

Delgado
COMMUNITY COLLEGE
Biotechnology

**Science Laboratory Technology, A.A.S
Biotechnology Concentration**

Program Handbook

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Welcome to SLT-Biotechnology!

Thank you for considering the Science Laboratory Technology (SLT) Program with a concentration in Biotechnology (SLT-Biotechnology)! We are very proud of the exceptional program that we have built over the years and look forward to meeting you. Two of the most common questions that we receive from our prospective students are ‘What exactly is Biotechnology?’ and ‘What can I do with a degree in Biotechnology?’. The answer to both questions is as broad as the questions themselves. Biotechnology is not a pure scientific discipline, however, at its basic definition it is simply technology based on biology.

Biotechnology combines aspects of several different biological fields including genetics, molecular biology, biochemistry, and microbiology to develop technologies and products that help improve our lives. This is not a new field, but rather a growing industry stretching back through time. Humans have harnessed various biological processes of bacteria and yeasts for more than 6,000 years to produce food products, such as breads, cheeses, beer, and wine. Today’s biotechnology industry is focused on combating devastating diseases that not only affect humans, but also agricultural livestock and crops, as well as, finding solutions to reduce our environmental footprint by producing cleaner and safer energy production and more efficient industrial manufacturing processes.

As a biotechnologist, your job requirements can vary according to the needs of the company or laboratory that employees you, but there are many common responsibilities. These responsibilities include, safety training, collecting samples, analyzing sample data, accurate record keeping, and ordering chemicals/equipment. The SLT-Biotechnology Program is intended to provide you with the necessary skill set for an entry biotechnician position in various regional academic, government, and private research laboratories. In accordance with these goals, it is necessary for the technician to have ample training not only in the basic theories for each scientific assay but a practical hands-on knowledge of the operation of common laboratory equipment. As a capstone experience, you will complete a semester internship with one of our academic or business partners in the New Orleans area or if you have a particular laboratory already in mind we will work with you to create your ideal internship.

Upon completion of this SLT-Biotechnology curriculum, you will be able demonstrate proficiency in essential laboratory skills that will help you achieve the ultimate goal of being successfully employed in the emerging New Orleans biotechnology industry. We look forward to hearing from you and helping you achieve your goal!

Summary of Biotechnology Concentration

Summary of Program Discipline

The SLT-Biotechnology Program focuses on providing students the necessary skills and techniques for standard, everyday science laboratory research work. The program focuses on the fundamental principles of the biological and physical sciences and emphasizes analytical laboratory techniques and applications, specifically in the realms of chemistry and biology. The curriculum will enable the student to explore a variety of laboratory testing techniques and to prepare and operate various types of tools and electronic analysis equipment. In addition, the SLT-Biotechnology program prepares graduates for employment in vast array of basic and applied research associated science laboratories. The science laboratory technology fields of opportunity of exciting career options including biological, agricultural and food science, environmental science, bioremediation, forensic, forest and conservation, and energy technology. The SLT program has two main concentrations (chemical technology and biotechnology) for the student to choose from based on their particular interests.

Goal of the Program (Student Learning Outcomes)

The goal of the SLT-Biotechnology program is to develop a graduate workforce to perform as science laboratory technicians. Upon the completion of this program the student will be able to:

1. Obtain employment as an **entry-level** science laboratory technician in a wide variety of contemporary biomedical technology professional settings including academic, industry or government settings.
2. Use fundamental knowledge of the biological and physical sciences to understand the scientific principles involved in the science laboratory.
3. Understand the function of a science laboratory technician in the workplace. Describe, operate and maintain tools and equipment in the science laboratory. Develop and adapt protocols to obtain and interpret data.
4. Demonstrate excellent communications skills (oral and written) to ensure optimal communication with shift co-workers, first line supervisors, maintenance personnel, safety personnel, contractors and other members of the site team.
5. Choose to extend their educational career in the sciences at a four-year institution.

Attributes of a Science Laboratory Technology Professional

The purpose of this program is to provide students with the knowledge and hands-on experience necessary to be successful as an entry-level biotechnologist. Some of the essential attributes of such a professional include the abilities to:

- Perform basic entry level lab duties, and understand basic lab functions
- Generate, evaluate and correlate accurate data in a laboratory setting, and collaborate in the production and/or development of chemical products.
- Manage detailed information, ensure regulatory compliance, and provide continual quality assurance.
- Work independently and collaboratively in a professional manner, being responsible for her/his own actions.
- Demonstrate knowledge of finance, operations, marketing, and human resource management within a laboratory setting.
- Communicate effectively with peers, exercise reasoned judgment, and demonstrate ethical and moral principles necessary to gain and maintain the confidence of superiors, peers, and the public.

