AGR4905 Undergraduate Independent Study Summer C 2016
3 credits

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Office Hours: By appointment

Course Description
The purpose of AGR4905 Undergraduate Independent Study supervised by Dr. Jianping Wang is to teach students basic molecular biological techniques in the laboratory, which are necessary to conduct an experiment to address plant genetic and biological research questions. The students will learn how to read and analyze scientific literature, develop a scientific hypothesis, and apply the techniques for conducting the research to test the hypothesis.

By the end of this course students will be able to:
1. Read, discuss and critique scientific literature;
2, Perform DNA extraction, RNA extraction, RNA/DNA quantification and quantification, primer design, PCR, gel electrophoresis, gel image documentation, PCR products purification, DNA fragment cloning, DNA sequencing, and DNA sequence analysis
3. Organize their procedures, record data and write scientific observations in a laboratory note book;
4. Analyze data, present and discuss the results in writing

Prerequisites: AGR3303 Genetics and accumulative 30 hours hands-on molecular biological laboratory experience.

Meeting Room: Room 337 and 340, Cancer and Genetics Research Complex.

Meeting Periods: dependent on the student's schedule. Each student will attend the lab research for 10-15 hrs/week. Hours in the lab will be set at the beginning of the project and followed throughout the semester.

Grading: Grade will be based on four parts:

Categories	Points
Keep on schedule	12
Follow lab routine and protocols	20
Literature reading and discussion	10
Lab note book -0.5/05-27-16	15
Project report	40
Total	100

Keep on schedule (12 points): You need to spend 10-15 hours/week in the lab for 3 credits. Set up the schedule in the first week of the semester and keep on the schedule in the whole semester

for 12 weeks. Each week you will earn one point for keeping your schedule. For whatever reason you can't come for a certain time, you will not get the point for that week.

Following lab routine and protocols (20 points): For the 5 listed techniques (below) you will learn in the study, you should be able to do it independently with good quality results. You will earn 3 points for each technique showing good results. Based on lab manager's report on whether you are following the lab routine and rules every time you come to the lab. If you are reported not following the lab routine or break one of the rules, you have one point deduction from the 5 routine points.

Literature reading and discussion (13 points): we will have five 2-hour long meetings in the whole semester at your convenient time. During the meeting, you will need to present your research progress and your lab note will be checked. In the 2nd hour of the meeting, you will present and discuss a literature paper assigned for reading. 2.6 points will be given with evidence of reading the paper.

Lab note book (15 points): lab note book standard will be clarified in the first week. The note book will be checked every two weeks in a meeting. The note book meeting the standard will be given three points at each checking time.

Project report (40 points): a project will be assigned at the first week of the semester and a project report in word document or in PowerPoint format is due at Wednesday of the final exam week. The report should include four parts: introduction, material and methods, results, conclusion and discussion, and citation. Each complete part with good organization and relevance will be given 8 points. Other than that, points will be given proportionally.

Grade scale:

A	90-100
B	80-89
C	70-79
D	60-69
E	< 60

Tentative schedule

Week	Activities
1	**Set up schedule for lab and meeting times; Set up the project; Select literature paper**
2	**Work on project; Technique 1: DNA isolation and quality check**
3	**Work on project; Technique 1: DNA isolation and quality check; meeting 1 ---------- - 1 point for notes**
4	**Work on project; Technique 2: PCR setting**
5	**Work on project; Technique 3: Gel electrophoresis and documentation; meeting 2**
6	**Work on project; ----------minus 2 points for not showing the notebook.**
7	**Work on project; meeting 3----------full points.**
8	**Work on project; Technique 4: Primer design**
9	**Work on project; Technique 5: sequencing and sequence analysis; meeting 4**
10	**Work on project;**
11	**Project report written up; meeting 5**
12	**Project report due**

No exams will be given for this course.

Recommended Reading:
Depend on each student's project, two literature papers will be recommended to read.

Academic Honesty
As a result of completing the registration form at the University of
Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University".

Accommodations for Students with Disabilities
Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodations.

UF Counseling Services
Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:
1. University Counseling Center, 301 Peabody Hall, 2-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 2-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 2-1161, sexual assault counseling;
4. Career Resource Center, Reitz Union, 2-1601, career development assistance and counseling.

NOTE: The instructors reserve the right to change any and all information contained in this and other handouts in this course.