Women in the Sciences

(course redesign project, WMNS 432)

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Abstract:

-We want to create a curriculum about current issues surrounding women in the sciences.

-We want to utilize a Women in Science class as a critical audience to evaluate the main issues of women in the sciences.

-We want to develop solutions to these issues to encourage more representation of women in science.

-We want to find solutions to problems of bias and exclusion and learn how to study science, alternately, as a field of equal inquiry.

Research Questions:

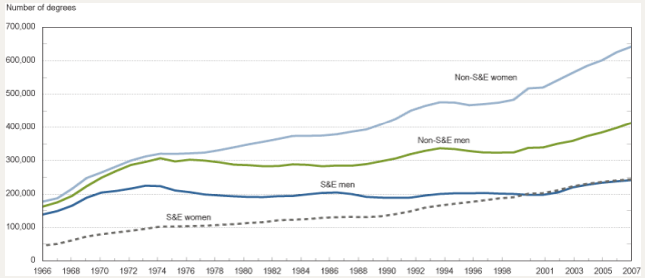
-How can you create a critical classroom environment through which more women will be encouraged and supported in their participation in this field of study?

-Can we find a solution to problems of bias and exclusion of women in science through the course?

-How does the course address current needs to increase education and awareness of women and science?

Why is a class like WMNS 432 Important?

Figure 1. Bachelor degrees awarded in S&E and non-S&E fields, by sex.



(National Science Foundation: www.nsf.gov)

Chart 1. Number of Bachelor degrees in S&E and non-S&E fields, by sex.

	Female		Male	
	S&E	Non-S&E	S&E	Non-S&E
1998	190,474	482,562	200,322	324,580
2000	200,952	517,607	197,650	338,409
2001	202,664	520,223	197,771	339,650
2002	211,308	542,022	204,675	350,965
2003	222,940	563,817	219,815	359,122
2004	230,797	585,036	227,861	373,727
2005	236,290	601,353	233,924	384,834
2006	240,829	625,534	238,029	398,530
2007	244,075	642,236	241,697	413,696

(National Science Foundation)

Chart 2. Employed full-time median salary across the sciences; by sex. (2006)

	Female	Male
Biological/life	30,000	35,000
Computer/Information	40,000	45,000
Mathematical	35,000	40,000
Physical	34,000	37,000
Psychology	30,000	32,000
Social	32,000	35,000
Engineering	52,000	52,000
Health	45,000	48,000

(National Academies: www.nationalacademies.org)

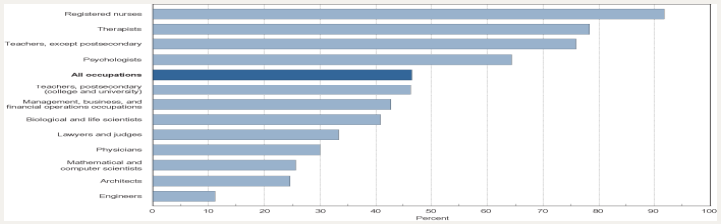
-Only 29.5% of female intend to major in science or engineering when entering college compared to 41.1% of males. (National Science Foundation)

-Only 27% of all women graduating having degrees in science and engineering., which compares with 37% of men graduating.

-Within science, technology, engineering and mathematics, females only earn 78.7 cents to every male's dollar (2003). This is down from 81 cents to every male's dollar (1995).

-In 2006, the average full-time salary for females in the sciences was $32,000 compared to males at $38,000.

Graph 2. Employed women 16 years and older as a percentage of selected occupations: 2007



(National Science Foundation)

-Even with the increase of number of degrees by women in the sciences, women are underrepresented in the science workforce.

-As seen in graph 2, all laboratory sciences fall below the average percentage occupation.

Common misconceptions:

-From the time they start school, most girls are less interested in science than boys are.

-Classroom interventions that work to increase girls' interest in sciences run the risk of turning off the boys.

-Science and math teachers are no longer biased toward their male students.

-When girls just aren't interested in science, parents can't do much to motivate them.

-At the college level, changing the science curriculum runs the risk of watering down important "sink or swim" coursework.

Method:

-We researched different curriculum to determine the best practices. We then employed these practices within our own curriculum.

-We utilized classroom research to determine the background of the students enrolled in the class.

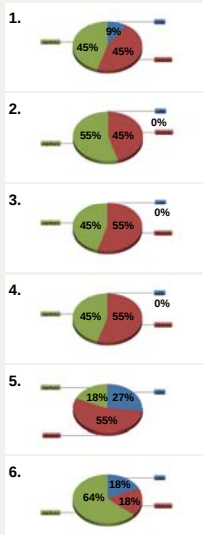
-We want to debunk the common misconceptions and bring equality in the genders in both education and employment.

Results:

-Reflection Paper Results: Initial response paper resulted in 100% of women (25) indicating less support in secondary education than males. 100% of males (5) felt they received adequate support. *At this time, results are incomplete(final response paper will be written and submitted at the end of spring, 2010 semester).*

-Class Survey Results, administered mid-term, spring, 2010. Six questions (graphical responses to the right):

1. How much has your awareness of the problems of bias an exclusion for women in science increased since your enrollment in WMNS 432?
2. How much has your awareness of the roles and opportunities of women in science increased since your enrollment in WMNS 432?
3. How much has your knowledge about scientific issues that affect women increased since your enrollment in WMNS 432?
4. How much has your knowledge about scientific issues that are affected by women scientists increased since your enrollment in WMNS 432?
5. How much has your awareness of the problems of bias and exclusion for women in science increased since your enrollment in WMNS 432?
6. How much has your awareness of the roles and opportunities of women in science increased since your enrollment in WMNS 432?



Response Key:
Little (blue)
Moderate (red)
Significant (green)

Acknowledgments:

-CETL Curriculum Development Grant