Employment Outlooks

Science Technology is a broad, diverse and growing field. According to the Bureau of Labor Statistics, Occupational Outlook Handbook, 2010-2011 Edition, in 2008 science technicians held approximately 270,800 jobs with chemical and biological sciences comprising 54 percent of the field and a projected field wide growth of 12 percent by 2018. The expected sectors of higher growth are listed as biological (18%), environmental (29%), and forensic (20%).

In Louisiana, chemical, biological, environmental science and protection technician jobs are expected to grow. Initial inquiries to business as to the need of this program suggests that there is a current and growing market for this type of trained individual in the Greater New Orleans and southern Louisiana and Mississippi regions.

In Biotechnology, "Employment of biological technicians should increase by 18 percent, faster than average (increase 14 to 19 percent), as the growing number of agricultural and medicinal products developed from the results of biotechnology research boosts demand for these workers. Also, an aging population and continued competition among pharmaceutical companies are expected to contribute to the need for innovative and improved drugs, further spurring demand. Most growth in employment will be in professional, scientific, and technical services and in educational services," This corresponds to 14,000 new jobs nationally in 10-year period. Nationally, median hourly wages in 2008 for biological technicians were \$18.46. In 2010, mean hourly wage was \$20.07. "In March 2009, the average annual salary in the Federal Government was \$39,538 for biological science technicians. Median annual wage in 2010 was \$39,020." In Louisiana, the mean annual wage was \$37,490 and mean hourly wage was \$18.03 in May 2010. In the greater New Orleans area, mean annual wage was \$33,300 and mean hourly wage was \$16.08. (<http://www.bls.gov/oco/ocos115.htm#outlook>)

Informal inquiries to local and regional potential employers are consistent with these government data and support the interpretation of a strong current and future need for Biotechnology technicians and biomedical technologists trained at the Associate of Applied Science level.

(Rothwell, J. (2015). "The Hidden STEM Economy New Orleans-Metairie-Kenner, LA." From <http://www.brookings.edu/research/reports/2013/06/10-stem-economy-rothwell>.)

Mission Statements

Delgado Community College Mission Statement

Delgado Community College (DCC) provides a learning centered environment in which to prepare students from diverse backgrounds to attain their educational, career, and personal goals, to think critically, to demonstrate leadership, and to be productive and responsible citizens.

Science Laboratory Technology Program Mission Statement

Science Laboratory Technology is a multidisciplinary field that increasingly requires skilled entry level workers in our area. The DCC Science Laboratory Technology Program offers students the opportunity to acquire the knowledge and skills required to start a career in the biotechnology and chemical industry. Recognizing that the educator is the critical link between these industries and a dynamic workforce, it is the mission of the DCC Science Laboratory Technology Program to provide exceptional quality education and hands-on training while delivering a technologically relevant workforce to our local industry partners. Our Program faculty members are student-focused scientists committed to providing leadership in our local biotechnology and chemical technology educational pipeline.

Associate of Applied Science: Science Laboratory Technology

Students wishing to enroll in the A.A.S. in SLT Program should proceed through the following steps for admission, starting at least one semester prior to when they wish to enroll in the program:

1. Attend an information session or schedule an advising appointment with a SLT Academic advisor: This can be completed prior to or after steps 2–4. Students are encouraged to seek information very early in the process.

2. Apply to Delgado Community College: New and transfer students must apply to Delgado Community College before their applications can be considered. New students should enroll in the Associates in Science, Louisiana Transfer Degree program prior to their acceptance into the program.

3. Provide High School and College transcripts and ACT Test scores for evaluation and proper course placement. Based on the evaluation of materials, placements tests may be required.

4. Complete prerequisite requirements for the program: Students applying to the SLT-Biotechnology degree must have documentation of placement in or completion of the following with a grade of C or better:

- BIOL-141 General Biology I
- BIOL-143 General Biology I Lab
- CHEM-141 General Chemistry I
- CHEM-143 General Chemistry I Lab
- ENGL-101 English Composition I
- MATH-130 College Algebra

5. Apply to the program.

Students need to complete the application found on the Science Laboratory Technology Program website. You may turn the completed website in by hand to the Division of Math and Science Office (City Park Campus, Building 2, Room 139e) or you may email it to btech@dcc.edu.

A faculty advisor will review the student's application, test scores, and transcripts to confirm the student is eligible for admission. An advising session will be scheduled, if one has not already been completed. Students accepted into the program will be notified by email. For complete details, please review the, "**Detailed Application Process for the Associate of Applied Science: Science Laboratory Technology Program**" section on the following page.

Detailed Application Requirements

Detailed Application Process for the Associate of Applied Science: Science Laboratory Technology Program

A. Delgado Application Requirements

- **If you are currently a Delgado Community College student** you must place your LoLa number on all application paperwork. **There is no need to reapply to Delgado.**
- **If you are a Non-Delgado Community College student**, you must apply to the College. Please go the Delgado website at <http://www.dcc.edu> and click the “APPLY NOW” button.

