

# Undergraduate Options

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# Undergraduate Options

## Additional Majors/Dual Degrees

Students interested in pursuing more than one area of study are encouraged to consider an additional major or dual degree. Students who complete an additional major will earn a single degree in two areas. Generally, it is possible to fulfill the requirements of both majors in four years by taking the course requirements of the second major in the elective spaces allowed by the first major. Students in Carnegie Institute of Technology may elect to double major in Engineering and Public Policy or Biomedical and Health Engineering, which are offered only as an additional major. Human Computer Interaction is also offered only as an additional major.

Dual Degree programs allow students to earn two degrees. Students who are interested in an additional major or dual degree are encouraged to review the specific possibilities with the relevant academic advisor.

## Five-Year Bachelor's/Master's Programs

Qualified undergraduates may apply to one of several programs to earn their bachelor's and master's degrees in five years. For further details about these programs, please refer to the appropriate college or departmental section(s).

### Carnegie Institute of Technology

The five-year Integrated Master's/Bachelor's programs offered by the Departments of Electrical and Computer Engineering and Civil and Environmental Engineering offers students superior technical preparation for careers in industry. The Departments of Chemical Engineering and Mechanical Engineering also offer fifth year/ Accelerated Masters programs. The Department of Materials Science and Engineering offers a cooperative Industrial Internship Option in which students alternate coursework with practical experience in industry. Admission is highly competitive and leads to a Master of Science degree.

### College of Humanities and Social Sciences

The Department of Philosophy offers a bachelor's/master's degree option: the Bachelor's/Master's degree in Logic and Computation. The M.A. in Teaching English to Speakers of Other Languages (TOESL) is a fifth year master's option for Modern Language students who are concentrating in English as a Second Language. Also, the department of English offers an accelerated program for undergraduates to obtain a Master of Arts in Professional Writing.

### H. John Heinz III School of Public Policy and Management

The Heinz School's Accelerated Masters program allows qualified undergraduate students to earn a prestigious Master of Science degree in Public Policy and Management. For students in the College of Fine Arts or the Bachelor of Humanities and Arts degree program who are interested in careers in arts management, the program leads to a Master of Arts Management degree.

### Mellon College of Science

The Honors Programs in the Departments of Chemistry and Mathematics are demanding, accelerated programs that give highly qualified students the opportunity to earn their bachelor's and master's degrees in just four years. Admission is by invitation only.

### Tepper School of Business 3-2 Program

Students who are interested in business management may wish to consider the Tepper School of Business 3-2 program. Qualified undergraduate students may earn their master's degree in Industrial Administration in addition to their bachelor's degree. For students interested in earning a Master of Science in Quantitative Economics degree, TSB offers an accelerated B.S./M.S. program in Economics.

## Health Professions Program

Director: Amy L. Burkert, Ph.D.

Office: Doherty Hall 1319

The Health Professions Program (HPP) at Carnegie Mellon University is an advising and resource center for all university students and alumni who are interested in one or more aspects of the health professions. This program complements a student's curricular advising and is meant to help students explore their interests, prepare for graduate programs in the health professions, and facilitate their application process. Students can enroll in the program at any time during their academic career, but the importance of early planning is communicated to interested first-year students. Once enrolled, students meet regularly with the director to discuss course requirements, medical exposure opportunities, and other aspects of preparing to be a competitive candidate.

Students in the HPP span all colleges of the university and have many diverse career interests including medicine, dentistry, optometry, biomedical research, medical physics, rehabilitation engineering, medical informatics, and health policy. Although the majority pursue a primary major in the Mellon College of Science, other highly represented disciplines include engineering and the social sciences.

Regardless of a student's major, the basic course requirements outlined below must be completed prior to medical school matriculation, and most should be taken before the student takes the Medical College Admissions Test (MCAT) that is normally taken in spring of the junior year:

1. One year of general biology with lab.

This is typically fulfilled by the following Carnegie Mellon courses:

03-121	Modern Biology
03-230	Introduction to Mammalian Physiology
03-124	Modern Biology Lab
or	
03-343	Experimental Genetics and Molecular Biology

2. One year of general chemistry with lab.

This is typically fulfilled by the following Carnegie Mellon courses:

09-105	Introduction to Modern Chemistry
09-106	Modern Chemistry II
09-221	Lab I: Introduction to Chemical Analysis

3. One year of organic chemistry with lab.

This is typically fulfilled by the following Carnegie Mellon courses:

09-217	Organic Chemistry I
09-218	Organic Chemistry II
09-222	Lab II: Organic Synthesis and Analysis

4. One year of physics with lab.

This is typically fulfilled by the following Carnegie Mellon courses:

33-106/111	Physics I (for science or engineering students)
33-106/112	Physics II (for science or engineering students)
33-100	Basic Experimental Physics

5. One year of English.

This is typically fulfilled by the following Carnegie Mellon courses:

76-101	Interpretation and Argument
76-xxx	English course of the student's choice, typically 200-level or higher

In addition to these general course requirements, recommended coursework includes calculus, biochemistry, statistics, behavioral sciences, ethics, and languages. Interdisciplinary studies are also strongly encouraged, and many students design an undergraduate curriculum that incorporates majors and/or minors in both the natural and social sciences. One interesting interdisciplinary minor offered is the Minor in Health Care Policy and Management, which broadens awareness of the health care field from social, economic, historical, and policy perspectives. See page 287 for the details of this minor.

