

Request for Graduate Course Addition

1. Prepare one paper copy with all signatures and supporting material and forward to the Graduate Council Chair.
2. E-mail one identical PDF copy to the Graduate Council Chair. If attachments included, please merge into a single file.
3. **The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: MedicineDept/Division: Department of ClinicalAlpha Designator/Number: CTS 615 Graded CR/NCContact Person: Alfred Cecchetti, PhD, MSc, MSc ISPhone: 304-691-1585**NEW COURSE DATA:**New Course Title: Introduction to Clinical Databases

Alpha Designator/Number:

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Title Abbreviation:

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(Limit of 25 characters and spaces)

Course Catalog Description:
(Limit of 30 words)

This course is an introduction to the concepts of database processing and management. Focus is on the concepts like DBMS, SQL, clinical data warehouse systems, etc.
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Co-requisite(s): NoneFirst Term to be Offered: Summer 2019Prerequisite(s): NoneCredit Hours: 3Course(s) being deleted in place of this addition (*must submit course deletion form*): None

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.

Dept. Chair/Division Head _____	Date _____
Registrar _____	Date _____
College Curriculum Chair _____	Date _____
Graduate Council Chair _____	Date _____

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College: Medicine

Department/Division: Department of Clinical and T Alpha Designator/Number: CTS 615

Provide complete information regarding the new course addition for each topic listed below. Before routing this form, a complete syllabus also must be attached addressing the items listed on the first page of this form.

1. FACULTY: Identify by name the faculty in your department/division who may teach this course.

Gouthami Kothakapu, MSc CS

2. DUPLICATION: If a question of possible duplication occurs, attach a copy of the correspondence sent to the appropriate department(s) describing the proposal. Enter "**Not Applicable**" if not applicable.

This course is unique in the following ways:

1. Students will be working with de-identified data from MU-JCESOM Clinical Data Warehouse.
2. The course will be tailored towards understanding clinical and translational research database systems.

3. REQUIRED COURSE: If this course will be required by another department(s), identify it/them by name. Enter "**Not Applicable**" if not applicable.

Not Applicable

4. AGREEMENTS: If there are any agreements required to provide clinical experiences, attach the details and the signed agreement. Enter "**Not Applicable**" if not applicable.

Not Applicable

5. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials to teach this course, attach an estimate of the time and money required to secure these items. (Note: Approval of this form does not imply approval for additional resources.) Enter "**Not Applicable**" if not applicable.

Not Applicable

6. COURSE OBJECTIVES: (May be submitted as a separate document)

Upon completion of this course, students are expected to:

1. Understand different database models
2. Understand the relational database model
3. Write queries in SQL
4. Database design UML and ER Modeling
5. Understand Data Warehouse based on Marshall Data Sources
6. Learn REDCap

7. COURSE OUTLINE (May be submitted as a separate document)

Week 1 - Introduction to Database systems, Structure and Unstructured Data, History
Week 2 - Database Models - RDBMS, NoSQL, OODB, etc.
Week 3 - The relational Database Model - advantages, disadvantages, ACID properties
Week 4 - Entity Relationship Modeling
Week 5, 6 - Introduction to Structured Query Language (SQL) - create, insert, update, delete
 - Installation Instructions for MS SQL Server
Week 7 - Advanced SQL - joins, views stored procedures, functions
Week 8 - MIDTERM
Week 9 - Advanced Concepts - Security, Connectivity, Big Data
Week 10 - Data Warehouse
Week 11 - Clinical Research Data at MU and its terms: Affinity, Centricity, Cerner, All Scripts
Week 12 - Closely work on demo data from procedures, registration, diagnosis, laboratory, etc.
Week 13 - Exploring tools like REDCap for Data Collection and Management
Week 14 - FINAL

8. SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATES (May be submitted as a separate document)

Text and Materials:

Cornel, Database Systems, 12th edition ISBN: 978-1-3056-2747-2, Cengage L (free pdf available online) <http://cri.uhicago.edu/crdw/>

Software:

Microsoft Access

Microsoft SQL Server

Microsoft SQL Server Management Studio

9. EXAMPLE OF INSTRUCTIONAL METHODS (Lecture, lab, internship)

Lecture

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10. EXAMPLE EVALUATION METHODS (CHAPTER, MIDTERM, FINAL, PROJECTS, ETC.)

Class Assignments 30%

Mid-terms 30%

Final Exam 30%

Attendance, In-class activity & participation 10%

11. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE/GRADUATE COURSE

None

12. PROVIDE COMPLETE BIBLIOGRAPHY (May be submitted as a separate document)

C. J. Date, A. Kannan and S. Swamynathan, An Introduction to Database Systems, Pearson Education, Eighth Edition, 2009.

Abraham Silberschatz, Henry F. Korth and S. Sudarshan, Database System Concepts, McGraw-Hill Education (Asia), Fifth Edition, 2006

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Please insert in the text box below your course summary information for the Graduate Council agenda. Please enter the information exactly in this way (including headings):

Department:

Course Number and Title:

Catalog Description:

Prerequisites:

First Term Offered:

Credit Hours:

Department: Department of Clinical and Translational Sciences (DCTS)

Course Number and Title: CTS 615 Introduction to Clinical Databases

Catalog Description: This course is an introduction to the concepts of database processing and management. Focus is on the concepts like DBMS, SQL, clinical data warehouse systems, etc.

