

# top fields of study



**UNDERGRADUATE:** ONE OF THE MOST ATTRACTIVE FEATURES OF A BACHELOR'S DEGREE PROGRAM IN THE UNITED STATES IS THAT IT IS HIGHLY FLEXIBLE. MANY UNDERGRADUATES ARE "UNDECIDED" FOR THEIR MAJOR AND CHOOSE TO **EXPLORE** A WIDE VARIETY OF COURSES OR CREATE THEIR OWN UNIQUE PROGRAM OF STUDY.

**GRADUATE:** OVER 1,200 UNIVERSITIES OFFER DEGREE PROGRAMS TO 2.5 MILLION GRADUATE AND PROFESSIONAL STUDENTS IN DIFFERENT TYPES OF INSTITUTIONS, ACADEMIC AND SOCIAL ENVIRONMENTS. EDUCATIONUSA CAN HELP YOU "FIND THE RIGHT FIT".

- STEP 1**  
DEFINE YOUR EDUCATION AND CAREER GOALS
- STEP 2**  
TALK TO AN EDUCATIONUSA ADVISER
- STEP 3**  
DEVELOP A SHORTLIST OF 10–20 INSTITUTIONS
- STEP 4**  
DECIDE WHERE TO APPLY

## WHAT FIELDS OF STUDY AND CAMPUS FEATURES ARE IMPORTANT TO YOU?

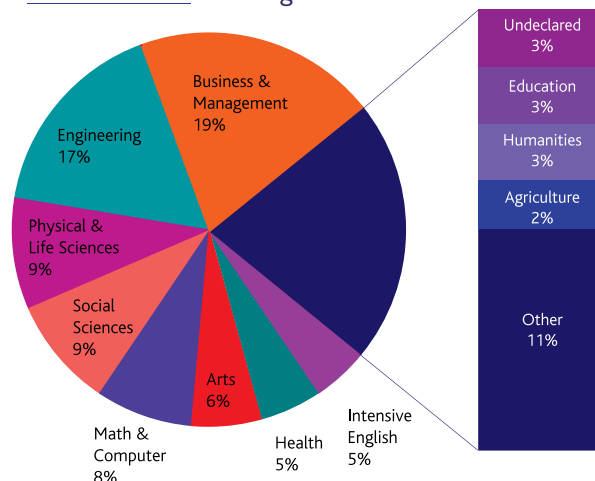
LEARN ABOUT THE MANY HIGH QUALITY DEGREE PROGRAMS IN THE UNITED STATES.

**Liberal arts** is a shortened form of the term "liberal arts and sciences," and the liberal arts philosophy is a unique feature of the U.S. higher education system. U.S. undergraduate education is based on this concept, which believes in providing a well-rounded academic education that develops the student's verbal, written, and reasoning skills. Undergraduates are encouraged to explore several fields of interest and many start their studies with "undecided" majors.

- Liberal arts and sciences – Undergraduate
- Political Science & International Relations
- Factsheet: Computer Science – Graduate
- Factsheet: Public Administration – Study the implementation, determination, and output of policy
- Factsheets: Electrical Engineering and Mechanical Engineering – Graduate
- **Studying Engineering in the USA** – An excellent guide for international students
- Explore 38 fields of study: **College Board Major and Career Profiles** – Undergraduate

*"The engineering programs here are very hands on and focus on getting you accustomed to real world problems. The courses concentrate on explaining concepts rather than making you memorize material. Additionally, they mandate engineering students take liberal studies courses to provide them with a well-rounded education. Many engineering programs have interdisciplinary components as well."*  
– **SUJITH VIDANAPATHIRANA**, Sri Lanka, Computer Science (Engineering Department), Cornell University

**36% of international students in the U.S. are studying in the fields of Business & Management and Engineering, the top 2 fields of study.**



(IIE Open Doors, 2008)



## NEW

### F VISA NOW PERMITS UP TO 29 MONTHS OF OPTIONAL PRACTICAL TRAINING IN THE UNITED STATES

Optional Practical Training (OPT) is an outstanding professional and academic benefit of completing a full degree program in the United States. OPT allows up to 12 months of practical training to foreign students enrolled and participating full-time in a U.S. college or university on an F visa, the most common visa type for academic studies.

