

COLLEGE OF HEALTH SCIENCES

Pegge L. Bell, PhD, RN, APN, Dean

Faculty: Beason, Carr, Cervantes, Colvin, Fernandez, Freed, Hackett, Harris, Hershorin, Lamet, Lavandera, Little, Majka, Morris, Neely-Smith, Packert, Perkel, Rafalko, Rice, Spalding, Steffey, Whalen

History of the College

The College was formed in 2008 to facilitate the collaboration of existing schools and programs across the campus. The College now houses undergraduate and graduate programs that prepare students to become healthcare professions in a number of disciplines. The College consists of the Division of Nursing and the Departments of Biomedical Sciences, Allied Health, Cardiovascular Perfusion, Occupational Therapy, Anesthesia, Health Services Administration, and Public Health.

The purpose of the College of Health Sciences is to provide high-quality education that will prepare competent, thoughtful, ethical and compassionate health professionals who gain value in serving others. This is accomplished within an environment that fosters personal and professional growth.

The goals of the College of Health Sciences are to:

- 1) Provide a health professional education to a culturally diverse student body;
- 2) Offer didactic, laboratory, and clinical courses and other educational experiences that meet the requirements of Barry University and of entrance into professional programs and careers; and
- 3) Develop a sense of ethical and social responsibility through opportunities in local and global community service.

The College of Health Sciences strives to graduate professionals who demonstrate the knowledge, skills, and behaviors to be successful in their careers and contribute to the community they serve. Academic programs within the college provide students an opportunity to learn, grow, and develop into successful healthcare providers. Students learn in a number of culturally diverse communities, contributing to accep-

tance and respect for others. Graduates return to the community as informed and educated leaders.

The College of Health Sciences reserves the right to remove any student for academic or non-academic reasons as outlined in university, or program policies and procedures.

ALLIED HEALTH PROFESSIONS PROGRAM

Gerhild Packert, Ph.D., Program Director

Allied Health is a term used to describe a range of occupations in which individuals have responsibility for assisting, facilitating, or complementing physicians and other specialists in delivering healthcare services to patients. Advances in the prevention and diagnosis of disease, in therapy and rehabilitation, and the need to cope with new health and environmental concerns have increased demands for skilled personnel in allied health fields. A student entering these fields must possess manual dexterity, reliability, moral character, and the ability to remain calm, courteous, and efficient under adverse conditions and stressful situations. Barry offers a choice of three different programs for students seeking to meet the growing demand in these fields: Histotechnology, Medical Technology, Diagnostic Medical Sonography, and Nuclear Medicine Technology.

The curricula of the Allied Health Professions Program are dynamic, supported by the belief that society and the healthcare field are ever-changing. In keeping with the mission of Barry University, the Allied Health Professions Program aims to provide a quality education amidst an atmosphere of religious dimension, social responsibility, scholarly research and respect for human dignity.

Clinical Biology (B.S.) Specialization Programs

Students will graduate from this program with a bachelor's degree in Clinical Biology and a specialization in either Histotechnology, Medical Technology, Diagnostic Medical Sonography or Nuclear Medicine. Classes are offered in the late afternoons, evenings and on weekends, providing education for traditional and non-traditional students alike. Participation in clinical experiences, rotations or fieldwork is a required part of the curriculum and will be undertaken off-campus at clinical affiliate sites.

ADMISSION REQUIREMENTS

Applications are accepted on an ongoing basis. A \$30 application fee is required at the time of submission. Students seeking admission to the Allied Health Professions Program must submit a completed application, write a statement of purpose, provide official transcripts from institutions attended, and submit two satisfactory professional letters of recommendation from faculty or supervisors. A personal interview may be required before acceptance into the program. Upon acceptance, a non-refundable deposit in the amount of \$250 is required to hold the applicant's position in the program. The deposit will be applied toward tuition expenses.

Students may transfer up to 64 credits from an accredited community college and an additional 26 upper-level credit hours from an accredited university.

All students must have received a minimum grade of C in all college-level prerequisites listed below, and an overall GPA of 2.5 (on a 4.0 scale).

PREREQUISITES

Biology (12 semester hours)

- General Biology
- Physiology with Lab
- Anatomy with Lab

Chemistry (8 semester hours)

- General Chemistry
- Introduction to Organic and Biological Chemistry with Lab

Math (6 semester hours)

- Algebra
- Statistics

*Physics (4 semester hours)

- Required for Diagnostic Medical Sonography and Nuclear Medicine students only.

General Non-Academic Requirements

Vision

- Read charts, labels, graphs; discriminate colors and record results

Speech and Hearing

- Communicate effectively using standard English, and assess non-verbal information

Fine Motor Skills

- Skills necessary to operate instruments and manipulate tools related to the chosen field

Psychological Skills

- Possess the emotional health required to utilize full intellectual abilities
- Recognize emergency situations and take appropriate actions

International Students

International students who have completed all or part of their college coursework outside of the United States at an internationally listed institution must submit their transcripts to an official international transcript evaluation service. Information about professional evaluating services in the United States is available from the Office of Health Sciences Admissions. Official transcripts and the international credit evaluation must be submitted to Barry University for admission and evaluation purposes.

Students are also required to obtain a score of at least 550 (213 on the computer-based test) on the Test of English as a Foreign Language (TOEFL). Official test results must be submitted to the Office of Health Sciences Admissions, Barry University.

Educational Objectives

Graduates will have acquired the ability to:

Demonstrate entry-level competencies in the basic procedures of the chosen field.

Demonstrate the skills and attitudes needed for clinical competencies in the allied health professions.

