Chair: Tracy Christofero | GC#6: Course Addition

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: CITE | Dept/Division: Computer Science | Alpha Designator/Number: IS/545 | (●) Graded ( ) CR/NC

Contact Person: Wook-Sung Yoo | Phone: x5452

NEW COURSE DATA:

New Course Title: Healthcare Data Analytic and Visualization

Alpha Designator/Number: IS545

Title Abbreviation: Healthcare Data Analytics

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

The course focuses on the systems, techniques, strategies and methods of big data analysis, data mining and machine learning algorithms and data visualization techniques in healthcare settings.

Co-requisite(s): None | First Term to be Offered: Fall 2018

Prerequisite(s): Graduate Status | Credit Hours: 3

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

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

Dept. Chair/Division Head Yoo, Wook-Sung	Date Jan. 11, '18
Registrar Sonya L 110401	Date 1-11-18
College Curriculum Chair	Date
Graduate Council Chair	Date

Request for Graduate Course Addition - Page 2

College: CITE Department/Division: Computer Science Alpha Designator/Number: IS/545

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.

Haroon Malik, Ph.D. (primary)
Liu Lu, Ph.D. (secondary)
Elias Majdalani Ph.D. (secondary)

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.

Not Applicable

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

Health Informatics

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)

Please refer to the attached syllabus

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

Please refer to the attached syllabus

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

Data Mining: A Tutorial-Based Primer, Second Edition (Chapman & Hall/CRC Data Mining and Knowledge Discovery Series), 2nd Edition, Richard J. Roiger (Author), Chapman and Hall/CRC; 2 edition (December 1, 2016), ISBN-10: 1498763979, ISBN-13: 978-1498763974

Healthcare Data Analytics (Chapman & Hall/CRC Data Mining and Knowledge Discovery Series), 1st Edition, by Chandan K. Reddy (Editor), Charu C. Aggarwal (Editor), Chapman and Hall/CRC; 1 edition (June 23, 2015), ISBN-10: 1482232111, ISBN-13: 978-1482232110

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

Recorded Lecture (Online Course)
Lecture Slides
Assignments and exams
Discussion Boards

Request for Graduate Course Addition - Page 4

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

Midterm and Final Exam
Homework Projects
Discussion Board Posts
Final Project

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

Not Applicable

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

Please see attached syllabus

Healthcare Business Intelligence Laura B. Madsen, Wiley ISBn: 978-1-118-21780-1

Request for Graduate Course Addition - Page 5

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: Information Systems
Course Number and Title: IS 545 - Healthcare Data Analytics and Visualization
Catalog Description: The course focuses on the systems, techniques, strategies and methods of big data analysis, data mining and machine learning algorithms and data visualization techniques in healthcare settings.
Prerequisites: Graduate Status
First Term Offered: Fall 2018
Credit Hours: 3

I'd rather attempt to do something great and fail than to attempt to do nothing and succeed.

~Robert H. Schuller

Course Title/Number **IS 545 – Healthcare Data Analytics and Visualization**	
Semester/Year	Fall 2018
Days/Time	Online Course – No Meeting times or dates
Location	Online
Instructor	TBA
Office	TBA
Phone	
Email	
Office/Hours	By Appointment; Open communication via email at any time
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to http://www.marshall.edu/academic-affairs/policies/. Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Course Description from Catalog

The course focuses on the systems, techniques, strategies and methods of big data analysis, data mining and machine learning algorithms and data visualization techniques in healthcare settings.

Student Learning Outcome (Students will...)	Practiced by:	Assessed by:
Be familiar with multiple statistical analysis applications, and be able to perform standard statistical analyses on healthcare datasets with SAS.	Reading assignments, Homework	Homework, Projects, Midterm
Be able to import and integrate data from a variety of different sources and formats into standard statistical analysis applications.		
Be able to manipulate data within standard statistical analysis applications to facilitate analysis of healthcare datasets.		
Be able to identify the types of data presented in a healthcare dataset and use this information to select an appropriate statistical test.		
Be able to summarize, analyze, report, and present analytical results a clear an coherent form using appropriate software..		

Attendance Policy

Online class: Not applicable.

