



CABRINI
UNIVERSITY

Science Department

Student Handbook

2021-2022

OLD CORE - FOR ADVISING PURPOSES ONLY

Biology – Biological Sciences

Biology – Molecular Biology & Biotechnology

Biology – Pre-Medicine

Biology – Pre-Dentistry

Chemistry

Biochemistry

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Welcome

Dear Student,

Welcome to the Science Department. As scientific discovery and technology continues to advance at an astonishing rate, we think you'll find this field will always challenge and amaze you. It is truly an exciting time to be at Cabrini and in the Science Department as well. We've designed our Biology, Biochemistry and Chemistry majors to provide you with flexibility in selecting the track/courses you want to meet your career goals. Our labs and classrooms are housed in the Antoinette Iadarola Center for Science Education and Technology. To keep pace with the ever-evolving field of science we are continually working on our curriculum design and delivery to keep up with best practices and to ensure that our curriculum is current. We have ~10:1 ratio of science majors to science faculty, which allows for superb student-faculty interaction and a personalized approach to your education. In addition to our full-time faculty, we have experts teaching specialized courses part-time within the department, as well as opportunities to take courses at our 8-affiliate institutions.

This handbook is designed to help you gain the most from your experience in our department at Cabrini University. It will acquaint you with requirements, procedures, opportunities, and services that exist within the department and will supplement the University Catalog and Student Handbook. Much of this information will be used throughout your four-year program, so please save this handbook until you graduate. For additional information about our medical school application process, internship/undergraduate research requirements, and affiliate programs please refer to the Department's website for the most up-to-date information and forms (www.cabrini.edu/science).

We look forward to you becoming an integral part of our department. All of the faculty are dedicated to helping you acquire the skills and knowledge for success in the workplace, postgraduate education and life. If we can be of any assistance throughout your career here, please don't hesitate to contact us.

Sincerely,

Melinda Harrison, Ph.D. (Chair)

Science Department

****It is the responsibility of the student to be aware of and meet the requirements for graduation and to make suitable academic progress. Students taking classes out of sequence, declaring their major after their freshman year, or having to repeat classes may not be able to finish their degree within a four year period.**

****All information in this handbook is subject to change. Please contact the Department Chair with any questions regarding policy/standard updates. Students follow the core general education graduation requirements in place during the academic year in which they were enrolled. Students follow the major degree requirements in place during the academic year in which they officially declared the major.**

Science Department Faculty & Staff Information

Full-time faculty

Dr. Alexis Moore Crisp is an Assistant Professor of Biology. Lexi Moore Crisp is an Assistant Professor of Biology. She received her PhD in Integrative Physiology from the University of Nevada, Las Vegas where she researched the biomechanics of burrowing rodents. Her research focuses on developing new methods to study a broad range of vertebrate forelimb form and function. Dr. Crisp teaches Human Anatomy and Physiology I and II and General Physiology courses.

Office: IAD 204 Phone:(610)902-8370 email: ac11462@cabrini.edu

Dr. Alexander Davis is an Assistant Professor of Chemistry in the Science Department. He earned his M.S. in Chemistry from the University of Western Australia, his Ph.D. from Purdue University and completed postdoctoral work at the National Institute of Standards and Technology. His research interests include the computational investigation of biofuel combustion, antioxidants, atmospheric pollutants, and chemistry education research. He serves the department as the Pre-Med Advisor. Dr. Davis teaches General Chemistry I and II; Science and Society, Intro to Presentations, Analytical Chemistry, Environmental Chemistry and Physical Chemistry I and II courses.

Office: IAD 306 Phone:(610) 902-8195 email: alexander.davis@cabrini.edu

Dr. Sheryl Fuller-Espie holds the rank of Professor of Biology. She received her Ph.D. and DIC from Imperial College (University of London) in Biotechnology and completed postdoctoral research at the Royal Postgraduate Medical School, Hammersmith Hospital in London and the Wistar Institute in Philadelphia. Her current research focuses on the cellular basis of innate immune responses in invertebrates and the antimicrobial effects of proteins and peptides from invertebrates. She teaches Genetics, Theory and Practice in Biotechnology, Immunology, Virology, General Microbiology, Biochemistry of Cancer, and Senior Seminar. Dr. Fuller-Espie is a Biology major advisor.

Office: IAD 222 Phone:(610)902-8369 email: sheryl.l.fuller-espie@cabrini.edu

Dr. Melinda Harrison is a Professor of Chemistry and will serve as Science Department Chair during the academic year. She earned her Ph.D. at Duquesne University. Her current research centers on bacteriophages which are viruses that infect bacteria and focuses on protein studies within the phage genomes. Her secondary research interests include wine chemistry and heavy metal metabolism. Dr. Harrison teaches Biochemistry I and II; Instrumental Chemistry; General Chemistry I and II; Forensic Science; Virus Discovery and Science and Society. In addition, she is a co-director of the Science Scholars for Social Justice Program.

Office: IAD 304 Phone:(610)902-8504 email:mah348@cabrini.edu

Dr. Maia Magrakvelidze is an Assistant Professor of Physics. She received her Ph.D. in Physics from the Kansas State University, where she worked on dissociation dynamics of diatomic molecules in intense laser fields. She also completed postdoctoral research at the Northwest Missouri University where she worked on attosecond time delays in photoionization of atoms, fullerenes, and atoms

confined in fullerenes. Her primary research interests involve modeling of laser-matter interaction processes. Dr. Maia teaches courses in the Physical Sciences for science and non-science majors.

Office: IAD 310

Phone: (610)902-1075

email: mm12133@cabrini.edu

Dr. Vinayak Mathur is an Assistant Professor of Biology. He received his Ph.D. from the University of Pennsylvania in Biology and completed his postdoctoral training at Georgetown University. His current research focuses on microbial genomics and application of bioinformatics to answer questions of horizontal gene transfer between bacteria and bacteriophages. Dr. Mathur is passionate about undergraduate biology education and researches the implementation of bioinformatics teaching tools to the undergraduate curriculum. He teaches Biological Sciences I/II, Bioinformatics, Neuroscience courses and is involved with the Senior Seminar course.

Office: IAD 224

Phone:(610)902-8727

Email: vinayak.mathur@cabrini.edu

Dr. Carrie Nielsen serves as an Associate Professor of Biology and Environmental Science. Dr. Nielsen earned her Ph.D. at Stanford University. She is a terrestrial ecosystem ecologist whose research examines both forests and human-dominated ecosystems. She also studies the history and effects of childhood lead poisoning. Dr. Nielsen teaches Introduction to Biology, Ecology, Environmental Justice, and SuperScience (a two-semester science course for Elementary Education majors). Dr. Nielsen is the Beta Beta Beta Biology Honor Society Faculty Advisor. She also serves as Principal Investigator of the Science Scholars for Social Justice program.

Office: IAD 208

Phone:(610)902-8570

email: caroline.b.nielsen@cabrini.edu

Dr. Joseph Smith is an Associate Professor of Chemistry. He received his Ph.D. in Organic Chemistry from the University of Washington and completed postdoctoral work at the University of California, Irvine. His interests include synthesis and study of small strained molecules, such as highly pyramidalized olefins. Dr. Smith teaches General Chemistry I and II, Organic Chemistry I and II, Inorganic Chemistry, and Astronomy.

Office: IAD 308

Phone:(610)902-8585

email: joseph.smith@cabrini.edu

Staff

Daniel Dye is the Science Department's Lab Manager and Chemical Hygiene Officer. He graduated with a BS in Biochemistry and worked in fuel and lubricant research for 13 years. Most recently, he supported researchers working on carbon capture and biofuels. As Lab Manager, Dan supports the faculty with purchasing, equipment maintenance, inventory, supervising student workers, and answering questions about lab procedures. His most important role is as Chemical Hygiene Officer and emergency contact. He is actively ensuring lab safety protocols are taught and being followed, safety equipment is maintained, and waste is properly handled.

Office: IAD 314a

Phone:(610) 902-8507

email: dd7017@cabrini.edu

Part-time Faculty

Part-time faculty maintain office space in IAD 120A, though most part-time faculty are on campus only during their class times. They are reached most effectively through the email. If there is an emergency, please contact School Office at 610-902-8340 and the Dean's Assistant will do her best to see that the part-time faculty member receives the message.

General Curriculum Requirements

All students receiving a four-year degree from Cabrini University complete a minimum of 123 credits and the requirements of the Core Curriculum. The general education core is designed to help students develop the qualities, abilities, and skills of a liberally educated person. While each student develops in-depth knowledge within a major, liberally educated students should also share a common core of knowledge. Detailed information regarding this curriculum is available in the University Catalog.

General Education Curriculum: Students intending to graduate from Cabrini University must complete the University's general education program. This curriculum is broken down into the Engagements with the Common Good, The Explorations, the 21st Century Literacies, and the First-Year Experience.

- ◆ Students in the Engagements take thematic and community engagement coursework, culminating in a capstone in their major field. The Engagements consists of ECG 100, 200 and 300, taken in the freshman, sophomore and junior years, respectively. Transfer students who have already completed ENG 101/102 or their equivalent will be placed into the appropriate level of ECG course during their admission process.
- ◆ Explorations courses extend learning from the Engagements and provide a broad exposure to various disciplinary experiences. Students are required to take courses in the following categories: Heritage (H), Imagination, Creativity and Aesthetic Appreciation (A), Values (V) and Individual and Society (I). For students entering Cabrini in 2021-2022, one of the four Exploration courses taken must have a diversity/inclusivity designation.
- ◆ The 21st Century Literacies provide foundational knowledge, skills, and experiences which prepare students for deeper, broader and more integrated explorations of the Common Good. Students are required to take coursework in the Information, Cross Cultural/Global, Scientific, Quantitative and Religious literacies.
- ◆ All first-year students at the University complete COL 101 – College Success Seminar. Other courses, such as developmental writing or mathematics courses may be required of some students based on their high school experiences, their SAT scores, and their results on first-year student academic placement exams.

Placement Results

Certain courses required for graduation are dictated by your academic preparedness and background, as determined by evaluation of your high school records, SAT/ACT scores, and placement exam results. You will be informed of your placements by your academic advisor, but please record that information for your future reference. Students may not enroll in courses below their placement level for academic credit.

Incoming freshman should receive placement results during COL 101 – College Success Seminar and transfer students will have their placements noted on their Transfer Credit Evaluation document (TCE).

Circle your placement results below so you have a record of courses you need to complete to meet graduation requirements. If you have questions regarding the placements, please contact your academic advisor.

English Developmental level: ENG 100

Quantitative Literacy Developmental level: MAT 098/MAT 107/MAT 117/MAT 118
MAT 099/MAT 107/MAT 117/MAT 118
Mid level: MAT 107/117/118
MAT 117/118
High level: MAT 130 or EXEMPT

Cross Cultural & Foreign Language Literacy Two years or less of prior foreign language experience: LAN 101/102
3 or more years of prior foreign language experience: LAN 102
LAN 201
EXEMPT or Other

Information Literacy CIS 120

**Please note that students placing in the developmental track of mathematics (quantitative literacy) will not be able to begin their science major curriculum until their developmental math requirements are complete. Students in Biology or Biochemistry must have placed into MAT 107 or higher to be placed into BIO 101. Students intending to major in Biology, Biochemistry, or Chemistry must have placed in MAT117 or higher to enroll in CHE111. This may require the students to do coursework in the summer to graduate on time or stay for one additional year.

Admission and Retention Standards

Admission Standards: Departmental

In general, first-time, first-year students will be accepted to Cabrini University with the Biology or Chemistry or Biochemistry majors as their “intended” fields of study based on criteria set by the Admissions Office of Cabrini University. Students not meeting those criteria may apply to the University as Undeclared.