B. Associates of Applied Sciences, Science Laboratory Technology Program Application Requirements

- **Prerequisite Courses, Prior To Applying:** Applicants should have a minimum grade of “C” or better and a combined GPA of at least 2.5 on a 4 point scale in the following courses:
 - BIOL-141 General Biology I
 - BIOL-143 General Biology I Lab
 - CHEM-141 General Chemistry I
 - CHEM-143 General Chemistry I Lab
 - ENGL-101 English Composition I
 - MATH-130 College Algebra
- **Cumulative GPA Requirements:** Overall grade point average in all college work (all colleges attended) of at least 2.0 on a 4.0 scale

C. Documentation Requirements

- **Transcripts**
Please Note: The Science and Mathematics Division Dean must approve college courses taken more than 10 years prior to entry into the program. The Science Laboratory Technology Program advisor will assist the student in obtaining the proper approvals if needed.

One official transcript from every college previously attended other than DCC must be submitted. Separate official transcripts are required from each college attended although that course work may be printed on another transcript as transferred coursework. Unofficial advising reports are not acceptable. If a college will not release an official transcript to a student and must mail it directly to Delgado, the student must request that the transcript be mailed to:

**Delgado Community College
Science and Math Division
c/o SLT-Biotech
Building 2, Room 139e
615 City Park Ave
New Orleans, LA 70119**

Documentation verifying the date the student requested the transcript (a copy of the transcript order form) must be included with the application package. The student may have the college E-script the transcripts to Delgado Community College. Please document on the AAS-SLT application that E-script was used. The applicant is completely responsible for ensuring that transcripts sent directly to the AAS-SLT program are received before the application deadline.

- **Course Descriptions**

A catalog course description must be submitted for each course taken outside the Delgado Community College curriculum that applies to the Science Laboratory Technology Program (please refer to Delgado Community College catalog course curriculum page) for which a student is seeking transfer credit. Course descriptions may be photocopies or printouts from online catalogs. The course numbers on catalog course descriptions must match those on the transcript. The student's name and LOLA number must be listed on the course description. Course descriptions are not needed for courses completed on Delgado Community College campuses.

D. Admissions Policies

- A student may not have more than four (4) enrollments resulting in grades D, F or W in General Biology I and General Chemistry I and College Algebra (BIOL-141, BIOL-143, CHEM-141, CHEM-143 and MATH-130) or the equivalent taken within the prior 5 academic years of application into the program.
- Falsification of any admissions requirements /documentation will result in denial of admission into the program. The student may be subject to a judicial procedure through the college.

E. Transfer

General education courses completed at another accredited institution will be evaluated for equivalency. Students desiring to transfer from another school to the SLT-Biotechnology Program must do the following:

1. Transfer students must meet the Delgado Community College and Science Laboratory Technology admission requirements. All Admission and Academic policies apply to the transfer student.
2. Transfer students must submit an application packet to the SLT-Biotechnology Program to include: The AAS-SLT application and official transcripts from **ALL** colleges attended.
3. Transfer students must meet the academic requirements as to the number of grades of D, F, or W in general education and required related courses. A student that has unsuccessful grades (D and F) in greater than 12 hours of general education and required related courses may be ineligible for admission into the SLT-Biotechnology program. A minimum grade of "C" is required in all general education and required related courses in the SLT-Biotechnology curriculum.

F. Continuing Education and Training

Those desiring to take courses within the SLT-Biotechnology curriculum for training or continuing education purposes will be evaluated on a case-by-case basis including those that have been established through industry partnership agreements.

G. The Selection Process

The SLT-Biotechnology admissions committee is charged with the consideration of applicants for program admission. The committee will take the following things into consideration for admittance into the program.

1. Cumulative College GPA of a 2.0 or higher on all college courses taken.
2. A combined GPA of a 2.5 or higher for all prerequisite courses required by the SLT-Biotechnology program.
3. Total number of D and F grades in courses taken over the past 5 years that are required in the SLT-Biotechnology program curriculum. Please note, if a particular course has been repeated and a higher grade was earned the original D or F is still counted towards total number.
4. Number of completed credits in the required and general education courses for the SLT-Biotechnology Program curriculum.
5. ACT score if required. (Photocopies of scores listed on high school transcripts are acceptable). Only for students with < 15 credit hours.

H. Application Submission

Complete and type the Delgado/AAS-SLT Application Packet and submit with required documents to the SLT-Biotechnology program.