Implement basic principles of laboratory and clinical safety procedures.

Develop the knowledge and skill in education, management and research to fulfill the leadership roles within the clinical environment.

Integrate knowledge and research to be able to critique and analyze data and published studies related to the field.

Develop an awareness of major health, social and economic problems of the community and the world at large.

Histotechnology Specialization

Histotechnology is a structural science concerned with the evaluation of tissues, their cellular morphology and their chemical composition. Histotechnologists work under the supervision of a pathologist, preparing, cutting, processing and staining tissue specimens of human, animal or plant origin for diagnostic, research and teaching purposes. New technologies and methodologies are constantly being developed in the field, making this allied healthcare profession one of the most exciting and dynamic in the workplace today. Patient contact is limited.

Histotechnologists must have critical thinking skills, precision, fine manual dexterity, and the ability to work well under pressure and with minimal supervision. Additional requirements include the ability to operate basic instruments including microtome, cryostat, embedding stations and processing equipment, and the ability to perform basic maintenance procedures on this equipment. The ability to differentiate materials with the aid of a microscope is also required. Graduates from this program will have acquired the ability to demonstrate entry-level competencies in the basic procedures of fixation, embedding, frozen sectioning, microtomy, routine and special stains and immunohistochemistry.

The Histotechnology Specialization Program is approved by the Florida Department of Health, Board of Clinical Laboratory Personnel, and accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS): 5600 N. River Road, Suite 720, Rosemont, IL 60018 / Telephone: 773-714-8880 / Fax: 773-714-8886 / E-mail: info@naacls.org.

Medical Technology Specialization

Medical technologists are healthcare professionals that play a key role in examining and analyzing body fluids, and are trained to work with infectious specimens. Medical technologists use microscopes, cell counters and other sophisticated precision laboratory equipment and work in all areas of the lab including hematology, microbiology, serology and blood banking. Clinical technologists develop and modify procedures, establish quality control programs and may supervise clinical laboratory technicians.

With increasing automation and use of computer technology the complexity of tests performed and the level of judgment needed is constantly increasing and the technologist must be able to work under pressure with minimal supervision. Patient contact is limited.

Some states require laboratory personnel to be licensed or registered. Information on licensure is available from state departments and/or health departments. The National Accreditation Agency for

Clinical Laboratory Sciences (NAACLS), the Commission on Accreditation of Allied Health Education Programs and the Accrediting Bureau of Health Education Schools are nationally recognized accrediting agencies.

Diagnostic Medical Sonography Specialization

Diagnostic medical sonography, or ultrasound, is a non-invasive medical imaging modality that uses high-frequency sound waves to produce images of different areas of the human body. Medical sonographers select satisfactory images for diagnostic purposes and show them to the physician for evaluation. Sonographers must have good communication skills, interpersonal skills and good hand-eye coordination. Sonographers can work in a variety of medical settings including hospitals, clinics, private offices, and other facilities performing examinations in their areas of specialization. Individuals entering diagnostic medical sonography are required to have a strong academic background in anatomy and the basic sciences and a strong comprehension of computer technology. The sonographer has direct patient contact and maintains patient records.

No state requires licensure in diagnostic medical sonography. However, the American Registry for Diagnostic Medical Sonography (ARDMS) provides certification.

Nuclear Medicine Technology Specialization

Nuclear medicine technology is a diagnostic technique that uses radioactive pharmaceuticals to provide information about the structure and function of bodily organs. Technologists prepare the dosage of the radiopharmaceuticals administered, position the patients, use sophisticated cameras to map the drug in the patient's body and obtain the images. This information is then used for diagnostic, therapeutic and research purposes. The nuclear medicine technologist has direct patient contact. Supervision is limited. Nuclear medicine technologists must be sensitive to patients' physical and psychological needs and must be able to operate complicated equipment that requires mechanical ability and manual dexterity. Excellent communication skills are required.

Educational requirements for nuclear medicine technologists vary from state to state; most states require certification or licensing. Certification is available from the American Registry of Radiologic Technologists (ARRT) and from the Nuclear Technologist Certification Board (NMTCB).

CORE COURSEWORK – BS in Clinical Biology Specialization Programs

BIOE 300	Special Topics: Orientation	(1 s.h.)
BIOE 300	Special Topics: Medical Terminology	(2 s.h.)
BIOE 300	Special Topics: Pathophysiology	(2 s.h.)
BIOE 303	Genetics	(3 s.h.)
BIOE 317	Laboratory Management Seminar	(2 s.h.)
BIOE 325	Microbiology	(3 s.h.)
BIOE 330	Cell Biology	(3 s.h.)
BIOE 455	Immunology	(3 s.h.)
BIOE 475	Seminar	(3 s.h.)
BIOE 484	Clinical Experience I - Histotechnology	(4-6 s.h.)
BIOE 489	Clinical Experience II - Histotechnology	(4-6 s.h.)
CHS 480-485-490	Medical Technology	(30 s.h.)
CHS 482-487-492	Nuclear Medicine Technology	(30 s.h.)
CHS 483-488-493	Diagnostic Medical Ultrasound Technology	(30 s.h.)
Additional courses available to students to satisfy upper-level biology requirements:		
BIOE 300	Special Topics: Flow Cytometry	(2 s.h.)
BIOE 300	Special Topics: Immunohistochemistry	(2 s.h.)
BIOE 300	Special Topics: Cytology	(2 s.h.)
BIOE 300	Special Topics: Bioinformatics	(2 s.h.)
BIOE 300	Special Topics: Laboratory Safety	(2 s.h.)
BIOE 300	Special Topics: Hematology	(2 s.h.)
BIOE 300	Special Topics: Clinical Chemistry I	(2 s.h.)
BIOE 300	Special Topics: Clinical Chemistry II	(2 s.h.)
BIOE 300	Special Topics: Serology	(2 s.h.)
BIOE 346	Parasitology	(3 s.h.)
BIOE 427	Biochemistry I	(3 s.h.)*
BIOE 428	Biochemistry II	(3 s.h.)*
BIOE 445	Microtechnique Lecture**	(2 s.h.)**
BIOE 445L	Microtechnique Lab**	(2 s.h.)**
BIOE 450	Histology Lecture**	(2 s.h.)**
BIOE 450L	Histology Lab**	(2 s.h.)**
BIOE 452	Quantitative Applications in Biology	(3 s.h.)*
BIOE 460	Special Topics: Advanced Histotechnology I	(2 s.h.)**
BIOE 465	Special Topics: Advanced Histotechnology II	(2 s.h.)**

