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 / 3301 / Principles Of Genomics/Proteomics And Bioinformatics
   - Instructional Area / Course Number / Short Course Title (30 characters max.)
     BTEC / 3301 / GENOMICS/PROTEOMICS & BIOINFO
   - SCH: 3.00 Level: JR CIP Code: 2612010002 Lect Hrs: 3.0 Lab Hrs: 0

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: lecture

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:
   ___ / ___ / ___
   - Start Date (yyyy3): ___ Content ID: ___

10. Proposed Catalog Description:
   Cr. (3-0) • Prerequisites: BIOL 2333/2133, 3301, and ITEC 2334 Description (30 words max.): Overview of the fields of bioinformatics and genomics. Topics, tools, issues and current trends in these and related fields will be discussed.

11. Dean’s Signature: ___________________________ Date: 10/12/06

Print/Type Name: Fred D. Lewallen
Course Objectives: Students who successfully complete this course will be able to:

- Describe genomics, proteomics and related fields and their application in predication of structure and function
- Analyze gene expression and interpret its significance
- Familiar with topics, tools, issues and current trends in these and related fields.
- Recognize the utility of bioinformatics applications in proteomics data analysis

Course Outline

1. Prokaryotic genome
   a. Gene Structure
   b. Gene Density
   c. G- C Content
2. Eukaryotic Genome
   a. Gene Structure
   b. Open Reading Frames
   c. GC- content
   d. Gene Expression
   e. Transposition
   f. Gene Density
3. Genomics
   a. Prokaryotic genomes and gene recognition
   b. Eukaryotic genomes and gene recognition
4. Protein Folding
   a. Polypeptide
      i. Secondary Structure
      ii. Tertiary and Primary structure
      iii. Structure prediction
      iv. Predicting RNA secondary structures.
5. Proteomics
   a. Protein Classification
   b. Experimental Techniques
   c. Inhibitors and Drug Design
   d. Ligand Screening
   e. X- ray crystal Structures
   f. Empirical methods and prediction techniques
   g. Posttranslational modification and prediction
6. Proteomics
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   e. X-ray crystal Structures
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8. Introduction to programming and data structures
   a. The basics
   b. Program control
   c. Readability
   d. Data structures
   e. Input and output