RADIOLOGIC TECHNOLOGY

Associate in Applied Science Degree | Career Program
Department of Nursing and Allied Health Sciences

Program Description

A radiologic technologist is a skilled professional who provides a specialized health care service. This rewarding profession involves the operation of sophisticated equipment in a rapidly expanding field. The Radiologic Technology Program in the Department of Nursing and Allied Health Sciences at Bronx Community College prepares students as entry-level qualified licensed and registered radiographers.

The term "diagnostic radiography" is used to describe a variety of radiographic or x-ray examinations. Most people are familiar with chest x-rays and also x-rays to diagnose broken bones. The radiographer performs these procedures as well as those which require the use of contrast agents that make it possible to study organs that otherwise cannot be seen.

Students receive their clinical education at Montefiore Medical Center, Jacobi Medical Center, New York Presbyterian Hospital, or Montefiore Wakefield Division. All facilities are accessible by public transportation.

Upon successful completion of the program, students are eligible for the national and state certifying examinations. Graduates may go on to earn a higher degree in radiological health sciences.

Graduates have a wide selection of clinical settings to choose from, including hospitals and medical centers, out-patient imaging facilities, public health institutions and government and private research institutes that require radiographers.

Mission Statement

The Mission of the Bronx Community College Radiologic Technology Program is to prepare its students for careers in the Diagnostic Imaging Sciences through a challenging, progressive academic and clinical environment. The faculty of the Radiologic Technology Program is committed to graduating competent, compassionate Radiographers with strong communication and patient care skills.

Goals and Student Learning Outcomes of the Radiologic Technology Program

Goal # 1: Graduates will demonstrate clinical competency in radiologic technology.

SLO # 1.1: Students will demonstrate accurate positioning skills to produce diagnostic images.

SLO # 1.2: Students will demonstrate effective patient-care skills.

SLO # 1.3: Students will compute appropriate technical factors and practice principles of ALARA.

SLO # 1.4: Students will utilize principles of radiation protection.

Goal # 2: Graduates will demonstrate effective communication skills.

SLO # 2.1: Students will demonstrate proficiency in written communication skills.

SLO # 2.2: Students will demonstrate effective oral communication skills in the clinical aspect of the program.

Goal # 3: Graduates will demonstrate critical thinking and problem-solving skills.

SLO # 3.1: Students will apply alternate methodologies for imaging trauma patients.

SLO # 3.2: Students will recognize the quality of diagnostic radiographic images.

SLO # 3.3: Students will demonstrate ability to modify and improve image quality.

Goal # 4: Graduates will demonstrate professionalism.

SLO # 4.1: Students will conduct themselves according to professional standards.

SLO # 4.2: Students will demonstrate understanding of the Code of Ethics.

SLO # 4.3: Students will demonstrate professional development by advancing in the field of radiologic technology and medical imaging.

Admission requirements for Radiologic Technology curriculum include:

- Achieve a minimum grade of C+ in BIO 23 and B- in MTH 28/28.5. by the conclusion of spring semester prior to entry. The Radiologic Technology Program only accepts students once a year for the subsequent fall semester.
- Be CUNY English proficient, either by meeting CUNY criteria (e.g., Regent's Score, English Proficiency Index >64, etc) or by successfully completing ENG 100/110. Note that completing ENG 100/110 is equivalent to ENG 111.