Students “intending” to enter a Science program are not guaranteed admission to the Department. Once enrolled, students applying to the Science Department must meet the following criteria:

- Successful completion of one full-time semester (12 or more credits) of coursework or its equivalent at Cabrini University
- Successful completion of at least one majors-level science course.
- 2.50 GPA overall
- 2.00 GPA in any attempted Science majors-level courses (BIO, CHE, PHY).
- Placement in MAT 117/118 or higher OR Completion of the Math competency as required by Cabrini University

Students failing to meet the science GPA requirement but earned a minimum of a C- in BIO101/CHE111 will be granted provisional acceptance to the Biology/Chemistry/Biochemistry major respectively. Students granted provisional acceptance will have until the end of the fall semester of their sophomore year to fully meet the acceptance standards including meeting the GPA requirement and earning a C- or higher in BIO101, BIO102, CHE111 and BIO206, if a biology or biochemistry major and CHE 111, CHE112 and CHE 211 if a chemistry major. Students failing to meet any of the other above requirements are denied admission to the department, but may appeal the decision by submitting a written appeal to the department chair.

Undeclared students who are interested in pursuing a science degree, but who have not been formally accepted into the major/program, are eligible to enroll in BIO 101-102, CHE 111-112, PHY 101-102 or PHY 111-112 on a space- available basis with approval of the department chair to help them prepare for entry into the major without jeopardizing a timely graduation.

Students not formally accepted into a major/minor may not advance to major-specific 200-level or higher courses until they are formally accepted into the department.

Retention Standards: University-wide

Graduation from the University requires the completion of 123 college credits or more, with an overall QPA of 2.0 or higher. Students must complete a minimum of 45 credits at Cabrini and it is expected that students will complete the last 30 credits of their degree at Cabrini University. Students who do not maintain the minimum QPA are subject to academic warning, probation or dismissal based on the following standards:

Credits completed	Grounds for warning, probation, or dismissal
0-29 credits	QPA < 1.75
30-75 credits	QPA < 1.9
76 or more credits	QPA < 2.0

If a student’s term QPA drops below the minimum QPA standard, but their overall QPA is at or above the standard, they are placed on academic WARNING. The first time the student’s overall QPA is not above the minimum level, the student is placed on PROBATION. A student on academic probation is not in good academic standing and is not eligible to participate in major extracurricular activities, including intercollegiate athletics or holding leadership positions in campus organizations. If the student’s overall QPA is still below the minimum level at the end of the probation semester, the student will be DISMISSED. Also, if a student’s overall QPA falls below 1.0 at any time, he/she is subject to immediate dismissal. Please see Academic Affairs regarding questions on this policy.

Retention and Degree Completion Standards: Departmental

After attempting 16 credits in Science majors-level courses (BIO, CHE, PHY courses; MAT 131 for chemistry majors only; calculations do not include non-majors science courses or remedial science courses), students declared in the Biology, Chemistry or Biochemistry major will have their departmental GPA's evaluated each semester. An "attempt" includes courses that are completed, withdrawn from, or audited, and is taken at Cabrini, another approved institution, or through the Advanced Placement program. Students must maintain a GPA of 2.00 or higher in all Science majors-level courses taken at Cabrini University with a minimum of "C-" in all majors-level courses taken at Cabrini to continue in the major or minor and ultimately to graduate with a degree from the Science Department.

The GPA requirement will be enforced after attempting 8 credits for transfer students. Transfer students will be assessed based only on the grades received in Science courses completed at Cabrini University.

Students with a Science course GPA below 2.00 will be considered "on probation" within the Department. Students on probation will receive a formal letter from the Department Chairperson noting the conditions of the probation and will be required to schedule a meeting with the Chairperson and their departmental Advisor to discuss ways to improve their academic standing within the Department. The Chairperson, in consultation with the Advisor and student, will determine a list of courses that must be repeated to improve the GPA. All repeated courses must be taken at Cabrini University unless an exemption is granted by the Chairperson.

During the probationary period, to maximize student success, students may enroll in a maximum of three Science courses during the Fall or Spring semester.

Students on probation within the Department have one full semester (Fall or Spring) to maintain their Science Semester GPA in BIO/CHE/PHY/MAT131 at 2.00 or above attempting a minimum of 2 science courses (BIO/CHE/PHY/MAT131) or 1 science (BIO/CHE/PHY) and 1 math course of appropriate level or they will be formally dismissed from the Department the subsequent semester.

Students may only be on probation in the Department once. Students who have a GPA that drops below 2.00 a second time will be dismissed immediately. Students dismissed from the Department will receive a formal letter from the Department Chairperson. Students that are formally dismissed from the Department may not take any major-specific coursework in the Department, except to repeat courses already attempted in order to improve their overall GPA or to take courses offered as part of the General Education core curriculum. Once dismissed, students are not eligible to reapply for admission to or graduate with a major in the Department. Students with extenuating circumstances may submit a formal written appeal to the Department Chairperson and be considered for an extension of the probationary period. All appeals must be received within two weeks of the dismissal letter date. Appeals will be reviewed and a final written decision will be sent to the student within one week of the appeal receipt date.

Students must have a 2.0 (C) or higher GPA in all required Science courses and have permission of the Department Chairperson to enroll in BIO/CHE 488 – Internship or RBIO/RCHE 166 or 466 – Research. Also, students who have any academic honesty violations on record with the University will not be permitted to register for RBIO/RCHE/RPHY 166 or 466. Those students not eligible to complete one of these courses will be required to complete one additional 3-4 credit elective in their major field at the 200-level or higher.

Students must successfully complete a minimum of 15 credits, including BIO/CHE 444 – Senior Seminar, at Cabrini University to graduate with a major from the Science Department. Students must successfully complete a minimum of 9 credits at Cabrini University to graduate with a minor in Biology, Chemistry or Environmental Science.

Any student may be subject to immediate dismissal, without a probationary period, from the Department for egregious or repetitive violations of the lab safety policy, theft or destruction of lab equipment/materials, or providing lab access to non-authorized personnel.

Departmental Learning Outcomes

The specific goal of the Science Department is to prepare students for successful careers in science and science-related fields, as well as prepare liberally educated individuals. The Department has identified disciplinary-specific learning outcomes for students completing the biology or chemistry majors.

Biology Major Learning Outcomes

Learning Outcome #1: Graduates of Cabrini University with a major in Biology will have an understanding of foundational biological, chemical, and physical science concepts, as emphasized in the core science course requirements.

- | | |
|--------------------------------------|-----------------------------------|
| 1. Animal Structure and Physiology | 5. Evolution |
| 2. Biochemistry | 6. Genetics |
| 3. Cell Biology | 7. Molecular Biology |
| 4. Ecology and Environmental Science | 8. Taxonomy and Diversity of Life |

Learning Outcome #2: Graduates of Cabrini University with a major in Biology will demonstrate the ability to apply the scientific method and will possess problem solving skills necessary to design, conduct, and troubleshoot experiments and to test a hypothesis.

Learning Outcome #3: Graduates of Cabrini University with a major in Biology will acquire the critical thinking, analytical, and quantitative skills necessary to read, understand, and critically review scientific papers and to interpret and analyze data presented in various forms (i.e. graphs, tables, narrative).

Learning Outcome #4: Graduates of Cabrini University with a major in Biology will develop written and oral communication skills necessary to present scientific ideas to multiple audiences using the accepted format of the discipline.

Learning Outcome #5: Graduates of Cabrini University with a major in Biology will acquire basic proficiency in computational skills, lab techniques, and use of technology (i.e. lab equipment, specialized computer hardware and software) necessary for entry into the science workplace or graduate/professional schools.

Chemistry Major Learning Outcomes

Learning Outcome #1: Graduates of Cabrini University with a major in Chemistry will have an understanding of foundational chemical and physical science concepts, as emphasized in the core science course requirements.

- | | |
|--|-----------------------|
| 1. Analytical and Instrumental chemistry | 4. Organic Chemistry |
| 2. Biochemistry | 5. Physical Chemistry |
| 3. Inorganic Chemistry | |

Learning Outcome #2: Graduates of Cabrini University with a major in Chemistry will demonstrate the ability to apply the scientific method and will possess problem solving skills necessary to design, conduct, and troubleshoot experiments and to test a hypothesis.

Learning Outcome #3: Graduates of Cabrini University with a major in Chemistry will acquire the critical thinking, analytical, and quantitative skills necessary to read, understand, and critically review scientific papers and to interpret and analyze data presented in various forms (i.e. graphs, tables, narrative).

Learning Outcome #4: Graduates of Cabrini University with a major in Chemistry will develop written and oral communication skills necessary to present scientific ideas to multiple audiences using the accepted format of the discipline.

Learning Outcome #5: Graduates of Cabrini University with a major in Chemistry will acquire basic proficiency in

computational skills, lab techniques, and use of technology (i.e. lab equipment, specialized computer hard- and software) necessary for entry into the science workplace or graduate/professional schools.

Biochemistry Major Learning outcomes

Learning Outcome #1: Graduates of Cabrini University with a major in Biochemistry will understand foundational biological, chemical, and physical science concepts, as emphasized in the core science course requirements.

- | | |
|-----------------|-----------------------|
| 1. Biochemistry | 4. Molecular Biology |
| 2. Genetics | 5. Organic Chemistry |
| 3. Cell Biology | 6. Physical Chemistry |

Learning Outcome #2: Graduates of Cabrini University with a major in Biochemistry will demonstrate the ability to apply the scientific method and will possess problem solving skills necessary to design, conduct, and troubleshoot experiments and to test a hypothesis.

Learning Outcome #3: Graduates of Cabrini University with a major in Biochemistry will acquire the critical thinking, analytical, and quantitative skills necessary to read, understand, and critically review scientific papers and to interpret and analyze data presented in various forms (i.e. graphs, tables, narrative).

Learning Outcome #4: Graduates of Cabrini University with a major in Biochemistry will develop written and oral communication skills necessary to present scientific ideas to multiple audiences using the accepted format of the discipline.

Learning Outcome #5: Graduates of Cabrini University with a major in Biochemistry will acquire basic proficiency in computational skills, lab techniques, and use of technology (i.e. lab equipment, specialized computer hardware and software) necessary for entry into the science workplace or graduate/professional schools.

Biology Major

Track in Biological Sciences

Students intending to earn a Bachelor of Science in Biology / Biological Sciences complete the following courses to meet the scientific literacy and major requirements of the University:

◆ BIO 101/102 – Biological Science I and II	8 credits
◆ BIO 206 – Cell and Molecular Biology	4 credits
◆ BIO 231 - Human Anatomy + Physiology II or BIO 301 – General Physiology	4 credits
◆ BIO 263 – Genetics	4 credits
◆ BIO 315 – Introduction to Scientific Presentations	1 credit
◆ BIO 348 - Ecology	4 credits
◆ BIO 444 – Senior Seminar	3 credits
◆ BIO 488 – Internship or RBIO 466– Research Biology (Students double majoring in Secondary Education may use SEC 490 to fulfill this requirement.)	3 credits
◆ *3 BIO electives (One elective must include a lab, two must be at the 300+ level or higher)	10 credits
◆ CHE 111/112 – General Chemistry I and II	8 credits
◆ CHE 211 – Organic Chemistry I	4 credits
◆ PHY 101/102 – General Physics I and II	<u>8 credits</u>
	Total:
	61 credits

*Acceptable BIO electives include:

BIO 205 - Animal Behavior, BIO 230 - Human Anatomy and Physiology I, BIO 250 - Nutrition, BIO 280 – Virus Discovery, BIO 308 - General Microbiology, BIO 312 – Theory and Practice in Biotechnology, BIO 318 - Virology, BIO 331 - Neuroscience, BIO 350 – Topics in Biology, BIO 351 – Biochemistry of Cancer, BIO 352 – Bioinformatics, BIO 420 - Immunology, BIO 430 - Developmental Biology, BIO 440 – Biochemistry I, BIO 441 - Biochemistry II, BIO 499 - Independent Study, or others with approval of the Department Chair.