Undergraduate research is a hallmark of the educational experience at Carnegie Mellon in many disciplines. Whether in the psychology lab studying the impact of breast cancer diagnosis on family social dynamics, in the NMR lab imaging metabolic function in the heart or brain, or in the surgery suite testing robotic devices, our students have made significant achievements in research, well beyond the more traditional guided experiments.

Our university policy is to train students to be first class scientists, engineers, artists, writers, managers, or whatever their passion may be. We do not train students to be “pre-meds,” but if they choose to use their talents in a health profession, we offer many services to help them obtain their life goals. Regular advising, application workshops, health issue seminars and symposia, community outreach activities, and preceptorship/ internship experiences are all part of our programming. The student pre-health organizations on campus, the Doctors of Carnegie (DOCs) and the Minority Association of Premedical Students (MAPS), together with the Health Professions Program, provide students with many opportunities to learn, explore, and prepare for their chosen area of professional interest.

The Health Professions Program has been successful in helping students to define, prepare for, and obtain their professional goals. Our students are regularly accepted at top-level medical and graduate programs, and our alumni continue to serve as outstanding ambassadors of Carnegie Mellon and the training and experience they received here.

## Minors

The following minors offer a secondary focus to the student's major area of study. Unless otherwise indicated, minors are generally open to all university students.

### Intercollege:

- Health Care Policy and Management (sponsored by the College of Humanities and Social Sciences, the H. John Heinz III School of Public Policy and Management, and Mellon College of Science)

### Carnegie Institute of Technology:

Biomedical Engineering  
Engineering Studies  
Robotics Technology and Policy

### Designated Minors (open only to CIT students):

Automation and Control  
Biomedical Engineering  
Colloids, Polymers and Surfaces Technology  
Data Storage Systems Technology  
Electronic Materials  
Engineering Design  
Environmental Engineering  
Manufacturing Engineering  
Materials Science and Engineering  
Mechanical Behavior of Materials  
Robotics

### The College of Fine Arts:

Accompanying (open only to students majoring in Music)  
Architecture  
Architectural History (available also to B.Arch. candidates)  
Architectural Representation and Visualization  
Architectural Technology  
Art  
Building Science (open only to B. Arch. candidates)  
Communication Design  
Conducting (open only to students majoring in Music)  
Drama  
History of the Arts  
Industrial Design  
Jazz Performance  
Jazz Performance (for students majoring in Music)  
Music

### Music Education (for students majoring in Music)

Music Performance  
Music Technology  
Music Theory  
Photography, Film and Digital Imaging

### The College of Humanities and Social Sciences:

African and African American Studies  
Chinese  
Decision Science  
English  
Environmental Policy  
Ethics  
European Studies  
Film and Media Studies  
French and Francophone Studies  
Gender Studies  
German  
Global Politics  
Hispanic Studies  
History  
Japanese  
Linguistics  
Logic and Computation  
Minority Studies  
Multimedia Production  
Philosophy  
Policy and Management  
Psychology  
Religious Studies  
Russian Studies  
Science, Technology and Society  
Second Language Acquisition  
Sociology  
Statistics  
Student Defined

### Tepper School of Business:

Business Administration Management (for Students in CFA)

### Mellon College of Science:

Biological Sciences  
Chemistry  
Discrete Mathematics and Logic  
Environmental Science  
Mathematical Science  
Physics  
Scientific Computing  
Secondary Education and Teacher Certification

### School of Computer Science:

Computer Science

## Pre-Law Advising Program

Director: Joseph Devine, Associate Dean for Undergraduate Studies, H&SS

Office: H&SS Dean's Office, Baker Hall 154

“Law School” is an objective that students frequently mention when asked about post-baccalaureate plans. It seems in its brevity to be a simple enough answer, but in reality it masks a host of complex and momentous personal decisions and strategic tasks.

First and foremost, seeking entry into law school implies an informed decision about the rigors of law school and the realities of professional life as an attorney, as well as a strong and mature commitment to achieving these objectives at significant cost and investment (financial, personal, and intellectual). Second, it implies an understanding of the prolonged sequence of steps involved in the process of selecting law schools to which to apply, actually applying, ultimately selecting a school to attend, financing a law school education, and succeeding in law school. Finally, it implies an understanding of this as one of many alternatives that should be conscientiously and intelligently considered before a choice is made that will so significantly influence the course of one's personal and professional life.

To address these needs, the University offers a Pre-Law Advising Program for students and alumni/ae who are contemplating or actively seeking to enter law school and careers in the law. The program consists of a range of support services, coordinated centrally, designed to assist these groups in engaging the complex questions associated with decisions about law school and careers

in the law, and in successfully negotiating the sequence of tasks associated with selecting, applying and gaining admission to the best law schools possible.

#### The emphases of this program are:

1. early identification of "pre-law" candidates;
2. stimulation at early stages and throughout this process to consider the essential questions of personal suitability for law school and professional life as an attorney, and also to engage meaningful substantive issues rooted in the law that illustrate the intellectual complexities of our legal system and the corresponding intellectual acumen needed to enter and thrive in this profession;
3. timely direction in designing and executing a well-planned law school research, selection and application strategy;
4. gathering and using accurate data on university alumni entering law school and the legal profession.