- A minimum cumulative GPA of 2.8 inclusive of the following: all BCC credits and the grades of any transferred credit applicable to Radiologic Technology curriculum (BIO 23, MTH 28/28.5 (or equivalent and above), ENG 100/110/111, PSY 11, COMM 11, HIS 11, BIO 24, and PEA). (Students are required to provide official transcripts for non-BCC coursework related to Radiologic Technology program). As the program is competitive, a GPA of 2.8 does not guarantee that the student will be accepted into the program. Seats are limited based on clinical placement capacity.
- It is recommended that ENG 100/110/111, HIS 10/11, COMM 11, PSY 11, BIO 24, and PEA be completed prior to entry to the Radiologic Technology coursework (RAD and CLE designated courses). Students who have completed ENG 100/110/111, HIS 10/11, COMM 11, PSY 11, and PEA courses at another college will have to submit their transcripts. Pre-radiologic technology students are allowed two attempts to achieve a C+ in BIO 23 (Human Anatomy and Physiology I) and B- in MTH 28 or MTH 28.5 (College Algebra and Elementary Trigonometry). A grade of "W/WU" will count as an attempt in these two courses. The Radiologic Technology Program's Committee on Admissions and Waivers has the right to allow the student an additional attempt when there is evidence of extenuating circumstances. Extenuating circumstances need to have legal and/or official documentation and must be presented to the Committee on Admissions and Waivers before a waiver will be granted.
- Students must have completed BIO 23, MTH 28 or MTH 28.5 (or equivalent or higher level) within seven years of the date of admission into the Radiologic Technology Program.

For a detailed listing of Radiologic Technology admission requirements and academic standards, please see BCC's Academic Rules and Regulations available on the BCC website.

PLEASE NOTE: For admission to the Radiologic Technology program (and enrollment in RAD/CLE courses), students must file an application with the program. Please contact the Radiologic Technology program for more information.

Program Accreditation:

The Radiologic Technology Program is accredited by the Joint Review Committee on Education in Radiologic Technology and the New York State Department of Health. In 2016, the Joint Review Committee on Education in Radiologic Technology awarded the Radiologic Technology program 8-year accreditation.

Complaints may be addressed to the JRCERT at the following address.

Joint Review Committee on Education in Radiologic Technology
20 N. Wacker Drive, Suite 2850, Chicago, IL 60606-3182
Phone: 312.704.5300 | Fax: 312.704.5304
http://www.jrcert.org/

Ethical Standards, Criminal Background Checks, and Drug Screening

Radiologic science professionals must meet high ethical standards given their essential role in the health care system and the close contact they have with patients. If you are a student who has been charged with or convicted of a misdemeanor or felony (including a conviction of a similar offense in a military court-martial), the Radiology program recommends completing an "Ethics Review Application" that can be obtained from the American Registry of Radiologic Technologist (ARRT). This application can help identify issues that may make a student ineligible for certification and registration. It is a student's responsibility to identify and address any potential issues early, before a student has pursued coursework toward the Radiologic Technology degree.

While the Department of Nursing and Allied Health Sciences at Bronx Community College does not require a criminal background check for admittance to degree programs, the department's educational requirements include placement at one or more hospitals or other off-campus clinical training sites. These sites do frequently require a student to undergo a criminal background check before the student can be placed for clinical training. If based upon the results of a criminal background check, the site determines that a student's participation in its clinical training program would not be in the best interest of the site, the site may deny that student admission to the training program. Even if the student has already begun the placement when the results are received, the site may elect to dismiss the student, regardless of the student's performance while in the training program. Each clinical training site that requires a criminal background check sets its standards and procedures, and you may be asked by the site to pay the cost of the background check. Please note that if a clinical training site determines that you may not take part in its training program based on the results of a criminal background check, you may be unable to complete your course requirements and to continue in the Radiology program. It is essential for you to consider this before you enroll in the Radiology program. Bronx Community College has no obligation to refund your tuition or fees or to otherwise accommodate you in the event you are ineligible to complete your course requirements based on the results of a criminal background check, or if you are denied a license to practice Radiologic Science.

Please note that some of the clinical affiliates require screening for substance abuse. If this is a mandate of the clinical facility, the student must comply with and is responsible for the expense. Failure to comply or a positive finding will result in the student having to withdraw from the Radiology program at the time of the finding. No alternate clinical placement will be accommodated.

Once accepted to the Radiology Program the Program Director will provide students with a handbook, which provides detail information regarding the process and cost of the background check and drug testing.

