Spring 2011 COMMUNITY COLLEGE OF PHILADELPHIA Spring 2011

MATHEMATICS 137: GEOMETRY FOR DESIGN
Section : **001** CRN # : **11970**

Room: **Monday W4-02 , Wednesday W4-27** Time: **2:30 – 3:50 p.m.**
Instructor**: Dr. D. French** Main Campus Office: **BR-60**
Phone: **215-751 - 8689** Email address: **dfrench@ccp.edu**
Office Hours : **M W F 8:00 – 8:55 am, M W F 1 :25 – 2:20 p.m.**
Mathematics Department Office: **W 2-7**
Secretaries: **Ms. Starr: 215-751- 8431 & Ms. Al-Ameen: 215-751- 8430**
Math Learning Lab: **B2-36, for tutoring support/ computers**
SACC**: B 2- 33 (for computer and internet access)**

COURSE DESCRIPTION:

Although concrete in its origins, the study of geometry provides ample opportunity to explore abstraction and logical mathematical organization. This course attempts to model inductive reasoning through guided student discovery. In turn, this approach builds towards deductive reasoning, emphasizing the use of logic and abstraction. Therefore, this course will explore topics from both two- and three-dimensional geometry, and students will cultivate an understanding of geometric relationships within the physical world. Traditional numerical, graphical and algebraic techniques will be used, along with appropriate technological tools.

IMPORTANCE OF GEOMETRY:

Mathematics is important for everyone in our society. For example, many problems affecting the world, such as the sky- rocketing world-wide demand for energy, the consequences of global warming and overpopulation, and the effects of poverty and disease can be understood in terms of mathematical problems requiring numerical solutions. In addition, high-tech fields involving visual design , such as art, architecture, animation , construction, and engineering , are expanding and creating many new and interesting jobs. These challenging careers require strong mathematical skills and the ability to frame and solve quantitative and geometric problems.

Knowledge of geometry is very important for those of our students who intend to pursue further studies in architecture, construction technology, art and visual design disciplines, either here at CCP or at other transfer institutions. Math 137 Geometry for Design can provide a strong foundation for the development of problem-solving ability, and therefore is a critically important course for students who are beginning to build their mathematical skills.

TEXTBOOK :

Serra, M. (2008). Discovering geometry-an investigative approach, fourth edition. Emeryville, CA: Key Curriculum Press
Available in CCP bookstore in West Building , Main Campus

SUPPLIES:

Scientific Calculator (e.g. Texas Instruments TI-30 Mark II) - optional.
Ruler (inch and cm) Graph paper, loose-leaf binder or folders for notes and drawings Professional grade compass, protractor, sharp pencils, eraser, flash drive (optional)

Special materials required for individual projects and assignments will be identified throughout the semester. Completed exercises should be kept sequentially in a folder along with the drawings and design projects.

COURSE OBJECTIVES:

i) Identification, description, comparison and classification of geometric figures.
ii) Visualization and representation of geometric figures, with development of spatial sense.
iii) Transformations of geometric figures.
iv) Use of geometric models to represent and solve problems.
v) Understanding and application of geometric properties and relationships.
vi) Development of appreciation of geometry as a means of describing the physical world.
vii) Development of an understanding of the historical development and application of geometry in fields such as art, architecture, design and construction.
viii) Appreciation of the historical role of important practitioners of creative disciplines who used geometry as central themes of their work.

ASSIGNMENTS AND GRADING:

Final grades will be determined using the following schema:

10 manual or computer-assisted drawings	10 %
Homework Quizzes	20 %
Project I	10 %
Mid term examination	20 %
Project II (including drawings and/or models)	10 %
Final examination	25 %

Classroom discussion and attendance	5 %
TOTAL	100 %

GRADES:	A	90 – 100 %	I	Incomplete
	B	80 – 89 %	W	Withdrawal
	C	70 – 79 %	NR	No Record
	D	60 – 69 %		
	F	0 - 59 %		

Please note:

1. Grading policy: approximately every week a short "homework quiz" will be given. This will be based on a set of homework problems distributed prior to the quiz.