The program proper consists of several components, organized and made available as an ongoing service to all students in, and graduates of, the University. These components include periodic workshops and seminars, a Pre-Law Handbook, a pre-law library, and linkage through the Program Director with law school admissions offices, the Law School Admissions Services, and associations (both regional and national) of pre-law advisors. The program also works with the student Pre-law Society and Undergraduate Student Mock Trial Association.

Two "early admission" options are available to Carnegie Mellon undergraduates interested in either of Pittsburgh's two law schools: the Duquesne University School of Law, and the University of Pittsburgh School of Law. Requirements and procedures vary for each option. Interested students should meet with the University pre-law advisor before the end of their junior year.

## Study Abroad

Carnegie Mellon students from every major can study in any part of the world for a semester, year or summer. Short-term programs during spring and winter break are also possible. A well planned study abroad program will allow a student to receive credit for study abroad and graduate on time. Most students study abroad during their junior year; however, a growing number of students are studying abroad during their sophomore and senior years.

The study abroad advising staff offers general information sessions as well as individual advising appointments to assist students in all stages of the study abroad process. The Office of International Education (OIE) has a large in-house library as well as useful web links to help students find the most appropriate study abroad program. In addition, OIE offers orientations to help with personal, academic and acculturation issues, before and after a study abroad experience.

Carnegie Mellon offers students a variety of payment schemes for study abroad to allow students to study abroad regardless of financial need. There are three categories of programs: Exchange Programs, Sponsored Programs, and External Programs. A description of each program follows. More detailed information can be found at [www.cmu.edu/studyabroad](http://www.cmu.edu/studyabroad).

## Exchange Programs

Students who participate in exchange programs pay Carnegie Mellon tuition and receive their regular financial aid package. Students are responsible for room, board, travel and miscellaneous expenses.

### University Exchanges

Carnegie Mellon University has university-wide exchange programs with institutions located in Australia, Chile, Hong Kong, Israel, Japan, Mexico, Qatar, Singapore, and Switzerland.

### Departmental Exchanges

Architecture, Art, Chemical Engineering, Design, Drama, Electrical and Computer Engineering, English, Heinz School, Information Systems, Materials Science and Engineering, Modern Languages, Computer Science and Business offer departmental exchange programs. Students should contact their department or the study abroad website for additional information.

## Sponsored Programs

The university has designated a few study abroad programs administered by other organizations or universities as sponsored programs. To participate in these programs students pay a university fee equivalent to current tuition, room and board, and retain their eligibility for all financial aid. Carnegie Mellon in turn pays the program costs to the study abroad sponsor. Where applicable, funds are distributed to the student for room, board, travel, and personal expenses.

Currently Carnegie Mellon has 38 sponsored programs available around the world. A full list can be found at [www.cmu.edu/studyabroad](http://www.cmu.edu/studyabroad) or in consultation with a study abroad advisor.

## External Programs

Students may also participate in a program sponsored by another university or study abroad organization if the student's home department approves the program and its course offerings. Students will pay the other organization or institution directly. Students who receive institutional aid from Carnegie Mellon will not be eligible for this aid while they are abroad. However, students with state and federal aid will still qualify. Students can learn more about external program options during study abroad advising appointments and by exploring the study abroad website and library.

## University Student-Defined Major

Carnegie Mellon offers the opportunity for undergraduate students to pursue a University Student-Defined Major. (There are also opportunities to pursue a Student-Defined Major in some of the colleges [see relevant college section of the catalog]). For information and advice, interested students are encouraged to speak to the Associate Dean (sic) of their current home college or the college most relevant to the proposed course of study.

The requirements for successful completion of a University Student-Defined Major include a student proposal approved by an advisor, relevant college(s), and the Provost, and successful completion of the approved course of study. In brief:

- A student interested in pursuing a university student-defined major must develop a proposal which outlines an intellectually coherent area of study (with degree title) and a plan of study (courses to be taken, pedagogical rationale, proposed schedule). The proposal should include an explanation of why it is not appropriate or possible to pursue such a program through the curriculum of any one of the colleges. It should outline a program of study for both general education (for example, the core requirements of one of the most relevant colleges or equivalent general education plan) and major requirements. The proposal should designate one of the participating colleges as de facto "home college" for tracking and verification purposes.
- The student's proposal must be approved by a faculty advisor within a college who takes pedagogical responsibility for the program, by the de facto "home college" and by any other colleges involved in granting the degree. The signed proposal will be submitted to the Provost's office for a final review and approval.
- Once approved by the faculty advisor, colleges, and the Provost's office, the student's major will be administered by the advisor and his/her progress tracked by the Dean's office of the "home college." The "home college" will be responsible for monitoring the student's progress and reminding any collateral colleges of the approval of the student-defined major so that these colleges may insure the student's ability to enroll in the necessary courses. Upon successful completion of the course of study, the "home college" will be responsible for contacting all the relevant colleges and verifying the completion of the degree. Unless there are sufficient numbers of university student-defined majors in any graduation year, upon consultation with the "home college," students may choose to receive the diploma in the most relevant department's ceremony.

## University Summer Sessions

The campus is in full operation during the summer, populated by students and faculty from a variety of programs. The university continues to have outstanding, innovative educational programs extending beyond regular involvement with its degree candidates. Three sessions of summer school are held for college students who wish to make up or advance their degree program studies. Every service and support organization is available to summer students: Computing Services, the Student Health Center, the Counseling Center, the University Libraries, the Office of Admission, the Career Center, Student Activities, etc.