RADIOLOGIC TECHNOLOGY CURRICULUM (PATHWAYS)

65 Credits required for AAS Degree

Program Director: Professor Manish Sharma

Required Core

A. English Composition

- ENG 100 English Composition I: Integrated Reading and Writing *OR* ENG 110 English Composition I: Fundamentals of Writing and Rhetoric *OR* ENG 111 English Composition I: Writing and Rhetoric (3 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 28 College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Sciences

- BIO 23 Human Anatomy and Physiology I (4 Credits)

Flexible Core

A. World Cultures and Global Issues

- HIS 10 History of the Modern World *OR* HIS 11 Introduction to the Modern World (3 Credits)

D. Individual and Society

- COMM 11 Fundamentals of Interpersonal Communication (3 Credits)

E. Scientific World

- BIO 24 Human Anatomy and Physiology II (4 Credits)

Additional Flexible Core Requirement – Area D

- PSY 11 Introduction to Psychology (3 Credits)

SUBTOTAL 23

Major Requirements

- CLE 11 Clinical Radiography Fundamentals (0.5 Credit)
- CLE 15 Clinical Radiography I (0.5 Credit)
- CLE 21 Clinical Radiography II (1 Credit)
- CLE 31 Clinical Radiography III (1 Credit)
- CLE 41 Clinical Radiography IV (1.5 Credit)
- CLE 45 Clinical Radiography V (0.5 Credit)
- CLE 51 Clinical Radiography VI (1.5 Credit)
- CLE 61 Clinical Radiography VII/ Senior Seminar (1 Credit)
- PEA Physical Education activity course (1 Credit)
- RAD 11 Fundamentals of Radiologic Sciences and Health Care (3.5 Credits)
- RAD 12 Radiographic Exposure I (2.5 Credits)
- RAD 13 Radiographic Procedures I (3 Credits)
- RAD 15 Radiographic Anatomy I (2 Credits)
- RAD 16 Patient Care and Pharmacology in Radiologic Sciences (2.5 Credits)
- RAD 22 Radiographic Exposure II (2.5 Credits)
- RAD 23 Radiographic Procedures II (3 Credits)
- RAD 24 Radiation Protection (2 Credits)
- RAD 25 Radiographic Anatomy II (1 Credit)
- RAD 32 Imaging Modalities (2 Credits)
- RAD 33 Radiographic Procedures III and Cross Sectional Anatomy (2 Credits)
- RAD 34 Radiographic Pathology (2 Credits)
- RAD 42 Radiation Biology (2 Credits)
- RAD 43 Quality Assessment/Management (1 Credit)
- RAD 71 Radiation Physics (2.5 Credits)

SUBTOTAL 42

Basic Life Support and Basic First Aid — All radiologic technology students are required to be certified in cardiopulmonary resuscitation and basic first aid by December 15 of their first clinical year. Proof of certification must be submitted to the Program Director. The student is responsible for the cost of the CPR class.

Health Requirements — All radiologic technology students must meet special health requirements to practice in clinical agencies.

Students will be accepted and assigned to clinical experiences and otherwise treated without regard to sex, sexual orientation, race, creed, color, national origin, age, marital or veteran status in accordance with the laws of the city, state and nation.

Science, AS, and Options

ABOUT THE PROGRAM

The AS in Science provides the math and science foundation necessary to pursue later specialization, graduate study, and professional schools. All students in the AS in Science must choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Biology, Chemistry, or Earth Systems and Environmental Science options transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Students in the Physics option usually transfer to colleges offering bachelor's degrees in engineering (civil, electrical, mechanical, etc.) or in the physical sciences. Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physical assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

SCIENCE

Associate in Science Degree | Transfer Degree | Department of Biological Sciences

Program Description

Science: Biology Option

A student interested in the AS degree in Science has to choose one of four options that includes Biology. The option prepares students for transfer to a complementary four-year degree program. Students in the Biology option transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Biology option requirements, students will be able to:

1. Exhibit basic mastery of biological content such as the primary principles and processes underlying natural systems, such as atoms and molecules and cells and organisms.
2. Demonstrate basic scientific skills, evaluate information scientifically, and distinguish between the scientific method and other human endeavors.
3. Demonstrate an understanding of theoretical principles across a broad range of sub-disciplines in the biological sciences and evaluate the quality/credibility of information from various kinds of sources (academic, journalistic, popular media).
4. Apply the principles of math as they pertain to the study of biological sciences.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Charles Maliti

