*Minorities in STEM*

# Course Information

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*This course is targeted towards freshmen level students seeking STEM degrees. I targeted them so they can understand the disparities and unequal opportunities that minorities face in fields that these students could potentially go into.*

# Course Description

*This course focuses on how minorities are viewed working in STEM related fields. This course is designed to break down the stereotypes that minorities are not capable of being successful in these types of fields and why is it so difficult to fill the disparity between whites and minorities in STEM related fields.*

Course Schedule

## **Unit 1: *Women in STEM***

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| **BIG Question:** What factors make it challenging for women to get into STEM related fields? |
| **Argument of the Unit:** Women are generally underrepresented in STEM fields. Beginning in high school, women lose interest in science and math at a faster rate than their male counterparts do. Women are also less likely to stick with STEM related degrees in college. |
| **Key Words:** *URPs, STEM, CS, HBCUs* |
| **Link to Reading:**[*Women in STEM*](https://drive.google.com/open?id=1ihey4tDdCsBDlOZFYnEu2C5CP7BMx6Lc) |
| **Annotation of Reading:** *Many women, especially women of color are underrepresented in science and technology fields for many reasons. One reason for this is that STEM fields are mostly white male dominated and women feel inferior. Women have a lack of role models in these fields in their family and getting them interested in STEM at a young age is difficult. In addition, many women feel that this work is solitary which doesn’t fit a woman’s general personality of being social. Fewer women are accepted into this field at universities and about two-thirds end up dropping out. Many women believe that the job market in STEM fields is very diluted and they fear they won’t be able to find a job. Women are also less persistent in completing the courses required for STEM degrees than men are.* |

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## **Unit 2: *African Americans in STEM***

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| **BIG Question:** What factors make it challenging for African Americans to get into STEM related fields? |
| **Argument of the Unit:** Blacks and the colleges they attend are not suited to prepare them for jobs in STEM fields. |
| **Key Words:***STEM, HBCUs, ASEE, NAE* |
| **Link to Reading:**[*African Americans in STEM*](https://drive.google.com/open?id=1OL4bqz0Oon77VvbrXoHpFxfkTb72Dfd1) |
| **Annotation of Reading:** *There has been an increasing amount of African American engineers since the early 1970s but they still don’t compete with the amount of white male engineers. Many Historically Black Colleges focus on training technicians rather than engineers and have associate degree programs rather than baccalaureate programs. The difference in these two programs is that engineering requires high level Calculus while technicians do not. During the Jim Crow Era of segregation, it was difficult for HBCUs to establish engineering programs at their schools. In 1960, Howard University was the only HBCU with an accredited engineering program. Having a father figure present in the home and in a STEM related field would usually set up their children to go into STEM fields, but three-fourths of African Americans do not have a father figure present in the home much less have a father figure in a STEM field.* |

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## **Unit 3: *Minority Interest in STEM***

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| **BIG Question:** Are minorities just not interested in STEM? |
| **Argument of the Unit:** Traditionally, engineering jobs were obtained through on the job experience which many women and other minorities have been steered away from due to the masculinity and work ethic within those jobs. |
| **Key Words:***STEM, engineeresses, RPI, MIT* |
| **Link to Reading:**[*Barriers for Minorities*](https://drive.google.com/open?id=1VapJU8v6PZJdx-XlVJ5lBVrZr7GTlIZx) |
| **Annotation of Reading:** During World War II, engineering fields experienced a lack of male workers which forced companies to begin recruiting women by the masses. RPI, a well known university known for its highly ranked engineering program opened its doors to women for the first time due to the war need. Even companies such as General Electric began recruiting women who had even the slightest math and science skills to turn them into wartime engineers. Unfortunately, as World War II started to end, the returning male veterans poured into engineering fields which pushed women out of those jobs. After the war, girls that seemed interested in technology, math, or science were discouraged by their teachers and in some cases their parents. Many employers believed that women and other minorities could not be engineers and thought the idea of them taking and being in engineering classes was pointless. They thought they couldn’t be “good engineers”. |

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## **Unit 4: *Famous Minorities in STEM Fields- Marie Curie***

