MATH 110, SUMMER 2012. 10am-12pm, 3109 Etcheverry Hall

AMENDED: 6/26/2012

Contact Details   Instructor: George Melvin
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    Office: 853 Evans Hall
    Course Website: http://math.berkeley.edu/~gmelvin/math110su12.html

Meeting time   Class will be begin Monday 18th June and end Thursday 9th August. We will meet Monday, Tuesday, Wednesday, Thursday at 10am in 3109 Etcheverry Hall between those dates. Class will begin at 10.10am promptly and will end at 12pm. There will be a ten minute break in the middle, usually 11-11.10am. **You should arrive so as to be ready to start at 10.10am**. Persistent lateness will no be tolerated and will be taken into account in the 'participation' grade.   **There will be no class on Wednesday 7/4.**

Office Hours   Monday 12.10-1.40pm, Thursday 12.10-1.40pm in 853 Evans Hall.

Enrollment Questions   Students on the wait list should look for an open section. If you cannot find one to fit your schedule then you can write to Thomas Brown, brown@math.berkeley.edu (I cannot help you with enrollment issues). Students with questions about Concurrent Enrollment can also write to Thomas Brown. You **MUST** attend the section for which you are registered. If you are enrolled and wish to switch sections then you can do so yourself on TeleBears. However, you cannot switch into a full section.

Make-Up of Final Grade   The final grade will comprise three different factors: *exams, progressive understanding and participation.* The percentage breakdown is

Exams:	Exam 1	25%
	Exam 2	25%
Progressive Understanding:	Long Homework	25%
	Short Homework	17.5%
Participation:		7.5%

Exam 1 will take place on Monday July 16. Exam 2 will take place on Thursday August 9. Both exams will be taken in Etcheverry 3109. Each exam will be **one hour and forty-five minutes long**.

Short Homework is due **two times a week** on Monday and ~~Wednesday~~ Thursday at 10.10am in 3109 Etcheverry, except Monday July 16 and ~~Wednesday July 4~~ Thursday August 9.

Long Homework is due **once a week** on Tuesday at 10.10am in 3109 Etcheverry beginning Week 2, except Tuesday July 17 when Long Homework will be due Thursday July 19.

If you can't drop the homework off in class it should be placed in my mailbox (the mailroom is on floor 9 Evans, opposite the north elevator) or handed in to office hours **prior to class**.

The participation grade will be based on several factors: *attendance, asking questions in class, asking questions outside of class (eg, via email), participating in discussion sections, collaboration on homework.* I will expect you to read through the lecture notes and think about it. If you do this then you should have questions to ask me or your classmates and, if you don't have any questions, you should try and help your classmates by explaining what you understand. The aim of this is to engage everyone in the class and to promote a 'healthy learning environment'(!). Seriously though, this is an easy way to get 7.5% and involves minimal effort on your behalf, just participate!

Grading Policy   *Exams:* You are allowed to miss Exam 1. In this case Exam 2 will be worth 55%, Long Homework will be worth 25% and Short Homework will be worth 12.5%. If you miss Exam 2 you will **fail** the class. Exceptions to this policy will only be made in extreme circumstances, if you have any queries or have to miss a midterm/final for unavoidable reasons then let me know well in advance (ie, at least two weeks).

Homework: Short Homework is intended to comprise basic and essential calculations. Long Homework is intended to comprise longer questions that will require significant thought and will be a test of your abilities to provide coherent and rigorous mathematical arguments. Your lowest two Short Homework scores will be dropped; your lowest Long Homework score will be dropped.

Prerequisites   Math 54.

Official Syllabus   Matrices, vector spaces, linear transformations, inner products. Determinants. Eigenvectors. QR Factorisation. Quadratic Forms and Rayleigh's Principle. Jordan Canonical Form, applications. Linear Functionals.

(Tentative) Schedule   Week 1: Review of mathematical language. Fields. Vector space, subspaces, linear (in)dependence/span. Linear morphisms I.

Week 2: Bases, dimension. Coordinates. Linear morphisms II. Dual Spaces.

Week 3: Invariant subspaces. Eigenstuff. Algebra of polynomials. Nilpotent morphisms. Jordan canonical form.

Week 4: Applications of Jordan canonical form. Diagonalisation (revisited).

Week 5: Bilinear forms, quadratic forms. Law of inertia. Inner products. Introduction to Euclidean spaces. **Exam 1**

Week 6: Orthogonality. Adjoints. Orthogonal and unitary matrices. Spectral Theorem.

Week 7: Quadratic forms in Euclidean and Unitary spaces.

Week 8: Additional topics. Review. **Exam 2**

Important Dates   The deadline to register for class is 6/29. The deadline to drop the class (with refund) is 6/22. The deadline to change the grading option is 7/27. The deadline to drop the class (without refund) is 6/29.

Special Accomodations   Efforts will be made to accommodate students with special needs. Students requiring special examination arrangements or note takers should please consult the DSP office and inform me by 6/22.

Academic Honesty Policy   Collaboration on the homework assignments is welcome and encouraged in this course. However, each student has to write up and hand in their own set of solutions and reference any additional materials used. Any evidence of cheating on an exam will result in a score of zero. Cheating includes but is not limited to bringing notes or written or electronic materials into an exam, copying off of another person's exam, allowing someone to copy off of your exam, and having someone take an exam for you. Incidences of cheating will be reported to Student Judicial Affairs, which may administer additional punishment.