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 28[1,2] College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Science

- CHM 11[1] General College Chemistry I (4 Credits)

Flexible Core

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World

- CHM 12[1] General College Chemistry II (4 Credits)
- MTH 30[1,2] Pre-Calculus Mathematics (4 Credits)

SUBTOTAL 33

Major Requirements

- MTH 31[3] Analytic Geometry and Calculus I (4 Credits)
- MTH 32 Analytic Geometry and Calculus II (4 Credits)
- Free Electives[2] (0 - 7 Credits)
- FYS 11[3] First Year Seminar (1 credit)

Biology Option Requirements

- BIO 120 Biology I: Molecules, Cells, and Genes (4 Credits)
- BIO 121 Biology II: Organisms, Biodiversity, and Systems (4 Credits)
- CHM 31 Organic Chemistry I (5 Credits)
- CHM 32 Organic Chemistry II (5 Credits)

SUBTOTAL 27

[1] This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits.

[2] Students who place out of MTH 28 and/or MTH 30 will take elective course(s) to complete 60 total degree credits. In such cases, major/option courses can be used to satisfy appropriate core requirements.

[3] Students transferring into the program with 24 or more degree or equated credits will be exempt from FYS 11, and can take 1 credit of elective to satisfy this requirement.

The Biology Option fully articulates with Lehman's B.S. in Physical Anthropology and B.A. in Biology. The Biology Option also articulates with SUNY Empire State College. Copies of these agreements may be found on the BCC Transfer Planning website.

SCIENCE

Associate in Science Degree | Transfer Degree
Department of Chemistry, Earth Sciences, and Environmental Sciences

Program Description

Science: Chemistry Option

A student interested in the AS in Science has to choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Chemistry and the Earth Systems and Environmental Science options transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Chemistry option requirements, students will be able to:

1. Demonstrate their knowledge in general, organic and analytical chemistry by identifying, analyzing, and solving the problems.
2. Interpret experimental outcomes, carry out organic syntheses, interpret instrumental analysis data and possess working knowledge of lab safety.
3. Write lab reports using the experimental data, perform computations, analyze graphs and utilize software programs such as "Chem Draw".
4. Apply chemistry principles by participating with faculty on research projects, by gaining industrial experience through department administered internships, or by giving oral presentations at STEM conferences.
5. Gain experience in operating the following instrumentation: FT-IR, NMR, GC/MS, and HPLC, Ion Chromatograph, Spectrophotometer, UV/Vis Spectrophotometer, 3D printers.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Soosairaj Therese and Dr. Sunej Hans

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 28[1,2] College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Science

- CHM 11[1] General College Chemistry I (4 Credits)

SUBTOTAL 14

Flexible Core

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World

- CHM 12[1] General College Chemistry II (4 Credits)
- MTH 30[1,2] Pre-Calculus Mathematics (4 Credits)

SUBTOTAL 19

Major Requirements

- MTH 31 Analytic Geometry and Calculus I (4 Credits)
- MTH 32 Analytical Geometry and Calculus II (4 Credits)
- FYS 11[3] First Year Seminar (1 credit)
- Free Electives[2] (0 - 7 Credits)

Chemistry Option Requirements

- CHM 31 Organic Chemistry I (5 Credits)
- CHM 32 Organic Chemistry II (5 Credits)
- Choose two[4] of the five courses below:
  BIO 120 Biology I: Molecules, Cells, and Genes AND/*OR* BIO 34 /CHM 34 Biofuels and Bioproducts AND/*OR* CHM 21 Introduction to Chemical Processes AND/*OR* CHM 33 Quantitative Analysis AND/*OR* PHY 11 Physics I OR PHY 31 Physics I (8 Credits)

TOTAL 27

[1] This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits.

[2] Students who place out of MTH 28 and/or MTH 30 will take elective course(s) to complete 60 total degree credits. In such cases, major/option courses can be used to satisfy appropriate core requirements.

[3] Students transferring into the program with 24 or more degree or equated credits will be exempt from FYS 11, and can take 1 credit of elective to satisfy this requirement.