Other requirements:

- ◆ Students must meet all course prerequisites to enroll in an upper level course. Students must take MAT 117, MAT 130 or be exempt AND either MAT 118 or MAT 313 to fulfill the Quantitative Literacy requirement or as electives.
- ◆ Students must earn a C- or higher in BIO 101 to enroll in BIO 102.
- ◆ Students must earn a C- or higher in both BIO 101 and BIO 102 to take upper level Biology courses.
- ◆ Students must be admitted to the Department formally to take coursework past BIO 102, CHE 112, and PHY 102.
- ◆ Based on SAT scores and high school preparation, some students will be required to complete BIO 100 as part of their major program.
- ◆ Students must achieve and maintain a 2.0 QPA or higher in majors-level BIO, CHE, and PHY courses once they have completed 16 credits or over in science courses to remain in and graduate from the Biology/Biological Sciences major. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 may be put on departmental probation or dismissed from the program.
- ◆ Students must have a 2.0 QPA or higher to enroll in BIO 488 or RBIO 166 or 466.
- ◆ With the exception of BIO 315, no required or related courses in the major may be taken under the pass/fail option.
- ◆ Students must complete a minimum of 15 credits in BIO courses at Cabrini University to earn a degree from the department.
- ◆ A minimum grade of “C-“ is required in all majors-level courses taken at Cabrini University.

Biology/Biological Sciences Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
Heritage			
Values			
Individual & Society			
Aesthetics			
<i>Literacies:</i>			
Information:	CIS120		
Religious			
Scientific	PHY101		
Scientific	PHY102		
Quantitative	Mat 117 or MAT 130 or Exempt		
	MAT 118 or MAT 313		
Cross Cultural	101 AND 102		
	OR 102/201/Exempt/Other		
<i>Other</i>			
COL101			
ENG 100	If required		
MAT098/099	If required		

Major Biology: Biological Science Track

Course	Specific Course	Semester planned/taken	Completed
BIO 101	General Biology I		
BIO 102	General Biology II		
BIO 206	Cell & Molecular Biology		
BIO 263	Genetics		
BIO 231 or 301	Anatomy & Physiology II or General Physiology		
BIO 348	Ecology		
BIO 315	Introduction to Sci. Presen.		
BIO 444	Senior Seminar		
BIO 488 or RBIO 466	Internship/ Research		
CHE 111	General Chemistry I		
CHE 112	General Chemistry II		
CHE 211	Organic Chemistry I		
Elective 1	300+ level		
Elective 2	300+level		
Elective 3	Lab Based		

Electives: (Complete electives to reach 123 credits.)

Biology Major

Track in Molecular Biology & Biotechnology

Students intending to earn a Bachelor of Science in Biology / Molecular Biology & Biotechnology complete the following courses to meet the scientific literacy and major requirements of the University:

◆ BIO 101/102 – Biological Science I and II	8 credits
◆ BIO 206 – Cell and Molecular Biology	4 credits
◆ BIO 263 – Genetics	4 credits
◆ BIO 308 – General Microbiology	4 credits
◆ BIO 312 – Theory and Practice in Biotechnology	4 credits
◆ BIO 315 – Introduction to Scientific Presentations	1 credit
◆ BIO 318 – Virology	3 credits
◆ BIO 420 – Immunology	3 credits
◆ BIO 440 – Biochemistry I	4 credits
◆ BIO 444 – Senior Seminar	3 credits
◆ BIO 488 – Internship or RBIO 466 – Research Biology	3 credits
◆ CHE 111/112 – General Chemistry I and II	8 credits
◆ CHE 211/212 – Organic Chemistry I and II	8 credits
◆ PHY 101/102 – General Physics I and II	8 credits
◆ Elective – Select one from BIO 351, BIO/CHE 441, CHE 201, CHE 316, CHE 407	<u>3-4 credits</u>
Total:	64-65 credits

Other requirements:

- ◆ Students must meet all course prerequisites to enroll in an upper level course. Students must take MAT 117, MAT 130 or be exempt AND either MAT 118 or MAT 313 to fulfill the Quantitative Literacy requirement or as electives.
- ◆ Students must earn a C- or higher in BIO 101 to enroll in BIO 102.
- ◆ Students must earn a C- or higher in both BIO 101 and BIO 102 to take upper level Biology courses.
- ◆ Students must be admitted to the Department formally to take coursework past BIO 102, CHE 112, and PHY 102.
- ◆ Based on SAT scores and high school preparation, some students will be required to complete BIO 100 as part of their major program.
- ◆ Students must achieve and maintain a 2.0 QPA or higher in majors-level BIO, CHE, and PHY courses once they have completed 16 credits or over in science courses to remain in and graduate from the Biology/Molecular Biology & Biotechnology major. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 may be put on departmental probation or dismissed from the program.
- ◆ Students must have a 2.0 QPA or higher to enroll in BIO 488 or RBIO466.
- ◆ With the exception of BIO 315, no required or related courses in the major may be taken under the pass/fail option.
- ◆ Students must complete a minimum of 15 credits in BIO courses at Cabrini University to earn a degree from the department.
- ◆ A minimum grade of “C-“ is required in all majors-level courses taken at Cabrini University.

Biology/Molecular Biology & Biotechnology Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
Heritage			
Values			
Individual & Society			
Aesthetics			
<i>Literacies:</i>			
Information:	CIS120		
Religious			
Scientific	PHY101		
Scientific	PHY102		
Quantitative	MAT 117 or MAT 130 or Exempt		
	MAT 118 or MAT 313		
Cross Cultural	101 AND 102		
	OR 102/201/Exempt/Other		
<i>Other</i>			
COL101			
ENG 100	If required		
MAT098/099	If required		

Biology Major: Biology and Biotechnology Track

Course	Specific Course	Semester	Completed
BIO 101	General Biology I		
BIO 102	General Biology II		
BIO 206	Cell & Molecular Biology		
BIO 263	Genetics		
BIO 308	General Microbiology		
BIO 312	Theory & Prac. Of Biotech.		
BIO315	Introduction to Sci. Presen.		
BIO 318	Virology		
BIO 420	Immunology		
BIO 440	Biochemistry 1		
BIO 444	Senior Seminar		
BIO 488 or RBIO 466	Internship/ Research		
CHE 111	General Chemistry I		
CHE 112	General Chemistry II		
CHE 211	Organic Chemistry I		
CHE 212	Organic Chemistry II		
Elective 1	BIO 351 or BIO/CHE 441 or CHE 201 or CHE 316, or CHE 407		

Electives: (Complete electives to reach 123 credits.)

Biology Major

Track in Pre-Medicine

Students intending to earn a Bachelor of Science in Biology / Pre-Medicine complete the following courses to meet the scientific literacy and major requirements of the University:

◆ BIO 101/102 – Biological Science I and II	8 credits
◆ BIO 206 – Cell and Molecular Biology	4 credits
◆ BIO 231 – Human Anatomy and Physiology II or 301 – General Physiology	4 credits
◆ BIO 263 – Genetics	4 credits
◆ BIO 308 - General Microbiology	4 credits
◆ BIO 315 – Introduction to Scientific Presentations	1 credit
◆ BIO 440 - Biochemistry I	4 credits
◆ BIO 444 – Senior Seminar	3 credits
◆ BIO 488 – Internship or RBIO 466 – Research Biology	3 credits
◆ *3 BIO electives (Two must be at the 300-level or higher.)	9 credits
◆ CHE 111/112 – General Chemistry I and II	8 credits
◆ CHE 211/212 – Organic Chemistry I and II	8 credits
◆ PHY 101/102 – General Physics I and II	<u>8 credits</u>
	Total: <u>68 credits</u>

*Acceptable BIO electives for the Pre-Medicine track include:

BIO 230 – Human Anatomy and Physiology I, BIO 250 - Nutrition, BIO 280 – Virus Discovery, BIO 312 – Theory and Practice in Biotechnology, BIO 318 - Virology, BIO 331 – Neuroscience, BIO 350 – Topics in Biology (select topics only), BIO 351 – Biochemistry of Cancer, BIO 352 – Bioinformatics, BIO 420 - Immunology, BIO 430 – Developmental Biology, BIO 441 - Biochemistry II, BIO 499 - Independent Study, or others with approval of the Department Chairperson.

Other requirements:

- ◆ Students must meet all course prerequisites to enroll in an upper level course. Students must take MAT 117, MAT 130 or be exempt AND either MAT 118 or MAT 313 to fulfill the Quantitative Literacy requirement or as electives.
- ◆ Students must earn a C- or higher in BIO 101 to enroll in BIO 102.
- ◆ Students must earn a C- or higher in both BIO 101 and BIO 102 to take upper level Biology courses.
- ◆ Students must be admitted to the Department formally to take coursework past BIO 102, CHE 112, and PHY 102.
- ◆ Students may substitute PHY 111 and PHY 112 in place of PHY 101 and PHY 102.
- ◆ Based on SAT scores and high school preparation, some students will be required to complete BIO 100 as part of their major program.
- ◆ Students must achieve and maintain a 2.0 QPA or higher in majors-level BIO, CHE and PHY courses once they have completed 16 credits or over in science courses to remain in and graduate from the Biology/Pre-Medicine major. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 may be put on departmental probation or dismissed from the program.
- ◆ Students must have a 2.0 QPA or higher to enroll in BIO 488 or RBIO 466.
- ◆ With the exception of BIO 315, no required or related courses in the major may be taken under the pass/fail option.
- ◆ Students must complete a minimum of 15 credits in BIO courses at Cabrini University to earn a degree from the department.
- ◆ A minimum grade of “C-“ is required in all majors-level courses taken at Cabrini University.

NOTE: See page 43 for “Medical School Committee Letter Requirements”

Biology/Pre-Medicine Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/ taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
Heritage			
Values			
Individual & Society			
Aesthetics			
<i>Literacies:</i>			
Information:	CIS120		
Religious			
Scientific	PHY101 or PHY111		
Scientific	PHY102 or PHY112		
Quantitative	MAT 117 or MAT 130* or Exempt		
	MAT 118 or MAT 313		
Cross Cultural	101 AND 102		
	OR 102/201/Exempt/Other		
<i>Other</i>			
COL101			
ENG 100	If required		
MAT 098/099	If required		

Biology Major: Pre-medicine Track

Course	Specific Course	Semester	Completed
BIO 101	General Biology I		
BIO 102	General Biology II		
BIO 206	Cell & Molecular Biology		
BIO 263	Genetics		
BIO 231/301	A & P II or Gen. Phys.		
BIO 308	General Microbiology		
BIO 315	Introduction to Sci. Presen.		
BIO 440	Biochemistry 1		
BIO 444	Senior Seminar		
BIO 488 or RBIO 466	Internship/ Research		
CHE 111	Gen. Chemistry I		
CHE 112	Gen. Chemistry II		
CHE 211	Organic Chemistry I		
CHE 212	Organic Chemistry II		
Elective 1	300+ level		
Elective 2	300+ level		
Elective 3			

*Students who plan to apply to medical school should take MAT 130 in order to be prepared for medical school.

Electives: (Complete electives to reach 123 credits.)

Biology Major

Track in Pre-Dentistry

Students intending to earn a Bachelor of Science in Biology / Pre-Dentistry complete the following science courses to meet the scientific literacy and major requirements of the University:

◆ BIO 101/102 – Biological Science I and II	8 credits
◆ BIO 206 – Cell and Molecular Biology	4 credits
◆ BIO 263 – Genetics	4 credits
◆ BIO 301 – General Physiology	4 credits
◆ BIO 308 - General Microbiology	4 credits
◆ BIO 315 – Introduction to Scientific Presentations	1 credit
◆ BIO 440 - Biochemistry I	4 credits
◆ BIO 444 – Senior Seminar	3 credits
◆ BIO 488 – Internship or RBIO 466 – Research Biology	3 credits
◆ Select 3 of 4 dentistry electives (BIO 290, BIO 291, BIO 293, BIO 360)	3 credits
◆ *2 BIO/CHE electives (Must be at the 300-level or higher.)	6 credits
◆ CHE 111/112 – General Chemistry I and II	8 credits
◆ CHE 211/212 – Organic Chemistry I and II	8 credits
◆ PHY 101/102 – General Physics I and II (Quantitative Literacy requirement)	8 credits
	Total:
	<u>68 credits</u>

*Acceptable BIO electives for the Pre-Dentistry track include:

BIO 280 – Virus Discovery, BIO 312 – Theory and Practice in Biotechnology, BIO 318 – Virology, BIO 351 – Biochemistry of Cancer, BIO 352 – Bioinformatics, BIO 420 - Immunology, BIO 430 – Developmental Biology, BIO 441 - Biochemistry II, BIO 499 - Independent Study, or others with approval of the Department Chairperson.

Other requirements:

- ◆ Students must meet all course prerequisites to enroll in an upper level course. Students must take MAT 130 or be exempt AND either MAT 118 or MAT 313 to fulfill the Quantitative Literacy requirement or as electives.
- ◆ Students must earn a C- or higher in BIO 101 to enroll in BIO 102.
- ◆ Students must earn a C- or higher in both BIO 101 and BIO 102 to take upper level Biology courses.
- ◆ Students must be admitted to the Department formally to take coursework past BIO 102, CHE 112, and PHY 102.
- ◆ Based on SAT scores and high school preparation, some students will be required to complete BIO 100 as part of their major program.
- ◆ Students must achieve and maintain a 2.0 QPA or higher in majors-level BIO, CHE and PHY courses once they have completed 16 credits or over in science courses to remain in and graduate from the Biology/Pre-Medicine major. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 may be put on departmental probation or dismissed from the program.
- ◆ Students must have a 2.0 QPA or higher to enroll in BIO 488 or RBIO 466.
- ◆ With the exception of BIO 315, no required or related courses in the major may be taken under the pass/fail option.
- ◆ Students must complete a minimum of 15 credits in BIO courses at Cabrini University to earn a degree from the department.
- ◆ A minimum grade of "C-" is required in all majors-level courses taken at Cabrini University.

Biology/ Pre-Dentistry Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
<i>Heritage</i>			
<i>Values</i>			
Individual & Society	(PSY 101 is recommended)		
Aesthetics			
<i>Literacies:</i>			
Information:	CIS 120		
Religious			
Scientific	PHY 101		
Scientific	PHY 102		
Quantitative	MAT 130		
	MAT 118 or MAT 313		
Cross Cultural	101 AND 102		
	OR 102/201/Exempt		
<i>Other</i>			
COL 101			
ENG 100	If required		
MAT 098/099	If required		

Major: Biology Pre-Dental Track

Course		Semester	Completed
BIO 101	General Biology I		
BIO 102	General Biology II		
BIO 206	Cell & Molecular Biology		
BIO 263	Genetics		
BIO 301	General Physiology		
BIO 308	General Microbiology		
BIO 440	Biochemistry I		
BIO 315	Introduction to Sci. Presen.		
BIO 444	Senior Seminar		
BIO 488 or RBIO 466	Internship/ Research		
CHE 111	General Chemistry I		
CHE 112	General Chemistry II		
CHE 211	Organic Chemistry I		
CHE 212	Organic Chemistry II		
BIO 290*	Intro. Dental Medicine		
BIO 291*	Intro. Clin. Research		
BIO 293*	Dental Terminology		
BIO 360*	Dental A & P		
BIO Elective 1 300+, 3-4 cr.			
BIO Elective 2 300+, 3-4 cr.			

General Electives: (Complete electives to reach 123 credits.) *Choose 3 of 4 classes.

BIOLOGY MAJOR TRACK COMPARISONS

2021-2022 CURRICULUM - GENERAL EDUCATION REQUIREMENTS

University General Education Requirements

<i>Other</i>	COL 101	ENG 100^		
<i>Engagements</i>	ECG 100	ECG 200	ECG 300	
<i>Explorations:</i>	Heritage	Values	Indiv. & Soc.	Aesthetic Appr.
<i>Quantitative Lit</i>	MAT 098/099/107^	MAT 117 or 130 or Exempt	MAT 118 or MAT 313	
<i>Cross Cultural</i>	101^	102 or 201^		
<i>Information Lit</i>	CIS 120			
<i>Religious Lit</i>	RELS			
<i>Scientific Lit</i>	PHY 101	PHY102		

[^]If required based on freshman placement results.

Biology Core & Track Requirements

Course	Biological Sciences	Molecular Biology/ Biotechnology	Pre-Medicine	Pre-Dentistry
BIO 101	X	X	X	X
BIO 102	X	X	X	X
BIO 206	X	X	X	X
BIO 230				
BIO 231/301	X		X	X
	X			
BIO 263	X	X	X	X
BIO 290/291/293/360				X
BIO 308		X	X	X
BIO 312		X		
BIO 315	X	X	X	X
BIO 318		X		
BIO 348	X			
BIO 420		X		
BIO 440		X	X	X
BIO 444	X	X	X	X
BIO 488/RBIO 466	X	X	X	X
Elective*	X	X	X	X
Elective*	X		X	X
Elective*	X		X	
Elective *				
CHE 111	X	X	X	X
CHE 112	X	X	X	X
CHE 211	X	X	X	X
CHE 212		X	X	X

*Approved electives for each track vary. Please consult the University Catalog or your advisor for a list of acceptable electives.

Chemistry Major

The Chemistry program at Cabrini is designed to prepare Chemistry majors for successful careers in a variety of industries and professions including the chemical and pharmaceutical industries, biotechnology, medicine, academics, secondary education, government labs, as well as other Chemistry related fields.

Students seeking a Bachelor of Science degree in Chemistry are required to take PHY 111/112 as their Scientific literacy requirement and must take MAT 130 for their core requirement in mathematics. Additionally, students must take 49-50 credits in Chemistry and related fields to complete the degree.

♦ CHE 111/112 – General Chemistry I and II	8 credits
♦ CHE 201 – Analytical Chemistry	3 credits
♦ CHE202L – Quantitative Analysis Laboratory	1 credit
♦ CHE 211/212 – Organic Chemistry I and II	8 credits
♦ CHE 303 – Inorganic Chemistry	3 credits
♦ CHE 315 – Introduction to Scientific Presentations	1 credit
♦ CHE 401/402 – Physical Chemistry I and II	8 credits
♦ CHE 407 – Instrumental Analysis	4 credits
♦ CHE 440 – Biochemistry I	4 credits
♦ CHE 444 – Senior Seminar	3 credits
♦ CHE 488 – Internship or RCHE 466 – Research Chemistry	4 credits
♦ *CHE elective	3-4 credits
♦ MAT 130* – Calculus I	4 credits
♦ MAT 131 – Calculus II	4 credits
♦ PHY 111/112* – University Physics I and II	<u>8 credits</u>
* satisfies core requirement	
Total: 62-63 credits	

NOTE: Chemistry majors are also required to take one chemistry elective from a selection of courses which include: BIO 441/CHE 441 – Biochemistry II, CHE 350 – Special Topics in Chemistry, CHE 220 – Environmental Chemistry, or others with approval of the Department Chairperson, CHE 307 – Polymer Chemistry, CHE 416 – Advanced Organic Chemistry.

Other requirements:

- ♦ Students must meet all course prerequisites to enroll in an upper levelcourse.
- ♦ Students must earn a C- or higher in CHE 111 to enroll in CHE 112.
- ♦ Students must earn a C- or better in both CHE 111 and CHE 112 to take upper level Chemistrycourses.
- ♦ Students must be accepted into the major to take classes past CHE 112 and PHY 112.
- ♦ No required or related courses in the major may be taken under the pass/failoption.
- ♦ Students must achieve and maintain a 2.0 QPA or higher in CHE, PHY, and MAT courses once they have completed 16 credits or over in science courses to remain in and graduate from the Chemistry program. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 may be put on departmental probation or dismissed from the program.
- ♦ Students must have a 2.00 QPA or higher to enroll in CHE 488 or RCHE 466.

Chemistry Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
Heritage			
Values			
Individual & Society			
Aesthetics			
<i>Literacies:</i>			
Information:	CIS120		
Religious			
Scientific	PHY111		
Scientific	PHY112		
Quantitative	MAT 130 or Exempt		
	MAT 118 or MAT 313		
Cross Cultural	101 AND 102		
	OR 102/201/Exempt/Other		
<i>Other</i>			
COL 101			
ENG 100	If required		
MAT 098/099 /107/117	If required		

Major Chemistry:

Course		Semester	Completed
CHE 100	If required		
CHE 111	General Chemistry I		
CHE 112	General Chemistry II		
CHE 201	Analytical Chemistry		
CHE 202L	Quantitative Analysis Laboratory		
CHE 211	Organic Chemistry I		
CHE 212	Organic Chemistry II		
CHE 303	Inorganic Chemistry		
CHE 315	Introduction to Scientific Presentations		
CHE 401	Physical Chemistry I		
CHE 402	Physical Chemistry II		
CHE 407	Instrumental Analysis		
CHE 440	Biochemistry I		
CHE 444	Senior Seminar		
CHE 488 or RCHE 466	Internship/ Research		
CHE Elective			
MAT 131	Calculus II		

Electives: (Complete electives to reach 123 credits.)

Biochemistry Major

The Biochemistry program at Cabrini is designed to prepare majors for successful careers in a variety of industries and professions including the chemical and pharmaceutical industries, biotechnology, medicine, academics, secondary education, government labs, as well as other Biochemistry related fields.

Students seeking a Bachelor of Science degree in Biochemistry are required to take PHY 111/112 as their Scientific literacy requirement and must take MAT 130 for their core requirement in mathematics. Additionally, students must take 62-64 credits in Chemistry and Biology related fields to complete the degree.

CHE 111/112 – General Chemistry I and II	8 credits
BIO101/102- Biological Sciences I and II	8 credits
BIO 206- Cell and Molecular Biology	4 credits
BIO 263- Genetics	4 credits
BIO 352-Bioinformatics	3 credits
CHE 201 –Analytical Chemistry	3 credits
CHE 202L- Quantitative Analysis Laboratory	1 credit
CHE 211/212 – Organic Chemistry I and II	8 credits
CHE 315 – Introduction to Scientific Presentations	1 credit
CHE 401 – Physical Chemistry I	4 credits
CHE 440/441-Biochemistry I and II	7 credits
BIO 442L –Advanced Biochemistry Laboratory Techniques	1 credit
CHE 444 –Senior Seminar	3 credits
CHE 488 – Internship or RCHE 466 –Research Chemistry	4 credits
*CHE/PHY elective	3-4 credits
*BIO elective	3-4 credits
MAT 130* – Calculus I	4 credits
MAT 131 – Calculus II	4 credits
PHY 111/112* – University Physics I and II	<u>8 credits</u>

* satisfies core requirement

Total: 62-64 credits

NOTE: Biochemistry majors are also required to take one chemistry/physics elective and one biology elective from a selection of courses which include: BIO280- Virus Discovery; BIO308- General Microbiology, BIO/PHY401- Biophysics, BIO430-Developmental Biology, CHE402- Physical Chemistry II, CHE407- Instrumental Chemistry, BIO351-Biochemistry of Cancer, BIO301- General Physiology or others with approval of the Department Chairperson.

Other requirements:

Students must meet all course prerequisites to enroll in an upper level course.

Students must earn a C- or higher in CHE 111 to enroll in CHE112.

Students must earn a C- or better in BIO101 to enroll in BIO102.

Students must earn a C- or better in both CHE 111/BIO101 and CHE 112/BIO102 to take upper level Chemistry and biology courses.

Students must be accepted into the major to take classes past CHE 112 and PHY112.

No required or related courses in the major may be taken under the pass/fail option.

Students must achieve and maintain a 2.0 QPA or higher in CHE, BIO, PHY, and MAT courses once they have completed 16 credits or over in science courses to remain in and graduate from the Biochemistry program. Transfer students with 8 or more credits in science at the time of enrollment will be assessed after 8 credits have been earned at Cabrini University. Students dropping below a 2.0 will first be put on departmental probation and will be given 1 semester to improve their QPA to 2.0 or above. Students failing to improve are subject for dismissal from the program.

Students must have a science 2.00 QPA or higher to enroll in CHE 488 or RCHE466.

Students who major in Biochemistry cannot major or minor in the biology or chemistry program.

Biochemistry Student Progress Record (2021-2022)

Update this progress record each semester, by checking off each course taken, to ensure you have completed the University and departmental requirements.

General Education Requirements

Course	Specific Course	Semester planned/taken	Completed
ECG 100			
ECG 200			
ECG 300			
<i>Explorations:</i>			
Heritage			
Values			
Individual & Society			
Aesthetics			
<i>Literacies:</i>			
Information:	CIS 120		
Religious			
Scientific	PHY 111		
Scientific	PHY 112		
Quantitative	MAT 107/117/130 or MAT 117/130 or MAT 130/Exempt		
Cross Cultural	101 AND 102 Or 102/201/Exempt/Other		
<i>Other</i>			
COL 101			
ENG 100	If required		
MAT 098/099	If required		

Major Biochemistry:

Course		Semester	Completed
CHE 111	General Chemistry I		
CHE 112	General Chemistry II		
BIO 101	Biological Sciences I		
BIO 102	Biological Sciences II		
CHE 201	Analytical Chemistry		
CHE202L	Quantitative Analysis Lab		
CHE 211	Organic Chemistry I		
CHE 212	Organic Chemistry II		
BIO 206	Cell and Molecular Biology		
BIO 263	Genetics		
BIO 352	Bioinformatics		
CHE 315	Introduction to Scientific Presentations		
CHE 401	Physical Chemistry I		
CHE 440	Biochemistry I		
CHE 441	Biochemistry II		
CHE 442L	Advanced Biochemistry Lab		
CHE 444	Senior Seminar		
CHE 488 or RCHE 466	Internship/ Research		
CHE Elective			
BIO Elective			
MAT 131	Calculus II		

Electives: (Complete electives to reach 123 credits.)

Cabrini Affiliated Science Programs

Cabrini's Affiliated Science Programs bridge Cabrini science students in select majors/tracks to graduate and professional programs which will prepare them for careers in Pharmacy, Physical Therapy, Osteopathic Medicine, and Podiatric Medicine.

Cabrini has articulation agreements with Temple University, Widener University, University of the Sciences, Thomas Jefferson University School of Pharmacy, and Philadelphia College of Osteopathic Medicine and will soon be developing one with Arcadia University. These programs ARE NOT separate majors but are programs meant to accelerate learning and combine study at Cabrini with study elsewhere for an advance degree in less time or provide advantages for students during the admissions process. It is important to emphasize that students cannot declare any of the following programs as a major. Qualified Cabrini Science students who meet strict GPA and course prerequisite requirements may apply for these programs in consultation with the Cabrini Science Affiliate Programs Coordinator. Students must meet certain placement requirements in mathematics and maintain a certain overall and science course GPA to be accepted into and remain in the program. Furthermore, students must maintain good academic standing and additional requirements as stipulated by articulation documents which are endorsed by Cabrini and the partner schools.

The curriculum models below reflect suggested course sequences or requirements. Please note that due to the department's schedule of course offerings and/or student prerequisite completion, certain exemptions or modifications may be made to the curriculum models. This will be evaluated on a case-by-case basis and will require advising from the Affiliate Coordinator and approval by the Department Chair. Additionally, Cabrini and partner schools reserve the right to modify certain admissions criteria to be in alignment with updated guidelines. For example, if the scoring criteria for the GRE or MCAT are modified by Educational Testing Services or Association of American Medical Colleges, then schools will need to update the language regarding acceptable criteria for acceptance.

Students interested in programs in Pharmacy, Physical Therapy and Podiatric Medicine should contact Dr. Kimberly Boyd (kboyd@cabrini.edu).

Students interested in programs in Medicine should contact Dr. Alexander Davis.

*Program requirements are subject to change based on affiliate schools admissions requirement or curriculum updates.

Cabrini University and Philadelphia College of Osteopathic Medicine 4+4 Curriculum Program

Cabrini University and Philadelphia College of Osteopathic Medicine (PCOM) have an affiliation agreement that facilitates the preferred acceptance of qualified Cabrini students to the Philadelphia Doctor of Osteopathic Medicine program at PCOM.

In this program, students follow the traditional Biology/Pre-Medicine curriculum and apply to the Osteopathic Medicine program following their junior year at Cabrini for admission to PCOM after receipt of their B.S. degree from Cabrini.

Requirements for a successful application to the Osteopathic Medicine program are:

- AACOMAS application
- Minimum 3.25 cumulative GPA in all coursework
- Excellent academic record with no academic honesty violations
- MCAT score at or above 504, with at least 126 on each section
- Successful interview with the program's admissions committee
- US Citizenship or Permanent Residency

Cabrini University and Thomas Jefferson University School of Pharmacy
3+4 Accelerated Curriculum Program

Students completing the requirements of the 3+4 program will be awarded a B.S. in Biology/Pre-Medicine, Biochemistry, or Chemistry from Cabrini University following successful completion of the first year of pharmacy study at Thomas Jefferson University. Following successful completion of the four years of study at Jefferson, students will be awarded a Pharm.D in Pharmacy. Students should consult with Dr. Kimberly Boyd for program details.

Sample Curriculum – Biology Major

Semester 1	Credits	Semester 2	Credits
<u>First Year</u> BIO 101 – Biological Science I CHE 111 – General Chemistry I MAT 130 – Calculus I ECG 100 – Engagements with the Common Good COL 101 – College Success Seminar	4 4 4 4 1 <hr/> 17	<u>First Year</u> BIO 102 – Biological Science II CHE 112 – General Chemistry II MAT 118 - Statistics CIS 120 – Introduction to Computers PSY 101 – Introduction to Psychology (I)	4 4 3 1.5 3 <hr/> 15.5
<u>Second Year</u> BIO 230 – Human Anatomy & Physiology 1 BIO 206 – Cell and Molecular Biology CHE 211 – Organic Chemistry I Language/Culture Literacy	4 4 4 3 <hr/> 15	<u>Second Year</u> BIO 231 – Human Anatomy & Physiology II BIO 263 – Genetics CHE 212 – Organic Chemistry II ECG 200 – Engagements with the Common Good	4 4 4 3 <hr/> 15
<u>Third Year</u> BIO 308 – General Microbiology PHY 101 – General Physics I ECG 300 – Engagements with the Common Good SOC 215 – Introduction to Sociology Religious Literacy	4 4 3 3 3 <hr/> 17	<u>Third Year</u> BIO 315 – Intro. To Scientific Presentations PHY 102 – General Physics II PSY 203 – Developmental Psychology I Explorations (A, H, V)	1 4 3 3 3 <hr/> 17
<u>Fourth Year (Jefferson)</u> Biochemistry Immunology Healthcare Service Learning or Community Pharmacy Health Care Communications and Patient Counseling Health Care Delivery Systems Pathophysiology I Pharmacy Practice I Preventative Healthcare and Self Care Issues	<hr/> 17	<u>Fourth Year (Jefferson)</u> Biostatistics Medicinal Chemistry Community Pharmacy or Healthcare Service Learning Molecular and Cell Biology Pathophysiology II Pharmacy Practice II Physical Assessment and Clinical Skills	<hr/> 16
		TOTAL CREDITS	129.5

Cabrini University and Thomas Jefferson University School of Pharmacy

3+4 Accelerated Curriculum Program

Students completing the requirements of the 3+4 program will be awarded a B.S. in Biology/Pre-Medicine or Chemistry from Cabrini University following successful completion of the first year of pharmacy study at Thomas Jefferson University. Following successful completion of the four years of study at Jefferson, students will be awarded a Pharm.D in Pharmacy.

Sample Curriculum – Chemistry Major with Biology Minor

Semester 1	Credits	Semester 2	Credits
<u>First Year</u> BIO 101 – Biological Science I CHE 111 – General Chemistry I MAT 130 – Calculus I ECG 100 – Engagements with the Common Good COL 101 – College Success Seminar	4 4 4 4 1 17	<u>First Year</u> BIO 102 – Biological Science II CHE 112 – General Chemistry II MAT 131 – Calculus II Language/Culture Literacy PSY 101 – Introduction to Psychology (I)	4 4 4 3 3 18
<u>Second Year</u> BIO 230 – Human Anatomy and Physiology I BIO 308 - Microbiology CHE 211 – Organic Chemistry I PHY 111 – University Physics I CIS 120 – Introduction to Computers	4 4 4 4 1.5 17.5	<u>Second Year</u> BIO 231 – Human Anatomy and Physiology CHE 212 – Organic Chemistry II PHY 112 – University Physics II ECG 200 – Engagements with the Common Good PSY 203 – Developmental Psychology I	4 4 4 3 3 18
<u>Third Year</u> CHE 201 – Analytical Chemistry CHE 201L – Quantitative Analysis Lab CHE 401 – Physical Chemistry I ECG 300 – Engagements with the Common Good Religious Literacy SOC 215 – Introduction to Sociology Exploration (A, H, V)	3 1 4 3 3 3 20	<u>Third Year</u> CHE 303 – Inorganic Chemistry CHE 315 – Intro. to Scientific Presentations CHE 402 – Physical Chemistry II CHE 407 – Instrumental Chemistry Exploration (A, H, V) Exploration (A, H, V)	3 1 4 4 3 3 18
<u>Fourth Year (Jefferson)</u> Biochemistry Immunology Healthcare Service Learning or Community Pharmacy Health Care Communication and Patient Counseling Health Care Delivery Systems Pathophysiology I Pharmacy Practice I Preventative Healthcare and Self Care Issues		<u>Fourth Year (Jefferson)</u> Biostatistics Medicinal Chemistry Community Pharmacy or Healthcare Service Learning Molecular and Cell Biology Pathophysiology II Pharmacy Practice II Physical Assessment and Clinical Skills	
	17	TOTAL CREDITS	141.5

Cabrini University and Thomas Jefferson University School of Pharmacy
3+4 Accelerated Curriculum Program

Students completing the requirements of the 3+4 program will be awarded a B.S. in Biology/Pre-Medicine, Biochemistry, or Chemistry from Cabrini University following successful completion of the first year of pharmacy study at Thomas Jefferson University. Following successful completion of the four years of study at Jefferson, students will be awarded a Pharm.D in Pharmacy. Students should consult with Dr. Kimberly Boyd for program details.

Sample Curriculum – Biochemistry Major

Semester 1	Credits	Semester 2	Credits
<u>First Year</u> BIO 101 – Biological Science I CHE 111 – General Chemistry I MAT 130 – Calculus I ECG 100 – Engagements with the Common Good COL 101 – College Success Seminar	4 4 4 4 1 17	<u>First Year</u> BIO 102 – Biological Science II CHE 112 – General Chemistry II MAT 131 – Calculus II Language/Culture Literacy PSY 101 – Introduction to Psychology (I)	4 4 4 3 3 18
<u>Second Year</u> BIO 206 – Cell and Molecular Biology BIO 308 - Microbiology CHE 211 – Organic Chemistry I PHY 111 – University Physics I	4 4 4 4 16	<u>Second Year</u> BIO 263 - Genetics CHE 212 – Organic Chemistry II PHY 112 – University Physics II ECG 200 – Engagements with the Common Good CIS 120 – Introduction to Computers	4 4 4 3 1.5 16.5
<u>Third Year</u> BIO 230 – Human Anatomy & Physiology I CHE 201 – Analytical Chemistry CHE 201L – Quantitative and Analysis Lab ECG 300 – Engagements with the Common Good SOC 215 – Introduction to Sociology Exploration (A, H, V)	4 3 1 3 3 3 17	<u>Third Year</u> BIO 231 – Human Anatomy & Physiology II CHE 315 – Intro. to Scientific Presentations PSY 203 – Developmental Psychology I Religious Literacy Exploration (A, H, V) Exploration (A, H, V)	4 1 3 3 3 3 17
<u>Fourth Year (Jefferson)</u> Biochemistry Immunology Healthcare Service Learning or Community Pharmacy Health Care Communication and Patient Counseling Health Care Delivery Systems Pathophysiology I Pharmacy Practice I Preventative Healthcare and Self Care Issues	 17	<u>Fourth Year (Jefferson)</u> Biostatistics Medicinal Chemistry Community Pharmacy or Healthcare Service Learning Molecular and Cell Biology Pathophysiology II Pharmacy Practice II Physical Assessment and Clinical Skills	 16
		TOTAL CREDITS	134.5

Cabrini University and Widener University Institute for Physical Therapy Education
3+3 Accelerated Curriculum Program

Students completing the requirements of the 3+3 program will be awarded a B.S. in Biology/Pre-Medicine from Cabrini University following successful completion of the first year of physical therapy study at Widener University. Following successful completion of three years of study at Widener, students will be awarded a D.P.T. in Physical Therapy.