*Required for Medical Technology students.

**Required for Histotechnology students.

General distribution courses needed to fulfill the degree requirements (refer to Catalog for course descriptions and requirements) can be taken concurrently through Barry University's School of Adult and Continuing Education (ACE). In fulfillment of the distribution requirement, PHI 353 – Biomedical Ethics is required.

DEGREE REQUIREMENTS

Major:	Minimum 50 semester hours in biology courses
Math:	6 semester hours, MAT 107 or above, and Statistics
Chemistry:	Minimum 8 semester hours exclusive of MLT Clinical Chemistry, equivalent to CHE 111 and CHE 152 or CHE 343 with lab.
Physics:	4 semester hours, required for Diagnostic Medical Sonography and Nuclear Medicine students
Computer:	Minimum 3 semester hours. (CAT 102 or CS 180)
Distribution:	36 semester hours, inclusive of PHI 353
Upper-Level credits:	48 semester hours
Total number of credits:	120

Graduation requirements for all majors include an exit interview, program evaluation and final written exam.

IMMUNIZATION AND PHYSICAL EXAMINATION

Before attending the Clinical Experience, the student must present proof of medical insurance, a physical examination and current immunizations to include annual TB screening (PPD), Diphtheria Inoculation Tetanus (DTP), MMRx2, and Hepatitis B. These documents must be presented before the student will be allowed to progress to Clinical Experience status.

PARTICIPATION IN THE CLINICAL EXPERIENCE

Students need 30 hours taken in residence at Barry University before enrolling in the Clinical Experience. Students may be required to relocate during the clinical session. Students must be financially prepared to enter into and complete the program. ***Important Notice:*** Participation in clinical experiences, rotations or fieldwork is a required part of the curriculum for the BS in Clinical Biology Specialization Program and a requirement for graduation. Clinical affiliate sites require a drug and criminal background check in order to permit participation in the program's Clinical Experience. The program may deny a student's participation in the Clinical Experience because of a felony or misdemeanor conviction, failure of a required drug test, or inability to produce an appropriate health clearance, which would result in delayed graduation

or the inability to graduate from the program. Individuals who have been convicted of a felony or misdemeanor may be denied certification or licensure as a health professional. Information regarding individual eligibility may be obtained from the appropriate credentialing bodies. Drug screening and background checks will be done at the student's expense.

The minimal passing grade for each Histotechnology Clinical Experience is: Clinical Experience I, "73" (C) or higher; Clinical Experience II, "83" (B) or higher.

The grading scale for the Histotechnology Clinical Experience courses is as follows:

93 – 100 = A
83 – 92 = B
73 – 82 = C
68 – 72 = D
Below 68 = F

The grading scale for the Medical Technology, Nuclear Medicine Technology and Diagnostic Medical Sonography Technology Clinical Experience courses is determined by each clinical site.

PROGRESSION IN THE PROGRAM AND ACADEMIC DISMISSAL

Students must maintain an overall GPA of at least 2.5 at all times. Each didactic course must be passed with at least the minimally acceptable grade of C or higher. In the event a grade lower than C is received in any didactic biology course, the student must submit a letter to the program's Student Affairs Committee, requesting permission to repeat the course and continue in the program. The members of the Committee will evaluate the student's academic and advisee records, and depending upon this evaluation, the student may be allowed to repeat the course. If the permission is not granted, the student will not be able to continue in the program.

One didactic course may be repeated *one* time with the consent of the program's Student Affairs Committee. The grades of D, F, W, WP and WF are considered the same as a grade lower than C when repeating any didactic course.

Students will not be able to enroll in Clinical Experience I – Histotechnology until all didactic courses have been successfully completed. Should a student fail to meet the minimal passing grade of "73" (C) or higher for Clinical Experience I, the student will be dismissed from the remainder of the program.

SITES

Didactic and lab courses are taught at Barry University on the main campus. General distribution courses may be taken at ACE sites. Clinical Experiences are offered at clinical affiliate sites throughout South Florida.

Any remaining courses needed to fulfill the degree requirements (refer to Catalog for course descriptions and requirements) can be taken concurrently through Barry University's School of Adult and Continuing Education (ACE).

ACCREDITATION

Barry University's Histotechnology Specialization Program is approved by the Florida Department of Health, Board of Clinical Laboratory Personnel, and accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS): 5600 N. River Road, Suite 720, Rosemont, IL 60018 / Telephone: 773-714-8880 / Fax: 773-714-8886 / E-mail: info@naaccls.org.