Session One: mid-May to early July

Session All: mid-May to mid-August

Session Two: early July to mid-August

The three summer sessions of credit course work are designed to meet the needs of currently enrolled college students (not exclusively Carnegie Mellon students) as they complement or supplement various college programs. The university offers a wide range of courses in the Carnegie Institute of Technology (CIT), College of Fine Arts (CFA), College of Humanities and Social Sciences (H&SS), the Mellon College of Science (MCS), the School of Computer Science (SCS), and the Undergraduate Business Program in the Tepper School of Business (TSB).

Undergraduates have the opportunity to earn advanced credit, remove deficiencies, and regularize their schedules pursued during the academic year; graduates may work toward master's and doctor's degrees, and professional people are encouraged to increase their knowledge and skills. There are two summer sessions, both seven weeks in duration. Special programs and graduate work may cover other periods of time.

Carnegie Mellon reserves the right to withdraw any course not justified by the number of applicants and to make changes in scheduling when necessary and advisable.

Requests for further information should be addressed to:

The HUB  
Enrollment Services  
Carnegie Mellon University  
5000 Forbes Avenue  
Pittsburgh, PA 15213-3890  
(412) 268-8186  
FAX: (412) 268-8084

# Department of Athletics & Physical Education

Susan Bassett, Director of Athletics  
Office: 204 Gymnasium

## Intercollegiate Athletics

Carnegie Mellon emphasizes excellence in its intercollegiate athletic programs as well as in its classrooms. The University strongly believes that academic and athletic excellence can successfully coexist. It also believes that intercollegiate athletics are important in student life and can become a key part of the educational experience. Professional and social endeavors after graduation also benefit from university experiences as a student-athlete.

Carnegie Mellon sports teams have competed intercollegiately since the early 1900s. In the past 15 years, the program has experienced extensive success. The Tartans have won 81 conference championships and competed in over 108 national championships since 1976. This success has been achieved while meeting all of the academic requirements of demanding programs and without athletic scholarships.

In 1986, Carnegie Mellon became a charter member of the University Athletic Association (UAA), a nine-team league of similar institutions with regard to academic and athletic programs. The UAA, a national association which geographically reaches as far north as Massachusetts, as far south as Atlanta and as far west as St. Louis and Chicago, sponsors intercollegiate competition in 24 sports including 12 for men and 12 for women. UAA members include Brandeis University, Case Western Reserve University, Carnegie Mellon University, Emory University, New York University, the University of Chicago, the University of Rochester and Washington University in St. Louis.

Carnegie Mellon, like the other seven UAA members, is a member of the National Collegiate Athletic Association (NCAA). Its intercollegiate teams compete on the Division III level, which prohibits athletic scholarships and operates under the true meaning of amateurism. Student-athletes who play at the varsity level are students first and athletes second. All students, both athletes and non-athletes, are treated equally with regard to admission and financial aid policies. Carnegie Mellon fully supports a policy of equity in resources and opportunities for women and men.

The university fields competitive teams in 17 sports. The Tartans compete in football, men's and women's soccer, men's and women's cross-country, men's and women's tennis, women's volleyball, men's and women's basketball, men's and women's swimming, men's and women's indoor and outdoor track and field, and golf.

Carnegie Mellon's intercollegiate program has consistently produced winners. The Tartans' football team has won 15 conference championships, has a string of 33 consecutive winning seasons, and has appeared in the NCAA Division III Championship playoffs six times. In 1979, Carnegie Mellon was awarded the Lambert Trophy as the best small college team in the northeast. The men's cross country won the conference championship in 2005 going on and placing 8th at nationals that same season. The team also has had a 12th and 9th place finish at nationals. The women's cross country won the 1998 conference and went on to place 4th nationally.

A freshman computer science major on the men's tennis team won the NCAA National singles title in 2000 and Carnegie Mellon's top doubles team also was selected to play in the nationals. The men's program garnered their highest team ranking ever in 2006 at 11th nationally. The women's tennis team has recently produced national ranked players in the NCAA competition and in 2005 had a sophomore claim the ITA National Small College Championship while earning the James O' Hara Sargent Sportsmanship Award. Both men's and women's swimming and track and field teams annually qualify a number of athletes for the national championships. Swimming recently has produced a national champion and the men's track and field team has won back-to-back conference championships.

To provide excellence in the athletic program, the department employs full-time coaches in all varsity sports. Intercollegiate competition begins with the first football and soccer games in early September and ends with the UAA track and field, golf and tennis championships in late April. Students with athletic skills in any of the above mentioned sports are welcome to become members of the team. Participation is open to all students. Inquiries may be directed to the appropriate coach at the:

Department of Athletics, Skibo Gymnasium, Carnegie Mellon University, Pittsburgh, PA 15213 (412) 268-8551

## Recreation

In addition to providing for its more formal programs and teams, Carnegie Mellon's athletic facilities are available for use by individual students on an extensive seven-day per week schedule. Hours for recreational use of all facilities are subject to change during varsity sports seasons.

The Skibo Gymnasium, which has facilities for basketball, volleyball, badminton, weight lifting, state of the art cardio equipment, is open Monday through Friday, as well as weekends. Located within the University Center are facilities for squash, basketball, racquetball, volleyball, badminton, a diving pool and a large swimming pool for lap swim, cardio machines like treadmills, Expresso Bike EFX, steppers, and other state of the art machines, Cybex machines, dumbbells, a sauna and a whirlpool. Gesling Stadium provides soccer, football and track facilities. Tennis courts, located between the University Center and Margaret Morrison, are lighted for night play. During the school year they are open for use by students, faculty and staff.

