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: Medicine   Dept/Division:Department of Clinic   Alpha Designator/Number: CTS 616   ⦿ Graded   ◯ CR/NC

Contact Person: Alfred A Cecchetti PhD, MSc, MSc IS   Phone: 304-691-1585

NEW COURSE DATA:

New Course Title: Introduction to Clinical Programming using C#

Alpha Designator/Number: | C | T | S | | 6 | 1 | 6 | | | |

Title Abbreviation: | I | N | T | R | O | | C | L | I | N | I | C | A | L | | P | R | O | G | R | A | M | | C | # |

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)

Course uses C# to manipulate data within the Clinical database using LINQ/other applications. The focus is on translational research, to bring bioscience research discoveries into patient care.

Co-requisite(s): none   First Term to be Offered: Summer 2019

Prerequisite(s): none   Credit Hours: 3

Course(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 _____

College: Medicine   Department/Division: Department of Clinical and T   Alpha Designator/Number: CTS 616

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.

Alfred A Cecchetti PhD, MSc, MSc IS

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 since it focuses on C# programming for clinical or machine learning use cases (e. g., interfacing clinical data warehouse, corpus building). Current course offerings are not medical research oriented.

3. REQUIRED COURSE: If this course will be required by another deparment(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)

(1) The student will setup the Integrated Development Environment (IDE) along with the tools required to develop medical applications.
(2) Understand the concepts and elementary use of .NET and the .NET library.
(3) Understand the syntax and use of C# as a development tool in a clinical translational environment.
(4) Be able to use C# in desktop, web and mobile phone application development with a focus on translational research.
(5) Student will learn what a clinical data warehouse is and how to access and manipulate data contained within it.

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

 see attached course outline

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

 Visual Studio Community Edition (Free download)
 MS SQL 2016 Community Edition (Free download)
 Optional: Professional Visual Studio 2017, Bruce Johnson, ISBN: 978-1-119-40458-3. https://www.amazon.com/Professional-Visual-
 Studio-Bruce-Johnson/dp/1119404584

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

 lecture

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

Exam1 100 points, Exam2 100 points, Exam3 100 points, Exam4 100 points, Exam5 100 points, Exam6 100 points, Exam7 100 points

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

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

https://www.introprogramming.info/wp-content/uploads/2013/07/Books/CSharpEn/Fundamentals-of-Computer-Programming-with-CSharp-Nakov-eBook-v2013.pdf (free download)

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: Department of Clinical and Translational Sciences (DCTS)
Course Number and Title: CTS 616 Introduction to Clinical Programming using C#
Catalog Description: Course uses C# to manipulate data within the Clinical database using LINQ/other applications. The focus is on translational research, to bring bioscience research discoveries into patient care.
Prerequisites: none
First Term Offered: Summer 2019
Credit Hours: 3

CTS 616 Introduction to Clinical Programming using C#
Marshall University, School of Medicine Summer 2019

General Information:

Professor: Alfred Cecchetti, PhD, MSc, MSc IS
Phone: 304-691-1585
Email: cecchetti@marshall.edu
Office: 281 TGRI, ECCC 2nd Floor
Lecture: TBA

Course Description: Course uses C# to manipulate data within the Clinical database using LINQ/other applications. The focus is on translational research, to bring bioscience research discoveries into patient care.

Credit Hours: 3

Course Focus:

This course focuses on C# programming for clinical and machine learning use cases (e. g., interfacing clinical data warehouse, corpus building). Console and application development in translational research will be introduced to provide assistance with research discoveries involved with patient care.

Text and Materials:

Optional: Professional Visual Studio 2017, Bruce Johnson, ISBN: 978-1-119-40458-3. https://www.amazon.com/Professional-Visual-Studio-Bruce-Johnson/dp/1119404584

Software:

Visual Studio Community Edition (Free download)
MS SQL 2016 Community Edition (Free download)

Program Outcomes:

Students in our courses will learn

1. The student will setup the Integrated Development Environment (IDE) along with the tools required to develop medical applications.
2. Understand the concepts and elementary use of .NET and the .NET library.
3. Understand the syntax and use of C# as a development tool in a clinical translational environment.
4. Be able to use C# in desktop, web and mobile phone application development with a focus on translational research.
5. Student will learn what a clinical data warehouse is and how to access and manipulate data contained within it.

Topical Outline:

1. Introduction to C#

2. Getting Started with Forms and Controls
3. Reading Input with TextBox Controls
4. Decision Structures and the if Statement
5. More About ListBoxes
6. Introduction to Methods
7. LINQ
8. Arrays

Policies:

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

Grading policy:
91% - 100% A
81% - 90 % B
71% - 80 % C
61% - 70 % D
51 % - 60% F

Grade Weights:
Exam 1 100 points,
Exam 2 100 points,
Exam 3 100 points,
Exam 4 100 points,
Exam 5 100 points,
Exam 6 100 points,
Exam 7 100 points

Exams and Assignments: There will be seven exams.

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.

Course outline for Clincal Programming using C#

Week 1 and 2	I.Introduction	
	A.Hardware and Software	
	B.How Computers Store Data	
	C.How a Program Works	
	D.Graphical User Interfaces	
	E.Objects	
	F.The Program Development Process	
	G.Getting Started with the Visual Studio Environment	
		exam
Week 3 and 4	II.Getting Started with Forms and Controls	
	A.Creating the GUI for Your First Visual C# Application	
	B. Introduction to C# Code	
	C. Writing Code for the Hello World Application	
	D. Label Control	
	E. Making Sense of IntelliSense	
	F. PictureBox Controls	
	G. Comments, Blank Lines, and Indentation	
	H. Writing the Code to Close an Application's Form	
	I. Dealing with Syntax Error	
		exam
Week 5 and 6	III. Reading Input with TextBox Controls	
	A. A First Look at Variables	
	B. Numeric Data Type and Variables	
	C. Performing Calculations	
	D. Inputting and Outputting Numeric Values	
	E. Formatting Numbers with the ToString Method	
	F. Simple Exception Handling	
	G. Using Named Constants	
	H. Declaring Variables as Fields	
	I. Using the Math Class	
	J. More GUI Details	
		exam
	K. Using the Debugger to Locate Logic Errors	
Week 7 and 8	IV. Decision Structures and the if Statement	
	A. The if-else Statement	
	B. Nested Decision Structures	
	C. Logical Operators	
	D. bool Variables and Flags	
	E. Comparing Strings	
	F. Preventing Data Conversion Exceptions with the TryParse Method	
	G. Input Validation	
	H. Radio Buttons and CheckBoxes	
	I. The switch Statement	
	J. Introduction to List Boxes	
		exam

week 9 and 10	V. More About ListBoxes	
	A. The while Loop	
	B. The ++ and -- Operators	
	C. The for Loop	
	D. The do-while Loop	
	E. Using Files for Data Storage	
	F. The OpenFileDialog and SaveFileDialog Controls	
	G. Random Numbers	
	H. The Load Event	
		exam
week 11 and 12	VI. Introduction to Methods	
	A. void Methods	
	LINQ	
	B.Passing Arguments to Methods	
	C.Passing Arguments by Reference	
	D.Value-Returning Methods	
	E.Debugging Methods	
		exam
week 13 and 14	VII.Value Types and Reference Types	
	A.Array Basics	
	B.Working with Files and Arrays	
	C.Passing Arrays as Arguments to Methods	
	D.Some Useful Array Algorithms	
	E.Advanced Algorithms for Sorting and Searching Arrays	
	F.Two-Dimensional Arrays	
	G.Jagged Arrays	
	H.The List Collection	
		exam