Semester 1	Credits	Semester 2	Credits
<u>First Year</u> BIO 101 – Biological Science I CHE 111 – General Chemistry I ECG 100 – Engagements with the Common Good MAT 118 – Statistics COL 101 – College Success Seminar	4 4 4 3 <u>1</u> <u>16</u>	<u>First Year</u> BIO 102 – Biological Science II CHE 112 – General Chemistry II MAT 117 or 130 – Alg/Trig or Calculus I PSY 101 – Intro. to Psychology (Core – I) CIS 120 – Introduction to Computers	4 4 3-4 3 1.5 <u>15.5-16.5</u>
<u>Second Year</u> BIO 206 – Cell and Molecular Biology BIO 308 – General Microbiology CHE 211 – Organic Chemistry I Language/Culture Literacy ECG 200 – Engagements with the Common Good	4 4 4 3 3 <u>18</u>	<u>Second Year</u> BIO 263 - Genetics CHE 212 – Organic Chemistry II Language/Culture Literacy Core (A) Religious Literacy	4 4 3 3 3 <u>16</u>
<u>Year Three</u> BIO 230 – Human Anatomy & Physiology I BIO 440 – Biochemistry I PHY 101 – General Physics I ECG 300 – Engagements with the Common Good SOC 215 – Intro. to Sociology	4 4 4 3 <u>3</u> <u>18</u>	<u>Year Three</u> BIO 231 – Human Anatomy & Physiology II PHY 102 – General Physics II BIO 315 – Intro. to Scientific Presentations PSY 203 – Developmental Psychology I Core (H) Core (V)	4 4 1 3 3 3 <u>18</u>
<u>Year Four – Summer (Widener)</u> PT 708 - Anatomy	<u>6</u> <u>6</u>		
<u>Fourth Year (Widener)</u> BIOL 505 - Histology PT 703 – Foundation of PT Practice PT 713 – Lifespan I PT 716 – Global Health I PT 725 - Kinesiology PT 730 – Client Management I PT 771 – Community Health Practicum	3 4 2 1 3 3 <u>1</u> <u>17</u>	<u>Fourth Year (Widener)</u> PT 709 – Neuromuscular System I PT 724 – Clinical Practice I PT 726 – Multisystem Exam, Eval. & DX PT 727 – Musculoskeletal System I PT 750 – Evidence-Based Inquiry I PT 772 – Community Health Practicum II	4 3 4 4 2 1 <u>18</u>
*Widener course sequence subject to change.		TOTAL CREDITS	142.5-143.5

Students must pass ALL Widener courses to earn the B.S. degree from Cabrini, not just 123 credits of required coursework. If a student chooses not to attend Widener University, they may remain at Cabrini University and earn their B.S. in Biology/Pre-Medicine degree by completing the following requirements. Students may also complete requirements of other biology tracks by completing an alternate course selection.

Semester 1	Credits	Semester 2	Credits
<u>Fourth Year</u> BIO 444 – Senior Seminar BIO elective (300+ level) BIO 488 or RBIO 466 – Internship or Research Biology General Electives	1.5 3-4 3 <u>5</u> <u>12.5+</u>	<u>Fourth Year</u> BIO 444 – Senior Seminar BIO elective (300+ level) General Electives	1.5 3-4 7.5 <u>12+</u>
		TOTAL CREDITS	123 min

Cabrini University and Temple University School of Podiatry

3+4 Accelerated Curriculum Program

Students completing the requirements of the 3+4 program will be awarded a B.S. in Biology/Pre-Medicine from Cabrini University following successful completion of the first year of podiatry study at Temple University. Following successful completion of the four years of study at Temple, students will be awarded a D.P.M. in Podiatry.

Semester 1	Credits	Semester 2	Credits
<u>First Year</u> BIO 101 – Biological Science I CHE 111 – General Chemistry I MAT 130 – Calculus I ECG 100 – Engagements with the Common Good COL 101 – College Success Seminar	4 4 4 4 1 <u>17</u>	<u>First Year</u> BIO 102 – Biological Science II CHE 112 – General Chemistry II MAT 118 – Statistics CIS 120 – Introduction to Computers Exploration (A, H, V, I)	4 4 3 1.5 3 <u>15.5</u>
<u>Second Year</u> BIO 206 – Cell and Molecular Biology CHE 211 – Organic Chemistry I Language/Culture Literacy ECG 200 – Engagements with the Common Good	4 4 3 3 <u>14</u>	<u>Second Year</u> BIO 263 – Genetics BIO 315 – Intro. Scientific Presentations CHE 212 – Organic Chemistry II Language/Culture Literacy Exploration (A, H, V, I)	4 1 4 3 3 <u>15</u>
<u>Third Year</u> BIO 308 – General Microbiology BIO 444 – Senior Seminar PHY 101 – General Physics II ECG 300 – Engagements with the Common Good Religious Literacy	4 1.5 4 3 3 <u>15.5</u>	<u>Third Year</u> BIO 444 – Senior Seminar PHY 102 – General Physics II Exploration (A, H, V, I) Exploration (A, H, V, I) Electives	1.5 4 3 3 3 <u>14.5</u>
<u>Fourth Year (Temple)</u> Course taken: P100 – Histology (7) P102 – General Anatomy (6.25) P105 – Neuroanatomy (2) P110 – Medical Biochemistry (6) P111 – Physiology (5) P130 – Podiatric Medicine (3.5) P109 – Biomechanics (2) P103 – Lower Limb Anatomy (7.7) P120 – Medical Micro. & Immunology (6.8)		Credit awarded for Cabrini course BIO Elective BIO Elective BIO 331 – Neuroscience (3) BIO 440 – Biochemistry I (4) BIO 301 – General Physiology (4) BIO 488 – Internship (3) BIO Elective BIO Elective BIO Elective	
		TOTAL CREDITS	137.75

Students must pass ALL Temple courses to earn the B.S. degree from Cabrini, not just 123 credits of required coursework. If a student chooses not to attend Temple University, they may remain at Cabrini University and earn their B.S. in Biology/Pre-Medicine degree by completing the following requirements. Students may also complete requirements of other biology tracks by completing an alternate course selection.

Semester 1	Credits	Semester 2	Credits
<u>Fourth Year</u> BIO 440 – Biochemistry BIO 488 or RBIO 466 – Internship/Research BIO elective Electives	4 3 3-4 6 <u>16+</u>	<u>Fourth Year</u> BIO 231/301 – Human Anatomy and Physiology II or General Physiology 2 BIO electives Electives	4 6-8 5.5+ <u>15.5+</u>
		TOTAL CREDITS	123+

Cabrini University and University of the Sciences in Philadelphia

3+4 Accelerated Doctor of Pharmacy Curriculum Program

Students completing the requirements of the 3+4 program will be awarded a B.S. in Biology or Chemistry from Cabrini University following successful completion of the first year of pharmacy study at the University of the Sciences in Philadelphia. Following successful completion of the four years of study at U. Sciences, students will be awarded a Pharm.D in Pharmacy.

Pre-Requisite Courses Required for Admission to USciences' PharmD Program

The equivalencies in the following table are for courses that are **required for admission** to USciences' Doctor of Pharmacy (PharmD) Program. Students will be advised on the requirements of the B.S. in Biology or Chemistry degree and Cabrini's core curriculum that are required in addition to the program requirements for USciences. Students must earn a minimum of 93 credits at Cabrini prior to beginning their professional year of study.

University of the Sciences		Cabrini University		
Course Name	Credits	Course #	Course Name	Credits
General Biology I with Lab	4	BIO101	Biological Science I	4
General Biology II with Lab	4	BIO102	Biological Science II	4
General Chemistry I with Lab	4	CHE111	General Chemistry I	4
General Chemistry II with Lab	4	CHE112	General Chemistry II	4
Calculus I	3	MAT130	Calculus I	4
Writing Intensive English	3	ECG100	Engagement with the Common Good	3
Social/Behavioral Science (includes sociology, psychology, anthropology, etc)	3	PSY101	Introduction to Psychology (I)	3
Organic Chemistry I with Lab	4	CHE211	Organic Chemistry	4
Organic Chemistry II with Lab	4	CHE212	Organic Chemistry II	4
Physics with Lab	4	PHY101	General Physics I	4
Human Anatomy & Physiology I & II with Lab (can be virtual or bench)	8	BIO230 BIO231	Human Anatomy & Phys I Human Anatomy & Phys II	4 4
Microbiology with Lab	4	BIO308	General Microbiology	4
Statistics	3	MAT118	Introduction to Statistics	3
Intro to Communication <u>or</u> Public Speaking	3	COM340	Public Speaking	3
Economics (e.g., Microeconomics, Macroeconomics, Health Economics)	3	ECO131 Or ECO132	Microeconomics Macroeconomics	3 3

First-year courses at U. Sciences: Professional Orientation, Practice Skills/Professional Behavior I, Foundations of Biomedical Sciences, Foundations of Pharmaceutical Sciences I and II, Humanities or Social Service/Professional Elective, Integrated Pharmacy Sciences, Medication Use Systems I, Foundations of Clinical Immunology, Introductory Pharmacy Practice Experiences (IPPE).

Students must pass ALL U. Sciences first year courses to earn the B.S. degree from Cabrini. If a student chooses not to attend University of the Sciences, they may remain at Cabrini University and earn their B.S. in Biology/Pre-Medicine or Chemistry degree by completing all major and core curriculum requirements outlined in the Cabrini University Catalog. requirements.

Students interested should declare a major in biology/chemistry prior to starting at Cabrini and indicate their interest in the program to the program coordinator so students can be enrolled in the proper first semester classes.

Students may indicate their interest once they have started at Cabrini but may not be able to complete the requirements of the 3+4 format. There is a 4+4 option for students who do not wish to pursue the accelerated track. All courses in the program must be taken at Cabrini University.

Capstone Experiences

While your science coursework will provide you with content knowledge, technical skills, application skills, and written and oral communication skills, two capstone experiences are part of the Biology and Chemistry curricula as well. These courses are to help you integrate your knowledge, to explore individual areas of interest through research, and to better understand what it is to be a professional scientist. (Majors seeking Secondary Education Certification are exempt from BIO/CHE 488, but must complete SEC 490 - Student Teaching and Practicum in its place. Grades for SEC 490 are not used in the science major GPA calculation for graduation. Students with provisional/conditional acceptance into the 4 + 1 BS/MSBS dual degree program are also exempt from BIO 488.)

BIO/CHE 444 – Senior Seminar

During the final year, students complete a senior thesis project and participate in a science research seminar series. In the fall semester, students register for BIO/CHE 444 (1.5 credits). During this semester, students will have weekly meetings with the course advisor, select a topic of interest, and begin library research of peer-reviewed scientific journals. During the spring semester, students will again register for BIO/CHE 444 (1.5 credits). In this semester, students will meet weekly with a faculty advisor and discuss issues related to research and written and oral communication skills. Students also continue working on their research thesis. The year culminates with a written thesis on their selected topic, a public poster presentation of the work, and an oral defense.

BIO/CHE 488 – Internship or RBIO/RCHE 466 – Research Biology/Chemistry

The second experiential capstone experience is for students to gain practical experience in the workplace. Students completing BIO/CHE 488 are placed in industry, university research labs, and hospitals, depending on their area of interest and must complete a minimum of 135 hours in the field for the Biology major and 180 hours in the field for the Chemistry major. Students should begin to search/apply for internship positions during their junior year. Positions may be paid or volunteer, but must be approved by the department before credit will be granted. The department will attempt to assist students who are unable to obtain a position themselves. Note that successful internship placement is dependent upon the selection criteria of the company, university, or hospital in conjunction with the student's academic performance. Students will register for BIO/CHE 488 during a semester either after the internship is completed or while the internship is in progress. Students are graded based on a work evaluation from their supervisor, a written summary of their research activities, and an oral presentation of their work. Please see the Departmental Internship Handbook, which is available at www.cabrini.edu/science for details.