[4] Students should consult with their advisor about which courses to take, including which best fit their future educational plans.

Students are encouraged to check the Transfer Planning website for information on articulation agreements.

SCIENCE

Associate in Science Degree | Transfer Degree
Department of Chemistry, Earth Sciences, and Environmental Sciences

Program Description

Science: Earth Systems and Environmental Science Option

A student interested in the AS in Science has to choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Chemistry and the Earth Systems and Environmental Science options transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Earth Systems and Environmental Science option requirements, students will be able to:

1. Demonstrate knowledge of research and theory of plate tectonics.
2. Apply research skills to successfully classify rock samples or unknown chemicals.
3. Write an essay to clearly explain discipline-specific ideas.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree
Curriculum Coordinator: Dr. Sheldon Skaggs

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 28[1,2] College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Science

- CHM 11[1] General College Chemistry I (4 Credits)

SUBTOTAL 14

Flexible Core

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World

- CHM 12[1] General College Chemistry II (4 Credits)
- MTH 30[1,2] Pre-Calculus Mathematics (4 Credits)

SUBTOTAL 19

Major Requirements

- MTH 31 Analytic Geometry and Calculus I (0 - 4 Credits)
- MTH 32 Analytic Geometry and Calculus II (4 Credits)
- FYS 11[3] First Year Seminar (1 credit)
- Free Electives[2] (0-7 Credits)

Earth Systems and Environmental Science Option Requirements

- CHM 27 Principles of Laboratory Safety (2 Credits)
- CHM 33 Quantitative Analysis (4 Credits)
- Choose two of the three courses below:
  ESE 11 Earth Systems Science: The Earth *OR*
  ESE 12 Earth Systems Science: The Atmosphere *OR* ESE 13 Earth Systems Science: The Ocean (8 Credits)
- ESE 21 Earth Systems Science: The Environment (4 Credits)

TOTAL 27

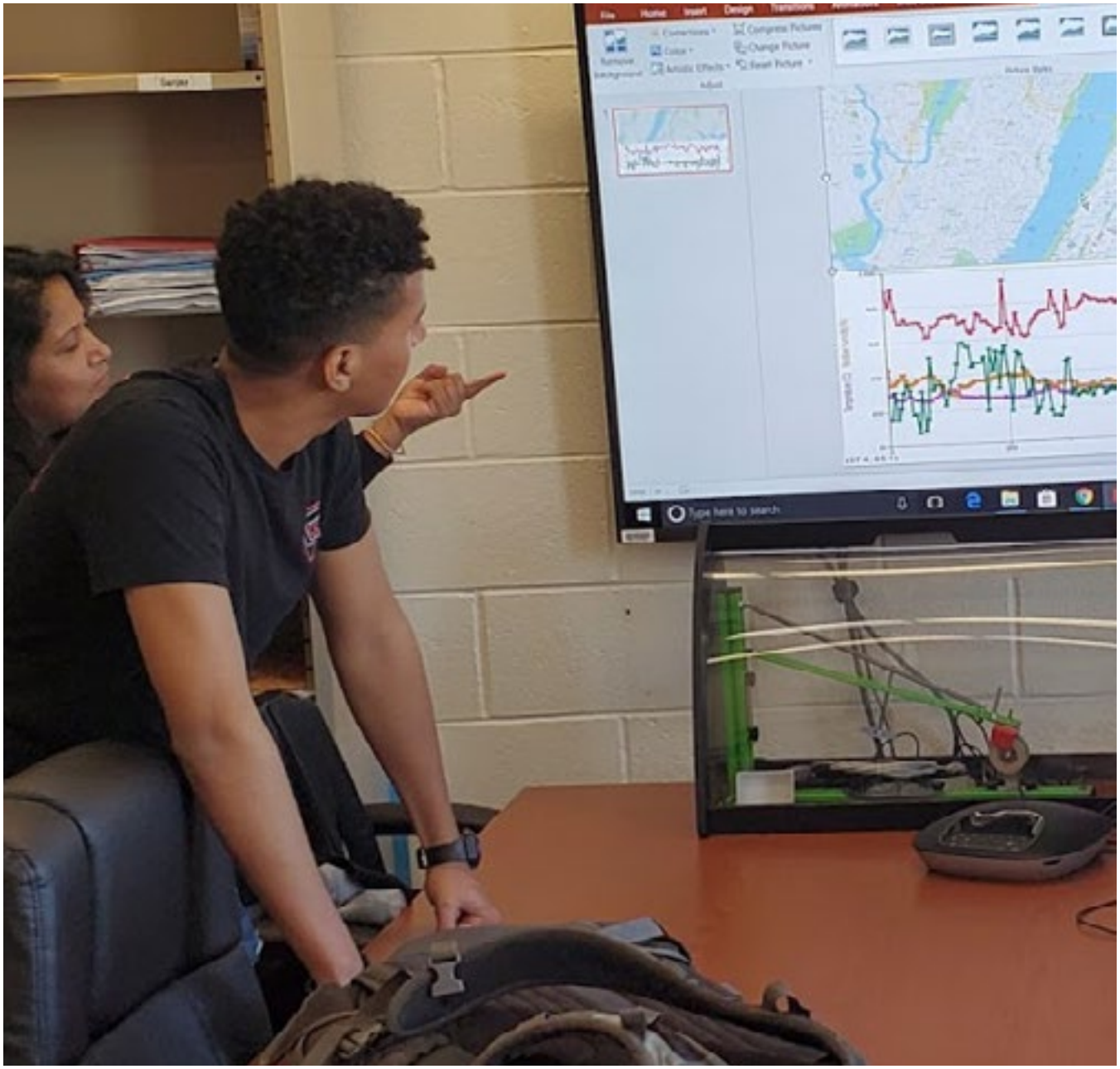
[1] This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits.

