**Special topics: Molecular Exercise Science**

**(KINE 8970) Course Syllabus**

**Summer 2014**

**Instructor**: Michael D. Roberts, Ph.D.

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**Office hours**: M, W: 4:00 – 5:00 PM

T: 4:00-5:00 PM

By appointment (**please e-mail me if you need to make an appointment**)

**Pre-requisites**: none

**Co-requisites**: none

**Syllabus prepared**: 3-16-14

**Class schedule**: M,T, W, R, F: 8:00 – 9:30 PM, room 2043 COLSM

**Course description**: Molecular biology techniques have widened the scope of exercise science research. This class will discuss various aspects as to how ‘molecular exercise scientists’ have made a lasting impact on the field of exercise science. Also, various techniques that are of common-day use will be discussed.

**Required text**: no text; printed notes

**Best preparation:** bring class notes to class!!!

**Semester Grading Rubric:**

|  |  |  |
| --- | --- | --- |
| **Assignments** | **Description** | **Points/ % of final grade** |
| Test 1 | Test descriptions are below | 25% |
| Test 2 |  | 25% |
|  |  |  |
| Test 3  Project |  | 25%  25% |
|  |  |  |
| **Total** | - | **100%** |

**Grading Scale:**

|  |  |
| --- | --- |
| **Letter Grade** | **Percent Scale** |
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | <60 |

**Attendance and Late-work Policies:** If a student were to miss a class due to a foreseen circumstance (e.g., wedding, funeral, etc.), then make-up exams can be re-scheduled ahead of time with the professor. For unforeseen circumstances (slept late, flat tire, etc.), tests can be made up with a 15% penalty.

**Disability and other accommodations**

If you have not established learning accommodations through the Program for Students with Disabilities (PSD) office (1228 Haley Center, 844-2096), please contact me as soon as possible if accommodations need to be made due to learning and/or other disabilities.

Also, please contact me for accommodations for class projects using MS word, PowerPoint, etc.

Finally, let me know if you have pertinent medical information that you need to share with me (e.g., cannot participate in weight-lifting laboratories due to prior injury, etc.).

**Academic integrity policy**: students must adhere to the student academic honesty code Title XII found on the University Policies Page (<http://www.business.auburn.edu/~yostkev/teaching/finc3610/images/SGAHonorCode.pdf>)

**Additional Notes:** while unlikely, note that the instructor reserves the right to modify this course syllabus at any time. However, students will receive verbal notification of such modification.

Class schedule

|  |  |
| --- | --- |
| Mon June 23 | Syllabus and class project announcement |
| Tues June 24 | Central dogma tenet to molecular exercise science |
| Wed June 25 | Historical papers part II |
| Thurs June 26 | Historical papers part III |
| Fri June 27 | Historical papers part IV |
| **Mon June 30** | **Test 1** |
| Tues July 1 | Muscle protein synthesis in exercise science research part I |
| Wed July 2 | Muscle protein synthesis in exercise science research part II |
| Thurs July 3 | mRNA studies in exercise science research part I |
| Fri July 4 | mRNA studies in exercise science research part II |
| Mon July 7 | ‘Omics’ ( microarray and RNA-seq) in exercise science research part I |
| Tues July 8 | ‘Omics’ ( proteomics) in exercise science research part II |
| Wed July 9 | ‘Omics’ ( metabolomics) in exercise science research part III |
| Thurs July 10 | ‘Omics’ (epigenomics) in exercise science research part IV |
| **Fri July 11** | **Test 2** |
| Mon July 14 | GWAS in exercise science research part I |
| Tues July 15 | GWAS in exercise science research part II |
| Wed July 16 | Cell culture studies in exercise science research part I – Pederson and SILAC myokine article |
| Thurs July 17 | Cell culture studies in exercise science research part II |
| Fri July 18 | Gene knockout models in exercise science research part I |
| Mon July 21 | Gene knockout models in exercise science research part II |
| Tues July 22 | microRNAs in exercise science research part I |
| Wed July 23 | microRNAs in exercise science research part II |
| Thurs July 24 | Protein-DNA interaction interrogations in exercise science research part I |
| Fri July 25 | Protein-DNA interaction interrogations in exercise science research part II |
| **Mon July 28** | **Class project presentations** |
| **Tues July 29** | **Class project presentations** |
| **Wed July 30** | **Test 3** |