

# CHEMISTRY (B.S.)

## Student Learning Outcomes

- Students will demonstrate knowledge of Thermodynamics, Kinetics, Equilibrium, Structure of Materials, Quantum Mechanics, Synthesis, Reactivity of Substances and Green Chemistry.
- Students will use critical thinking by demonstrating the ability to recognize the components of a problem, formulate a strategy to solve the problem, apply comprehensive scientific knowledge to execute a solution and then evaluate the effectiveness of the solution.
- Students will demonstrate communication skills reflective of professional standards in chemistry consistent with the American Chemical Society.
- Students will demonstrate discipline-specific core laboratory and calculation-based skills related to the synthesis and characterization of compounds and common methods of chemical analysis.
- Students will demonstrate readiness for post-baccalaureate entry into a workforce or advancement (entrance) into graduate or professional programs in Chemistry.
- Students will demonstrate global perspective in their understanding of how chemistry affects economics, health, technology and the environment.

## Recommended

- A Global Learning (GL) experience (<http://catalog.walsh.edu/undergraduate/academic-services/#globallearning>)

## Required

- General Education Requirements (<http://catalog.walsh.edu/undergraduate/general-education-curriculum/>)
- Internship

Code	Title	Hours
<b>Chemistry</b>		
CHEM 101	FD:T1:Princ of Chemistry I	3
CHEM 101L	Principles of Chemistry I: Lab	1
CHEM 102	Principles of Chemistry II	3
CHEM 102L	Principles of Chemistry II:Lab	1
CHEM 198	Chem Career Seminar IA	0.5
CHEM 208	Organic Chemistry I	2
CHEM 201L	Organic Chemistry I: Lab	1
CHEM 209	Organic Chemistry II	2
CHEM 202L	Organic Chemistry II: Lab	1
CHEM 210	Organic Chemistry III	2
CHEM 303	Modern Analytical Chem	3
CHEM 303L	Modern Analytical Chem Lab	1
CHEM 305	Inorganic Chemistry	3
CHEM 310	Found of Physical Chem	4
CHEM 390	DV:Chemistry Internship	3
CHEM 398	Premier Skills/Professionalism	0.5
CHEM 411	Introduction to Research	1,2
or CHEM 412	Introduction to Research	
CHEM 417L	Integ Lab Experience III	2
<b>Systems Thinking (Choose 1)</b>		<b>3</b>

CHEM 403	Clinical Biochemistry	
CHEM 460	Materials Chemistry	
CHEM 470	Nano and Fuel Chemistry	
BIO 4XX 400	Level Elective	3
<b>Technical Expertise (Choose 1)</b>		<b>1</b>
CHEM 302	Instrumental Analysis	
CHEM 415L	Integrated Lab Experience I	
CHEM 416L	Integrated Laboratory Exp II	
CHEM 440	NMR Theory & Applications	
CHEM 4XX 400	Level Elective	
<b>Practical Knowledge (Choose 1)</b>		<b>3</b>
CHEM 307	Essential Biochemistry	
CHEM 3XX 300	Level Elective	
<b>CHEM 3xx/4xx Level elective</b>		<b>3</b>
<b>Mathematics</b>		
MATH 210A	Calculus I	3
MATH 211	Calculus II	3
MATH 310A	Calculus III	3
<b>Physics</b>		
PHYS 201	Physics with Calculus I	3
PHYS 101L	Principles of Physics I: Lab	1
PHYS 202	Physics with Calculus II	3
PHYS 102L	Principles of Physics II: Lab	1
<b>Total Hours</b>		<b>64-65</b>

All courses required in the major must be completed with a "C-" or better in order to satisfy the major. Incoming students need to place into MATH 104 in order to enroll in BIO 101 and MATH 155 to enroll in CHEM 101.

Students may elect to take research hours or course electives in special topics in they wish.