These facilities are available to any student, faculty or staff person with a valid Carnegie Mellon ID. For hours, please contact the Athletic Office at (412) 268-1236.

## Physical Education

The Department of Physical Education provides an elective program with an emphasis on personal fitness and lifetime recreation, thus preparing students for physical activity after the college years. Most classes are offered on a mini-course system with each class running seven weeks in length.

This program of more than 30 courses is designed for all students, from the beginner to those students who have already developed some skill. Courses include personal fitness, racquetball, tennis, golf, weight training, karate, aerobic fitness, and yoga. Instruction is also provided in several team sports. Carnegie Mellon also provides courses for American Red Cross certification in the four levels of swimming (beginners, intermediate, swimmers, and life guarding), and First Aid and Cardiopulmonary Resuscitation (CPR).

## Intramurals

For those who seek another level of competition or just like to participate and have fun, the Intramural Program provides recreation and relaxation for all students, faculty and staff, regardless of the degree of their natural athletic skills. The university prides itself on an intramural program which annually involves some 6,000 students. Men and women, both graduate and undergraduate, compete in one or more of over 40 indoor and outdoor sports, ranging from flag football and basketball to table tennis, water polo, and ultimate frisbee.

The Intramural Department is under staff direction, but four student-run organizations (the Intramural Board, the Managers' Club, the Women's Representatives and the Officials' Club) govern the events.

Through participation in this program, students are able to keep physically fit, put to good use various learned skills, and develop leadership, team play and sportsmanship. Intramural activities, like all sports endeavors, contribute to physical development, good health, and a sound state of mind, while providing keen competition and team spirit. In addition, intramurals possess an inherent flexibility that allows for a limited commitment of time in light of academic priorities. The intramural program permits students from all departments to meet and socialize on an informal basis.

The following is a listing of the intramural sports offered by season:

Fall	Spring
Flag Football	Basketball
Tennis	Table Tennis-Singles
Golf	Faculty/Grad. Volleyball
Co-Rec Volleyball	Pinochle
Cross-Country	Individual Call Pool
Water Polo	Swimming
Chess	Indoor Soccer
Soccer	Softball
Volleyball	Co-Rec Softball
Bowling	Fencing
Racquetball	Co-Rec Kickball
Team Table Tennis	Ultimate Frisbee
Darts	Track
3-Person Volleyball	Water Basketball
Foosball	Co-Rec Badminton
Team Call Pool	Team Badminton
Floor Hockey	3-on-3 Basketball
Spades	Foul Shooting
	3-Point Basketball
	Pickleball
	Euchre

## Fitness and Wellness

The university is well aware that fitness is a vital contributor to an individual's well-being and productivity. For this reason the department is committed to providing the entire campus community with the opportunity and resources to keep fit for the new century.

The Fitness and Wellness program provides educational services, programs, workshops and seminars. Programs include cardio-respiratory fitness, muscular strength, blood pressure and stress reduction. Workshops include the topics of nutrition, weight control, stress management and lower back care and prevention. The Group X program provides over 30 exercise classes per week ranging from yoga and pilates to zumba and spinning.

## Faculty

SUSAN BASSETT, Director of Athletics, Physical Education and Recreation – M.S., Indiana University; Carnegie Mellon, 2005—.

GARY ALDRICH, Associate Head Track & Field Coach/Instructor – M.S., Slippery Rock University; Carnegie Mellon, 2006—.

TERRY BODNAR, Assistant Football Coach/Instructor – M.S., Indiana University of PA; Carnegie Mellon, 1984—.

JOSH CENTOR, Assistant Director of Athletics – B.A., Brandeis University; Carnegie Mellon, 2008--.

DARIO DONATELLI, Head Men's Cross-Country & Track Coach/Instructor – B.S., Carnegie Mellon University; Carnegie Mellon, 1987—.

RICHARD ERDELYI, Assistant Football Coach and Head Golf Coach/Instructor – B.A., University of Pittsburgh; Carnegie Mellon, 1985—.

ANDREW GIRARD, Head Men's and Women's Tennis Coach/Instructor – B.S., Michigan Tech University; Carnegie Mellon, 2003—.

MIKE GRZYWINSKI, Assistant Intramural Director – B.S., Carnegie Mellon University; Carnegie Mellon, 1994—.

JUSTIN JENNINGS, Assistant Men's Basketball Coach/Instructor – MBA., Penn State Behrend; Carnegie Mellon, 2008—.

SEAN KAVANAUGH, Assistant Swimming Coach/Instructor – B.A., Ithaca College; Carnegie Mellon, 2005—.

KIM KELLY, Head Volleyball Coach/Instructor – MBA., Mt. St. Mary's University; Carnegie Mellon, 2005—.

MATTHEW KINNEY, Head Swimming and Diving Coach/Instructor – M.S., Western Illinois; Carnegie Mellon, 2007—.

RICHARD LACKNER, Head Football Coach /Instructor – B.A., Carnegie Mellon University; Carnegie Mellon, 1979—.

ARRON LUJAN, Head Men's Soccer Coach/Instructor – M.S., Virginia Commonwealth University; Carnegie Mellon, 2008—.

JASON MAKRINOS, Assistant Football Coach/Instructor – M.S., Slippery Rock University; Carnegie Mellon, 2008—.