- Application packets may be submitted by E-mail, U.S. Mail or hand delivered. Make sure your application is complete and contains all of the required documents, before posting or delivering. Unofficial transcripts may be sent with the packet to expedite review for conditional acceptance, but official transcripts must be received to confirm your acceptance into the program.
- The SLT-Biotechnology program will not accept any additional application material after the student has submitted the application and documents unless documentation shows that a college or university will be sending a transcript on behalf of the student.
- Incomplete applications or applications submitted with missing documents will be returned and candidates must wait until the next deadline to reapply.
- The SLT-Biotechnology program is not responsible for late delivery or failed delivery of application materials. For your peace of mind, purchasing a tracking number will provide evidence that the application has successfully made it to campus. Please mail your completed AAS-SLT application package and required attachments to:

**Delgado Community College
Science and Math Division
c/o SLT-Biotech
Building 2, Room 139e
615 City Park Ave
New Orleans, LA 70119**

I. Criminal History Check

When a student is selected and granted admission to SLT-Biotechnology Program, admission is conditional and all students will be subject to obtain a criminal background history check prior to enrollment to the program. A past criminal history is not an automatic disqualification from the program. Students with criminal histories will be evaluated on a case-by-case basis.

J. Communications You Should Receive from Admissions

There are three types of communication that will be sent from SLT-Biotechnology program admissions.

1. Acceptance notification. **Upon acceptance into the program, register for courses as directed by your faculty advisor.**
2. Enrollment Maximum Reached – The student is qualified for the program but scored below the profile cutoff.
3. Ineligible, the student is not qualified to apply. Possible reasons for being ineligible include but are not limited to:
 - a. Student has not received a High School Diploma or GED
 - b. Student has not completed remedial courses.
 - c. Cumulative or Delgado Community College GPA is too low.
 - d. Student has exceeded the number of allowed “D” or lower grades.
 - e. Student has not completed the DCC application and paid the \$25.00 fee

K. Application Process for Career Studies Certificates in Biotechnology and Chemical Technology

Students applying to the Career Studies Certificate in SLT must complete all of the preadmission requirements as outlined for the A.A.S. in SLT with the exception that applications will only be accepted for students enrolling in the fall semester. In addition, a student must have completed a college degree (Associate of Science degree or higher). Foreign students must document the equivalent to a U.S. Associate’s Degree. Students without a science degree are strongly advised to complete the A.A.S. in Science Laboratory Technology instead of the Career Studies Certificate.

Academic Advising

Upon acceptance into the SLT-Biotechnology program, each student will be assigned an academic advisor from among the SLT-Biotechnology faculty. Some classes are offered only in certain semesters or at a particular campus. For this reason, it is essential that all students work closely with their advisor throughout their time in the program to develop an appropriate course schedule for each semester.

Academic Policies for SLT-Biotechnology Program

The academic policies found in this handbook are specific to the DCC SLT-Biotechnology program and are **in addition to** the policies set forth in DCC's Student Handbook.

- ***Communication***

All students are required to use their official DCC email accounts to communicate with program faculty and staff. Sending emails from your personal account (yahoo, msn, etc.) is not permitted. In addition to your official DCC email account, program faculty and staff will notify you of course information through Canvas. Please check Canvas and your email on a daily basis to ensure you are staying up to date.

- ***Attendance***

Students are expected to attend every class meeting and to arrive to class on time prepared for the day's activities. This includes bringing any assignments that are due, materials for note taking, calculators, etc. Specific attendance policies are found in the syllabus of each course. However, the program has some general attendance policies as outlined below.

1. **Lecture:** The student is responsible for notifying the instructor of any unavoidable absence. Properly documented absences may be excused at the discretion of the instructor. Excessive absence from class, as described in the course syllabi will result in an automatic grade of "F" for the course.
2. **Laboratory:** Absences from laboratory sessions are particularly problematic. Laboratory skills compound upon each other and missing a week can put a student at a severe disadvantage. Since the curriculum for the SLT-Biotechnology program strongly leverages skills learned in the laboratory it is essential that every effort is made on the student's part to attend lab. Due to supply costs and faculty/laboratory scheduling, no make-up labs will be allowed. Excessive absences from laboratory sessions, as described in the course syllabi, will result in an automatic grade of "F" for the course.
3. **Internship:** As a required capstone experience for the program, the student will be placed in a local laboratory internship. Since you are representing not only yourself, but also Delgado and the SLT-Biotechnology faculty, regular and punctual attendance at the internship site is required. Students should carefully review the attendance policies stated within the internship course syllabus. Absences (or tardiness) from internship obligations for reasons other than health or family emergencies will not be tolerated and the student may be subjected to dismissal from the internship.

- ***Electronic Devices***

All electronic devices should be set to silent mode at all times in the classroom. This includes smart phones, tablets, and laptops. The use of electronic devices may be permitted for research activities or note taking in the classroom (at the discretion of the instructor); however they may not be used to take calls, read or write text messages, or emails during class. The use of these devices is not only distracting to you, but also to your fellow classmates and instructor.

- ***Academic Integrity***

Academic Integrity is an essential component of professional behavior in any academic program. Academic work (homework, lab reports, exams, quizzes, etc.) submitted by students shall be the result of their own thought, research, and/or self-expression. When students borrow ideas, wording, or organization from another source, they shall reference that information in an appropriate manner.

Each student is expected to read the Delgado Community College Student Handbook regarding academic dishonesty. The SLT Program strictly adheres to the college's policies on student conduct:

“Delgado Community College is a learning community with specific expectations concerning the conduct of its students. The College’s approach to student learning and student conduct is to provide a safe and healthy learning environment that facilitates the mission of the College. When a student’s conduct adversely affects the College’s pursuit of its educational objectives, actions will be taken to remedy the situation.”

Laboratory Preparation

Working in a biotechnology laboratory can be fun and rewarding when all members arrive prepared and follows some commonsense rules. The SLT program expects each student to always be mindful of the potential hazards found in the laboratory and to be respectful of the policies and procedures.

- ***Safety Training***

The student is required to attend safety training prior to performing any experiments. Each student is required to watch relevant safety videos, complete in-person safety training with the instructor or laboratory staff, and sign the safety policy document that indicates acknowledgement of laboratory safety rules. These safety training activities are completed on the first day of laboratory class.

- ***Dress Code***

Students must be properly attired when working in a SLT laboratory. Shoes must be close-toed. Leather-type tennis or similar shoes are strongly recommended. Clogs, crocs, or other backless shoes are not allowed. All long hair should be drawn back in a clip or a band so as not to hang in the face or interfere with laboratory experiments. Long pants or long skirts are required at all times in the laboratory. Laboratory coats will be provided and are required when performing experiments. When not in use, the lab coat is to be stored in its designated area.

- ***Restricted Laboratory Access***

Due to the presence of potential hazards, the laboratory is considered “off-limits” to students when an instructor or laboratory staff member is not present.

- ***Laboratory Etiquette***

The SLT labs have been well equipped with state of the art equipment and tools to enhance your program experience. Each student is responsible for the proper handling of each piece of lab equipment used. At the conclusion of each lab meeting, all equipment should be powered down based on individual requirements, and put away in the proper location, all materials should be disposed of properly (as indicated by the instructor or lab staff), and all benches should be properly cleaned and in ready to use condition for the next class.

Science Laboratory Technology, Biotechnology FAQs

The Science Laboratory Technology, Biotechnology (SLT-Biotechnology) Program at Delgado Community College is accredited by the Southern Association of Colleges and Schools. Graduates of the program receive an Associate of Applied Science Degree for the two-year SLT-Biotechnology Program.

What is Science Laboratory Technology, Biotechnology?

SLT-Biotechnology is a track under the Science Laboratory Technology program. The SLT-Biotechnology specialization involves understanding the day-to-day activities of a research oriented laboratory environment. Graduates of the program will be highly trained in several modern scientific techniques and laboratory instrumentation. The program has a mandatory internship program that allows the student to explore a biotechnology field of their choosing.

What is the SLT-Biotechnology Program like at Delgado?

SLT-Biotechnology includes prerequisites and two years of integrated general education, required related courses and the professional courses. The SLT-Biotechnology program courses are offered in the Fall and Spring semesters on a rotating basis and consists of combined didactic and hands-on research education.

How do you apply for admission to the SLT-Biotechnology Program?

Delgado Community College is an open admissions college; however acceptance into the SLT-Biotechnology Program is by selection. The Admissions Committee for the SLT-Biotechnology Program reviews and evaluates each application on an impartial basis. Meeting the minimum requirements does not guarantee admission into the program. Students wishing to apply for admission to the SLT-Biotechnology Program must submit a completed SLT-Biotechnology application to the Division of Science and Math NO LATER THAN APRIL 15.

When should you apply for admission to the SLT-Biotechnology Program?

Students are eligible for admission to the SLT-Biotechnology Program who:

- Provide evidence of a high school diploma or equivalent.
- Successfully complete all prerequisite courses. The prerequisite courses for the SLT-Biotechnology Associate of Applied Science Degree are BIOL 141 and 143 (General Biology Lecture and Lab); CHEM 141 and 143 (General Chemistry Lecture and Lab); MATH 130 (College Algebra); and ENGL 101 (English Composition I).
- Possess a cumulative grade point average of 2.0 on a 4.0 scale in all college courses and a 2.5 on a 4.0 scale in all science major courses.

NOTE: Science courses over 10 years old may require repetition. Check with the SLT-Biotechnology Admissions Advisor.

What are the career opportunities for a SLT-Biotechnology Graduate?

Biotechnology technicians work in many different science research environments which may include but are not limited to: academic institutions; government (Federal, State, and Local) facilities; and private research facilities.

How do you find out if courses you have taken at other schools will transfer to Delgado?

To find out if courses you have taken will transfer to Delgado, call 504-671-6148 and for information on advising hours of the Science and Math Advisor to have your transcripts evaluated.

Interested students should meet with an SLT-Biotechnology Advisor.

Curriculum Outline for AAS – Science Laboratory Technology, Biotechnology A.A.S

Required Courses in Major (15 Credit Hours)

BIOL 141 General Biology I
BIOL 143 General Biology I Lab
CHEM 141 Chemistry I
CHEM 143 Chemistry I Lab
CHEM 142 Chemistry II
CHEM 144 Chemistry II Lab
MATH 203 Introductory Statistics

General Education Courses (12 Hours)

ENGL 101 English Composition I
MATH 130 Pre-Calculus Algebra
SPCH 130 Fund. of Speech Communication
ECON 202 or **PSYC 127** Microeconomics or General Psychology

Biotechnology Courses (17 Credit Hours)

BTEC-130 Introduction to Biotechnology
BTEC-132 Biotechnology Laboratory Techniques
BTEC-274 Introduction to Nucleic Acids
BTEC-275 Introduction to Protein Expression and Analysis
BIOL-210 Microbiology
BIOL-212 Microbiology Lab
SCIE-299 Internship

Select Any Four Courses (8 Credit Hours) (Lab/lecture required to be taken together)

BIOL 265 Cell Biology
BIOL 266 Cell Biology Lab
CHEM 201 Introduction to Organic and Biochemistry
CHEM 203 Introduction to Organic and Biochemistry Lab
CHEM 221 Organic Chemistry 1
CHEM 223 Organic Chemistry 1 Lab
CHEM 222 Organic Chemistry 2
CHEM 224 Organic Chemistry 2 Lab

Select Any Three Courses (9 Hours) from the following elective courses:

BTEC-280 Microscopy Techniques
BTEC-282 Introduction to Molecular and Genetic Biology
BTEC-284 Biomolecules
BTEC-285 Bioinformatics and Bioethics
BTEC-286 Cell Culture Techniques Lab

TOTAL CREDIT HOURS: 61

Required Program Courses

BIOL 210 General Microbiology 3-0-3

General concepts of microbiology including microbe structure and function, genetics, metabolism & diversity, host-microbe interactions, pathogens and immunology. No credit for both BIOL 210 and BIOL 211. Prerequisite(s): "C" or better in BIOL 141 and 143 or equivalent; or a composite ACT score of 22 or higher and passed biology in high school with a grade of "B" or better; or passing score on the Biology Placement Exam. Students are strongly encouraged to take BIOL 212 during the same semester.

BIOL 212 General Microbiology Lab 0-3-1

Laboratory designed to supplement General Microbiology for science majors. Prerequisite(s): "C" or better in BIOL 141 and 143 or equivalent; or "C" or better in BIOL 161 and 163; or a composite ACT score of 22 or higher and passed biology in high school with a grade of "B" or higher; or passing score on the Biology Placement Exam. Students are strongly encouraged to take BIOL 210 or 211 during the same semester.

BIOL-265: Cell Biology 3-0-3

Structure and function of cells, and molecules essential for cellular processes. Prerequisite(s): "C" or better in BIOL 141 and BIOL 143 and permission of instructor. Corequisite(s): BIOL 266

BIOL-266 Cell Biology Lab 0-3-1

Laboratory designed to supplement Cell Biology. Prerequisite(s): "C" or better in BIOL 141 and BIOL 143, and permission of instructor. Corequisite(s): BIOL 265

BTEC-130 Introduction to Biotechnology 2-0-2

Introduction to the field of biotechnology. Topics include recombinant DNA, production of biological molecules, plant and animal technology, and current events. Students will also review employment and careers in the biotechnology industries. Prerequisite(s): "C" or better in BIOL 141 and BIOL 143.

BTEC-132 Biotechnology Laboratory Techniques 0-6-2

Background principles for the experimental concepts and fundamental laboratory skills associated with research, development, and production. Prerequisite(s): "C" or better in BIOL 141 and BIOL 143.

BTEC-274 Introduction to Nucleic Acids 2-3-3

Deoxyribonucleic Acid (DNA) extraction, DNA purification, Polymerase Chain Reactions, Gel Electrophoresis, DNA quantitation, plasmid construction and topics involving DNA use in modern research settings. Intended for students who are enrolled Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): "C" or better in BTEC 132 and Admission to the Science Laboratory Technology degree program.

BTEC-275: Introduction to Protein Expression and Analysis 2-3-3

Introduction to common techniques used for studying the expression and analysis of proteins and builds on the basic techniques for quantitation of protein concentration in solution. Studies include quantitation of single proteins, Electrophoretic techniques for estimating protein molecular weight and estimation of protein activity using basic Michaelis-Menten enzyme kinetics. Intended for students admitted to the Science Laboratory Technology degree program. Prerequisite(s): "C" or better in BTEC 274 and Admission to the Science Laboratory Technology degree program, or permission of instructor.

SCIE-299 Internship 0-14-3

Required internship experience in the Science Laboratory Technology program. Provides students with the opportunity to apply laboratory skills and classroom knowledge in a practical/real-world setting with the guidance of a faculty advisor. Prerequisite(s): Permission of Instructor/Department.

BIOTECHNOLOGY ELECTIVES

BTEC-280 Microscopy Techniques 0-9-3

Laboratory course covering the various microscopy techniques used in the biotechnology fields. Material preparation, instrument specific techniques and general presentation of the component function of the various types of microscopes. Intended for students in the Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): "C" or better in BTEC 274 and BTEC 275, or permission of instructor.

BTEC-282 Introduction to Molecular and Genetic Biology 0-9-3

Intermediate level laboratory study of basic molecular processes and genetic phenomena in eukaryotes and prokaryotes. Genomics-centered approach and covers many of the latest methodologies used in genomics analysis. Topics to be covered include molecular aspects of structure and function, replication, transcription and translation, as well as synthesis and repair of nucleic acids; protein synthesis. Intended for students in the Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): "C" or better in BTEC 274 and BTEC 275 or permission of instructor.

BTEC-284 Biomolecules 0-9-3

Introduces common techniques used for studying isolating and identifying biomolecules and biologically active compounds. Focuses on multiple sample destructive and sample non-destructive techniques for the quantitation of various biomolecules and biologically active compounds and purification of biomolecules and biologically active compounds. Intended for students in the Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): "C" or better in BTEC 274 and BTEC 275 or permission of instructor.

BTEC-285 Bioinformatics and Bioethics 3-0-3

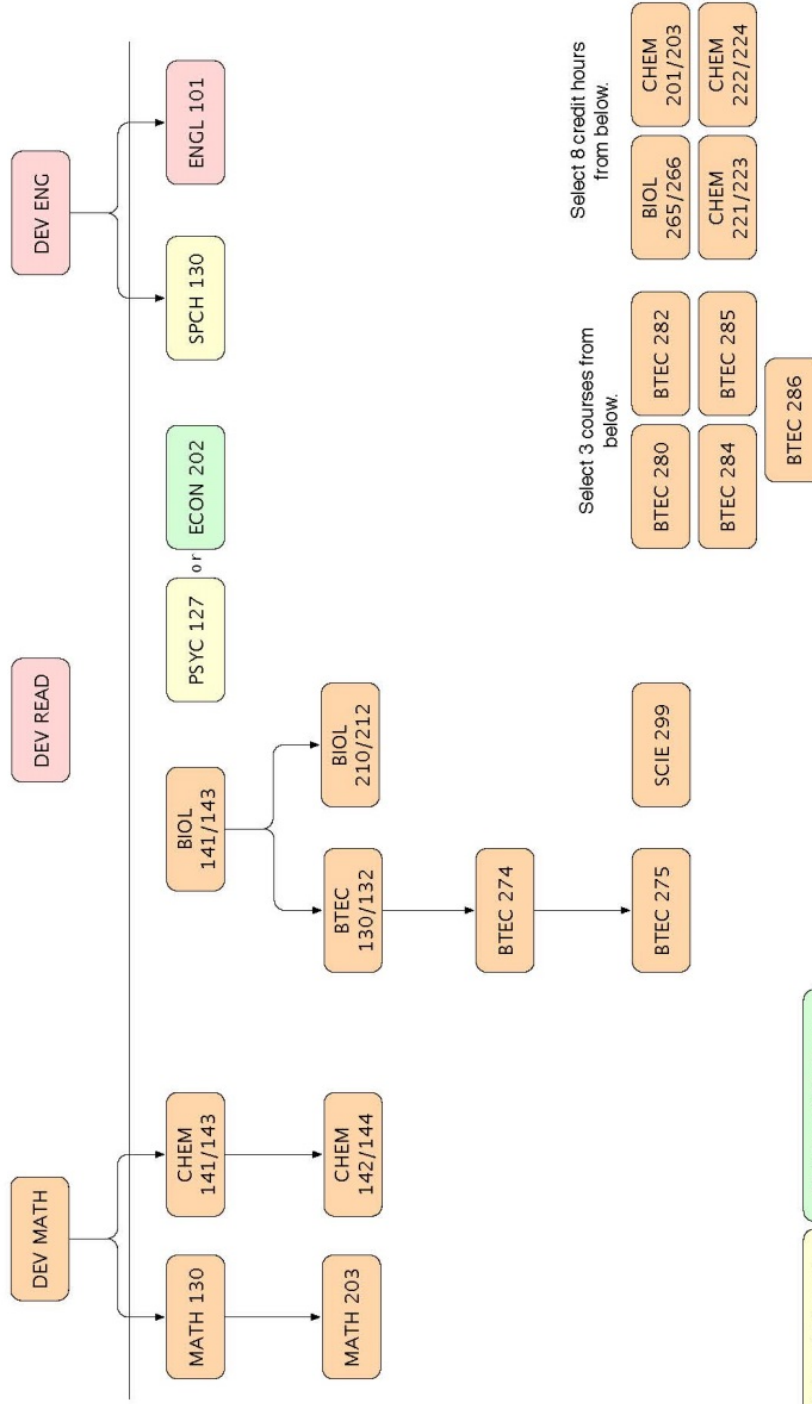
Two distinct disciplines of Bioinformatics and Bioethics. Introduction to the high powered statistical field of bioinformatics occurs in the first half of the semester, while the second half consists of a survey of some of the ethical issues facing scientists today. This class is intended for students in the Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): Admission to the Science Laboratory Technology program, or "C" or better in BTEC 274 and BTEC 275, or permission of instructor.