BIOLOGY COMPLETION PROGRAMS

Barry's undergraduate Biology Completion Programs prepare licensed histotechnicians, medical laboratory technicians, nuclear medicine technicians, respiratory technicians, and diagnostic medical sonography technicians for a bachelor's degree in Clinical Biology. Students are able to transfer 64 semester hours from an accredited community college technician program, and up to an additional 26 upper-level semester hours from an accredited university. The students then will progress toward a B.S. degree through late-afternoon, evening and weekend classes.

PREREQUISITES

Biology (12 semester hours)

General Biology
Physiology with Lab
Anatomy with Lab

Chemistry (8 semester hours)

General Chemistry
Introduction to Organic and Biological Chemistry with Lab

Math (6 semester hours)

Algebra
Statistics

*Physics (4 semester hours)

Required for Diagnostic Medical Sonography and Nuclear Medicine students only.

General Non-Academic Requirements

Vision

- Read charts, labels, graphs; discriminate colors and record results

Speech and Hearing

- Communicate effectively using standard English, and assess non-verbal information

Fine Motor Skills

- Skills necessary to operate instruments and manipulate tools related to the chosen field

Psychological Skills

- Possess the emotional health required to utilize full intellectual abilities
- Recognize emergency situations and take appropriate actions

International Students

International students who have completed all or part of their college coursework outside of the United States at an internationally listed institution must submit their transcripts to an official international transcript evaluation service. Information about professional evaluating services in the United States is available from the Office of Health Sciences Admissions. Official transcripts and the international credit evaluation must be submitted to Barry University for admission and evaluation purposes.

Students are also required to obtain a score of at least 550 (213 on the computer-based test) on the Test of English as a Foreign Language (TOEFL). Official test results must be submitted to the Office of Health Sciences Admissions, Barry University.

Educational Objectives

Graduates will have acquired the ability to:

- Develop the knowledge and skill in education, management and research to fulfill the leadership roles within the clinical environment.
- Demonstrate the skills and attitudes needed for clinical competencies in the allied health profession.
- Implement laboratory and clinical safety procedures.
- Develop an awareness of major health, social and economic problems of the community and the world at large.
- Integrate knowledge of medical technology and scientific research to be able to critique and analyze data and published studies related to your field.

CORE COURSEWORK – Clinical Biology Completion Programs

All students must meet the following requirements:

BIOE 300	Special Topics: Orientation	(1 s.h.)
BIOE 300	Special Topics: Medical Terminology	(2 s.h.)
BIOE 300	Special Topics: Laboratory Safety	(2 s.h.)
BIOE 303	Genetics	(3 s.h.)
BIOE 317	Laboratory Management Seminar	(2 s.h.)
BIOE 325	Microbiology	(3 s.h.)
BIOE 330	Cell Biology	(3 s.h.)
BIOE 346	Parasitology	(3 s.h.)
BIOE 452	Quantitative Applications in Biology	(3 s.h.)
BIOE 455	Immunology	(3 s.h.)
BIOE 427	Biochemistry I	(3 s.h.)
BIOE 428	Biochemistry II	(3 s.h.)
BIOE 475	Seminar	(3 s.h.)

Additional courses to satisfy upper-level biology requirements are available. Please see: Core Coursework – BS in Clinical Biology Specialization Programs for a list of available courses.

Classes may be substituted at the discretion of the program's Student Affairs Committee.

General distribution courses needed to fulfill the degree requirements (refer to Catalog for course descriptions and requirements) can be taken concurrently through Barry University's School of Adult and Continuing Education (ACE). PHI 353 – Biomedical Ethics is required.

Each didactic course must be passed with at least the minimally acceptable grade of C or higher. Students must maintain a minimum overall GPA of 2.50.

DEGREE REQUIREMENTS

Major:	Minimum 40 semester hours in upper-level biology courses
Math:	6 semester hours, MAT 107 and above
Chemistry:	Minimum of 8 semester hours, exclusive of MLT Clinical Chemistry. CHE 111 and CHE 151 with labs, can be transferred.
Physics:	4 semester hours, required for Diagnostic Medical Sonography and Nuclear Medicine students
Computer:	Minimum 3 semester hours, CAT 102 or CS 180
Distribution Requirements:	36 semester hours, inclusive of PHI 353
Upper-Level credits:	48 semester hours
Total number of credits:	120, with a minimum of 30 credits from Barry University

Graduation requirements for all majors include an exit interview, program evaluation and final written exam.

PROGRESSION IN THE PROGRAM AND ACADEMIC DISMISSAL

Students must maintain an overall GPA of at least 2.5 at all times. Each didactic course must be passed with at least the minimally acceptable grade of C or higher. In the event a grade lower than C is received in any didactic biology course, the student must submit a letter to the program's Student Affairs Committee, requesting permission to repeat the course and continue in the program. The members of the Committee will evaluate the student's academic and advisee records, and depending upon this evaluation, the student may be allowed to repeat the course. If the permission is not granted, the student will not be able to continue in the program.

One didactic course may be repeated *one* time with the consent of the program's Student Affairs Committee. The grades of D,F, W, WP and WF are considered the same as a grade lower than C when repeating any didactic course.

NATIONAL LICENSURE REQUIREMENTS

Upon successful completion of the Clinical Biology Completion Program, the student will be eligible for technologist certification by ASCP, NCA, AMT, NMTCB, ARDMS or other applicable certifying agencies. Please note that certification agencies may change their qualifying requirements; it is your obligation to meet those requirements.