[2] Students who place out of MTH 28 and/or MTH 30 will take elective course(s) to complete 60 total degree credits. (Students in the Earth Systems and Environmental Science Option are recommended to take either GIS 11 or GIS 12 to fulfill free elective credits.) In such cases, major/option courses can be used to satisfy appropriate core requirements.

[3] Students transferring into the program with 24 or more degree or equated credits will be exempt from FYS 11, and can take 1 credit of elective to satisfy this requirement.

[4] It is recommended that students take either GIS 11 or GIS 12 to fulfill free elective credits.

Students are encouraged to check the Transfer Planning website for information on articulation agreements.



SCIENCE

Associate in Science Degree | Transfer Degree | Department of Engineering, Physics and Technology

Program Description

Science: Physics Option

A student interested in the AS in Science has to choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Physics option usually transfer to colleges offering bachelor's degrees in engineering (civil, electrical, mechanical, etc.) or in the physical sciences. Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs). Please note that the option articulates with SUNY Empire State College. Please visit the Transfer Planning web site for more details.

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Physics option requirements, students will be able to:

1. Students will demonstrate a conceptual understanding of Physics principles, including those in Newtonian Mechanics, Electricity, Fluid Dynamics, and Magnetism.
2. Students will show mastery of a variety of experimental techniques, data analysis, scientific writing, and presentation skills.
3. Students will demonstrate the ability to use analytical and / or computational methods to solve Physics problems.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Option Coordinator: Dr. Joseph Malinsky

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 28[1,2] College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Science

- CHM 11[1] General Chemistry I (4 Credits)

SUBTOTAL 13

Flexible Core

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World

F. CHM 12[1] General Chemistry II (4 Credits)

- MTH 30[1,2] Pre-Calculus Mathematics (4 Credits)

SUBTOTAL 19

Major Requirements

- MTH 31 Analytic Geometry and Calculus I (0 - 4 Credits)
- MTH 32 Analytical Geometry and Calculus II (4 Credits)
- Free Electives (0-7 Credits)
- FYS 11[3] First Year Seminar (1 credit)

Physics Option Requirements

- MTH 33 Analytic Geometry and Calculus III (4 Credits)
- PHY 31 Physics I (4 Credits)
- PHY 32 Physics II (4 Credits)
- PHY 33 Physics III (4 Credits)
- Free Electives (2 Credits)

SUBTOTAL 27

[1] This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits.

