

## College of Natural, Applied and Health Sciences

The mission of the College of Natural, Applied and Health Sciences is consistent with the overall mission of the University. The College of NAHS has strong, quality program offerings in the sciences and health professions. The faculty and staff are committed to providing relevant education and services to a diverse student population. The goal is to prepare students to think critically and creatively so that they can adapt to changing social, economic and technological conditions. Building external collaborations with major technological corporations and the health care industry is an integral part of the colleges outreach mission, which enables it to provide valuable services to the community as well as increased opportunities for students.

We are proud to have been designated the Flagship State University for the Health Professions. Our graduates can be found practicing in hospitals and other health care agencies across New Jersey. Also, our programs in the Sciences have a long distinguished record of service to this region. So, whether you are looking to study in the Natural and Physical Sciences, Health Care, Mathematics, Technology, or Computer Science, you will gain a strong foundation at the College of Natural, Applied and Health Sciences.

*Interim Dean, Pablo Zafra*

*Assistant to the Dean, Lourdes F. Prieto*

*B-104, (908) 737-3600*

### ACADEMIC DEGREES, PROGRAMS

#### B.A. in Biology

- General Option
- Honors Option
- Teacher Certification Option
- Teacher of Students with Disabilities Option

#### B.S. in Biology

- General Option
- Biotechnology Option

#### B.A. in Chemistry

- General Option
- Preprofessional Option
- Teacher Certification Option

#### B.S. in Chemistry, Expanded Option

#### B.S. in Computer Science

- Information Systems Option

#### B.A. in Earth Science

- General Option
- Teacher Certification Option
- Teacher of Students with Disabilities Option

#### B. S. in Earth Science

- Earth System Science Option
- Geology Option
- Meteorology Option

#### B.A. in Mathematical Sciences

- Teacher Certification Option
- Teacher of Students with Disabilities Option

#### B.S. in Computer Integrated Design and Manufacturing Technology

#### B.S. in Electronics Technology

#### B.S. in Telecommunications and Information Technology

### HEALTH PROFESSIONS

#### B.S. in Health Information Management

- General Option
- Occupational Therapy Track

#### B.S. in Medical Technology

- General Option
- Cytotechnology Option
- Histotechnology Option

#### B.S.N. in Nursing

#### Post Baccalaureate School Nurse Program

### JOINT (OR COMBINED) DUAL DEGREE PROGRAMS

#### B.S. in Health Information Management/ M.S. Management Information Systems

#### B.S. in Health Information Management/ M.A. Communication Studies

#### B.A. / M.S. in Occupational Therapy

#### B.A. / DPT Physical Therapy (with UMDNJ)

### COLLABORATIVE PROGRAM

BA in Elementary Education Liberal Studies in Mathematics, Science, and Technology:

- Biology Specialization
- Earth Science Specialization
- Mathematics Specialization
- Technology Specialization

### DEPARTMENTS, FACULTY

#### Biological Sciences

Faculty: Codella, Field, Glazer, Hayat, James, Mancarella (Chairperson), Osborne, Porta, Pu, Rosenthal, Vassiliou, Yu, Zhang

#### Chemistry-Physics

Faculty: Castiglione, Criasia (Chairperson), Gao, Getzin, Hicks, Kampa, Kubow, Lees, Shin, Stokes-Huby, Vitale, Zarrilli

#### Geology and Meteorology

Faculty: Croft, Dobosiewicz, Krall, Kroll, Manfrino, Metz (Chairperson), Murphy, Ngoy, Yoh, Zois

#### Mathematics and Computer Science

Faculty: Abeles, Affouf, Alsina, Arnow, Avirappattu, Beaugris, Chang, Deavours, Emanouilidis, Hahn (Chairperson), Halper, Krantz, Lehmann, Lipson, Mathur, Narasimhan, Ryder, Santomauro, Stewart-Gardiner, Tse, Viglione, Wang, Wittenberg, Woubneh, Zafra

#### Technology

Faculty: Behi, Cokewood, Shahrabi (Chairperson)

#### Health Information Management

Faculty: Davis, Manger (Chairperson)

#### Medical Technology

Coordinator: Osborne

#### Nursing

Faculty: Campbell (Chairperson), Fitzgerald, Fitzsimons, Hascup, Krause-Parello, Neville, Pisani

#### Occupational Therapy

Faculty: Knis-Matthews, Richard, Stern (Chairperson)

## Health Professions

Kean University offers an array of professional programs in nursing and health care careers. Students with an interest in any of these programs should consult the appropriate program coordinator or the College advisor.

