FYSP 179 – Symmetry in Science, Art, and Life (Fall 2010)

Instructor: Kevin Woods, King 220B, Kevin.Woods@oberlin.edu.

Writing Associate: Sam Jewler, sjewler@oberlin.edu.

Class: Monday, Wednesday, Friday 1:30-2:20pm, King 325.

Office Hours:

Monday 2:30-3:30pm, Wednesday 11am-12pm, Thursday 1:30-2:30pm, Friday 9-10am. Also, feel free to stop by any time my door is open (but be understanding if I say I am too busy), or you can make an appointment via email.

Readings:

Everything will be available online. We will be discussing these readings in class, so you will need to print out copies of them (I suggest printing 2-sided to save paper and your print quota!) It is also ok if you bring a laptop with an electronic copy of the reading, as long as you are engaged in the discussion and not using the computer for other things.

Blackboard:

I will post readings, homework, and other announcements on Blackboard.

Outline of course:

Both the natural world and the man-made world are rife with symmetry. We will examine various arenas where symmetry makes an appearance. Some of these topics will be from art: Bach's canons, Islamic decoration; and some will be from science: the chemistry of crystals, the evolutionary biology of mirror symmetry in animals. As the semester progresses, we will also think about the aesthetics of pattern: why do we find beauty in symmetry?

We will have daily readings and discussions about these topics. The readings for the first third of the semester are set (and are on or will soon appear on Blackboard). The readings for the second third of the semester will be found by you, based on your interests. And we'll go from there. Each student, at various times, will write response papers based on the readings that everyone will read before class, as well as a final research paper.

Interleaved will be a mathematical strain. You will have problems sets where the mathematical notions of symmetry are explored. We will generally reserve Fridays for talking about mathematics, or for other activities like visiting the library or peer review of writing.

Writing Associate:

I will be helping you with your writing, but so will a Senior undergraduate, Sam Jewler. He will be available for one-on-one help on all of your writing assignments, and meeting with him will be required for some of them.

Grading:

Class participation (30%),
Written Mathematical Homework (20%),
Short Response to Reading (5%),
Art Project (10%),
Developing a Reading and a Response Paper (15%),
Final Research Paper (20%).

Class participation (30%).

This counts so much because it is a vital part of this discussion-based course. It is important that you be actively engaged in the discussions: listening, thinking, and talking. It is important that you have read the readings and any posted student response papers. It is important that you be in class each day, on time.

Finally, we will be using the **Discussion Board** on Blackboard. I will post all of the readings here. By the midnight before each class, you must post a short paragraph commenting on the reading, the posted student response, or previous comments. Also I encourage you to continue the discussion with more posts, but you're only required to post one. Your posts should be more than just "I didn't get ___" or "I really liked ___". Explain why you liked it or where your confusion starts.

Written Mathematical Homework (20%).

These will generally be due on Fridays. I am looking for solutions that are not only correct, but also clear. Imagine someone else in the class reading your solutions: Would they understand them?

You may find these challenging (but fun!), and they will be different from the sorts of math you have done in high school. To compensate for this, your grade on the mathematical work **cannot** lower your final grade, as long as you are reasonably attempting every problem. A low math grade might keep you from getting the half quantitative proficiency credit that this class provides, but that is less important than your actual grade and can be satisfied in many ways at Oberlin.

Late Work Policy: If they are handed in before I leave my office that day (no guarantee when that is), you get full credit. If they are handed in the next school day before I leave, you get 90%. Two school days, 70%, three school days 50%, more than that 0%.

Short Response to Reading (5%).

A 1.5-2 page response to one of the readings between September 20 and October 18. This will be posted in advance for everyone to read and will help start our discussion. Specific instructions will come in a handout.

Art Project (10%).

Due October 20. You will create a work of art. This will be graded on creativity, use of symmetry, effort and a short artist's statement. Specific instructions will come soon.

Developing a Reading and a Response Paper (15%).

Tentatively between November 1 and November 22. In pairs, you will choose a reading related to some appearance of symmetry. Each of you will individually write a 4-5 page response. This will be posted in advance for everyone to read. You will also lead that day's discussion. Specific instructions will come later.

Final Research Paper (20%).

The final draft will be due at the end of our scheduled exam time, Monday, December 20 at 9pm, though there will be earlier deadlines in November and December for drafts, etc. This will be a 9-11 page research paper with at least 4-6 works cited. Specific instructions will come later.

Honor Code:

See http://www.oberlin.edu/students/links-life/rules-regs.html for the complete Honor Code.

For each assignment, I will give you specific Honor Code. The general theme is that discussion with other students is great, but the final work must be your own, though you may "use sources of assistance routinely offered to all students, such as reference librarians and writing tutors" (Honor Code text).

For the mathematical assignments, I encourage you to work together. Written assignments must be in your own words, however. Work on the problem together, and then go back home and write up your solution. In particular, you should never look at someone else's write-up before it is due. Other than the other students (and me!), you may not use any other outside sources for the math problems.

Disabilities:

If you have a disability of any sort that may affect your performance in this class, please consult with me and with Jane Boomer in the Office of Disability Services. All requests for accommodation must go through that office.