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2019

### Bachelor of Science-Chemistry 2019-2020

Nova Southeastern University

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## HALMOS COLLEGE OF NATURAL SCIENCES AND OCEANOGRAPHY DEGREE CURRICULUM SHEET | 2019-2020 CATALOG

**Bachelor of Science - Chemistry** 

FIRST YEAR SEMINAR			
Course	Credits	Frequency	
UNIV 1000: First Year Seminar	3		
Total First Year Seminar Credits	3		

Area/CourseCreditsFrequencyWritten Composition 6 credits at or above COMP 150033Open Written Communication Open Written Communication33Mathematics 6 credits at or above MATH 104033Open Math Open Math 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language3Open Arts & Humanities 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS3Open Social & Behavioral Sciences 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS3Open Sceince 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS3Open Sceince Open Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FWOpen Science3FW	GENERAL EDUCATION REQUIREMENTS			
6 credits at or above COMP 1500 Open Written Communication 3 Open Written Communication 3  Mathematics 6 credits at or above MATH 1040 Open Math 3 Open Math 3 Arts & Humanities 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language Open Arts & Humanities 3 Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 Open Science 3 FW Open Science 3 FW	Area/Course	Credits	Frequency	
Open Written Communication 3 Open Written Communication 3  Mathematics 6 credits at or above MATH 1040 Open Math 3 Open Math 3  Arts & Humanities 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language Open Arts & Humanities 3 Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 4 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 Open Science 3 FW Open Science 3 FW	Written Composition			
Open Written Communication3Mathematics6 credits at or above MATH 1040Open Math3Open Math3Arts & Humanities6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign languageOpen Arts & Humanities3Open Arts & Humanities3Social & Behavioral Sciences6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLSOpen Social & Behavioral Sciences3Open Social & Behavioral Sciences3Science6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYSOpen Sceince3FWOpen Science3FWOpen Science3FW	6 credits at or above COMP 1500			
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6 credits at or above MATH 1040 Open Math Open Math 3 Arts & Humanities 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	Open Written Communication	3		
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Open Math  Arts & Humanities 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	6 credits at or above MATH 1040			
Arts & Humanities 6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA, FILM, MUSC, DANC, WRIT, foreign language Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	Open Math	3		
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FILM, MUSC, DANC, WRIT, foreign language  Open Arts & Humanities  Open Arts & Humanities  Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences  Open Social & Behavioral Sciences  Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Science  Open Science  3 FW Open Science 3 FW	Arts & Humanities			
Open Arts & Humanities 3 Open Arts & Humanities 3 Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	6 credits in HIST, ARTS, PHIL, HUMN, LITR, THEA,			
Open Arts & Humanities 3  Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3  Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Science 3 FW Open Science 3 FW	FILM, MUSC, DANC, WRIT, foreign language			
Social & Behavioral Sciences 6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Science 3 FW Open Science 3 FW		3		
6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG, GEST, INST, POLS Open Social & Behavioral Sciences 3 Open Social & Behavioral Sciences 3 Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Science 3 FW Open Science 3 FW	Open Arts & Humanities	3		
GEST, INST, POLS         Open Social & Behavioral Sciences       3         Open Social & Behavioral Sciences       3         Science       6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS         Open Sceince       3       FW         Open Science       3       FW				
Open Social & Behavioral Sciences       3         Open Social & Behavioral Sciences       3         Science       6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS         Open Sceince       3       FW         Open Science       3       FW	6 credits in PSYC, SOCL, ANTH, ECN, COMM, GEOG,			
Open Social & Behavioral Sciences       3         Science       6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS         Open Sceince       3       FW         Open Science       3       FW				
Science 6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	Open Social & Behavioral Sciences	3		
6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS Open Sceince 3 FW Open Science 3 FW	Open Social & Behavioral Sciences	3		
Open Sceince         3         FW           Open Science         3         FW	<u>Science</u>			
Open Science 3 FW	6 credits in BIOL, MBIO, CHEM, SCIE, ENVS, PHYS			
	Open Sceince		FW	
Total General Education Credits 30	Open Science	_ 3	FW	
	Total General Education Credits	30		

	OPEN ELECTIVES
take 8-10 elective courses	
Total Open Electives Credits	24-31

TRACKS	
choose a track; see track sheet for details	17-24
Total Track Credits	17-24

Frequency Key: F-Every Fall; W-Every Winter; FO - Odd Year Fall; FE - Even Year Fall; WO - Odd Year Winter; WE - Even Year Winter

CREDITS 120

MAJOR		
Course	Credits	Frequency
BIOL 1500 Biology I Lab	4	FW
CHEM 1300 General Chemistry I Lab	4	FW
CHEM 1310 General Chemistry II/Lab	4	FW
CHEM 2400 Organic Chemistry I/Lab	4	FW
CHEM 2410 Organic Chemistry II/Lab	4	FW
CHEM 3050 Chemical Literature and Seminar	3	W
CHEM 3460 Quantitative Analysis / Lab	4	F
CHEM 3650 Biochemistry/Lab	4	FW
CHEM 4005 Inorganic Chemistry I	3	F
CHEM 4101 Senior Chemistry Seminar	1	W
MATH 2100 Calculus I	4	FW
MATH 2200 Calculus II	4	FW
PHYS 2400 Physics I/Lab	4	F
PHYS 2500 Physics II/Lab	4	W
Total Major Credits	51	-