MIKE MASTROIANNI, Director of Intramurals and Club Sports Coordinator/Assistant Athletic Director/Instructor – M.S., Slippery Rock University of Pa.; Carnegie Mellon, 1986—.

DONNA MOROSKY, Director of Fitness and Health/Instructor – Post-Graduate Education, University of Pittsburgh; Carnegie Mellon, 1975—.

SARA POMAYBO, Director of Aquatics/Assistant Swimming Coach/Instructor – M.S., Gannon University; Carnegie Mellon, 2005—.

MICHAEL PRANIAN, Assistant Men's Soccer Coach/Instructor – B.S., Virginia Polytechnic Institute & State University; Carnegie Mellon, 2008—.

CHRIS ROSE, Head Athletic Trainer/Instructor – M.S., Frostburg State University; Carnegie Mellon, 2005—.

GERRI SEIDL, Head Women's Basketball Coach/Instructor – B.S., University of Pittsburgh; Carnegie Mellon, 1984—.

PATTYE STRAGAR, Operations Manager for Fitness and Aquatics/Instructor – B.S., Northwestern University; Carnegie Mellon, 2003—.

BETSY WARREN, Assistant Women's Soccer Coach/Instructor – M.Ed., Ashland University; Carnegie Mellon, 2007—.

STEPHANIE WESTRICK, Assistant Athletic Trainer/Instructor – M.S., University of Wisconsin-Madison; Carnegie Mellon, 2008--.

SUE WILLARD, Head Women's Soccer Coach/Instructor – M.A., Washington College; Carnegie Mellon, 2005—.

TONY WINGEN, Head Men's Basketball Coach/Associate Athletic Director/Instructor – M.Ed., Springfield College; Carnegie Mellon, 1990—.

# Reserve Officers' Training Corps (ROTC)

## Department of Aerospace Studies (Air Force ROTC)

Mark T. McKenzie, Colonel, U.S. Air Force  
Office: 2917 Cathedral of Learning, University of Pittsburgh

In the four-year commissioning program, a student takes the general military course (GMC) during the freshman and sophomore years, attends a four-week summer training program, and then takes the professional officer course (POC) in the junior and senior years. In the two-year commissioning program, a student attends a five-week summer training program following his or her junior year and then enters the POC. A student is under no contractual obligation to the Air Force until entering the POC or accepting an Air Force scholarship. In addition to the academic portion of the curriculum, each student attends two hours of leadership lab each week. This lab utilizes a student organization designed for the practice of leadership and management techniques. Two to three and a half year scholarships are available on a competitive basis to qualified students. Many AFROTC scholarships cover a portion of tuition costs, incidentals and lab fees, \$600 for books, plus pay each recipient \$250-\$400 per month.

### General Military Course (GMC)

The subject matter for the freshman and sophomore years is developed from an historical perspective and focuses on the scope, structure, and history of military power with emphasis on the development of air power. The freshman courses explore the role of U.S. military forces, and the Air Force in particular, through a study of the total force structure, strategic offensive and defensive forces, general-purpose forces, and support forces. The sophomore courses include an introduction to the history of air power with emphasis on the development of concepts and doctrine governing the employment of U.S. air power.

### Professional Officer Course (POC)

The Professional Officer Course, taken during the cadet's junior and senior years, concentrates on three main themes: the concepts and practices of management, leadership, and national defense policy. During the first term of the junior year, the course concentrates on a study of the management functions: planning, organizing, coordinating, directing and controlling. Basic and advanced management techniques, as found in the military and industrial environment, are explored. The second term deals with the application of general concepts of leadership to Air Force situations. As a basic study of human behavior, human relationships, and professional ethics, the course emphasizes the similarities between the problems encountered in the military and civilian environment. The first term of the senior course concentrates on selected elements of the U.S. government and national security process engaged in producing national strategy as well as various elements of U.S. military forces, doctrine, and employment capabilities. During the second term, the course concentrates on the strategic options available to the U.S. and on the manner in which policy choices are made. The course also includes a review of the military justice system.

For details about the two programs as well as information on the courses, scholarships and flying programs, interested students are encouraged to contact the Air Force ROTC detachment, or write to the Professor of Aerospace Studies, Air Force ROTC, 2917 Cathedral of Learning, University of Pittsburgh, Pittsburgh, PA 15260.

## Department of Military Science (Army ROTC)

John N. Bender, Lieutenant Colonel, U.S. Army  
Office: Bellefield Hall, Room 409, University of Pittsburgh

The Army Reserve Officers' Training Corps (ROTC) program supporting Carnegie Mellon University is located at the University of Pittsburgh. It exists to train the future officer leadership of the United States Army and offers opportunities and challenges that can put college students on the fast track to success in life. ROTC provides a combination of academics and important hands-on training, in addition to physical and mental challenges that will help students succeed in college and beyond. Through the training in ROTC, students will develop the confidence, self-esteem, motivation and leadership skills they will need regardless of their career plans.

### The Four-Year Program

The traditional Four-Year program is divided into two parts. The Basic Course is taken in the freshman and sophomore years. There is no commitment for non-scholarship students at this level. Upon successful completion of the Basic Course, students are eligible for the Advanced Course, taken in the junior and senior years. At the beginning of the Advanced Course, students will decide whether or not they wish to become officers in the Army and enter into a formal contract. During the summer between the junior and senior years, students are required to attend the the Leader Development and Assessment Course (LDAC). Upon successful completion of a University degree and the Army ROTC program, students are commissioned into the United States Army as a Second Lieutenant.

