

## Course Overview

**Session 1 – January 15, 2009 – Orientation**

**Session 2 – January 22, 2009 - Tissue sampling and DNA extraction**

**Session 3 – January 29, 2009 - Mitochondrial D-loop analysis**

**Session 4 – February 5, 2009 - Analysis of mitochondrial DNA**

**Session 5 – February 12, 2009 – DNA cloning**

**Session 6 – February 19, 2009 - DNA sequencing**

**February 26 – Break**

**Session 7 – March 5, 2009 - DNA sequence analysis (Mid-term test)**

**Session 8 – March 12, 2009 - Microsatellite analysis: part I**

**Session 9 – March 19, 2009 - Microsatellite analysis: part II**

**Session 10 – March 26, 2009 – RNA extraction and characterization**

**Session 11 – April 2, 2009 – Real time PCR/gene expression analysis**

**– presentations, review**

**Final exam**

## Objectives

**To provide hands-on experience in a variety of laboratory techniques essential to studies in genomics.**

**Students will acquire skills to facilitate laboratory work on 4<sup>th</sup> year and graduate projects.**

## Course aids

**1. Reference – Molecular Cloning: A Laboratory Manual, vol 3, by Sambrook and Russell is available in the lab**

**2. Reference - Genes VIII, Lewin ed., also available in lab**

**3. Lab instructors**

**4. There is a plethora of on-line material available on each and every component covered in the course**

### **Format and Course Schedule**

At least 5 hours of laboratory exercises per week.

The main session is scheduled for 2:00 to 6:00 pm on Thursdays. However, due to the nature of the course and the activities involved, it will not always be possible to complete assignments in the allotted time period. In addition, it will be necessary to perform certain tasks on the day preceding the main session (Wednesday) and/or the day following the main session (Friday) in order to complete the week's assignment. The Wednesday session (3:00 to 4:30 pm) will be used predominantly to review topics covered and to introduce topics relevant to the upcoming lab session. Friday sessions, when necessary, will start at 2:00 pm.

### **Evaluation Scheme**

Each participant will be required to submit two (2) lab reports. Everyone will report on the experiments conducted during first seven (7) sessions dealing with mitochondrial DNA sequence analysis. Students will select one (1) of the three (3) remaining topics, i.e. microsatellite DNA analysis, RNA extraction and characterization, and real time PCR, for their second lab report.

Lab reports.....	40%
Mid-term test...	10%
Participation....	10%
Presentation....	10%
Final exam.....	30%

### **Lab Reports**

Particular attention should be paid to lab reports since they account for a considerable proportion of the grade for this course.

The format for lab reports should approximate that of a standard scientific publication with the following components:

1. Title
2. Abstract
3. Introduction
4. Materials and Methods
5. Results and Discussion
6. References

Specific guidelines for the preparation of reports such as the level of detail expected for the Materials and Methods, and Results and Discussion sections will be discussed in class and samples provided.