[2] Students who place out of MTH 28 and/or MTH 30 will take elective course(s) to complete 60 total degree credits. In such cases, major/option courses can be used to satisfy appropriate core requirements.

[3] Students transferring into the program with 24 or more degree or equated credits will be exempt from FYS 11, and can take 1 credit of elective to satisfy this requirement.

SCIENCE FOR FORENSICS

Associate in Science Degree | Joint Degree Program
Department of Chemistry, Earth Sciences, and Environmental Sciences

Program Description

The Science for Forensics (SFF) Associate in Science (AS) degree program is part of a joint program between Bronx Community College and John Jay College of Criminal Justice for students with a strong interest in science, law and public service. BCC graduates of the Science for Forensics AS program will continue their studies at John Jay College where they will earn a Bachelor of Science in Forensic Science. To enter the Forensic Science program at John Jay, BCC graduates must have a 2.5 or better GPA in foundation coursework. Creation of this 2 + 2 partnership in forensic science opens up a new opportunity for New York City area students to receive an excellent education leading to exciting career paths. The SFF program provides future forensic scientists with the necessary scientific foundation and technical training in general chemistry, organic chemistry, physics, biology, mathematics, data collection and analysis, oral and written communication skills, teamwork and hands-on experience for successful, productive and rewarding careers in local, regional and national forensic science and chemistry based laboratories, major research centers, university facilities, government testing labs and public utilities.

Learning Outcomes

Upon successful completion of the Science for Forensics program requirements, students will be able to:

1. Demonstrate chemical knowledge to identify, analyze and evaluate chemical components of an unknown specimen.
2. Compare scientific data utilizing learned critical thinking skills and strong science fundamentals in biology, chemistry and physics.
3. Demonstrate the necessary knowledge, laboratory skills and interpersonal skills required of entry-level Forensic Science technicians and general science technicians in related fields in the public and private sectors of commercial and governmental research, institutional, and commercial enterprises.

SCIENCE FOR FORENSICS CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Dickens St. Hilaire

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning[1]

- MTH 31 Calculus and Analytical Geometry (4 Credits)
- MTH 28[1,2] College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)

C. Life and Physical Sciences[1]

- CHM 11 General College Chemistry I (4 Credits)

SUBTOTAL 13

Flexible Core

Select two courses from any of the following areas (Flexible Core A-D)[3], with no more than one course in any area and no more than one course in any discipline or interdisciplinary field (6 Credits):

A. World Cultures and Global Issues (0-3 Credits)

B. U.S. Experience in its Diversity (0-3 Credits)

C. Creative Expression (0-3 Credits)

D. Individual and Society (0-3 Credits)

The following courses are required:

E. Scientific World[1]

- CHM 12 General College Chemistry II (4 Credits)
- PHY 31 Physics I (4 Credits)

SUBTOTAL 14

Major Requirements

- BIO 11 General Biology I (4 Credits)
- BIO 12 General Biology II (4 Credits)
- CHM 31 Organic Chemistry I (5 Credits)
- CHM 32 Organic Chemistry II (5 Credits)
- CHM 33 Quantitative Analysis (4 Credits)
- MTH 30[2] Pre-Calculus Mathematics (4 Credits)
- MTH 31 Analytic Geometry and Calculus I (4 Credits)
- Restricted Electives[2] (3-10 credits)

SUBTOTAL 33

[1] This program has received a waiver to require students to complete specific STEM/STEM Variant courses in Required Area B, Required Area C and Flexible Area E.

[2] Students who place out of MTH 28 shall complete MTH 32 Analytic Geometry and Calculus II in Restricted Electives. Students who place out of MTH 30 as well shall complete PHY 32 Physics II in Restricted Electives. Students who place out of neither may take a 3-credit flex core course. Note that both MTH 32 and PHY 32 are required in the John Jay Science for Forensics degree.

[3] To fulfill the two-year degree requirements of this Joint Degree with John Jay College, this program has received an additional waiver to allow students to complete a portion of the Common Core requirements prior to transfer and complete the remaining requirements upon transfer.

