

**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/535

☒ Graded ☐ CR/NC

Contact Person: Wook-Sung Yoo

Phone: x5452

**NEW COURSE DATA:**

New Course Title: Applied Healthcare Databases/Tools

Alpha Designator/Number:

I S S 3 5

Title Abbreviation:

A p p l i e d H e a l t h c a r e D B

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

To understand the logical and physical design of data stored and retrieved from relational databases, how it applies to healthcare, and how HIM professionals can effectively communicate business requirements.

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*

Date

*Jan. 10, '18*

Registrar

*Song, L*

110461

Date

*1-10-18*

College Curriculum Chair

*T. Carter*

Date

*1/19/18*

Graduate Council Chair

*J Christofero*

Date

*3-6-18*

## Request for Graduate Course Addition - Page 2

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College: CITE

Department/Division: Computer Science

Alpha Designator/Number: IS/535

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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.

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

Husnu Narman, Ph.D. (primary)

Cong Pu, 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 department(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

## **Request for Graduate Course Addition - Page 3**

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### **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)**

Database Systems Edition: 11th (February 4, 2014)

Author: Carlos Coronel, Steven Morris

ISBN: 9781285196145

Database Processing: Fundamentals, Design, and Implementation 14th Ed. (July 26, 2015)

Author: David M. Kroenke, David J. Auer

ISBN: 978-0133058352

### **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)**

Health Informatics Data Analysis: Methods and Examples (Health Information Science), 1st ed, Dong Xu, May D. Wang, Fengfeng Zhou, Yunpeng Cai (Editors), Springer, ISBN-10: 3319449796, ISBN-13: 978-3319449791

Database Systems, Coronel, C. & Morris, S. Eleventh Edition, 2014. ISBN: 9781285196145

Database Processing: Fundamentals, Design, and Implementation, Kroenke, D. D., & Auer D., Fourteenth Edition, 2015 ISBN: 9780133058352

Data Driven Healthcare, How Analytics and BI are transforming the Industry, Laura B. Madsen, Wiley, ISBN: 9781118772218



## 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 535 Applied Healthcare Databases/Tools  
Catalog Description: To understand the logical and physical design of data stored and retrieved from structured and unstructured databases, how it applies to healthcare, and how HIM professionals can effectively communicate business requirements.  
Prerequisite: Graduate status  
First year offered: Spring 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*

<b>Course Title/Number</b>	<b>IS 535 – Applied Healthcare Databases/Tools</b>
<b>Semester/Year</b>	Spring 2018
<b>Days/Time</b>	Online Course – No Meeting times or dates
<b>Location</b>	Online
<b>Instructor</b>	TBA
<b>Office</b>	TBA
<b>Phone</b>	
<b>Email</b>	
<b>Office/Hours</b>	By Appointment; Open communication via email at any time
<b>University Policies</b>	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to <a href="http://www.marshall.edu/academic-affairs/policies/">http://www.marshall.edu/academic-affairs/policies/</a> . 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***

To understand the logical and physical design of data stored and retrieved from relational databases, how it applies to healthcare, and how HIM professionals can effectively communicate business requirements.

<b>Student Learning Outcome (Students will...)</b>	<b>Practiced by:</b>	<b>Assessed by:</b>
<i>Be able to identify and define data elements and construct a data dictionary for a Health care application.</i>	Reading assignments, Homework	Homework, Projects, Midterm
<i>Be able to normalize data from a healthcare data set/setting environment.</i>		
<i>Be able to develop and entity relationship diagram (ERD) based on healthcare business requirements/end user needs..</i>		
<i>Be able construct Structured Query Language (SQL) statements for healthcare database definitions, manipulation, and data retrieval.</i>		
<i>Be able to apply the principles of information integrity, security, and confidentiality to a healthcare database. Additional, emphasis on confidentiality due to HIPPA requirements.</i>		
<i>Be able to identify issues with database systems that are unique to the healthcare environment.</i>		

<b>Attendance Policy</b>
Online class: Not applicable.

<b>Required Texts, Additional Reading, and Other Materials</b>	
<i>Healthcare Databases: A Simple Guide to Building and Using Them</i>	
<i>Author</i>	Alan Giles
<i>ISBN</i>	978-1857759723
<i>Publisher</i>	CRC Press
<i>Database Systems: Design, Implementation, &amp; Management</i>	
<i>Author</i>	Carlos Coronel & Steven Morris
<i>ISBN</i>	9781285196145
<i>Publisher</i>	CRC Press
<i>Pub. Date</i>	2015