BTEC-286 Cell Culture Techniques Lab 0-9-3

Advanced course in a cell culture. Introduces techniques such stem cell culturing, transfection, cellular cloning, and biomarker identification. Students expand upon techniques mastered in BIOL-266. This class is intended for students in the Biotechnology concentration of the Science Laboratory Technology degree program. Prerequisite(s): Admission to the Science Laboratory Technology program, or BIOL 265 and BIOL 266, or permission of instructor.

Science Lab Technology/Biotechnology Curriculum

A.A.S. Degree - 2015-2016 Catalog



- Division of Arts and Humanities
- Division of Business and Technology
- Division of Communication
- Division of Science and Mathematics

Delgado Community College, Science and Math Division
Science Laboratory Technology, Biotechnology Degree Planner and Course Sequence Recommendation

Last Name:	First Name:	Middle:	LOLA#
Street Address:		Home Phone:	
City:	State:	Zip:	Work Phone:
Email address		Degree Associates of Applied Sciences	
Major: Science Laboratory Technology, Biotechnology			

Semester 1

Dept	Course #	Course Title	Credit HRs	Grade	Comments
BIOL	141	General Biology Lecture	3		
BIOL	143	General Biology Laboratory	1		
ENGL	101	English Composition I	3		
CHEM	141	General Chemistry Lecture I	3		
CHEM	143	General Chemistry Laboratory I	1		
MATH	130	College Algebra	3		Prerequisite(s): "C" or better in MATH 118, ACT-22 or above, 46-100 on the COMPASS College Algebra Placement Test, or 0-45 on the COMPASS Trigonometry Placement Test
					Total hours: 14

Semester 2

Dept	Course #	Course Title	Credit HRs	Grade	Comments
CHEM	142	General Chemistry Lecture II	3		"C" or better in CHEM 141/143
CHEM	144	General Chemistry Laboratory II	1		"C" or better in CHEM 141/143
ECON	202	Microeconomics	3		You may substitute PSYC 127
PSYC	127	Introduction to Psychology	3		You may substitute ECON 202
BIOL	210	General Microbiology	3		"C" or better in BIOL 141/143
BIOL	212	General Microbiology Lab	1		"C" or better in BIOL 141/143
BTEC	130	Introduction to Biotechnology	2		"C" or better in BIOL 141/143
BTEC	132	Biotechnology Laboratory Techniques	2		"C" or better in BIOL 141/143
					Total hours: 15

Semester 3

Dept	Course #	Course Title	Credit HRs	Grade	Comments
BTEC	274	Introduction to Nucleic Acids	3		"C" or better in BTEC 132
BTEC	Elective	BTEC 280, 282, 284, 285 or 286	3		"C" or better in BTEC 274 or instructor permission
BIOL	265	Cell Biology	3		"C" or better in BIOL 141/143
BIOL	266	Cell Biology Lab	1		"C" or better in BIOL 141/143
MATH	203	Introductory Statistics	3		"C" or better in MATH 130
CHEM	201	Introduction to Organic and Biochemistry Lecture	3		"C" or better in CHEM 141/143 -may sub CHEM 221/223
CHEM	203	Introduction to Organic and Biochemistry Laboratory	1		"C" or better in CHEM 141/143 -may sub CHEM 221/223
					Total Hours: 17

Semester 4

Dept	Course #	Course Title	Credit HRs	Grade	Comments
SPCH	130	Fundamentals of Speech Communication	3		
BTEC	275	Introduction to Protein Expression and Analysis	3		"C" or better in BTEC 132
BTEC	Elective	BTEC 280, 282, 284, 285 or 286	3		"C" or better in BTEC 274 or instructor permission
BTEC	Elective	BTEC 280, 282, 284, 285 or 286	3		"C" or better in BTEC 274 or instructor permission
SCIE	299	Internship	3		
					Total Hours: 15

Apply for Graduation During	Semester prior to graduation	Graduating	Semester
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Mentor's Signature: _____ Date: _____

Student's Signature: _____ Date: _____

Division Rep Signature: _____ Date: _____