After being enrolled one full academic year, a student may be authorized to participate in pre-completion OPT on a part-time basis while school is in session, or full-time when school is not in session or upon completion of studies. A Designated School Official (DSO) at the United States college or university where you are enrolled must approve OPT before you can receive your Employment Authorization Document.

**Students of science, technology, engineering, or mathematics (STEM)** may apply for an additional 17 months of OPT for a total of 29 months. That is more than two years! STEM fields are:

- Computer Science
- Chemical Engineering
- Engineering
- Engineering Technologies
- Biological and Medical Sciences
- Mathematics and Statistics
- Military Technologies
- Physical Sciences
- Science Technologies
- Health Professions and Related Clinical Sciences
- Actuarial Science

Consider the lifelong benefits of completing a Master's or other full degree program in the United States. The international student office at your U.S. university or college can assist you with practical training opportunities in your **field of study**.

#### TIP:

**Be wary of using rankings as the sole criterion for selecting an institution.**

## FIELD OF STUDY FOCUS

### POLITICAL SCIENCE & INTERNATIONAL RELATIONS

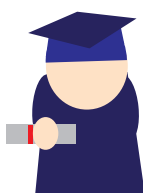
PROSPECTIVE STUDENTS FACE A WIDE VARIETY OF CHOICES FOR STUDY, AND WILL NEED TO DECIDE WHICH DEGREE PROGRAM, DEPARTMENT AND UNIVERSITY WILL BEST FIT THEIR CAREER GOALS.

Aristotle wrote that politics is the "master science". Put another way, politics is one of the most interdisciplinary fields including anthropology, economics, history, law, philosophy, psychology, and sociology. As such, prospective students face a wide variety of choices for study, and will need to decide which degree program, department, and university best fit their career goals (indeed, one of the first challenges is sorting out all the various programs that fall under the heading "international"). Ask your educational adviser for the Petersen's Guide to Graduate Programs in the Humanities, Arts, & Social Sciences and Getting What You Came For (a general guide to graduate education written by Robert Peters). What follows is some specific advice for political science/international affairs students.

### SELECTING THE RIGHT DEGREE

When deciding what degree to pursue, students must consider their career goals. Do students want to work at a university or at a research institute/think tank? Do they want to work as a diplomat or as a civil servant? Would they prefer to work for a political party or for the private sector? The answers to these questions will guide students toward the right program. Some may find themselves in a political science department or at a school of international affairs. Others may find themselves studying public policy or something else entirely (an increasing number of business schools offer specializations in international business or the international MBA).

- [Find an undergraduate program](#) in Political Science & International Relations
- Graduate students see: [A Global Ranking of Political Science Programs](#).



## POLITICAL SCIENCE MASTER'S AND PH.D. PROGRAMS

If prospective students want to pursue a career in research and teaching, they should investigate Ph.D. programs in political science departments which emphasize theory and research methods. The website of the American Political Science Association at [www.apsanet.org](http://www.apsanet.org) provides a great introduction to the academic side of political science. Another resource to consider is an article by Simon Hix from the Department of Government at the London School of Economics entitled "[A Global Ranking of Political Science Programs](#)", though students should be wary of using rankings as their sole criterion.

In the United States, political science departments are typically divided into four subfields: political theory (sometimes called political philosophy), American politics, comparative politics, and international relations. Some departments offer additional subfields, like political economy or methodology. Students are usually expected to specialize in one of these subfields and minor in another. Their course of study will depend on their specialization. Additionally, opportunities for dual degrees are widespread, and a good number of universities do not require that students have an MA before beginning doctoral studies.

Master's graduates often go into government service, serve as analysts in the private sector or work as foreign affairs specialists. Doctoral students are trained to conduct research (and, increasingly, to be effective professors in the classroom). On average, it takes more than 6 years for doctoral students in political science to complete their Ph.D. Students who want to pursue a Ph.D. should be highly dedicated to political science. It is very important that prospective doctoral students seek out potential faculty members whose research interests match their own before they apply. Some schools are stronger in particular subfields of political science than others and students will need to do a lot of research about departments.

Prospective students face a wide variety of choices for graduate study, and will need to decide which degree program, department and university will best fit their career goals.