## HALMOS COLLEGE OF NATURAL SCIENCES AND OCEANOGRAPHY TRACK SHEET | 2019-2020 CATALOG

**Bachelor of Science - Chemistry** 

#### There are 2 tracks available; choose one of the following:

AMERICAN CHEMICAL SOCIETY TRACK			
Course	Credits	Frequency	
CHEM 3700 Physical Chemistry I/Lab	4	F	
CHEM 3710 Physical Chemistry II/Lab	4	W	
CHEM 4010 Inorganic Chemistry II/Lab	5	W	
CHEM 4150 Chemical Instrumentation	4	W	
CHEM 4990 Independent Study in Chemistry or	3	U	
CHEM 4950 Internship in Chemistry	3	U	
MATH 3200 Calculus III or	4	F	
MATH 3400 Ordinary Differential Equations	3	W	
Total ACS TRACK Credits	23-24		

BIOCHEMISTRY TRACK		
Course	Credits	Frequency
BIOL 1510 Biology II/Lab	4	FW
CHEM 3405 Biophysical Chemistry/Lab	4	F
<u>Major Electives</u>		
Select 3 courses from the following list		
CHEM 3150 Environmental Chemistry	3	FO
CHEM 3215 Survey of Rational Drug Design	3	FO
CHEM 3650 Biochemistry/Lab	4	FW
CHEM 3800 Principles of Pharmaceutics	3	F
CHEM 3850 Principles of Pharmacology	3	F
CHEM 4010 Inorganic Chemistry II/Lab	5	W
CHEM 4150 Chemical Instrumentation	4	W
CHEM 4200 Plant Drug Analysis	3	WE
CHEM 4500 Principles of Pharmacokinetics	3	W
PHYS 3100 Introduction to Biophysics	3	WE
*Only one of these courses can be used for a maximum of 3 credits.		
CHEM 4900 Special Topics in Chemistry	3	U
CHEM 4990 Independent Study in Chemistry	3	U
CHEM 4950 Internship in Chemistry	3	U
Total BIOCHEMISTRY TRACK Credits	17	