### The Two-Year Program

If the first two years of ROTC are not taken, students can attend the Leader's Training Course (LTC) during the summer between the sophomore and junior year. This camp will qualify students to begin the Advanced Course in their junior year or in the first year of a two-year graduate program. Or, if students have served in the active duty military, attended a military academy for one year, participated in JROTC for three years or belong to a Army National Guard or Army Reserve unit, they already qualify for entrance into the Advanced Course.

### The Alternative Entry Program

The Alternative Entry Program is designed for academic junior students with no prior qualifying military training but are otherwise qualified. This option allows students to contract into the Advanced Course without receiving placement credit for the basic course. Students accepted into this program must complete the Leader's Training Course and the Leader Development and Assessment Course during the summer months.

## Curriculum

### Freshman Year

30-101	Introduction to Military Leadership	Fall
30-102	Foundations of Leadership	Spring

### Sophomore Year

30-201	Leadership Dynamics & Application	Fall
30-202	Applications in Leadership & Combat Power	Spring

### Junior Year

30-301	Basic Leader Planning & Combat Operations	Fall
30-302	Advanced Leadership Planning & Combat Operations	Spring

Leadership Development & Assessment Course  
(six-week required summer camp)

## Senior Year

30-401	Progressive Leadership Theory & Applications	Fall
30-402	Transition to the Profession of Arms	Spring

## Army ROTC Scholarships

Army ROTC offers four, three and two year full scholarships with additional annual allowances of \$900 for books and a monthly stipend. High school, undergraduate and incoming two-year graduate students are eligible to apply. For application and information call ROTC at the University of Pittsburgh at (412) 624-6254/6197.

## The Simultaneous Membership Program (SMP)

This program allows students to become members of the Army National Guard or the Army Reserves while enrolled in Army ROTC. Students in the Advanced Course who are SMP are paid for their Guard/Reserve training. The benefit of this program is that students in the Advanced Course are able to act as Army officers in their National Guard or Reserve unit, receiving valuable leadership experience.

## Summer Programs

### Leadership Development & Assessment Course

This 35-day camp is a requirement for all contracted students. Students attend the summer between their junior and senior year. Students are placed in various leadership positions throughout Camp and their skills and abilities will be tested and evaluated in preparation of a commission in the United States Army. All expenses are paid by the Army. Students are paid while attending.

### Leader's Training Course

This 35-day camp is taken as a prerequisite for entry into the Advanced Course if the Basic Course cannot be fulfilled. It is taken the summer before the junior year. All expenses are paid by the Army. Students are paid while attending.

### Army Adventure Training

ROTC students may participate in Airborne School, Air Assault School, Northern Warfare School and Mountain Warfare School the summer before the sophomore and junior year. These courses range from two to four weeks and students must arrive in top physical condition. All expenses are paid by the Army.

### Extracurricular Activities

#### Rangers

Army ROTC students are eligible to participate in the Cadet Ranger Club. The Club conducts physically and mentally challenging extracurricular training to promote fitness, teamwork, self-confidence and fellowship. Training includes physical fitness, rappelling, rope bridging, tactics, hiking, climbing, weapons training and orienteering.

#### Scabbard & Blade

National Honor Society consisting of cadets/midshipmen from Army, Air Force and Naval ROTC.

#### Rho Tau Chi

Military fraternity established for the members of the various branches of ROTC. Purpose is to draw together cadets to increase communication and feelings of goodwill between the Cadet Corps and the community. Cadets participate in a variety of community service projects.

#### Color Guard

Dedicated group of Army ROTC cadets who train and perform to present the American flag and Army colors at football and basketball games and various community events.

## Faculty

JOHN N. BENDER, Lieutenant Colonel, Professor of Military Science — M.S., Long Island University; Carnegie Mellon, 2004 —.

ANDREW R. KICK, Captain, Assistant Professor of Military Science — B.S., University of Dayton; Carnegie Mellon, 2005—.

ROY C. NICKERSON, Captain; Assistant Professor of Military Science — B.A., Western Kentucky University; Carnegie Mellon, 2004—.

## Department of Naval Science (Naval ROTC)

Gregory Billy, Captain, U.S. Navy  
Office: 4615 Forbes Avenue

The Department of Naval Science was established 16 December 1987. Its mission is to prepare young men and women mentally, morally, and physically, and to instill in them the highest qualities of duty, honor, and loyalty, in preparation for leadership positions in the naval service.

Carnegie Mellon's Naval Reserve Officers Training Corps (NROTC) is designed for young men and women who are seeking a challenging academic experience and who desire to serve their country as officers in the Navy or Marine Corps after graduation.

NROTC midshipmen lead the same campus life as other Carnegie Mellon students. They make their own arrangements for room and board, choose a preferred area of study and participate in extracurricular activities. Midshipmen wear civilian clothes to classes but wear uniforms one day of the week. NROTC students are active in all facets of university life; many are in positions of leadership in student government, on varsity and intramural sports teams, in campus clubs, and other student organizations. The NROTC program seeks students who are bright, ambitious, enthusiastic leaders whose lives are enriched by their education at Carnegie Mellon and by their involvement in NROTC.