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| **BIG Question:** Can minorities be successful in STEM fields or have they been conditioned to believe that they can’t? |
| **Argument of the Unit:** During a time period when women were only expected to be homemakers, Marie Curie was on the forefront of important discoveries in Chemistry and Physics that even men struggled to understand. |
| **Key Words:** *STEM, Nobel Prize, Radioactivity* |
| **Link to Reading:**[*Marie Curie*](https://drive.google.com/open?id=18mDVXr32cbp9B2Qz9Bme-vTO3qURKdO4) |
| **Annotation of Reading:** Marie Curie was raised by her father who was a Physics and Math teacher. This began her passion for Science and Math. She began her life as a teacher and helped put her sister through school. She moved to Paris to go to school at the Sorbonne, a university in Paris, to study Physics and Chemistry. This is where she met her husband, Pierre, who was also her lab partner. After his death, she took his position as a professor at the Sorbonne. She was the first female professor there. In 1903, she won the Nobel Prize for Physics and in 1911 the Nobel Prize for Chemistry. Marie Curie is the only woman to win these awards in two different fields despite her hindrance of being a minority. |

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## **Unit 5: *How minorities are viewed working in the STEM Field.***

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| **BIG Question:** What do minorities face in the STEM field and how are they oppressed? |
| **Argument of the Unit:** In a white male dominated field of work, it is hard for women and people of color to feel welcome due to the discrimination and harassment they face in the STEM workplace. |
| **Key Words:** *STEM, discrimination* |
| **Link to Reading:**[*What do minorities face in the STEM workplace?*](https://drive.google.com/open?id=1Ctu_FL8J4Vpp0xndTx9EEaMxKHoD7rf6) |
| **Annotation of Reading:** Nearly half of women report facing sexual harassment in the workplace as well as unfair pay and assignments. Minorities are generally undervalued in STEM fields and 62% of African Americans, 44% of Asians, and 42% of Hispanics report facing racial discrimination in the workplace. In the white dominated workplace, there are many preconceived notions that minorities cannot handle the high caliber of work nor produce reliable outcomes. African Americans make up 9% of the STEM workforce while Hispanics make up 7%. 43% of Hispanics and 70% of African Americans report discrimination at recruitment. Asians are overrepresented in the STEM workforce. They make up 82% of the workforce and get paid more than whites. |

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## **Unit 6: Affirmative Action and Minorities**

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| **BIG Question:** Does affirmative action really help minorities in STEM? |
| **Argument of the Unit:** Affirmative Action has created a false sense of hope for minorities by allowing them admittance into universities that are too demanding for their academic abilities which has created an academic mismatch in their classes which causes many to fail out or switch majors. |
| **Key Words:** *STEM, affirmative action, academic mismatch, race-blind admissions* |
| **Link to Reading:**[*Affirmative Action*](https://drive.google.com/open?id=1CRgklfoCg7q1b5nc8CzNzqzStmmZmBtv) |
| **Annotation of Reading:** Affirmative Action has unintended consequences such as students being admitted by their race rather than their academic merit. This has lead to low grades and higher dropout rates. More than half of African American students admitted through affirmative action policies were at the bottom 10% of their class. The dropout rate among African Americans was over double than that of their white peers at 19.3%. Many minorities accepted through affirmative action policies end up switching to easier majors, dropping out, or failing out. Because of these policies, fewer minorities are entering STEM careers. This is not due to a lack of interest among minorities in STEM fields, it is due to the fact that there are not enough minority students at the top of their class to satisfy the merit required to get into these universities that have STEM programs. Minorities demonstrate more interest in STEM but admitting them into universities with those programs is more difficult because of their lower GPAs and SAT scores. After the California race-blind admissions went into effect , failures rates and grades among minorities improved due to the fact that they went to universities more matched to their abilities. |

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## **Unit 7: Organizations that encourage minorities in STEM Fields.**

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| **BIG Question:** How do support groups help minorities in the STEM Field? |
| **Argument of the Unit:** There are many organizations to support minorities in the STEM field as well as help them build careers and protect against discrimination in the workplace. |
| **Key Words:** *STEM, NSBE, NACME, MAES, SACNAS, HBCUs* |
| **Link to Reading:**[*Organizations that help minorities in STEM*](https://drive.google.com/open?id=1R-3YTc5Xh_DctSeR26RlQ2WMWF7KgEX7) |
| **Annotation of Reading:** There are several groups dedicated to supporting minorities in STEM related careers. One being the National Society of Black Engineers (NSBE). This organization’s main priority is to increase the number of minority students studying engineering and pushing them to achieve advanced degrees in engineering. NSBE has also implemented study programs in high schools to get African Americans interested in STEM and engineering. They also support their members in the workplace should issues such as discrimination arise. The National Action Council for Minorities in Engineering (NACME) supports K-12 education programs and provide scholarship for high achieving minorities. The Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS) and Latinos in Science and Engineering (MAES) both help Hispanics, Latinos, and Native Americans in STEM fields quite similarly to the way that NSBE and NACME help African Americans in the STEM field. |