

## **PROPOSAL TO ADD A COURSE**

### **1. CATALOG DESCRIPTION FOR COURSE**

CPSC 5230 Business Intelligence (3) Three hours lecture. Prerequisite: CPSC5000 or approval of department head. Discussions on advanced database systems, data warehousing, online analytical processing, data mining, decision support systems, artificial intelligence and other Business Intelligence topics. Standard letter grade.

### **2. COURSE OUTLINE**

Week 1 Intro to Decision Support Systems and BI, Review of relational database and SQL  
Week 2 Decision Making, Systems, Modeling, and Support, Advanced SQL queries  
Week 3 Decision Support Systems Concepts, Methodologies, and Technologies: An Overview, Triggers and Stored Procedures, Atomic Transactions  
Week 4 Modeling and Analysis  
Week 5 An introduction/review of transaction processing systems  
Week 6 Data Mining for Business Intelligence  
Week 7 Data Warehouse scheme: Operational and Star Schemas, Pivot Tables and Charts, Executive Dashboards  
Week 8 Data Warehousing (ETL) and concept of multi-dimension cubes  
Week 9 Online Analytical Processing (OLAP)  
Week 10 OLAP, Microsoft SSAS Tutorials, Microsoft MDX  
Week 11 Artificial Neural Networks for Data Mining, IBM Cognos  
Week 12 Concept of data and knowledge management  
Week 13 Artificial Neural Networks for Data Mining  
Week 14 Data Mining and Text/Web mining

### **3. METHOD OF EVALUATION**

90+ = A; 80-89 = B; 70-79 = C; 60-69 = D; below 60 = F.

Assignments .....	30%
Graduate Project.....	15%
Exams (1 & 2).....	30%
Final .....	25%
Total .....	100%

### **4. JUSTIFICATION**

This course is proposed to meet a growing business need of individuals skilled in information and business intelligence, data analytics, business programming and other software skills. The proposed course will combine theory and practice to enable the student to gain the necessary knowledge to compete in the ever changing work environment. Students will learn concepts and methods designed to improve the business decision-making process by putting targeted information into the hands of those who need it most. They will understand business critical processes that drive organizational structures and systems within the context of varying stakeholder interests. Additionally, they will be able to define and evaluate potential initiatives that best fit organizational goals. This proposal will enable UTC to meet the need of local industry such as Blue Cross Blue Shield, U.S. Xpress, UNUM, etc., and educate professionals in areas of business intelligence and data analytics. Specifically, at the end of

this course students should be able to effectively develop, manage, integrate, and use corporate information resources. Specifically, students should be able to:

1. provide a working definition for business intelligence in general and various classifications of business intelligence.
2. build upon and enhance his knowledge of relational database technology and skills performing complex database queries, triggers, and stored procedures.
3. become familiar with a variety of data visualization options, including bar/line/pie/bubble charts, digital dashboards, virtual reality displays, and key performance indicator gauges.
4. apply data visualization techniques to a wide variety of data sources in order to present user-friendly and informative interfaces to end-users.
5. demonstrate knowledge of the processes used to extract operational data, transform and cleanse this data, and load it into a data warehouse or data mart.
6. demonstrate a working knowledge of the difference in structure between relational databases and multidimensional data warehouse architectures.
7. demonstrate a working knowledge of relationship between facts tables and dimension tables, as well as understanding basic star and snowflake schemas.
8. design online analytical processing (OLAP) models, and build multidimensional cubes that are capable of providing summary information as well as drilling down for detailed data.
9. demonstrate a working knowledge of a variety of data mining models and structures: inductive decision trees, naïve Bayes algorithms, clustering algorithms, neural networks, and time sequences.
10. apply data mining models to real-world data sets to train the models for predictive behavior, and then apply the trained models to test data in order to evaluate their accuracy and reliability.
11. learn how to enhance data mining performance by modifying model parameters and adjusting feature selection decisions.
12. use commercial and open-source business intelligence tools to develop their BI applications.

## **5. EVIDENCE OF POST-BACCALAUREATE RIGOR**

Graduate Students will be challenged with extensive reading, writing and graduate project with research value. They are required to undertake and successfully finish a semester-long graduate project. Students select the topics of interest on the condition that they have research components and are related to the course. Potential topics and resources are included in the graduate project section of each attached syllabus. Projects, based on students' interests, will be approved by instructors of the course. Students can search the ACM Digital Library or IEEE Explorer in the UTC on-line library. Students need to provide a page of abstract, a project report, and a PowerPoint version of slides for the presentation. All the presentations must address the following questions:

How is the problem to be solved?

What is the author's solution(s)?

How are the solutions to be evaluated?

What are the strengths, compared with prior works?

Do you think there is any weakness in the proposed work?

**6. RESOURCES**

This proposal does not require any additional resources such as staff support, financial resources or physical facilities from the Department of Computer Science and Engineering or any other departments or programs. This course will allow us to more fully utilize the resources we have already in the department. We have the capacity to enroll more graduate students than we presently have, and this concentration will help us recruit more graduate students and utilize our capacity.

**7. CONTACT**

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**8. PLANNED FREQUENCY**

Fall semesters

**9. EXPLANATION of Duplication**

There is NO duplication or overlapping of proposed course content with courses offering from other departments.

**10. CATALOG DESCRIPTION FOR PROGRAM**