Prerequisites: None

First Term Offered: Summer 2019

Credit Hours: 3

CTS 615 Introduction to Clinical Databases
Marshall University, School of Medicine
Summer 2019

General Information:

Professor: Gouthami Kothakapu
Phone: 304-691-6816
Email: kothakapu@marshall.edu
Office: 281 TGRI, ECCC 2nd Floor
Lecture: TBA

Course Description: This course is an introduction to the concepts of database processing and management especially as it relates to clinical translational research. The focus is to bring bioscience research discoveries into patient care. Primary topics include discussions of major database types, history of databases and database issues, security, database principles, DBMS, RDBMS, SQL Queries, Big Data, Marshall Clinical Data Warehouse.

Credit Hours: 3

Course Focus

Translational research is concerned with bringing bioscience research discoveries into patient care. Translational studies aim to accelerate research findings from bench (biological or mathematical using animal as well as human vectors) to bedside and into widespread clinical practice.

Students in our courses will learn 1) the language of the medical researcher (e.g., ICD9/10, CPT, LOINC, Animal terminologies, etc.), 2) how to organize data from the electronic medical record as well as other unstructured sources (animal or human) to define the clinical properties of many diseases, 3) the close association of informatics with security and privacy issues and 4) the core functions necessary to develop novel technologies that are used to acquire and analyze translational data in an integrated fashion.

Text and Materials:

Cornel, Database Systems, 12th edition ISBN: 978-1-3056-2747-2, Cengage L (free pdf available online)
<http://cri.uhicago.edu/crdw/>

Software:

Microsoft Access
Microsoft SQL Server
Microsoft SQL Server Management Studio

Program Outcomes: The goal of this program is to equip physicians in training and other biomedical scientists with information and training they need to translate basic clinical advances into improved patient care that will enhance the quality of life for patients in the Appalachian region, particularly southern West Virginia. Students will receive education in clinical trial design, epidemiology, statistics, informatics, Technology and translational research. Upon successful graduation from this program:

1. Students will be able to lead clinical trials of new drugs and procedures in West Virginia, particularly in its rural regions
2. Students will be strong applicants for positions in schools of medicine and medical centers that have clinical and translational science centers

Course Outcomes: The following outcomes have been adopted for this course. All outcomes listed below have direct relevance to course material. Upon completion of this course, students are expected to:

1. Understand different database models
2. Understand the relational database model
3. Relational Database design and using ER Modeling
4. Structured Query Language (SQL)
5. Understand Data Warehouse based on Marshall Data Sources

Topical Outline:

1. Introduction to Database systems
2. Database Models – RDBMS, NoSQL, OODB, etc.
3. The relational Database Model – advantages, disadvantages, ACID properties
4. Entity Relationship Modeling
5. Normalization of Database tables
6. Introduction to Structured Query Language (SQL) - create, insert, update, delete
7. Advanced SQL - joins, views, triggers, stored procedures
8. Data Security
9. Data Warehouse
10. Big Data
11. Clinical Data - Affinity, Centricity, Cerner, All Scripts
12. Closely work on example data from procedures, registration, diagnosis, laboratory, etc. tables
13. Exploring tools like REDCap for Data capture and management

Policies:

Attendance Policy: Attendance is required, notification through email or in the classroom should be at least 24 hours in advance.

Grading policy: All missing assignments are graded with zero, late assignments will have a penalty. If submitted after due date will be considered missing if they are not submitted by the following session (one week).

91% - 100% A

81% - 90 % B

71% - 80 % C

61% - 70 % D

51 % - 60% F

Grade Weights:

Class Assignments 30%

Mid-terms 30%

Final Exam 30%

Attendance, In-class activity & participation 10%

Exams and Assignments: There will be two exams. One during middle of the semester including topics covered earlier. Another exam in the final week includes later topics discussed in the class after midterm. 4-5 assignments can be expected throughout the semester. Additional homework can be given weekly.

Exam Makeup Policy: Make-up exams will be given only in the case of a documented emergency or with approval from the instructor at least 24 hours prior to the exam. Make-up exams may be different from the original exam.

Classroom and Lab Behavior: The use of mobile devices (making calls, texting, emailing, etc.) is not permitted during class and lab times. You may leave your phone on vibrate or silence mode in order to receive emergency calls.

Academic Integrity: All students are expected to present and represent their own original work and properly credit sources used in preparation of their own original work. Discussion of programming assignments and helping each other with debugging is permissible but copying from others or the internet is not permissible.

Harassment Policy: The University strongly disapprove and expressly prohibit any form of harassment or discrimination based on race, color, national origin, ancestry, religion, sex, age, sexual orientation, disability, veteran status, marital status or any other characteristic protected by applicable federal, state or local laws.

ADA Policy: If a student wishes to be identified as having a physical, mental, or learning disability, that may or may not require reasonable accommodation(s), he/she must register with the Office of Accessibility. These registered students should identify themselves to their instructors and provide a written statement from the Accessibility Office that indicates the appropriate accommodations. The process of a student self-proclaiming the need for accommodation should occur as early in the semester as possible.

FERPA: The University is committed to fully respecting and protecting the rights of students under the Family Educational Rights and Privacy Act (FERPA). These rights generally include the right to inspect, review and seek amendment to the student's education records and the right to provide written consent before personally identifiable information from education records is disclosed. Under FERPA, students have the right to file a complaint with the US Department of Education concerning alleged failures to comply with FERPA.