## PROFESSIONAL MA AT A SCHOOL OF INTERNATIONAL AFFAIRS /PUBLIC POLICY

For specialized professional training – as opposed to academic study – students are advised to look at schools of international affairs or public policy/administration. These interdisciplinary programs train professionals for careers in international politics or national/local government. Schools of international affairs prepare students for careers in diplomacy and related areas of foreign affairs, although many graduates also pursue work in the private and non-profit sectors. The curricula of these schools focus on international relations theory and practice, international trade/economics, diplomacy, security studies, political economy, and foreign languages. For detailed information, visit the Association of Professional Schools of International Affairs at [www.apsia.org](http://www.apsia.org). APSIA organizes several education forums for international students in cities throughout the world (typically in Europe or Latin America). Schools of public policy and public administration train students for careers in the government and non-profit sectors. Good starting points for this career path include the websites of the [Association for Public Policy Analysis and Management](#) and the [National Association of Schools of Public Affairs and Administration](#).



## AREA STUDIES

Students seeking deep knowledge (politics, economics, and culture) of a particular region of the world might also wish to consider "area studies" programs. Common specializations include Europe, eastern Europe/former Soviet Union, Latin America, Middle East, Asia, and so on. Graduates of area studies programs usually find careers in government, the private sector, or the nonprofit sector.

## PREPARATION FOR ADMISSION

Students who have a bachelor's degree in political science, economics, area studies, history, or foreign languages would be well prepared to begin graduate study in any of the fields above. All applicants should present a strong undergraduate academic background, excellent admission exam test scores (GRE, TOEFL), insightful letters of recommendation, and a clear statement of purpose that outlines the applicants' motivations, interests, and goals. Admissions committees will also value relevant internship or volunteer work; travel, study, or work experience at an international organization; or undergraduate research on an international theme.

By *BRAM CAPLAN*,  
*American Councils for International  
Education: ACTR/ACELS*

## PUBLIC ADMINISTRATION

**GENERAL DESCRIPTION:** The study and implementation, determination, and output of policy. Master of Public Administration (MPA) degrees prepare students for positions in government, NGOs, international organizations, public affairs divisions and agencies dealing with critical public policy issues. MPA candidates gain critical expertise in quantitative, analytical, and managerial skills and apply them to the public sector.

### COMMON SPECIALIZATIONS

#### Economic Development

The development of economic wealth of countries or regions for the well being of their inhabitants. Public policy generally aims at continuous and sustained economic growth and expansion of national economies in hopes that developing countries becoming developed countries.

#### Environmental Policy & Management

The study of laws, regulation, and other policy concerning environmental issues and sustainability. Issues include air and water pollution, natural resource protection as well as energy and toxic regulation.

#### Health Policy & Social Welfare

A systematic evaluation of alternative means of achieving social goals. A focus on the guidelines for the changing, maintenance or creation of living conditions that can be conducive to human welfare.

#### International Development

Multidisciplinary study that aims to acquire a broader understanding of economic, political, and social changes in the developing world with the goal of alleviating poverty and inequality.

#### Public Finance

Relates to economics with a focus on budgeting the revenues & expenditures of a public sector entity.

#### Public Policy Analysis

Policy analysis is an organized structured thinking about policy problems. It can be methodologically diverse using both qualitative methods and quantitative methods, including case studies, survey research, statistical analysis, and model building.



## Public & Nonprofit Management

Public and Nonprofit Management explores the role of government and nonprofit organizations in developing, implementing, and evaluating policy.

## Criminal Justice Policy & Management

An interdisciplinary study where students are introduced to the academic disciplines that are needed to understand crime and the administration of criminal justice.

## Urban Planning & Management

Multidisciplinary study that looks at how neighborhoods, cities, and regions develop. Planners hope to use their skills to respond to changing social, economic, environmental, and cultural conditions.

*Source:* This information is based on internal materials produced by the Institute of International Education and resources readily accessible on the internet (EducationUSA Connections, January, 2009).

## ELECTRICAL ENGINEERING – GRADUATE

**GENERAL DESCRIPTION:** Electrical Engineering is the practical application of the theory of electricity. This is the branch of engineering science that studies the uses of electricity and the equipment for power generation and distribution and the control of machines and communication.

