

## Why STEM Majors Should Vote

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*Created for faculty and students*

As of 2020, there are only 11 scientists out of 535 members serving in Congress. Scientists and engineers have been vastly underrepresented in our Congress, as well as throughout many elected offices all over the country.

Given that many of our significant challenges as a country have a scientific or technological component, the lack of scientists and engineers in government is a *serious* problem. Scientists and engineers are key problem-solvers for our country, examining many important issues such as environmental concerns, cybersecurity and election integrity.

If this country is going to have the scientific and technological expertise in government that it desperately needs, STEM majors need to vote for elected officials who promote science and technology. Below, we have listed some of the most popular STEM majors and how they are connected to our democracy.

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### Astronomy

Did you know that astronomy has historically been a political subject, both domestically and internationally? Astronomers have expertise in many areas that have a profound effect on policy, such as planetary science and solar system physics. Their links to weather and climate information are also impactful for both government and industry.

### Biology

Did you know that biology can help us understand how people feel toward political issues? In a series of experiments, [Chelsea Coe and her colleagues](#) use a machine to measure people's baseline physiological reactions to a series of pictures. They find that people can be persuaded on political issues, including gun control, immigration, and abortion, based

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on their physiology. Biology is helping us understand how people form and maintain their political opinions.

## Chemistry

Have you ever considered how the U.S. Presidential Election is similar to the transition state of a chemical reaction? Several years ago, [Steve Jones from the University College London](#) made this connection in an effort to simplify the United States electoral system. He explained that, much like the transition state, the Electoral College votes coming out of any one state are unstable and likely to tip one way or the other, ultimately determining the state's final outcome. Each vote can be thought of as just one more push in one direction or the other, with the difference coming down to the margins, particularly in swing states.

## Computer Science

Did you know that [computer scientists created touch screen voting machines](#) in the early 2000s? Computer scientists across the country have worked closely with election officials to identify the role of cryptology in voting security, design voter verification systems, relate election policies to new technologies and improve the usability and accessibility of the voting process. Computer scientists have been crucial in making our elections easier and more accessible.

## Engineering

While the Army Corps of Engineers is perhaps one of the best known groups of federal engineers, you can also find engineers working for organizations spanning the Department of Transportation to the Environmental Protection Agency to the Department of the Interior. These engineers promote and finalize plans on infrastructure in our communities.

## Earth Sciences

Have you ever heard of environmental justice? Recently there has been a push toward this concept of environmental justice, which strives to redefine the environment beyond the wilderness itself. As a result, now local, state and federal governments have shown renewed interest in the environmental well-being of suburban, urban and rural areas. Air quality guidelines, wastewater management standards and wildlife preservation are all



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subject to change depending on leadership at the Environmental Protection Agency, which is appointed by the president and approved by the Senate.

## Health Sciences

Did you know students in the health sciences are preparing for careers deeply entrenched in ethics, politics and law? Policy has a direct relationship to research and patient practice. Health science majors lobby for healthcare accessibility, vaccine awareness and promotion and international health aid.

## Information Technology

Did you know that information technology specialists play a crucial role in combating voter fraud? For years, information technologists have helped with inconsistent voting practices, including inaccurate voter identification, voter fraud, lack of accommodations for voters with disabilities, incorrect voter intent and inconvenient polling times and locations.

## Mathematics

Did you know that mathematicians are heavily involved in determining the most equitable election method? When it comes to nation-wide races, there have been recent pushes to abolish the electoral college, changing the voting system from plurality to either approval voting or instant-runoff voting. Additionally, organizations like the [Princeton Gerrymandering Project](#) use math to determine whether there needs to be state and federal reform around gerrymandering.

## Physics

Did you know that theories and formulas derived from physics turn out to be useful tools for understanding the ways democratic elections work? [A physics-based study from Alexander Siegenfeld and Yaneer Bar-Yam](#) finds that U.S. elections went through a transition in 1970, from a condition in which election results captured reasonably well the greater electorate's political preferences, to a period of increasing instability, in which very small changes in voter preferences led to significant swings toward more extreme political outcomes in both directions.

## Business

Did you know that businesses and corporations are in a tight relationship with policy, government, and law? They work with policy leaders on issues such as taxes, regulations



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for offshore corporations, worker's rights, business loans and laws surrounding investment regulations. Patagonia is leading a movement to make Election Day a holiday for their employees called "[Time to Vote Coalition](#)" and has the support of over 700 companies.

## First Responders

Did you know that a group of nurses from the Emergency Nurses Association, with members representing 47 states, flood Capitol Hill each year to speak with legislators about the importance of quality and accessibility of care? This [day of advocacy](#) falls in line with the rising belief that emergency medical providers have an obligation to become "Nurse Citizens." In other words, more and more EMS providers are beginning to see the importance of bringing the perspective of health care to the voting booth and to legislators' attention.

## Agriculture

Are you curious why agriculture has been in the political spotlight recently? Changes to global trade agreements have impacted farming sales and profits, immigration issues have drawn attention to undocumented laborers and financial support systems such as farm aid grants and disaster assistance programs have become more important. Issues such as food safety, tax reform, nutrition and health, sustainable energy production and farming practices and GMO labeling are also relevant to the field of agriculture.

## Economics

Did you know that economists have a major role in determining monetary and fiscal policy? Economists are involved with The Federal Reserve (interest rates, amount of money in circulation), can be economic advisors for politicians, help determine how effective a stimulus package will be, institute ethical stock market practices and conduct economic forecasting.

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## About Us

**Campus Election Engagement Project (CEEP)** is a national nonpartisan project that helps administrators, faculty, staff and student leaders at America's institutions of higher education engage students in federal, state and local elections. CEEP views voting as a means to promote a more equitable and inclusive democracy and to address past and

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present disenfranchisement. To learn more, visit [campuselect.org](http://campuselect.org) or contact us at [info@campuselect.org](mailto:info@campuselect.org).

## Looking for More Resources?

Visit [campuselect.org](http://campuselect.org) for more resources and case studies to get students involved in the voting process.