## HALMOS COLLEGE OF NATURAL SCIENCES AND OCEANOGRAPHY SAMPLE FOUR YEAR CURRICULUM | 2019-2020 CATALOG

**Bachelor of Science - Chemistry: American Chemical Society Track** 

	Freshn	aan Year	
Fall	Hesim	Winter	
Course	Credits	Course	Credits
UNIV 1000: First Year Seminar	3	Open Written Communication	3
Open Written Communication	3	Open Arts & Humanities	3
BIOL 1500 Biology I/Lab	4	CHEM 1310 General Chemistry II/Lab	4
CHEM 1300 General Chemistry I/Lab	4	MATH 2200 Calculus II	4
MATH 2100 Calculus I*	4		
<b>Total Credits</b>	18	Total Credits	14
	Sophon	nore Year	
Fall	•	Winter	
<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>
Open Social & Behavioral Sciences	3	Open Social & Behavioral Sciences	3
CHEM 2400 Organic Chemistry I/Lab	4	Open Arts & Humanities	3
MATH 3200 Calculus III**	4	CHEM 2410 Organic Chemistry II/Lab	4
PHYS 2400 Physics I/Lab	4	PHYS 2500 Physics II/Lab	4
Total Credits	15	Total Credits	14
	Junio	or Year	
Fall	Junio	r Year Winter	
Fall <u>Course</u>	Junio <u>Credits</u>		Credits
	·	Winter	Credits 3
Course	<u>Credits</u>	Winter <u>Course</u>	· · · · · · · · · · · · · · · · · · ·
<u>Course</u> CHEM 3460 Quantitative Analysis /Lab	Credits 4	Winter <u>Course</u> CHEM 3050 Chemical Literature and Seminar	3
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab	Credits 4 4	Winter <u>Course</u> CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab	3 4
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/ Lab CHEM 4990 Independent Study in Chemistry	Credits 4 4 3	Winter <u>Course</u> CHEM 3050 Chemical Literature and Seminar  CHEM 3710 Physical Chemistry II/Lab  CHEM 4150 Chemical Instrumentation	3 4 4
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits	<u>Credits</u> 4 4 3 3 14	Winter <u>Course</u> CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits	3 4 4 3
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab CHEM 4990 Independent Study in Chemistry Open Elective	<u>Credits</u> 4 4 3 3 14	Winter <u>Course</u> CHEM 3050 Chemical Literature and Seminar  CHEM 3710 Physical Chemistry II/Lab  CHEM 4150 Chemical Instrumentation  Open Elective  Total Credits	3 4 4 3
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits	<u>Credits</u> 4 4 3 3 14	Winter  Course  CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits or Year  Winter  Course	3 4 4 3
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/ Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits  Fall Course CHEM 4005 Inorganic Chemistry I	Credits 4 4 3 3 14 Senio	Course CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits or Year  Winter Course CHEM 4101 Senior Chemistry Seminar	3 4 4 3 14
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits  Fall Course CHEM 4005 Inorganic Chemistry I CHEM 3650 Biochemistry/Lab	Credits  4 4 3 3 14 Senio	CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits  TYear  Winter  Course CHEM 4101 Senior Chemistry Seminar CHEM 4010 Inorganic Chemistry II/Lab	3 4 4 3 <b>14</b> <u>Credits</u>
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/ Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits  Fall Course CHEM 4005 Inorganic Chemistry I	Credits  4  4  3  3  14  Senio	Course CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits or Year  Winter Course CHEM 4101 Senior Chemistry Seminar	3 4 4 3 <b>14</b> <u>Credits</u> 1
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/ Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits  Fall Course CHEM 4005 Inorganic Chemistry I CHEM 3650 Biochemistry/Lab Open Elective Open Elective	Credits  4  4  3  3  14  Senio	Course CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits  Total Credits  Winter  Course CHEM 4101 Senior Chemistry Seminar CHEM 4010 Inorganic Chemistry II/Lab Open Elective Open Elective	3 4 4 3 <b>14</b> <u>Credits</u> 1 5
Course CHEM 3460 Quantitative Analysis / Lab CHEM 3700 Physical Chemistry I/Lab CHEM 4990 Independent Study in Chemistry Open Elective Total Credits  Fall Course CHEM 4005 Inorganic Chemistry I CHEM 3650 Biochemistry/Lab Open Elective	Credits  4  4  3  3  14  Senio  Credits  3  4  3	Course CHEM 3050 Chemical Literature and Seminar CHEM 3710 Physical Chemistry II/Lab CHEM 4150 Chemical Instrumentation Open Elective Total Credits  Total Credits  Winter  Course CHEM 4101 Senior Chemistry Seminar CHEM 4010 Inorganic Chemistry II/Lab Open Elective	3 4 4 3 <b>14</b> Credits 1 5 3

**TOTAL CREDITS 120** 

<sup>\*</sup>This sample plan is based on the student beginning at least at the level of MATH 2100: Calculus I.

<sup>\*\*</sup>NOTE: This requirement may also be fulfilled by completing MATH 3400: Ordinary Differential Equations, which is offered each Winter.



# HALMOS COLLEGE OF NATURAL SCIENCES AND OCEANOGRAPHY SAMPLE FOUR YEAR CURRICULUM | 2019-2020 CATALOG

**Bachelor of Science - Chemistry: Biochemistry Track** 

	Freshm	nan Year	
Fall	TICOIIII	Winter	
Course	Credits	<u>Course</u>	Credits
UNIV 1000: First Year Seminar	3	Open Written Communication	3
Open Written Communication	3	BIOL 1510 Biology II/Lab	4
BIOL 1500 Biology I/Lab	4	CHEM 1310 General Chemistry II/Lab	4
CHEM 1300 General Chemistry I/Lab	4	MATH 2200 Calculus II	4
MATH 2100 Calculus I*	4		
Total Credits	18	Total Credits	15
	Sophon	nore Year	
Fall		Winter	
<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>
Open Social & Behavioral Sciences	3	Open Social & Behavioral Sciences	3
Open Arts & Humanities	3	Open Arts & Humanities	3
CHEM 2400 Organic Chemistry I/Lab	4	CHEM 2410 Organic Chemistry II/Lab	4
PHYS 2400 Physics I/Lab	4	PHYS 2500 Physics II/Lab	4
Total Credits	14	Total Credits	14
	Junio	or Year	
Fall		Winter	
<u>Course</u>	<b>Credits</b>	<u>Course</u>	<u>Credits</u>
CHEM 3460 Quantitative Analysis / Lab	4	CHEM 3050 Chemical Literature and Seminar	3
CHEM 3405 Biophysical Chemistry/Lab	4	CHEM 3650 Biochemistry/Lab	4
Open Elective	4	Major Elective	3
Open Elective	3	Open Elective	3
		Open Elective	3
Total Credits	14	Total Credits	16
	Senio	or Year	
Fall		Winter	
<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>
CHEM 4005 Inorganic Chemistry I	3	CHEM 4101 Senior Chemistry Seminar	1
Major Elective	3	Major Elective	3
Open Elective	3	Open Elective	3
Open Elective	3	Open Elective	3
Open Elective	3	Open Elective	3
Total Credits	15	Total Credits	13

### **TOTAL CREDITS 120**

#### NOTES:

<sup>\*</sup>This sample plan is based on the student beginning at least at the level of MATH 2100: Calculus I.