POST-BACCALUREATE CERTIFICATE IN HISTOTECHNOLOGY PROGRAM

The Post-Baccalaureate Certificate in Histotechnology program is designed for students who have already earned a bachelor's degree from an accredited institution and have fulfilled the prerequisites listed above. This 4 + 1 program prepares the student for histotechnology certification with nine months of additional study. This program includes a five-month Clinical Experience at clinical affiliate sites in South Florida. Students successfully completing the program are eligible to sit for the American Society for Clinical Pathology (ASCP) HTL certification examination. Please note that certification agencies may change their qualifying requirements; it is your obligation to meet those requirements.

CORE COURSEWORK – Post-Baccalaureate Certificate Program

BIOE 300	Special Topics: Orientation	(1 s.h.)
BIOE 300	Special Topics: Medical Terminology	(2 s.h.)
BIOE 300	Special Topics: Advanced Histotechnology I	(2 s.h.)
BIOE 300	Special Topics: Advanced Histotechnology II	(2 s.h.)
BIOE 317	Laboratory Management Seminar	(2 s.h.)
BIOE 445L	Microtechnique Lab	(2 s.h.)
BIOE 445	Microtechnique Lecture	(2 s.h.)
BIOE 450L	Histology Lab	(2 s.h.)
BIOE 450	Histology Lecture	(2 s.h.)
BIOE 484	Clinical Experience I	(4-6 s.h.)
BIOE 489	Clinical Experience II	(4-6 s.h.)

PROGRESSION IN THE PROGRAM AND ACADEMIC DISMISSAL

Students must maintain an overall GPA of at least 2.5 at all times. Each didactic course must be passed with at least the minimally acceptable grade of C or higher. In the event a grade lower than C is received in any didactic biology course, the student must submit a letter to the program's Student Affairs Committee, requesting permission to repeat the course and continue in the program. The members of the Committee will evaluate the student's academic and advisee records, and depending upon this evaluation, the student may be allowed to repeat the course. If the permission is not granted, the student will not be able to continue in the program.

One didactic course may be repeated *one* time with the consent of the program's Student Affairs Committee. The grades of D,F, W, WP and WF are considered the same as a grade lower than C when repeating any didactic course.

ACCREDITATION

Barry University's Post-Baccalaureate Certificate in Histotechnology Program is approved by the Florida Department of Health, Board of Clinical Laboratory Personnel, and accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS): 5600 N. River Road, Suite 720, Rosemont, IL 60018 / Telephone: 773-714-8880 / Fax: 773-714-8886 / E-mail: info@naacls.org.

Course Descriptions – Allied Health Professions Program

BIOE 300 Special Topics (1-3)

Content to be determined as required for accreditation or to fill specified needs or interests.

BIOE 303 Genetics (3)

The goal is to acquire an understanding of the relationship between genes and phenotypes. Emphasis will be placed on familiarizing the student with the molecular nature of the hereditary material, gene function, and gene inheritance. In addition, the student will be introduced to recombinant DNA technology and will learn how these techniques are utilized in human genetics.

BIOE 317 Laboratory Management Seminar (2)

General introduction to laboratory management for allied health professionals; emphasis on theories, methods, and techniques used in management, with specific application to the laboratory.

BIOE 325 Microbiology (3)

Bacterial and viral classification, structure, physiology, genetics, pathogenicity and immunology; methods of cultivation, identification, and control of microorganisms. Prerequisites: Biology 104 or equivalent; CHE 152 or 343.

BIOE 330 Cell Biology (3)

Biological processes in prokaryotic and eukaryotic cells, with emphasis on the correlation between structure and function on the molecular level. Prerequisite: BIO 104 or equivalent, CHE 152 or 343.

BIOE 346 Parasitology (3)

Morphology, taxonomy, identification, life cycle, host-parasitic relationship, and control of protozoan, helminth, and arthropod parasites. Prerequisite: BIO 104 or equivalent.

BIOE 427, 428 Biochemistry I, II (3) (3)

Introduction to the fundamental aspects of biochemistry, emphasizing the relationship between structure and function of the major classes of macromolecules in living systems. Metabolic interrelationships and control mechanisms are discussed as well as the biochemical basis of human disease.

BIOE 445 Microtechnique and Lab (2) (2)

Theory and extensive hands-on experience in the histotechnology laboratory. Students learn how to use basic instrumentation in preparation for the Histotechnology Clinical Experience. Prerequisite: BIO 104, BIOE 220 or equivalent, and BIOE 450/L.

BIOE 450 Histology and Lab (2) (2)

Microscopic identification of human tissues. Emphasis on the relationship between structure and function. Prerequisite: BIO 104, BIOE 220 or equivalent.

BIOE 455 Immunology (3)

Major topics considered in this course are antibody formation, antigen-antibody interactions, biological effects of immunologic reactions, immunological specificity of normal diseased cells and tissues. Prerequisites: BIO 104 and any one of the following: BIO 253 or BIOE 325 or BIOE 330.

BIOE 460 Advanced Histotechnology I (2)

This course introduces students to advanced aspects of histological procedures used in clinical settings. The course will focus on the theoretical basis of immunohistochemistry, enzyme histochemistry and electron-microscopy. Prerequisite: BIOE 445.

BIOE 465 Advanced Histotechnology II (2)

This course is a capstone course for the histotechnology program. Working in teams, all students will conduct a directed research project around a clinical case study. Students will be required to work collaboratively in the design, implementation, and presentation of their research findings. Prerequisite: BIOE 445.

BIOE 475 Seminar (3)

Presentation of reports, discussions, lectures, and papers on selected topic(s) in biology.