Select students complete RBIO/RCHE 466 and have the opportunity to do research with a Cabrini University Science faculty member. The criteria for selection and requirements of the course are determined by the faculty member and the student must complete an Undergraduate Research Proposal (refer to the Science Department Undergraduate Research Manual). Students may enroll in RBIO/RCHE 466 multiple times. If the course is used to fill the capstone experience requirement, students must complete oral and written presentation requirements. See your research advisor for details of this requirement. Students may also take the course as a BIO/CHE elective (limit of 3 credits may be applied to the major requirements) or as a free elective.

See Cavalier Express Center for the most current forms.

Honors in the Major

In addition to Latin honors conferred at graduation and completion of the University honors program, students in the Sciences may also apply for honors within the Department. Earning honors in the major is limited to students with an overall QPA of 3.0 or higher, a science QPA of 3.5 or higher, and to those having been accepted to one of the science honor societies. Students must also complete an independent research project (3 credit minimum of RBIO/RCHE 466) with a faculty member in the Science Department and present their work at a regional or national conference. The following application should be submitted to the department chair no later than December 1, 2019 or one semester prior to graduation.

Application for Honors in the Science Department

Name _____

University ID Number _____

Major _____ Track _____

Month and year of expected graduation _____

The following requirements must be met to graduate with Honors in the Department

1. File this application with the Chair of the Science Department;
2. Have a overall QPA of at least 3.00 at the time of graduation;
3. Have a QPA in all majors-level Science courses (BIO, CHE, ENS, PHY; MAT 131 is included for chemistry majors) taken at Cabrini of at least 3.50 at the time of graduation;
4. Complete and give a public presentation (poster or oral) at a conference (other than at Cabrini University) on a research project, done in collaboration with or under the supervision of a full-time member of the Science Department, and
5. Be a member of the Cabrini chapter of *Beta Beta Beta*, a national biological honor society or *Gamma Sigma Epsilon*, a national honor society for chemistry majors.

I acknowledge that the filing of this application does not guarantee that I will graduate with Honors in the major, and that to achieve that status, I must meet all the requirements stated above at the time of graduation.

Applicant's Signature

Date

Department Chair's Signature

Date

Double Majors

Some students may elect to pursue a double major to gain extensive skills in another field or to pursue a unique career path. Students are suggested to begin courses in their second major as early as possible, but be aware that completing two majors generally requires a student to far exceed the 123 credit graduation minimum and may not allow completion of the degrees within four years. Since this can also be academically rigorous, it is suggested that only students with strong QPA's attempt a double major. Students may not earn a double degree by completing the requirements of two tracks within a major. Students who major in Biochemistry cannot major or minor in the biology or chemistry program.

Students double majoring in Biology and Chemistry are only required to take two capstone courses, one Senior Seminar and one Internship/Research, not two for each major. In this case, to meet American Chemistry Society curriculum guidelines, the Senior Seminar project must be biology based and the Internship/Research must be chemistry based. There may be no overlap of the content/topic used for these courses.

Minor Requirements

All students are encouraged to consider developing a minor to expand their knowledge in another discipline. The requirements for all minors are listed within the current Cabrini University Catalog. The Science Department offers minors in Biology, Chemistry and Environmental Science. Awarding of all Science Department minors requires a minimum of a 2.0 QPA in all required and elective minor courses. Students must take at least two courses not already required in their major to earn a minor in one of these science fields. Students not already a member of the Science Department must meet requirements necessary to be accepted into the Department to take courses past BIO 102, CHE 112, and PHY 102. Students who major in Biochemistry cannot major or minor in the biology or chemistry program.

Biology Minor Requirements

BIO 101	4 credits
*BIO 102	4 credits
*1 BIO lab course (200+-level)	4 credits
*3 additional BIO courses (200+-level)	9 credits
Total	21 credits

*Students must meet all required course prerequisites to enroll. Students may not use BIO 444 – Senior Seminar, BIO 488 – Internship, BIO 489 – Curriculum Methods or RBIO 466 – Research Biology for the minor.

Chemistry Minor Requirements

CHE 111	4 credits
*CHE 112	4 credits
*CHE 211	4 credits

Select at least 3 courses from the list below and must earn between 9-12 credits:

- CHE 201- Analytical Chemistry (3 Credits)
- CHE 201L- Analytical Chemistry Lab (1 Credit)
- CHE 212- Organic II (4 Credits)
- CHE 220- Environmental Chemistry (3 credits)
- CHE 303- Inorganic Chemistry (3 credits)
- CHE 350- Topics in Chemistry (1-3 credits)
- CHE 401- Physical Chemistry I (4 credits)
- CHE 402- Physical Chemistry II (4 credits)
- PHY 401- Biophysics (3 credits)
- CHE 407- Instrumental Chemistry (4 credits)
- CHE 440- Biochemistry I (4 credits)
- CHE 441- Biochemistry II (3 credits)
- CHE 442L- Advanced Biochemistry Laboratory (1 credit)

Total	21-24 credits
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*Students must meet all required course prerequisites to enroll.

Environmental Science Minor Requirements

BIO 101	4 credits
*BIO 102	4 credits
*BIO 348 – Ecology	4 credits
*Select from the following:	6 credits
PHI 326 – Environmental Ethics BIO 211 – Watershed Ecology, or other 200-level or higher BIO courses with approval of Department Chairperson	

Total	18 credits
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*Students must meet all required course prerequisites to enroll.

Students declaring this minor may need to take select courses at an affiliate or other college. Students not declaring this minor in their freshman year may be unable to complete the minor prior to graduation.

Registration Procedures

Registration for Courses

During the summer prior to admission and at the mid-point of each semester, you will register for the next semester's courses. Registration materials and dates will be mailed to you several weeks ahead of time. Prior to the registration period, make an appointment with your advisor to discuss your course selections and fill out a "Registration Roster". Before your meeting, make a list of courses you would like to take or that fill your university requirements. Remember that you may not always get your first choice of times or classes, so come prepared with several alternates. Students wanting to maintain full-time status must register for a minimum of 12 credits/semester. Students may take up to 18 credits without special permission. Only upper division students with a QPA of 3.0 or higher may attempt more than 18 credits with permission of their advisor. A list of open courses is available through the Registrar's page on the Cabrini University web site: www.cabrini.edu/webtms. After meeting with your advisor and obtaining their signature on the roster, take the roster to the Registrar's Office or register through Cabrini University Portal at your designated time to complete the process. Registration preference is based on seniority at the university (i.e. students with senior status (>90 credits) register before students with junior status (60-89.5 credits)). Your designated time will be indicated on your registration materials or can be found in the front of the "Class Schedule".

Add/Drop policy

Once your initial roster is submitted, any changes must be completed using a "Course Add/Drop" form or via your Cabrini Portal account. See your advisor or the Registrar's Office to obtain and complete these forms. The Add/Drop period usually extends for the first week to week-and-a-half of classes. The specific deadline each semester will be published in the "Class Schedule" or in the "Semester Calendar". After the deadline, courses can no longer be added. Courses dropped during this time period will not be noted on your university transcript.

Withdrawal policy

After the Add/Drop deadline, courses may be dropped by filling out a "Course Withdrawal Card" or filling out the online "Withdrawal Form" prior to the withdrawal deadline published in the "Class Schedule" or in the "Semester Calendar". Courses dropped during this time period will appear on your transcript with a "W" indication. These classes will not be used in calculating your QPA or your total credits completed.

Taking a class at another institution

Upperclassmen may take courses at other 2-year or 4-year colleges. Before registering for the course at another college, please discuss this option with your advisor. You should obtain a copy of the course syllabus from the instructor or provide a copy of the course description in the college's catalog. If approved, your advisor will fill out and sign an "Approval for Credit Taken at Other Institutions" form. This form must also be co-signed by the literacy or exploration coordinator; as well as the Department Chair and Assistant Dean of the course similar at Cabrini. Students are responsible for obtaining these signatures and should work with their academic advisor in order to identify these individuals. While the credits earned at another school may be transferred to Cabrini and the credits will count towards the 123-credit graduation minimum, the grade will not be used in calculating your QPA. The only exceptions to this are classes taken during the Fall or Spring semesters at Eastern University, Valley Forge Military Academy, and SEPCHE institutions with whom we have reciprocal agreements.

Students enrolled in any of the Science majors (Biology, Chemistry) may not take any science courses off campus without prior approval of their advisor or department chair. The only class equivalents that can be taken off campus at a 100-level are those equivalent to BIO 101/102, CHE 111/112, and PHY 101/102; PHY111/112. These courses must be designed for majors, must be four or more credits and must have a lab component. Any 200-level or higher course required at Cabrini University must be taken at a 200-level or higher and may not be more than one class level below the equivalent course at Cabrini. Examples include if a student wants to take BIO 230 – Human Anatomy and Physiology off campus to meet graduation requirements, they may not enroll in a 100-level A+P course at a community college or if they want to take BIO 440 – Biochemistry I off campus, a 200-level biochemistry course cannot be used, but a 300- or 400-level can. If the above rules are not followed, students may transfer in the credits as "Science core" only to facilitate receipt of financial aid and to make satisfactory academic progress.

CLEP/DSST/IB/AP credit

Students may also earn credit towards graduation through the CLEP, DSST, IB or AP programs. Students must earn a grade of 4 or 5 on AP science-based exams to earn credits towards graduation. A list of currently accepted exams can be found in the University Catalog.

Declaring a major or minor

Although you may have indicated a major and/or minor on your application form for the University, you are not officially admitted into the major/minor until you complete the "Application for Undergraduate Major/Minor" form. Students must meet the admission standards of the Department as outlined previously in this handbook. It is suggested that you complete this form before your sophomore year, so you can be assigned to an appropriate departmental advisor. Forms can be obtained in the Registrar's Office and must be signed by the Departmental Chair.

Graduation applications

And finally, an application for graduation is required prior to the completion of your degree requirements. You will be informed by mail as to the deadlines for graduation. "Applications for Graduation" are available at the Registrar's Office.

Grading Policies

Grading System

Cabrini University uses the 4.0 grading system to evaluate students' achievements in a course. Each letter grade is assigned a numerical value called quality points as follows:

Letter Grade	Quality Points
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
D+	1.33
D	1.00
F	0.00

Quality Point Average (QPA)

Your quality point average (QPA) is the same as a GPA. The QPA is calculated by dividing the total number of credit hours attempted in classes with A→F letter grades into the total number of quality points earned. To calculate the number of quality points earned for each course, multiply the quality point value for the letter grade you earned and multiply it by the number of course credits for that class. For example, if you earn a B in a 4 credit class, you earn 3.00 (quality points for a B) x 4 (credits for the class) = 12.00 total quality points.

The following letter grades may be present on your transcript, but are not used in calculating the QPA:

P (pass)	PH (pass with honors)	I (incomplete)
IP (in progress)	NG (no grade)	NR (not reported)
NC (no credit)	TR (transfer)	W (withdrawn)
AU (audit)	CR (credit)	
IPP (in progress passing)		

Students failing a required course or earning an unacceptable grade in a required course must repeat that course to satisfy the graduation requirements. Students repeating a course should alert the Registrar's Office of the repeat when registering for the course. If the course is repeated at Cabrini, the original grade is no longer computed in the cumulative average. However, the original entry, shown as an Excluded course, and the adjusted semester average will remain on the transcript.

Here's an example of calculating your overall QPA:

Course	Letter Grade	Quality Points	Course Credits	Total Quality Points Earned
BIO 101	B	3.00	4 credits	12.00
CHE 111	A-	3.67	4 credits	14.68
ECG 100	F	0.00	3 credits	0.00
CIS 125	W	0.00	0 credits	0.00
SPA 101	C+	2.33	3 credits	6.99
			14 credits	33.67 quality points

Therefore your QPA is $33.67 / 14 = 2.405$.

Warning Notices

- During the first year and beyond, students may receive two types of progress notices.
- After the first month of classes, students get an email progress report from each professor indicating strengths, weaknesses, and hints for improvement.
- At mid-term, if a student's grade in a particular class is a D or F, they may receive a "Warning Notice." Both documents also go to academic advisors, the student and the Academic Dean and should be a point of

discussion at an advising meeting.