## Four-Year Scholarship Program

The four-year scholarship program provides full tuition and university fees, \$750 for textbooks per year, uniforms, and a \$250 per month tax-free subsistence allowance to students during their freshman year. This stipend then increases to \$300 during their sophomore year, \$350 for their junior year and \$400 for their senior year. Midshipmen must complete the university-approved curriculum of their choice, including courses in calculus and calculus-based physics (Navy Option Only), and specified courses in naval science subjects. Paid summer training periods are also provided. Scholarships are awarded on the basis of a nationwide competition before the start of the freshman year. Midshipmen commissioned through the scholarship programs become officers in the Navy or Marine Corps and incur a four-year active duty obligation in a selected area of the naval service.

## Tweedale Scholarship Program

This scholarship program provides the same benefits as the four-year program, but is targeted toward currently enrolled students who have completed at least one, but not more than four semesters, and who are pursuing technical majors. This program allows a highly-qualified engineering, physics, chemistry, or mathematics student who has never applied for a NROTC scholarship in the past to be considered for this scholarship. Solid academic standing within his or her field of study is required, including a ranking within the top half of students pursuing his or her chosen course of study. If nominated by the Professor of Naval Science for this scholarship, the student will generally receive a scholarship decision within 5 working days from submission. Midshipmen commissioned through the scholarship programs become officers and incur a four-year active duty obligation in a selected area of the naval service.

## College (Non-Scholarship) Programs in NROTC

Qualified students may participate in NROTC as college program (non-scholarship) midshipmen and earn commissions in the Navy or Marine Corps Reserve upon graduation. The active duty obligation for this program is three years. Students receive all naval science textbooks and uniforms. Additionally, if awarded advanced standing during their junior and senior years, they receive a tax-free subsistence monthly allowance of \$350 and \$400 respectively. A paid summer training period is provided between the junior and senior year. College program students may compete for three- and two-year scholarships described in the following paragraph.

## College Program Three- and Two-Year Scholarships

Three-year scholarships are available on a competitive basis to those qualifying college program (non-scholarship) NROTC students who have demonstrated leadership and academic excellence during their freshman or sophomore year and are nominated for the scholarship by the Professor of Naval Science. Scholarship benefits are identical to those provided by the four-year scholarship

program. Active duty obligation is four years upon commissioning in a selected area of the naval service.

### Two-Year National Scholarship Program

Sophomores who have not participated in the NROTC program may apply for a nationally competitive two-year NROTC scholarship. The two-year scholarship program provides the same benefits as the four-year program for a period of 20 months. Students must apply for this program no later than February of their sophomore year. Students selected for this program attend the Naval Science Institute during the summer before their junior year to complete required naval science course material. A paid summer training period is provided between the junior and senior years. Commissionees incur a four-year active duty obligation upon graduation in a selected area of the naval service.

## Curriculum

The sequence of naval science courses is the same for all officer candidates for the first three semesters. Midshipmen accepted into the Marine Corps option program will have curriculum variations starting with their third year. Additionally, some candidates may be required to complete courses in American military affairs, national security policy, English, mathematics, and/or the physical sciences. Descriptions of the course requirements for each candidate classification (scholarship/college program) may be obtained from the Department of Naval Science office.

All scholarship and college program students are required to attend a weekly 1.5 hour Naval Laboratory (32-100) where professional orientation, military drill, physical fitness, and leadership are emphasized. Guest speakers from the Fleet are frequent participants in these laboratories.

Naval Science courses are open to all students. Since these are required courses for NROTC students, they will be given priority in enrollment. Remaining spaces will be filled through the normal university registration process.

### Naval Professional Academic Courses (Naval Science Courses)

#### Freshman Year

32-100	Naval Laboratory	3
32-101	Introduction to Naval Science	6
32-102	Sea Power and Maritime Affairs	6

#### Sophomore Year

32-200	Naval Laboratory	3
32-201	Leadership and Management	6
32-212*	Navigation	9

#### Junior Year

32-300	Naval Laboratory	3
32-310**	Evolution of Warfare	9
32-311*	Engineering	9
32-312*	Weapons Systems	9

#### Senior Year

32-400	Naval Laboratory	3
32-402	Leadership and Ethics	6
32-410**	Amphibious Warfare	9
32-411*	Naval Operations and Seamanship	9

\* Required of students in the Navy Option

\*\* Required of students in the Marine Option

All other courses are required of all students in the program.

## Faculty

GREGORY BILLY, Professor of Naval Science — Captain, U.S. Navy; B.S. Mechanical Engineering, United States Naval Academy; Carnegie Mellon, 2008—present.

JOSEPH GRANT, Associate Professor of Naval Science — Lieutenant Colonel, U.S. Marine Corps; B.S. Systems Engineering, Ohio State University; M.A. Management, Naval Postgraduate School; Carnegie Mellon, 2008—present.

ALEX LEARY, Assistant Professor of Naval Science — Lieutenant, U.S. Navy; B.S. Mechanical Engineering, University of Virginia; M.S. Bioengineering, University of Pittsburgh; Carnegie Mellon, 2008—present.

BRIAN PATTERSON, Assistant Professor of Naval Science — Lieutenant, U.S. Navy; B.S. Marine Systems Engineering, United States Merchant Marine Academy; Carnegie Mellon, 2007—present.

JOSEPH THOMPSON, Assistant Professor of Naval Science — Lieutenant, U.S. Navy; B.S. Ocean Engineering, United States Naval Academy; Carnegie Mellon, 2006—present.