CHS 480-485-490 Clinical Experience – Medical Technology (30)

Twelve- to fifteen-month period of academic and clinical training in a school of medical technology approved by a national allied health accrediting agency. (Fall, Spring, Summer)

BIOE 484 Clinical Experience I – Histotechnology (4-6)

Clinical Experience with students' first exposure to the hospital environment. Prerequisite: Completion of didactic portion of the histotechnology specialization.

BIOE 489 Clinical Experience II – Histotechnology (6-9)

Continuation of clinical experience with emphasis on achieving entry-level competencies for histotechnologists. Prerequisite: BIOE 484.

CHS 482-487-492 Clinical Experience – Nuclear Medicine Technology (30)

Twelve-month period of academic and clinical training in a school of nuclear medicine technology approved by a national allied health accrediting agency. (Fall, Spring, Summer)

CHS 483-488-493 Clinical Experience – Diagnostic Medical Sonography Technology (30)

Twelve-month period of academic and clinical training in a school of diagnostic medical ultrasound technology approved by a national allied health accrediting agency. (Fall, Spring, Summer)

For course description of all other courses see appropriate section of University Catalog.

CARDIOVASCULAR PERFUSION, B.S.

Jason Freed, M.S., Director

The profession of cardiovascular perfusion is one of the newest and most challenging in health care. Perfusionists apply their knowledge of the cardiopulmonary system and complex technology to the task of maintaining life during cardiac surgery. This involves the preparation and operation of the heart-lung machine and other equipment used to replace the normal functions of the heart and lungs during surgery. Perfusionists are clinically active in a number of areas including pulmonary intervention, neurosurgery, cancer surgery, organ and limb preservation, vascular repair, hypothermia, blood salvage and recovery, transplantation, and artificial heart assist devices. Their primary role, however, remains in cardiovascular surgery.

Perfusion has grown from the era of on-the-job trained technicians to technologists of a recognized and respected allied health profession demanding highly skilled specialists, educated and certified in the art and science of extracorporeal technology.

Barry University has designed this program for the allied health care professional. The curriculum will take twenty-one months to complete. The didactic session will last two semesters. Classes are scheduled during the daytime. The clinical session will last three semesters. Clinical practicums are full time, during the day, Monday through Friday and the student may need to be available nights, weekends, and holidays depending on the surgical scheduling. Clinical experience will consist of adult and pediatric rotations obtained at various affiliated hospitals. Clinical relocation may be necessary. Students must live and be within thirty minutes of the hospital when on-call.

ADMISSION REQUIREMENTS

Entrance into the program occurs only once per year in the fall. A completed application and a \$30.00 nonrefundable application fee must be submitted prior to June 1st of each year.

Applicants are required to submit three reference letters from individuals who have known the applicant in a working or educational situation. Applicants are required to submit a letter documenting the observation of at least one cardiac surgical procedure requiring cardiopulmonary bypass. A personal interview will be required before acceptance into the program. Official transcript(s) must be sent to the Office of Health Sciences Admissions, Barry University from all post-secondary academic programs and must also document the satisfactory completion of all minimum required prerequisite courses.

Upon acceptance into the program, a non-refundable \$250.00 deposit is required to hold the applicant's position in the class for which he/she is accepted. The position deposit will be applied toward tuition expenses. The balance of the tuition payment is due on or before matriculation.

Applicants must have received a minimum grade of C in all college level prerequisite courses listed below, and an overall GPA of 2.50. (Grading is based on a 4.00 scale.) All prerequisite courses are semester hours or equivalent.

English*	6 s.h.
Speech*	3 s.h.
Algebra*	3 s.h.
Physics (with lab)	4 s.h.
General Chemistry (with lab)	8 s.h.
Human Anatomy & Physiology	8 s.h.
Introduction to Biochemistry, or Cell Biology	3 s.h.
Social & Behavioral Sciences*	9 s.h.
Humanities & Arts*	9 s.h.
Computer Science	3 s.h.
Theology or Philosophy	3 s.h.

* Not required if applicant has completed a baccalaureate degree.

International Students

International students who have completed all or part of their college coursework outside of the United States at an internationally listed institution must submit their transcripts to an official international transcript evaluation service. Information about professional evaluating services in the United States is available from the Office of Health Sciences Admissions. Official transcripts and the international credit evaluation must be submitted to Barry University for admission and evaluation purposes.

Students are also required to obtain a score of at least 550 (213 on the computer-based test) on the Test of English as a Foreign Language (TOEFL). Official test results must be submitted to the Office of Health Sciences Admissions, Barry University.

Educational Objectives

1. The graduate will have the clinical skills and theoretical knowledge required for entry level positions in the field. They will be able to competently complete all phases of Cardiopulmonary Bypass including pre, intra and post-operatively.
2. The graduate will demonstrate compassion for patients and exhibit a strong sense of ethical behavior.
3. The graduate will be able to collaborate with other members of the Cardiovascular team and act as a resource person to other healthcare professionals and patients.

4. Collectively, graduates of the program will demonstrate acceptable pass rates on the American Board of Cardiovascular Perfusion certification examination.
5. Graduates will become actively employed in the field of Cardiovascular Perfusion and become involved in professional societies and continuing education.

Non-Academic Requirements

Vision

- Read charts, labels, graphs, discriminate colors and record results

Speech and Hearing

- Communicate effectively using standard English, and assess non-verbal information

Fine Motor Skills

- Skills necessary to operate complex machinery

Psychological Skills

- Possess the emotional health required to utilize full intellectual abilities
- Recognize emergency situations and take appropriate actions

All applicants must affirm and attest to sound physical health, emotional stability, and personal integrity that will enable them to successfully complete the educational program and to comply with criteria for the American Board of Cardiovascular Perfusion certification and adherence to the American Society of Extracorporeal Technology professional codes of contact and practice. Applicants must affirm and attest that they are free of addiction to substances of abuse and are willing to adhere to Drug Free Workplace policies and procedures of affiliate clinical training sites, to included submission to randomized drug testing and/or testing for cause and upon program demand.

PROGRAM REQUIREMENTS

Students must:

1. satisfactorily complete all program course work;
2. maintain a minimum C average for all courses, and an overall GPA of 2.5;
3. perform a minimum of 75 satisfactory adult clinical bypass procedures and perform or observe a minimum of 10 pediatric clinical bypass procedures;
4. maintain a student membership in the American Society of Extra-Corporeal Technology (AmSECT) and the Florida Perfusion Society (FPS); and
5. satisfactorily complete a final written and clinical simulation examination;
6. have a current certification in Basic Life Support

***Important Notice:** Participation in clinical experiences, rotations or fieldwork is a required part of the curriculum and a requirement for graduation. Clinical rotation and fieldwork sites may require a drug, criminal, and/or child abuse background check in order to permit participation in the program's clinical experience, rotation or fieldwork. Clinical rotation and fieldwork sites may deny a student's participation in the clinical experience, rotation or fieldwork because of a felony or misdemeanor conviction, failure of a required drug test, or inability to produce an appropriate health clearance, which would result in delayed graduation or inability to graduate from the program. Individuals who have been convicted of a felony or misdemeanor may be denied certification or licensure as a health professional. Information regarding individual eligibility may be obtained from the appropriate credentialing bodies. Drug and background checks will be done at the student's expense.*

Before applying, an individual should assess his/her capacity and suitability for being a student and pursuing a career as an independent health practitioner. **The program is an extremely intense 21 month program that requires personal and financial sacrifices and demands a high degree of integrity, self-sufficiency, motivation, discipline and highly developed study skills.** Proof of medical insurance and a physical examination must be presented prior to matriculation. Proof of current immunizations, to include Annual TB Screening (PPD), Diphtheria Inoculation Tetanus (DTP), MMRx2, and Hepatitis B must be presented before the student will be allowed to progress to clinical status. Students may be required to relocate during the clinical session. Students must be financially prepared to enter into and complete the program. This may include providing and maintaining additional housing and living expenses during the clinical session should they be required to relocate.

REQUIRED COURSES

First Year

Fall Semester

Description	Semester Hours
Basic Surgery & Monitoring	2
Perfusion Technology I	3
Perfusion Devices & Lab I	1
Cardiac Anatomy & Physiology	3
Physiologic Management of Bypass	2
Biomedical Ethics	3
Elective Course	3
	17

Spring Semester	
Cardiovascular Pathology	3
Cardiovascular Pharmacology	3
Perfusion Technology II	3
Perfusion Devices and Lab II	1
Cardiology	2
Research Methodology	1
Theology	3
	16
Summer Semester	
Clinical Practicum I	12
Second Year	
Fall Semester	
Clinical Practicum II	12
Spring Semester	
Clinical Practicum III	12
Total Required for Graduation	69

The Cardiovascular Perfusion program will have one class annually and enrollment is limited. The program is fully accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). Upon successful completion of all program requirements, each graduate will be eligible to enter the perfusion certification process with the American Board of Cardiovascular Perfusion (ABCP).

ACADEMIC DISMISSAL AND PROBATION

Each didactic course must be passed with, at least, the minimally acceptable grade of C or higher as well as satisfactorily completing all of the required course components. Students will not be able to enroll in Clinical Practicum I until all didactic courses have been successfully completed. Students failing a didactic course will not be granted automatic readmission and will need to reapply to the program and undergo the interview process. Students returning because of academic dismissal must start from the beginning of the program and retake all program specific courses. Failing a didactic course twice will prevent readmission to the program.

The minimal passing grade for each clinical practicum is Clinical Practicum I —“76” (C) or higher; Clinical Practicum II —“80” (C) or higher, and Clinical Practicum III —“85” (B) or higher. Should a student fail to meet a grade of “76” (C) or higher during Clinical Practicum I because of unacceptable clinical performance, that student will be placed on clinical probation. While on clinical probation, that student will be allowed to advance to Clinical Practicum II. At the midterm of Clinical Practicum II that student must have a passing grade of “80” or higher or will be dismissed from the program. Failure to receive

the minimal passing grade for Clinical Practica II or III will result in dismissal from the program. The grading scale for the *Clinical Practica only* is as follows:

94 – 100 = A

85 – 93 = B

76 – 84 = C

Course Descriptions— Cardiovascular Perfusion Prefix: CVP

310 Cardiac Anatomy and Physiology (3)

Structure and mechanisms by which the cardiovascular system functions in relationship to other organ systems. Prerequisite: Program Admission.

340 Basic Surgery and Monitoring (2)

Exposure of sterile and aseptic techniques, interrelationships among personnel and surgical techniques within the operating room relating to perfusion. Prerequisite: Program Admission.

350 Perfusion Technology I (3)

Introduction to the various components that comprise the software and hardware of the perfusion circuit and techniques in their utilization. Prerequisite: Program Admission.

360 Perfusion Devices and Lab I (1)

Extensive hands-on experience in the perfusion wet-lab. Students learn and demonstrate proper circuit assembly with knowledge of the mechanics. Prerequisite: Program Admission.

400 Cardiovascular Pharmacology (3)

Study of the various pharmacological interventions utilized for cardiovascular patients. Prerequisites: CVP 310, 340, and 350.

410 Research Methodology (1)

Applications of how to interpret, write, and present scientific data pertinent to perfusion science. Prerequisites: CVP 350 and 360.

420 Cardiology (2)

Study of normal and abnormal EKG's, echo cardiography, electrophysiology treatments, cardiac catheterization, and related procedures. Prerequisites: CVP 310 and 340.

430 Physiological Management of Bypass (2)

Understanding physiological changes occurring during bypass with safety plan. Prerequisite: Program Admission.

440 Cardiovascular Pathology (3)

Understanding of pathological conditions that exist in all organ systems, with special emphasis on the cardiovascular system. Prerequisite: CVP 310.

450 Perfusion Technology II (3)

Emphasis on the numerous long-term support technologies that are utilized separately or in conjunction with the heart-lung machine. Prerequisite: CVP 350.

460 Perfusion Devices and Lab II (1)

Emphasis on set-up and priming of different pump systems utilizing centrifugal pumps and perfusion techniques. Prerequisite: CVP 360.

470 Clinical Practicum I (12)

An introduction to clinical experience with the students' first major exposure to the operating room environment. (approximately 600 clinical hours) Prerequisites: CVP 400, 410, 420, 440, 450, 460.

475 Clinical Practicum II (12)

Essentials of clinical perfusion with emphasis on cardiopulmonary bypass case management. (approximately 600 clinical hours) Prerequisite: CVP 470.

480 Clinical Practicum III (12)

Operation of complex perfusion related devices and students' participation in emergency procedures. (approximately 600 clinical hours) Prerequisite: CVP 475.

OCCUPATIONAL THERAPY

Belkis Landa-Gonzalez, Ed.D., Director

The Occupational Therapy Program at Barry University has prepared students for careers as occupational therapists since 1989. Because the program is designed for working adults, occupational therapy courses are scheduled on weekends.

In 1999, the American Occupational Therapy Association voted to move the education of occupational therapists to the graduate level. The last undergraduate students were admitted to Barry's Occupational Therapy Program in 1999; students are no longer admitted at the undergraduate level.

Barry University currently offers a weekend program leading to the Master of Science in Occupational Therapy. Information about program requirements and application procedures is included in the current Graduate Catalog.

A bachelor's degree is required for admission to the M.S. program. If you are interested in the Occupational Therapy Program, but have not yet completed a bachelor's degree, you may wish to contact the Director about choosing undergraduate courses which will support your application to the professional curriculum. Evening courses leading to baccalaureate degrees are offered through Barry University's School of Adult and Continuing Education.

POST-BACCALAUREATE/ MASTER OF BIOMEDICAL SCIENCE COMBINATION PROGRAM

Ralph Laudan, Ph.D., Associate Dean

POST-BACCALAUREATE PROGRAM

The two year Post-Baccalaureate/Master's Combination Program is designed for students of high potential, seeking a career change by pursuing premed and subsequent medical studies.

This program encourages students with a bachelor's degree to strengthen their undergraduate and/or graduate credentials for application to U.S. medical schools. Candidates will have the opportunity to pursue a coordinated program of required undergraduate science courses in the various disciplines.

ADMISSION REQUIREMENTS

Admission to the post-baccalaureate program is based upon several criteria:

- a bachelor's degree from a regionally accredited college or university, with a minimum grade point average of 2.70;
- official transcripts from all undergraduate institutions attended;
- receipt of official MCAT or DAT scores now or at the time of application to the Master of Biomedical Science Program;
- a typed personal statement describing your future goals; and
- three letters of recommendation: Two letters from undergraduate science faculty members, and one from an advisor or current employer.

CURRICULUM

- 8 s.h. Math (Precalculus)
 - * 8 s.h. General Chemistry with Lab
 - * 8 s.h. Physics with Lab
 - * 8 s.h. Organic Chemistry with Lab
 - * 8 s.h. Anatomy & Physiology with Lab
 - * 4 s.h. Zoology with Lab
 - 8 s.h. Anatomy & Physiology strongly recommended
- *Starred courses are required by most medical schools.

MASTER'S PROGRAM

Upon completion of all post-baccalaureate program requirements, a candidate's credentials will be considered for admission to the Master of Biomedical Science Program. The file must be appended to include

an application for graduate admission, post-baccalaureate course transcripts and satisfactory scores on the MCAT or DAT. (See Master of Science in Biomedical Sciences Program.)

Limited financial support may be available for this program.

The College of Health Sciences at Barry University has conducted a special one year program leading to the M.S. in Biomedical Sciences (MBS). While completion of the program does not guarantee acceptance to medical school, approximately 78% of the Track I students over the past 24 years have gained admission to medical or dental schools, as well as schools of osteopathic, veterinary, and podiatric medicine throughout the United States, including the Barry University School of Podiatric Medicine.

Students that are accepted into the Option I – 1 year master's degree program after completing the Post-Baccalaureate Program, may take some of the following courses with the first year podiatric medical students: Biochemistry, Histology, and Neuroanatomy.

Completion of 36 graduate credits with a minimum grade point average of B (3.00), with no more than 8 semester hours of C work, must be maintained. Courses with D or F grades must be repeated and replaced with grades of B or better. In addition, each student must pass a written comprehensive qualifying examination with an overall score of 70% or better before a candidate can be awarded the M.S. degree.

Students should also be aware that the course load required for completion of the master's degree in one year is twice that of the standard course load in our traditional graduate programs.

A student who has had precalculus could complete this post-baccalaureate program in one year (including summer sessions) and apply to the Master's program in Biomedical Sciences for the second year.