### SPECIAL NOTES ON APPLYING:

- **Send detailed letters of recommendation from faculty/employers who can attest to your qualifications.**
- **Include a well written study objective focused on your specialization.**

### Common Degrees

**MEng** The MEng is a professional degree. This degree can usually be completed in 1 year and does not require a thesis.

**M.S.** There are usually 2 options for the Master of Science degree, thesis and non thesis. The non thesis option requires more credits to complete the degree.

**Ph.D.** Typically a 5 year program beginning with coursework followed by a dissertation composed of original research.

### COMMON SPECIALIZATIONS

#### Bioengineering

Bioengineering is concerned with the application of engineering principles to the study of biological processes.

#### Computer Engineering

The field of computer engineering is centered in digital design, computer architecture and computer applications, i.e., circuits and devices, computer systems, and engineering software.

#### Digital Signal Processing

Digital Signal Processing is the representation of signals in digital form and the transformation of such signal representations using digital computation.

#### Electric Power

Electric Power is primarily concerned with meeting the future demand of electrical energy while satisfying environmental constraints.

#### Electronic Design and Applications

This specialization includes device and integrated circuit fabrication, and circuit and system design and simulation.

#### Microelectronics/Microsystems

Microelectronics is concerned with the design, analysis, growth, and fabrication of micron/submicron feature length devices.

#### Systems and Controls

Systems and Controls is concerned with mathematical and computation techniques for modeling, estimation, and control of systems and processes

**SPECIAL TIPS for visiting student researchers:**  
It is important to identify the faculty person in the U.S. with whom you would like to work.

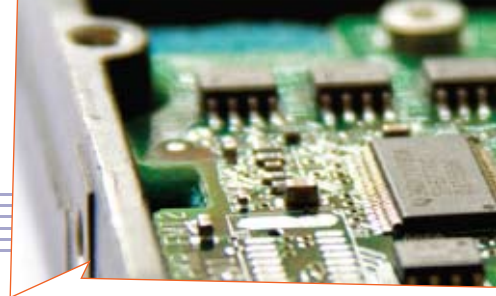
### ADMISSION REQUIREMENTS

**Admission and financial aid deadlines:** Deadlines tend to be from December 15 to January 15. Ph.D. applicants may have earlier deadlines. Check the university website for details.

**Academic background:** Students applying to the Master's or Ph.D. program must have an undergraduate or graduate degree in Engineering.

**Work and experience:** Research and/or work experience is advantageous, but not necessary.

**Tests:** As a general rule, a TOEFL iBT score of 90 is required. GRE scores in the 90th percentile are essential, especially in Math.



## MECHANICAL ENGINEERING – GRADUATE

**GENERAL DESCRIPTION:** Mechanical Engineering is the branch of engineering that deals with the design, construction and operation of machinery. Mechanical engineers use principles such as heat, force, and the conservation of mass and energy to analyze static and dynamic physical systems.

### COMMON SPECIALIZATIONS

<b>Mechatronics</b>	Mechatronics is the fusion of electrical and mechanical disciplines in modern engineering.
<b>Thermal-Fluid Sciences</b>	Thermal-Fluid Sciences includes computational fluid dynamics, experimental techniques, optical thermal sensing and laser diagnostics applied to the investigation of sprays, droplet deposition and combustion.
<b>Acoustic/Vibrations</b>	This area of research deals with the engineering of sound and vibration. Applied research may involve the development of aircrafts and automotive brakes, jet engine turbine blades, components in power drive trains, and advanced manufacturing methods.
<b>Design &amp; Manufacturing</b>	This specialization focuses on design theory, methods, and practice. Stochastic optimization techniques are used to develop design tools for product layout.
<b>Solid Mechanics</b>	Solid Mechanics addresses issues related to impact resistance and notch sensitivity of gas turbine materials, residual stresses and deformation in solid free form fabrication techniques, and the mechanics of thin bonded films and coatings.

### SPECIAL NOTES ON APPLYING:

- Send detailed letters of recommendation from faculty/employers who can attest to your qualifications.
- Include a well written study objective focused on your specialization.

### Common Degrees

**MEng** The MEng is a professional degree. This degree can usually be completed in 1 year and does not require a thesis.