<b>Other Materials</b>
<ol style="list-style-type: none"> <li>1. Campbell, Robert J. "Database design: what HIM professionals need to know." Perspectives in health information management/AHIMA, American Health Information Management Association 1 (2004).</li> <li>2. AHIMA. "Managing Copy Functionality and Information Integrity in the EHR." Journal of AHIMA 83, no.3 (March 2012): 47-49. <ol style="list-style-type: none"> <li>a. <a href="http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_049377.hcs?p?dDocName=bok1_049377">http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_049377.hcs?p?dDocName=bok1_049377</a></li> <li>b. <a href="http://csrc.nist.gov/news_events/hiipaa_june2012/day1/day1-b2_drode_integrity-protections.pdf">http://csrc.nist.gov/news_events/hiipaa_june2012/day1/day1-b2_drode_integrity-protections.pdf</a></li> </ol> </li> <li>3. Eliason, B., Burke, J., &amp; Hess, P. "Master Data Management in Healthcare: 3 Approaches" Health Catalyst <ol style="list-style-type: none"> <li>a. <a href="https://www.healthcatalyst.com/master-data-management-in-healthcare-3-approaches">https://www.healthcatalyst.com/master-data-management-in-healthcare-3-approaches</a></li> </ol> </li> <li>4. LeSuer, D. "5 Reasons Healthcare Data Is Unique and Difficult to Measure" Health Catalyst <ol style="list-style-type: none"> <li>a. <a href="https://www.healthcatalyst.com/5-reasons-healthcare-data-is-difficult-to-measure">https://www.healthcatalyst.com/5-reasons-healthcare-data-is-difficult-to-measure</a></li> </ol> </li> <li>5. Dolins, S., Kero, R. "Data Management Challenges for U.S. Healthcare Providers" <ol style="list-style-type: none"> <li>a. <a href="http://www.irma-international.org/viewtitle/32893/">http://www.irma-international.org/viewtitle/32893/</a></li> </ol> </li> <li>6. MITRE. (2015) "Eliciting, Collecting, and Developing Requirements" MITRE- Systems Engineering Guide <ol style="list-style-type: none"> <li>a. <a href="http://www.mitre.org/publications/systems-engineering-guide/se-lifecycle-building-blocks/requirements-engineering/eliciting-collecting-and-developing-requirements">http://www.mitre.org/publications/systems-engineering-guide/se-lifecycle-building-blocks/requirements-engineering/eliciting-collecting-and-developing-requirements</a></li> </ol> </li> </ol>

**Course Requirements/Due Dates****Discussion Board Posts**

Most weeks, there will be a discussion board post due. It will be based on the Healthcare Database: A Simple Guide to Building and Using Them, articles in relation to effective communication of business requirements/needs, and challenges of database management in healthcare.

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

#	Description	Due beginning of:
1	Identification of Data Elements/Terminology	3 <sup>rd</sup> Week
2	Data Normalization	5 <sup>th</sup> Week
3	Data Dictionary	7 <sup>th</sup> Week
4	Database Modeling and Design	10 <sup>th</sup> Week
5	Data Definition Language SQL	11 <sup>th</sup> Week
6	Data Manipulation Language SQL	13 <sup>th</sup> Week
7	Data Query Language SQL	15 <sup>th</sup> Week

**Mid-Term: Due by Midnight Monday of the 9<sup>th</sup> week of class.**

There will be a take home exam that will include multiple choice, t/f, and problem solving questions.

**Project Proposal (Due Monday Midnight 7<sup>th</sup> Week):** Project Description, and proposed reports ideas.

**Project Rough-Draft (Due Monday Midnight 12<sup>th</sup> Week):** Requires Project Description, Business Requirements, Data Dictionary, ERD Diagram, Two Sample Reports Descriptions/Outlines

**Final Project: Due by Midnight the last day of class.**

There will be a final project in where the student will elect a project or be given a project that utilizes a healthcare data setting. The project submission will include:

- *Project Description*
- *Business Requirements/End Use Requirements: KEY ELEMENT*
- *Data Dictionary*
- *ERD Diagram*
- *Data Definition Queries*
- *Two Sample Reports Needed and Accompanying Queries*

**Grading Policy**

A	90-100%
B	80-89%
C	70-79%
F	Below 70%

**Activities & Points**

15%	Discussion Board Posts
30%	Homework Assignments
10%	Mid-Term
10%	Project Proposal
10%	Project Rough Draft
20%	Final Project

**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.

<b>Course Schedule</b>			
<b>Week</b>	<b>Text Book*</b>	<b>Topic</b>	<b>Assignments (Monday at Midnight)</b>
<b>1</b>	Chapter 1 & 2	Introduction; General Terminology, Systems, Models, Importance in Healthcare	2 <sup>nd</sup> week: Discussion Board Post
<b>2</b>	Chapter 3 & 6	Relational Model & Normalization	3 <sup>rd</sup> Week Discussion Board Post: HW #1
<b>3</b>	Chapter 4, 5, 6	Data Elements, Data Types	4 <sup>th</sup> Week: Discussion Board Post
<b>4</b>	Chapter 4	Business Requirements, Data Dictionary	5 <sup>th</sup> Week: Discussion Board Post 5 <sup>th</sup> Week: HW #2
<b>5</b>	Chapter 4	Database Modeling	6 <sup>th</sup> Week: Discussion Board Post
<b>6</b>	Chapter 4	Database Modeling (Give out Midterm)	7 <sup>th</sup> Week: HW #3 7 <sup>th</sup> Week: Project Proposal
<b>7</b>	Chapter 7, 9	Data Definition Language SQL	8 <sup>th</sup> Week: Discussion Board Post
<b>8</b>	Chapter 7, 9	Data Definition Language SQL	9 <sup>th</sup> Week: Midterm Due
<b>9</b>	Chapter 7	Data Manipulation Language SQL	10 <sup>th</sup> Week: HW #4 10 <sup>th</sup> Week: Discussion Board Post
<b>10</b>	Chapter 7	Data Manipulation Language SQL	11 <sup>th</sup> Week: Discussion Board Post 11 <sup>th</sup> