CHEMISTRY MAJOR - B.S.

Nanotechnology Concentration

First Year

Fall		Credits	Spring		Credits
CHEM 121	General Chemistry I/Lab	4	CHEM 122	General Chemistry II/Lab	4
CHEM 192	Freshman Chem. Seminar	0	CORE 104	Spring Comm. Enrich., G.E.	0
CORE 103	Fall Comm. Enrich., G.E.	0	CORE 113	First Year Seminar, G.E.	3
HIST XXX	History, G.E.	3	FTAE 105	Francis & Glob. Iss., G.E.	3
SOC SCI 1st	Social Science (1 of 3), G.E.	3	MATH 122	Calculus II	3
MATH 121	Calculus I	3	PHYS 121	General Physics I/Lab	4
WRIT 102	Research Writing, G.E.	3			17
		16			

Second Year

Fall		Credits	Spring		Credits
CHEM 221	Organic Chemistry I/Lab	4	CHEM 222	Organic Chemistry II/Lab	4
LIT XXX	Literature, G.E	3	CHEM 251	Quantitative Analysis/Lab	3
MATH XXX	Mathematics Elective*	3	CHEM 292	Sophomore Chem. Seminar	0
PHYS 122	General Physics II/Lab	4	LANG XXX	Language, G.E.	3
		14	PHIL 205	Reason and Respons., G.E.	3
			SOC SCI 2nd	Social Science (2 of 3), G.E.	3
					16

Third Year

Fall		Credits	Spring		Credits
BIOL 111	Molec, Cells, Anim./Lab	4	CHEM 323	Instrumental Analysis/Lab	3
CHEM 321	Physical Chemistry I/Lab	4	CHEM XXX	Chemistry Elective**	3
CHEM XXX	Chemistry Elective**	3	CHEM 392	Junior Chem. Seminar	0
Diversity	Diversity Elective, G.E.	3	CHEM 401	Spectroscopy	3
EXAM 301	Writing Comp. Exam, G.E.	0	CHEM 457	Chemistry and Society	3
PHIL/FTAE	Ethics Course, G.E.	3	SOC SCI 3rd	Social Science (3 of 3), G.E.	3
		17			15

Fourth Year

Fall		Credits
CHEM 324	Inorganic Chemistry/Lab	4
CHEM 499	Undergraduate Research	1
or 398/399	*or* Internship	
CHEM 405	Biochemistry I/Lab	3
FNAR XXX	Fine Arts, G.E.	3
XXX	Elective	3
		15

****Due to Penn State's policy changes, these courses are now offered over the summer****

(Completed at Penn State)		Credits
NANO 211	Materials, Safety, Equipment	3
NANO 212	Basic Nanotech. Processes	3
NANO 213	Materials in Nanotech.	3
NANO 214	Patterning for Nanotech.	3
NANO 215	Nanotech. Applications	3
NANO 216	Characterization	3
		18

A minimum of 128 credits are needed for graduation.

*Mathematics Electives

MATH 221	Calculus III	3	MATH 306	Differential Equations	3

**Chemistry Electives (6 or more credits must be taken from the following)

CHEM 305	Environmental Chemistry/Lab	4	CHEM 308	Forensic Chemistry	3 or 4
CHEM 402	Biophysics	3	CHEM 404	Advanced Organic Chemistry	3
CHEM 407	Biochemistry II	4	CHEM 410	Special Topics in Chemistry	3

***If the course taken to satisfy one of these requirements (RLST/PHIL, FNAR, Soc Sci, LANG) is on the list of courses approved to satisfy the diversity requirement, then both requirements will be fulfilled with a single course. Otherwise a separate diversity course (3 credits) is needed.

To obtain an ACS certified degree you must take the following classes: CHEM 121, 122, 192, 221, 222, 251, 292, 321, 323, 324, 392, 398/399 OR 499, 405, 492, either 321 with lab or 308 with lab and 6 credits of CHEM electives (305, 401, 402, 404, 407, 410, 501)

Note: Sequence of courses may be altered with advisor's approval.

Revised 05/15/2023