2. In calculating the final grade for the course, the homework quiz grade component will be the average of the best seven (7) homework quiz scores . Lower scores will be dropped.

3. To obtain extra credit, students may attend a minimum of five ($5 + n, n \geq 0$) tutoring sessions, or workshops or other programs in the Learning Lab in B 2- 36 over the course of the semester . This will give a student LLXC score that will be the equivalent of scoring 100 % on one (1) homework quiz. Proof of attendance at Learning Lab sessions (green or white cards/slips) will be required .

ATTENDANCE POLICY & OFFICE HOURS:

Due to the nature of the course instruction, attendance and class participation are of prime importance, as material considered in class will correspond to the text readings and assignments. Also, the classroom participation component of the final grade makes regular attendance necessary. There is a class-attendance policy allowing only six absences for M W F classes. (For M W or T R classes there is a maximum of only four allowable absences during the semester.) Class attendance will be taken at the beginning of each session and students are responsible for arriving to class on time.

Chronic lateness will be considered as absence and treated accordingly as described below. It is a college regulation that if a student accumulates more than the maximum allowable absences, an instructor has the right to drop the student (who then gets a W) before the final drop deadline , which is Mon April 11 – the 11th week of the semester . No W grades can be assigned after that date. For this course this semester, I will not necessarily drop a student automatically after 6 absences. However, if you think you may fail the course, it is YOUR RESPONSIBILITY to drop the class before the final drop date Apr 11. I will not necessarily drop you from the course .

If a student is absent and misses a session, he/she is responsible for getting his/her own lecture notes and for obtaining any assignments distributed during that session. The teacher will be available for consultation during office hours or a first come, first serve basis, unless by prior appointment.

CLASSROOM MANAGEMENT POLICY:

Students should refer to and follow CCP guidelines for classroom behavior, as documented in the student handbook and 2010-2011 College catalog. Students are expected to refrain from inappropriate behavior, and this includes operating mobile phones and/or pagers or other electronic gear in the classroom during class sessions. Students must therefore turn off (or otherwise silence) pagers and phones before classes begin. Students who must leave class early should do so quietly without disrupting the session. Students must not bring beverages or food into the classroom, and under no circumstances should food or beverages be consumed in any computer-equipped locations such as classroom W 4-27 , the Math Lab B2- 36, or the SACC center B2- 33. Students may not bring children to class, and everyone must observe the campus-wide NO SMOKING policy.

ACADEMIC HONESTY

Students are expected to maintain the highest standards of integrity in all their academic work, and therefore they must do their own work: cheating or plagiarism or other forms of dishonesty will not be tolerated. Students are therefore advised to carefully review the relevant sections of the 2010-2011 College Catalog & Student Handbook on plagiarism , in-class cheating , cheating outside the classroom and electronic cheating. Students who are caught cheating or plagiarizing will be dealt with; penalties can include, but are not limited to, receiving a zero score for the test, examination or homework assignment or homework project in question.

DISABILITY

Students who are registered with the Center on Disability must inform the instructor by the end of the first week of classes if special accommodations are requested. The instructor will try to work with all students to help them succeed to the utmost of their ability.

SOME SUGGESTIONS FOR YOUR SUCCESS IN THIS COURSE:

Every student should be aware that the **Math Learning Lab in B 2 -36** is an extremely important resource center where one-on-one tutoring assistance can be obtained. The Math Lab presents several useful skills sessions and workshops every semester, and, in addition, the Math Lab has computers that may be equipped with algebra tutorial software. Students will be able to earn “extra credit” for attending Math Lab workshops and /or tutoring sessions (details will be provided as the course proceeds). The computers in the **SACC computer lab in B 2 -33** also

give Internet access to CCP students with a valid ID card. If appropriate, currently registered students can apply for a CCP email account by logging onto computers in the BG lobby.

Please try to make every effort to come to each class. This course is based on a practical problem-solving approach. Most people learn by doing, and it has been said that "Math is not a spectator sport". It will be difficult to do the homework assignments if you missed the corresponding class. You should therefore **attend class regularly and punctually**. If you are absent, call a classmate or the teacher's voicemail at (215) 751- 8689 for information about the homework assignment.

Another obvious suggestion is to **do all the homework assignments on time and come to class as prepared as possible**. As you read your newspapers and magazines, you may want to copy the articles and graphs containing mathematical and/or algebraic information and save them using a folder or three-ring binder. Please do not tear or disfigure articles or graphs that appear in library books or magazines - every library user has a right to view the material in a library's collection. Save and review all homework quizzes before tests and exams.

You should always **take lecture notes during the classroom session.** The notes could include main ideas of a section, questions that came to mind as you viewed the solution of a particular equation system, or personal responses to the readings in the text or from other sources. Always **check your work** before handing in any assignment to find out if your solution answers the question.

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January 2011

Spring 2011 **COMMUNITY COLLEGE OF PHILADELPHIA** **Spring 2011**

MATH 137 -001 GEOMETRY FOR DESIGN

Dr. D. French: 215- 751- 8689 E-MAIL : **dfrench@ccp.edu**

TEXT : Serra, M. (2008). Discovering geometry--an inductive approach, 4th edition. Emeryville, CA: Key Curriculum Press

[Note: This course outline is approximate ; Wednesday Feb 16 Professional Development Day = No classes; Spring Vacation March 7 – 12 = -no classes]

Lesson	Date	Day	Section	Topic
1.	1/19	W	Ch.0 & 1	Introducing Geometry. Sketchpad activity. Skpad 1
2.	1/24	M	Ch.1	Using technology in basic geometry .
3.	1/26	W	Ch. 2	Reasoning in Geometry , angle relationships Skpad 2.
4.	1/31	M	Ch.3	Using the tools of geometry **Project 1 assigned.**
5.	2/2	W	Ch. 3	Using the tools of geometry , c'td. Skpad 3.
6.	2/7	M	Ch.4	Discovering and proving triangle properties
7.	2/9	W	Ch.4	Discovering and proving triangle properties, ct'd. Skpad 4
8.	2/14	M	Ch.5	Discovering and proving polygon properties .
9.	2/21	M	Ch.5	Discovering and proving polygon properties
10.	2/23	W	Review	Chapters 0 – 5 Skpad 5
11.	2/28	M	**MIDTERM EXAM**	**Chapters 0 – 5**
12.	3/2	W	Ch. 6	Discovering and proving circle properties Skpad 6.
13.	3/14	M	Ch. 6	Discovering and proving circle properties. **Project 1 due** **Project 2 assigned**
14.	3/16	W	Ch.7	Transformations and Tessellations Skpad 7
15.	3/21	M	Ch.7	Transformations and Tessellations , c'td.
16.	3/23	W	Ch.7	Transformations and tessellations, ct.d. . Skpad 8,
17.	3/28	M	Ch.8	Area
18.	3/30	W	Ch.8	Area Skpad 9.
19.	4/4	M	Ch.9	The Pythagorean Theorem
20.	4/6	W	Ch.9	The Pythagorean Theorem , c'td. Skpad 10
21.	4/11	M	Ch.10	Volume .
22.	4/13	W	Ch.10	Volume, ct'd. Hands-on polyhedra activity
23.	4/18	M	Ch.10	Volume, c'td.
24.	4/20	W	Ch.11	Similarity, Polyhedra Internet activity.
25.	4/25	M	Ch.11	Similarity, c'td.
26.	4/27	W	Ch.0 - 1	Similarity: Golden Mean Computer Activity. , Review Ch 0-11 **Project 2 due**

Study day 4/29 . **Final Examination Week : May 2-6 ; Date of Final Exam TBA**