### PROFESSIONAL NURSING

The Baccalaureate of Science in Nursing (BSN) degree is offered to applicants who have completed lower division nursing education and hold a valid license to practice as a registered nurse (RN). The 125 credit, upper division program is accredited by the National League for Nursing Accrediting Commission (NLNAC).

### POST BACCALAUREATE SCHOOL NURSE PROGRAM (Non-Degree)

The Post Baccalaureate School Nurse Program at Kean University is approved by the NJ State Department of Education and prepares students for certification as "School Nurse/Instructional."

Registered Nurses with a baccalaureate degree in any major and minimum GPA of 2.75 may apply. To apply go to [www.kean.edu](http://www.kean.edu), please select "Apply online," then choose the application for "Post Baccalaureate Teacher Certification." Print a copy of the application, then carefully read and follow the directions for completion and submission.

### PREPROFESSIONAL MEDICAL PROGRAMS

#### Premedical and Predental

Although admissions requirements are not uniform among schools of medicine and dentistry, the following two programs include the courses required for entrance by most medical and dental schools: Department of Biological Sciences - B.S. or B.A. in Biology; Department of Chemistry-Physics - B.A. in Chemistry (Preprofessional). Other major programs may be selected if electives are chosen to fulfill the requirements of the medical or dental school(s) to which the student plans to apply.

Entering or transfer students interested in medical or dental school should consult a member of the Pre-Medical Advisory Committee for advisement. Names of committee members may be secured from the department offices of either Biological Sciences or Chemistry-Physics, or by viewing the Pre-Health Professions Web Page at <http://www.kean.edu/~biology/PREHEALTH>.

#### Other Preprofessional Medical Programs

Students with an interest in veterinary medicine, optometry, pharmacy, or other preprofessional medical programs should consult a member of the Pre-Medical Advisory Committee.

### Podiatric Medicine

Under an articulation agreement between Kean University and the New York College of Podiatric Medicine, students interested in pursuing a career in podiatric medicine can apply to the New York College of Podiatric Medicine in their junior year. Students admitted to the program can complete two degrees (B.A. in Biology from Kean University and Doctor of Podiatric Medicine [DPM] from the New York College of Podiatric Medicine) in only seven years rather than the more typical eight.

### HEALTH INFORMATION MANAGEMENT AND MEDICAL TECHNOLOGY

Baccalaureate programs are offered in medical technology (with options in cytotechnology and histotechnology) and health information management.

Both of these programs mentioned above can accommodate entering freshmen and transfer students from two or four-year institutions. The first two (preprofessional) years include general education requirements and basic courses in the sciences, mathematics and social sciences. The final two (professional) years include a sequence of courses and related clinical experiences in the professional area and advanced coursework in supporting disciplines. The curriculum of each program has been designed to enable the graduate to meet the requirements for eligibility for national or state certification. Each program has been accredited by the relevant professional association.

After completing the preprofessional requirements, students must apply for admission to the professional phase of the program. The number of students admitted to each program is limited by the availability of clinical placements, and the admissions process is selective. Students are advised to plan their coursework during the preprofessional two years in such a way that alternate majors are possible should they choose not to continue or should they not be admitted to the program of their choice.

### DUAL DEGREE PROGRAMS

#### OCCUPATIONAL THERAPY

The Dual Degree Program provides an opportunity to earn both an undergraduate degree in one of thirteen majors and a master's degree in occupational therapy. Students will select from a list of undergraduate majors in other disciplines for the undergraduate degree. After three years, or when the undergraduate and prerequisite courses are completed, students may apply to the Master's program in Occupational Therapy. If accepted, the first year of the M.S. program in occupational therapy will be used to complete the undergraduate degree, and the Bachelor's degree will be

awarded in the undergraduate discipline chosen. Upon completion of the requirements of the occupational therapy program, a Master of Science in Occupational Therapy will be awarded. Both degrees are awarded by Kean University.

#### PHYSICAL THERAPY

This Dual Degree Program is a collaborative effort between Kean University and the University of Medicine and Dentistry of New Jersey (UMDNJ), combining both a Bachelor's and Doctor of Physical Therapy degrees. It consists of undergraduate studies at Kean for the Bachelor's degree and graduate studies at UMDNJ in Newark leading to a Doctor of Physical Therapy degree (DPT). The Dual Degree program is available to students who do not already have a Bachelor's degree.

Kean University offers nine majors from which to choose for the Bachelor's degree. In the fall semester of the Junior year, students apply for admission to the graduate program in Physical Therapy. If accepted into the program (and upon completion of the undergraduate coursework), courses taken during the first year of the DPT will be used to complete the senior year of the undergraduate degree. After completing the first year of the DPT, Kean University will award the Bachelor's degree in the undergraduate discipline chosen. Students will continue the two additional years at UMDNJ to complete the requirements for the DPT degree, to be awarded by UMDNJ.

#### PHYSICIAN ASSISTANT PROGRAM

An articulation agreement between Kean University and UMDNJ for a BA Biology from Kean, MS in Physician Assistant from UMDNJ, has just been approved. For further details, contact the Department of Biology, 90-737-3650.

### JOINT ACCELERATED UNDERGRADUATE/GRADUATE DEGREE PROGRAMS

#### HEALTH INFORMATION MANAGEMENT AND MANAGEMENT INFORMATION SYSTEMS

#### HEALTH INFORMATION MANAGEMENT AND COMMUNICATION STUDIES

Joint programs are offered which enable students to complete a Bachelor's degree in Health Information Management with a Master's degree in either Management Information Systems or Communication Studies. Elective courses at the undergraduate level may be substituted by prerequisite requirements for the graduate degree. If accepted, graduate coursework may begin in the Senior year.

# Medical Technology

Coordinator: Dr. Frank H. Osborne  
C132, (908) 737-3655

Students who successfully complete this program are eligible for national certification in medical technology. The program is affiliated with the Cooper Hospital/University Medical Center, Jersey Shore Medical Center, Morristown Memorial Hospital, and The Valley Hospital. The medical technologist is a professional member of the health care team who participates in diagnosis of disease through the use of sophisticated instruments and techniques and trains other laboratory workers. Medical technologists are needed to fill positions in hospitals, clinics and research laboratories.

## B.S. DEGREE MEDICAL TECHNOLOGY

### OPTION: GENERAL

#### GENERAL EDUCATION 52-53

#### FOUNDATIONS REQUIREMENTS 13

GE 1000	Transition to Kean	1
ENG 1030	College Composition	3
MATH 1000	College Algebra	3
COMM 1402	Speech Communication as Critical Citizenship	3
GE 2021	Research and Technology	3

#### DISCIPLINARY AND INTERDISCIPLINARY REQUIREMENTS 39-40

<i>Humanities</i>	9
*ENG 2403	World Literature 3
Select two courses from different areas:	
Fine Arts or Art History	3
Philosophy or Religion	3
Foreign Languages	3
Music or Theatre	3
Interdisciplinary	3
<i>Social and Behavioral Sciences</i>	
*HIST 1000	Hist of Civil Soc in America 3
PSY 1000	General Psychology 3
SOC 1000	Intro to Sociology 3

<i>Science &amp; Mathematics</i>	
*MATH 1054	Precalculus 3
CHEM 1083	Chemistry I 4
CHEM 1084	Chemistry II 4

<i>Health and Physical Education</i>	
ID 1225	Issues Contemp. Health 2-3

<b>OR</b>	
ID 1010	Leisure and Rec. in Multicultural Soc. 3

<b>OR</b>	
Physical Education	2

#### CONCENTRATION 8

PHYS 2091	General Physics I	4
PHYS 2092	General Physics II	4

#### CAPSTONE\*\* 0

\*\*3 credits of ID 4877-4878 will fulfill the capstone requirement

\*Required Distribution Course

#### MAJOR REQUIREMENTS 62

BIO 2200	Cell Biology	4
BIO 2400	Genes, Populations, Organisms	4
CHEM 2180	Principles of Organic Chemistry	4
CHEM 2283	Quantitative Analysis	4
BIO 3305	Principles of Microbiology	4
BIO 3403-3404	Anatomy and Physiology I and II	8

#### OR

BIO 3433-3434	Anatomy and Physiology I and II (Honors)	8
BIO 4105	Essentials of Biochemistry	4
ID 4877-4878	Medical Technology Clinical Preceptorship I and II	30

#### FREE ELECTIVES 9-10

(50% of electives must be taken at the 3000-4000 level.)

#### TOTAL 124

## B.S. DEGREE MEDICAL TECHNOLOGY

### OPTION: CYTOTECHNOLOGY

The option in cytotechnology leads to both a Bachelor of Science degree and eligibility for national certification in cytotechnology. Cytotechnologists scan slides of cells from body surfaces and body fluids to detect abnormalities; e.g. cancer, and to report their findings to physicians.

Students attend a cytotechnology educational program for clinical training. The hospital selects the students for clinical preceptorship.

#### GENERAL EDUCATION 52-53

#### FOUNDATIONS REQUIREMENTS 13

GE 1000	Transition to Kean	1
ENG 1030	College Composition	3
MATH 1000	College Algebra	3
COMM 1402	Speech Communication as Critical Citizenship	3
GE 2021	Research and Technology	3

#### DISCIPLINARY AND INTERDISCIPLINARY REQUIREMENTS 39-40

<i>Humanities</i>	9
*ENG 2403	World Literature 3

Select two courses from different areas:

Fine Arts or Art History	3
Philosophy or Religion	3
Foreign Languages	3
Music or Theatre	3
Interdisciplinary	3

*Social and Behavioral Sciences*

*HIST 1000	Hist of Civil Soc in America	3
PSY 1000	General Psychology	3
SOC 1000	Intro to Sociology	3

*Science & Mathematics* 11

*MATH 1054	Precalculus	3
CHEM 1083	Chemistry I	4
CHEM 1084	Chemistry II	4

*Health and Physical Education* 2-3

ID 1225	Issues Contemp. Health	3
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#### OR

ID 1010	Leisure and Rec. in Multicultural Soc.	3
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#### OR

Physical Education	2
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#### CONCENTRATION 8

PHYS 2091	General Physics I	4
PHYS 2092	General Physics II	4

#### CAPSTONE\*\* 0

\*3 credits of ID 4879-4880 will fulfill the capstone requirement

\*\*Required Distribution Course

#### MAJOR REQUIREMENTS 65

BIO 2200	Cell Biology	4
BIO 2400	Genes, Populations, Organisms	4
CHEM 2180	Principles of Organic Chemistry	4
BIO 3260	Histology	4
BIO 3305	Principles of Microbiology	4
BIO 3403-3404	Anatomy and Physiology I and II	8

#### OR

BIO 3433-3434	Anatomy and Physiology I and II (Honors)	8
BIO 3704	Principles of Genetics	3
BIO 4105	Essentials of Biochemistry	4
ID 4879-4880	Cytotechnology Clinical Preceptorship I and II	30

#### FREE ELECTIVES 6-7

(50% of free electives must be taken at the 3000-4000 level.)

#### TOTAL 124

## B.S. DEGREE MEDICAL TECHNOLOGY

### OPTION: HISTOTECHNOLOGY

The option in histotechnology leads to both a Bachelor of Science degree and eligibility for national certification in histotechnology. Histotechnologists are trained to process body tissue sections and prepare them for examination by a pathologist. Students attend a histotechnology educational program for clinical education. The hospital selects the students for clinical preceptorship.

### GENERAL EDUCATION 52-53

### FOUNDATIONS REQUIREMENTS 13

GE 1000	Transition to Kean	1
ENG 1030	College Composition	3
MATH 1000	College Algebra	3
COMM 1402	Speech Communication as Critical Citizenship	3
GE 2021	Research and Technology	3

### DISCIPLINARY AND INTERDISCIPLINARY REQUIREMENTS 39-40

<i>Humanities</i>		9
*ENG 2403	World Literature	3
Select two courses from different areas:		
Fine Arts or Art History		3
Philosophy or Religion		3
Foreign Languages		3
Music or Theatre		3
Interdisciplinary		3
<i>Social and Behavioral Sciences</i>		9
*HIST 1000	Hist of Civil Soc in America	3
PSY 1000	General Psychology	3
SOC 1000	Social Life and Sociology	3
<i>Science &amp; Mathematics</i>		11
*MATH 1054	Precalculus	3
CHEM 1083	Chemistry I	4
CHEM 1084	Chemistry II	4

*Health and Physical Education* 2-3

ID 1225 Issues Contemp. Health

OR

ID 1010 Leisure and Rec. in Multicultural Soc. 3

OR

Physical Education 2

### CONCENTRATION 8

PHYS 2091 General Physics I 4

PHYS 2092 General Physics II 4

### CAPSTONE\*\* 0

\*3 credits of ID 4881-4882 will fulfill the capstone requirement

\*\*Required Distribution Course

### MAJOR REQUIREMENTS 66

BIO 2200 Cell Biology 4

BIO 2400 Genes, Populations, Organisms 4

CHEM 2180 Principles of Organic Chemistry 4

BIO 3260 Histology 4

BIO 3305 Principles of Microbiology 4

BIO 3403-3404 Anatomy and Physiology I and II

OR

BIO 3433-3434 Anatomy and Physiology I and II (Honors) 8

BIO 3815 Microtechniques 4

BIO 4105 Essentials of Biochemistry 4

ID 4881-4882 Histotechnology Clinical Preceptorship I and II 30

### FREE ELECTIVES 5-6

(50% of free electives must be taken at the 3000-4000 level.)

### TOTAL 124

## MEDICAL TECHNOLOGY CLINICAL PRECEPTORSHIPS

### ID 4877-4878 Medical Technology Clinical Preceptorship I and II (15,15)

Course offered at an affiliated medical technology program. Clinical preceptorship in medical technology for a period of one year. Instruction and clinical practice in clinical biochemistry, medical microbiology, clinical microscopy, hematology, immunohematology, immunoserology, management, records, instrumentation, radioisotopes, ethics and others.

*Prerequisites: Declared major in medical technology, acceptance by an affiliated MT program and consultation with the MT coordinator.*

### ID 4879-4880 Cytotechnology Clinical Preceptorship I and II (15, 15)

Course offered at an approved cytotechnology program. Clinical preceptorship in cytotechnology for a period of one year. Instruction and clinical practice in exfoliative cytology. Instruction and clinical practice in the microscopic study of normal and abnormal cells from body secretions and fluids, preparation and staining of cell smears, cytology of body organs, interpretation of stained cell smears for detection of malignant cells.

*Prerequisites: Declared major in medical technology: cytotechnology option; acceptance by an approved cytotechnology program; and consultation with the MT coordinator.*

### ID 4881-4882 Histotechnology Clinical Preceptorship I and II (15, 15)

Course offered at an approved histotechnology program. Clinical preceptorship in histotechnology for a period of one year. Instruction and clinical practice in the processing of body tissue sections by fixation, dehydration, embedding, sectioning, mounting and staining. Other special topics studied. *Prerequisites: Declared major in medical technology: histotechnology option; acceptance by an approved histotechnology program; and consultation with the MT coordinator.*