

CBM003 ADD/CHANGE FORM

Undergraduate Council
 New Course Course Change
 Core Category: NONE Effective Fall 2007

or

Graduate/Professional Studies Council
 New Course Course Change
 Effective Fall

1. Department: ET College: TECH

2. Person Submitting Form: Rupa Iyer Telephone: 713-743-4076

3. Course Information on New/Revised course:

- Instructional Area / Course Number / Long Course Title:
BTEC / 3100 / Instrumentation And Measurement Laboratory

- Instructional Area / Course Number / Short Course Title (30 characters max.)
BTEC / 3100 / INSTRUMENT & MEASUREMENT LAB

- SCH: 1.00 Level: JR CIP Code: 2612010022 Lect Hrs: 0 Lab Hrs: 3

4. Justification for adding/changing course: To provide for new discipline areas

5. Was the proposed/revised course previously offered as a special topics course? Yes No

If Yes, please complete:

- Instructional Area / Course Number / Long Course Title:

 / /

- Content ID: Start Date (yyyy3):

6. Is this course offered for undergraduate credit only? Yes No

7. Authorized Degree Program(s): BS, Biotechnology

- Does this course affect major/minor requirements in the College/Department? Yes No

- Does this course affect major/minor requirements in other Colleges/Departments? Yes No

- Are special fees attached to this course? Yes No

- Can the course be repeated for credit? Yes No

8. Grade Option: Letter (A, B, C ...) Instruction Type: laboratory

9. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title

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- Start Date (yyyy3): Content I.D.:

10. Proposed Catalog Description:

Cr: 0-3. Prerequisites: BIOL 3301. Description (30 words max.): Provides a hands-on experience of the techniques and instrumentation used in the modern biotechnology laboratory.

11. Dean's Signature:  Date: 10/12/06

Print/Type Name: Fred D. Lewallen

RECEIVED OCT 18 2006

APPROVED JAN 24 2007

University of Houston

Proposed Course Outline for BTEC 3100, Instrumentation and Measurement
laboratory

Course Objectives: Students who successfully complete this course will be able to:

- Make calculations and prepare stock laboratory solutions..
- Purify and maintain bacterial strains on agar plates.
- Culture pure microbial strains in liquid media.
- Clone DNA sequences into bacterial plasmids
- Transform bacteria with recombinant DNA plasmids
- Purify recombinant plasmid DNA from bacteria.
- Perform agarose gel electrophoresis to separate DNA fragments.
- Analyze and map recombinant DNA fragments.
- Set up PCR reactions and operate a thermal cycler.
- Analyze PCR reaction products and calculate genetic frequencies.
- Analyze DNA sequence information.
- Perform protein assays
- Determine protein structure
- Analyze proteins by SDS polyacrylamide gel electrophoresis..
- Maintain a laboratory notebook according to biotechnology industry standards.

Course Outline

1. **Analyze Clones**
 - a. Verification of clones
 - b. Isolation of Plasmid DNA
 - c. Restriction Cleavage
 - d. Restriction Activity
2. **Structure of OPH Gene**
 - a. Sequencing and Sequence analysis
 - b. Homology searches of genomic databases
 - c. Homology alignments and identification of conserved residues
3. **Expression of OPH**
4. **Enzyme Assay of Organophosphorus Hydrolase**
 - a. A qualitative assay
 - b. A quantitative assay
 - c. Discuss factors affecting enzyme function and production
 - d. Broad spectrum activity: a survey of activity against a variety of OP pesticides
5. **Characteristics of Organophosphorus Hydrolase**
 - a. Introduction to protein structure
 - b. Visualization using PyMol
 - c. SDS PAGE (general protein stain) vs. native PAGE (OPH specific activity stained)