CBM003 ADD/CHANGE FORM

☒ Undergraduate Council	or	☐ Graduate/Professional Studies Council
☒ New Course ☐ Course Change		☐ New Course ☐ Course Change
Core Category: NONE Effective Fall 2007		Effective Fall __

1. Department: ET College: TECH

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APPROVED JAN 2 4 2007

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 I.D.: _____
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: [redacted] Date: 10/12/06

    Print/Type Name: Fred D. Lewallen

University of Houston
Proposed Course Outline for BTEC 3301, Introduction to Genomics/Proteomics and Bioinformatics

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**
    - 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

7. **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
8. **Introduction to programming and data structures**
   a. The basics
   b. Program control
   c. Readability
   d. Data structures
   e. Input and output

Recommended Text: Krane, D. E. and Raymer, M. L. (2003) Fundamental Concepts of Bioinformatics. Benjamin Cummings.