THERAPEUTIC RECREATION

Associate in Science Degree | Joint Degree Program
Department of Health, Physical Education and Recreation

Program Description

The mission of the Therapeutic Recreation program is to prepare students for the workplace, or for further education leading to a baccalaureate degree, by providing the core information and skills necessary to improve leisure time functioning and quality of life for individuals living with a wide range of chronic health conditions or disabilities.

Therapeutic Recreation Specialists are employed in health and human services settings such as hospitals, nursing homes, adult day care facilities, youth agencies, drug treatment centers and homeless shelters. This is a rewarding career for those interested in improving the quality of lives for people with health conditions and disabilities. The Therapeutic Recreation Associate of Science (AS) degree program is a joint degree program with Lehman College's B.S. program in Therapeutic Recreation.

Upon completion of the curriculum at Bronx Community College students will automatically be accepted into Lehman College's Recreation Education Program. At Lehman, students can continue in the specialization of Therapeutic Recreation or Administration. Upon graduation from Lehman College students in Therapeutic Recreation are eligible to take the National Certification Examination for Certified Therapeutic Recreation Specialist (CTRS) administered by the National Council for Therapeutic Recreation Certification. Students in the administration specialization are employed in public parks and recreation agencies, not-for-profit organizations such as P.A.L. and the YMCA, health and fitness centers, camps and sports associations. Upon graduation from Lehman College, students can sit for the national certifying examination for Certified Leisure Professional (CLP) administered by the National Recreation and Park Association.

Learning Outcomes

Upon successful completion of the Therapeutic Recreation degree program requirements, students will be able to:

1. Identify the relationship between leisure and health/well-being.
2. Conduct formal and informal assessment(s) and analyze results with acuity.
3. Discuss the impact of culture on leisure/health behaviors.
4. Demonstrate the ability to effectively plan and facilitate therapeutic programs and activities.
5. Identify the role of the Therapeutic Recreation specialist within an interdisciplinary team.
6. Examine and analyze attitudes towards individuals with social, emotional, or physical disabilities.

THERAPEUTIC RECREATION CURRICULUM (PATHWAYS)

60 Credits required for AS Degree
Curriculum Coordinator: Prof. Tiquana Gatlin

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning[1] (3 Credits)

C. Life and Physical Sciences[2]

- BIO 23 Human Anatomy and Physiology I (4 Credits)

SUBTOTAL 13

Flexible Core

No more than two courses in any discipline or interdisciplinary field.

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World[2]

- BIO 24 Human Anatomy and Physiology II *OR* any 4 credit science course (4 Credits)

Restricted Elective Select one course from Flexible Core A-E (3 Credits)

SUBTOTAL 19

Major Requirements

- CPR 10 Cardiopulmonary Resuscitation *OR* WFA 10 Workplace First Aid Training (1 Credit)
- Free Electives (1-4 Credits)
- HLT 91 Critical Issues in Health (2 Credits)
- HLT 101 Introduction to Public Health (3 Credits)
- HCM 11 The U.S. Health Care Delivery System (3 Credits)
- PEA Select any Course (1 Credit)
- PEA 51 Stress Management (2 Credits)

- PSY 11[3] Introduction to Psychology (0-3 Credits)
- REC 93 Introduction to Therapeutic Recreation (3 Credits)
- REC 94 Recreation: Historical and Philosophical Perspective (3 Credits)
- REC 95 Program Planning and Leadership in Recreation (3 Credits)
- Restricted Electives[4] (3 Credits)

SUBTOTAL 28

[1] Students in this curriculum are strongly advised to take MTH 23/23.5.

[2] The curriculum has obtained a waiver to require its students to take BIO 23 and BIO 24 in the required and flexible Common Core Areas C and E. Students planning on continuing their education in Therapeutic Recreation may opt to take any 4 credit Flexible E science course in place of BIO 24.

[3] If this course satisfies a flexible core area, free electives may be taken.

[4] Select from REC 96, any 3 credit HLT, or PEA courses totaling 3 credits.