**M.S.** There are usually 2 options for the Master of Science degree, thesis and non thesis. The non thesis option requires more credits to complete the degree.

**Ph.D.** Typically a 5 year program beginning with coursework followed by a dissertation composed of original research.

**SPECIAL TIPS for visiting student researchers:**  
It is important to identify the faculty person in the U.S. with whom you would like to work.

### ADMISSION REQUIREMENTS

**Admission and financial aid deadlines:** Deadlines begin as early as December 15 and will continue through February. Ph.D. applications may have earlier deadlines.

**Academic background:** An undergraduate degree in Engineering is required for admission to both M.S. and Ph.D. programs. Strong quantitative skills are essential.

**Work Experience:** Work experience is not essential but is recommended.

**Tests:** As a general rule, a TOEFL iBT score of 79–80 (minimum) is required. GRE scores in the 90th percentile and above are essential, especially in Math.

Source: This information is based on internal materials produced by IIE and resources readily accessible on the internet.

## COMPUTER SCIENCE

**GENERAL DESCRIPTION:** Computer Science is the systematic study of computing systems and computation. This field of study includes: design methodology, algorithms, and tools; methods for the testing of concepts, analysis and verification; and representation and implementation.

### COMMON SPECIALIZATIONS

#### Artificial Intelligence

AI is a complex, highly interdisciplinary branch of computer science that attempts to incorporate the principles of human intelligence and reasoning into computer systems.

#### Computer Information Systems

This specialization is closely related to management information systems and information science, and integrates the computer applications of data processing with problem solving to improve the efficiency of organizations.

#### Computer Graphics/Design

Computer graphics is the field of visual computing, where one utilizes computers both to generate visual images synthetically, and to integrate or alter visual and spatial information sampled from the real world.

#### Computer Networks

A computer network is a system for communication among two or more computers.

#### Database Systems

A database system is a computer program (or more typically, a suite of them) designed to manage a database; a large set of structured data, and run operations on the data requested by numerous users.

#### Neural Networks

The study of computer systems modeled after the biological nervous system, neural networks are designed to imitate the workings of the human brain and are used in areas such as voice and pattern recognition and speech synthesis.

#### Robotics

A branch of computer science that applies artificial intelligence and engineering concepts to create and program mechanical devices (robots) that are able to perform a variety of tasks including some previously performed by humans. Sometimes offered as a specialization in Electrical Engineering.

#### Software Engineering

The application of engineering principles and methods of design to the production of software, Software Engineering covers not only the technical aspects of building software systems, but also management issues, such as directing programming teams, scheduling and budgeting.

### SPECIAL NOTES ON APPLYING:

- Send detailed letters of recommendation from faculty/employers who can attest to your qualifications.
- Include a well written study objective focused on your specialization.
- For visiting student researchers, it is very important for the candidate to identify the faculty person in the U.S. with whom he/she would like to work.

### Common Degrees

**M.S.** There are usually 2 options for the Master's degree, thesis and non thesis. The non thesis option usually requires more credits to complete the degree.

**Ph.D.** The Ph.D. is the highest degree. It is typically a 5 year program beginning with course-work followed by a dissertation composed of original research.

### ADMISSION REQUIREMENTS

#### Admission and financial aid:

Deadlines are early for Computer Science. Applications should arrive at universities by December 15 with a few exceptions. Some schools have earlier deadlines. Check the university website for details.

#### Academic background:

Most applicants to the M.S. and Ph.D. program hold a Bachelor's or Master's degree in computer science, computer engineering, or a related area with a sufficient computer science component. Strong applicants from other areas may be considered; however, they must demonstrate outstanding ability to complete the required background on their own accord.

#### Tests:

As a general rule, a TOEFL iBT score of 90 is required. GRE scores in the 90th percentile are essential, especially in Math.

Some universities require the GRE Subject Test in Computer Science for Ph.D. applicants. The candidate should check school websites to see if it is required for their program of interest. The GRE Subject Test is offered on a limited basis outside the U.S.

EducationUSA advisers in 170 countries provide accurate, unbiased information about all accredited U.S. higher education institutions. Find your EducationUSA center at: [www.educationUSA.state.gov/centers](http://www.educationUSA.state.gov/centers). Articles from this resource were originally published in EducationUSA Connections (2007–2009).