- Faculty send Warning Notices to @cabrini.edu email address through the last day of classes for the semester.
- Warning notices are optional for faculty, so not receiving one doesn't necessarily mean you are passing a class.
- If students do receive a warning notice or think that they are in jeopardy of failing, they should take the initiative to meet with the professor to determine how best to improve.

Mid-Term Grades

- Faculty teaching traditional undergraduate 15-week courses will provide students with mid-term letter grades, designed to help students understand how they are doing at the halfway point of the semester.
- Mid-term grades do not necessarily reflect 50% of the final grade, only the work done to date.
- They will not be used to calculate GPA at the end of the term or appear on students' permanent transcripts.
- Mid-term grades can be accessed the same way final grades are viewed, through the Cabrini University Portal at portal.cabrini.edu.

Department Grading Standard

Each member of the Science Department sets and upholds their own grading policies. All policies are clearly stated in the syllabus provided for each course. Please refer to individual faculty with questions regarding their grading standards and policies.

Academic Grievance Procedure

If a student has an academic grievance with a faculty member, the student must follow this procedure:

1. Discuss the grievance within six weeks following the end of the semester with the faculty member directly involved and attempt to settle the issue.
2. If resolution is not achieved, the student should, within a two-week period, take the grievance to the department chair. The chair, faculty member, and student will attempt to resolve the problem. If the instructor is a department chair, then the matter is referred directly to the Dean for Retention and Student Success or his/her designee.
3. If unresolved, the Dean or his/her designee will, within two weeks, discuss the situation with the student and the faculty member to attempt to resolve the issue. The student should have his/her case well organized and supply written information about the grievance. The Dean or his/her designee will also determine if the issue is grievable.
4. If grievable, the Academic Honesty and Student Grievance Board will meet within two weeks after receiving an appeal.
5. The Academic Honesty and Student Grievance Board shall make its recommendation to the Dean or his/her designee for final resolution within two weeks. Issues that arise during the summer session may be addressed during the fall semester. Or, if not grievable, the Dean or his/her designee will inform all parties.
6. The Academic Honesty and Student Grievance Board will be composed of faculty members selected by the Nominating and Appointment Board and students selected by the Student Government Association. Alternate students and alternate faculty will be selected annually. No person serving on the Student Grievance Board can be involved in the complaint taken before the Board.

Academic Honesty Policy

Academic honesty is expected on all work completed towards your academic degree. Acts of dishonesty include, but are not limited to, cheating, plagiarism, allowing another student to cheat from or copy your work, copying your work from that of another student, data fabrication, and misrepresentation for the purpose of making-up an exam or extension of assignment deadlines. Details of the academic honesty policy and penalties can be found in the Student Handbook and the University Catalog. Each instructor will provide you with additional information regarding their particular policies and penalties in their course syllabus.

In addition to the course-related penalties, faculty may withhold support for a student for admission to medical, graduate, and/or professional school programs.

Departmental Organizations and Societies

Science Club

The Science Club welcomes all Cabrini University students with an interest in science. The Science Club meets monthly throughout the Fall and Spring semesters for general meetings. In addition, Science Club also participates in scheduled field trips, social outings, and community service endeavors. In some instances, the department may also invite the Science Club to participate in the hiring process of new Science faculty. There are also opportunities for students to gain leadership experience as an elected officer for the club. Flyers announcing meeting times and events are typically posted throughout the Iadarola Center's 2nd and 3rd floors. Dr. Maia Magrakvelidze is the faculty advisor to this club.

Beta Beta Beta

Tri-β is the national undergraduate honor society in Biology. The Lambda Rho Chapter was chartered at Cabrini in 1974. Biology majors with an overall QPA of 3.0 or greater after completing 3 or more semesters of a 4-year curriculum and a BIO QPA of 3.0 or greater after the completion of 12 credits in BIO courses are eligible for induction as regular members. Associate membership is open to any student who meet these credentials. Dr. Nielsen is the faculty advisor to this society.

Gamma Sigma Epsilon

The Rho Chapter of ΓΣΕ, the National Chemistry Honor Society, invites students who excel in the area of Chemistry to apply for membership. Active membership of the Chapter is composed of students who have completed a minimum of 16 credit-hours in chemistry and are declared major or minors in the field. Students must have a minimum grade point average of 3.0 in all CHE courses and at least a 3.0 overall grade point average. Biology majors who meet the minimum Chemistry credits are also eligible for membership. ΓΣΕ's interim faculty advisor is Dr. Smith.

Advising

Academic Advising

Academic Advising begins in the summer prior to your freshman year when you meet your instructor for COL 101 – College Success Seminar. This faculty member will serve as advisor until you formally declare a major. After that, you will be assigned a full-time faculty advisor in your department based on your career interests and goals. Your faculty advisor will assist you with course scheduling, academic progression, and career planning.

Tutoring

Cabrini's Center for Student Success is dedicated to helping students reach their full academic potential. Support services include peer tutoring, a writing center and a math center, and are available to all students free of charge. Contact the Center at 610-902-8443 to schedule tutoring services or if you would like to serve as a tutor.

Counseling Services

Counseling, consultation, and psychological services are available on campus free of charge to students. Please call 610-902-8561 to schedule an appointment. Campus ministry (610-902-8225) also offers student support and guidance.

Accessibility Resource Center (ARC)

Students with identified physical or learning disabilities are eligible to receive support services from Cabrini's ARC office. Contact arc@cabrini.edu for more information.

Center for Career and Professional Development

Your academic advisor will assist you in focusing your career interests and guide you through the process of applying for jobs, graduate school, the GRE's or MCAT's. BIO/CHE 315 – Introduction to Scientific Presentations and BIO/CHE 444 – Senior Seminar will also address many of these issues formally. Career and professional guidance is also available through the Center for Career and Professional Development. This center provides individual career counseling and testing to assess your interests, skills, values, experiences, and to review resumes. The office also contains a career resource library, alumni connections and organizes career fairs. You may stop in to their Widener Center office (second floor) or call, Erin Gabriele at 610-902-8304, or James McLaughlin at 610-902-8305 to arrange a meeting. <https://www.cabrini.edu/about/departments/career-and-professional-development>

Medical School Committee Letter Requirements

Please note that obtaining a Committee Letter from Cabrini University for recommendation to a medical school has a significantly more stringent requirement than graduation, in line with the requirements of medical school admissions committees:

- Overall GPA must be 3.5 or higher, with 3.4 or higher in science and math courses.
- Requisite courses should be taken at Cabrini receiving a C or higher in each. Transferred courses will be evaluated on an individual basis by considering the transcript grade and institution.
- MCAT scores must be 500+ overall with 125+ in each section.
- The student's record must be verified as free of academic honesty or behavioral violations.
- Other criteria will be evaluated beyond these minimums if they are likely to adversely impact admissions. If you have any questions or concerns about these requirements, please speak to the Pre-Medical Advisor (Dr. Alex Davis) early in the process to plan ahead and evaluate options.
- Fill out and submit a Medical School Committee Letter request form during the academic year before they apply for medical school.

Dental School Committee Letter Requirements

Please note that obtaining a Committee Letter from Cabrini University for recommendation to a dental school has a significantly more stringent requirement than graduation, in line with the requirements of a dental school admissions committees:

- Overall GPA must be 3.5 or higher, with 3.4 or higher in science and math courses.
- Requisite courses should be taken at Cabrini receiving a C or higher in each. Transferred courses will be evaluated on an individual basis by considering the transcript grade and institution.
- DAT scores overall score of 21 or higher.
- The student's record must be verified as free of academic honesty or behavioral violations.
- Other criteria will be evaluated beyond these minimums if they are likely to adversely impact admissions. If you have any questions or concerns about these requirements, please speak to the Pre-Dental Advisor (Dr. Kimberly Boyd) early in the process to plan ahead and evaluate options.
- Fill out and submit a Dental School Committee Letter request form during the academic year before they apply for dental school.

Lab Safety Policies

Cabrini University is dedicated to the safety of our students as they learn. Indeed, an important part of a student's scientific education is learning how to safely operate in the lab. Our safety policy contains general safety practices for chemistry, biology and physics labs, but cannot cover all circumstances. Students must comply with faculty and staff instructions and use practical judgement at all times.

Students are required to familiarize themselves with these standard lab safety practices and complete a lab safety training in each lab course at the University. This training consists of an in-person and/or online explanation of the lab safety rules and passing a corresponding quiz. Once trained on the rules, students are expected to operate safely in the lab environment. Failure to comply with safety practices and policies may potentially result in dismissal from a class session and a reduction in course grade. Egregious and/or repetitive infractions may also result in failure of or dismissal from a course or even the department and major, without a probationary period. Cabrini University genuinely cares about the safety of all our students, faculty and staff.

You can find these safety policies on the Science Department website [Link to Safety Policies](#).

Special Health Concerns:

If a student is breastfeeding, pregnant, or may become pregnant, Cabrini wants to care for your particular health needs. Special precautions must be taken to avoid contact with certain harmful chemicals and materials. Faculty, the Chemical Hygiene Officer, and SDS logs are available resources to assist with this.

If a student has any allergies or chemical sensitivities, Cabrini wants to protect your health. Please have a conversation with your instructor and consult the Chemical Hygiene Officer and SDS logs to help reduce your health risk.

Guidelines for Laboratory Notebooks

Many majors' -level science laboratory courses require each student to obtain and use a laboratory notebook. When used, it must be one with a sewn-in binding rather than a ring binder. This regulation, when applicable, will be presented and explained at the first laboratory session of the semester. A set of notebook regulations or guidelines will be given to each student at that time, showing how to record data and maintain a notebook. The notebook will be used by the student throughout the term, and will be graded as per course syllabus. The notebook will be collected periodically or at the end of the semester, and maybe retained for one year in the department files if requested by instructor. No student will be permitted to attend any laboratory session (after the first) without bringing the laboratory notebook with them.

Science Department Guidelines for Laboratory-Based Independent Student Projects

Effective June 2015

Below are specific regulations regarding independent student work in the labs in the Science Department that pertain to all science majors and non-majors enrolled in science courses, effective immediately. All full-time and part-time faculty are expected to follow these rules in order to be in compliance with departmental policy.

1. All supervising faculty members in charge of students conducting independent projects must be present when any chemical considered hazardous is being used.

Note: In the case of RBIO/RCHE 466/468 students, this restriction is modified as following: Following significant training and understanding of SDS documentation, students enrolled in RBIO/RCHE 466/468 courses may work without the immediate supervision of full-time faculty members, but only if working with another research student, and only between the hours of 7 a.m. – 10 p.m., including weekends. Faculty supervisors for RBIO/RCHE 466/468 must be made aware of when students are conducting their work, the name of the accompanying person, and the chemical reagents involved.

2. Only faculty may acquire or request chemicals from the storage area in the basement. Students are never permitted to have access to the chemical storage or waste disposal areas in the basement.

3. The supervising faculty member is responsible for overseeing the labeling of hazardous materials (stock/working solutions, experimental in progress, etc.), and hazardous waste associated with all laboratory activities. Labeling will be conducted according to the posted guidelines in the satellite accumulation areas for hazardous waste.

4. Students conducting independent laboratory-based projects in any science course, must submit a written document outlining their project design and identifying all laboratory equipment and reagents that will be used in advance of the project start date. All SDS documents associated with chemicals used in projects must be read by students in advance of conducting their experiments, and the chemical hygiene officer must be informed of any hazardous substances that are under consideration. If the chemical hygiene officer has any concerns about the experimental design or chemicals requested, then the department chair must be contacted for final approval. Pending approval, faculty can request students to have access to the lab outside class times. For major-level classes students may be granted limited 7-day access 8am-4pm as deemed needed. For non-major-level classes students may be granted limited access Monday-Friday 8am-4pm access as needed.

6. Upper division students/classroom coaches/ lab assistance may not oversee labs in the absence of a supervising faculty member. If a faculty misses a lab for illness/conference, another faculty member must cover the lab, or the lab will be cancelled, and alternative activities assigned.

7. Students not currently enrolled in a science course may not enter a science lab for any reason. Science students have access only to specified laboratory spaces approved by their faculty supervisor.