Required Texts, Additional Reading, and Other Materials	
	Data Analytics in Healthcare Research: Tools and Strategies
Author	David Marc, MBS, CHDA, and Ryan Sandefer, MA, CPHIT
ISBN	978-1584264439
Publisher	AHIMA Press
Pub. Date	2016

Course Requirements/Due Dates

Discussion Board Posts

Most weeks, there will be a discussion board post due.

Homework: The homework assignments will utilize health care data sets.

#	Description	Due beginning of:
1	Advanced Excel Orientation Homework	2nd Week
2	Advanced Charts/Graphs -> Visualization Homework	3rd Week
3	Advanced Excel Pivot Tables Homework	5th Week
4	Project 1	6th Week
5	SAS Orientation Homework	7th Week
6	SAS Homework 1	9th Week
7	SAS Homework 2	11th Week
8	Project 2	13th Week
9	Final Report & Presentation	14th Week
10	Final Presentation Discussion Posts	15th Week

Final Report & Presentation: Due beginning of the 14th week of class.

Each student will be required to do a final report, and five minute recorded presentation on a data analysis and visualization software application: May use one of the following (or other instructor approved application):

- ☐ SAS
- ☐ SPSS
- ☐ Google Analytics
- ☐ Crystal Reports
- ☐ SSAS (SQL Server Analysis Services)
- ☐ Redcap
- ☐ Tableau
- ☐ POWERBI
- ☐ SQL Server and Visual Studio Data Tool
- ☐ Jaspersoft

Discussion Post/Response to all other students' presentations due by Midnight the last day of class.

Grading Policy	
A	90-100%
B	80-89%
C	70-79%
F	Below 70%
Activities & Points	
15%	Discussion Board Posts
20%	Homework Assignments
15%	Project 1
15%	Project 2
20%	Final Report
10%	Final Presentation
5%	Final Discussion Post

Late Assignments will be deducted 10% for each day they are turned in late.

100% credit will be given for completing all aspects of the assignment correctly. Any points deducted will have an accompanying explanation.

10% extra credit can be earned on any assignment in which a student goes above and beyond the requirements or produces otherwise exceptional work.

Note: The professor reserves to the right to make changes to this syllabus.

Course Schedule		
Week	**Text Book**	**Topic**
1	Lynda.com, MuRemote Chapter 1	Introduction to Data Analysis and Visualization – Why is it important in Healthcare? Data and Information Governance
2	Chapter 2	Data Analytics and Privacy and Security Data Visualization, Advanced Excel Charts/Graphs
3	Chapter 3	Pivot Table Exploration Introduction to Data Analysis: Tools, Techniques, and Data
4	Chapter 5	Pivot Table: Data Importing, Integration Introduction to R
5	Chapter 6	Project 1: Practical Application of all knowledge to date Exploratory Data Analysis and Data Visualization of MS-DRGs
6	Chapter 7	Evaluating Participation in the EHR Incentive Program SAS Orientation; select final report application
7	Chapter 8	Population Health: Hazardous Air Pollutants and County Level Health Measures SAS: Numerical Summaries, Probability, OddsRatio (OR)/Relative Risk (RR)
8	Chapter 9	Comparative Effectiveness Research: Case Study of Hospital Readmissions SAS: Interpreting Numerical Summaries, Probability, OR/RR
9	Chapter 10	Comparing Medicare Spending per Patient and Patient Satisfaction Scores SAS: Importing DataSets, Distribution of Mean, C.I., Hypothesis testing
10	Chapter 11	Evaluating Excessive Hospital Readmissions: The Geographic Impact SAS: Correlation, Regression, Inference on Proportions.
11	Chapter 12	Nursing Home Excessive Hospital Readmissions: The Geographic Impact Project 2: Practical Application of all knowledge to-date
12	Chapter 13	The Relationship Between a Quality Measure and Staffing Hours in Nursing Homes Expectations or Report, Presentation, Discussion
13	Chapter 14	Studying the Relationship Between Primary Care Access and Preventive Care Utilization Final Reports & Presentation Due
14	Thanksgiving Break!	Thanksgiving Break! No Reading Assigned
15	Chapter 15	Using Data Mining Techniques to Predict Healthcare-Associated Infections Issues with Database Management in Healthcare
16	Finals Week	Final Discussion Posts Due