 4690 Comparative Vertebrate Morphogenesis (3 credits)
- PCB 3063 Genetics (4 credits)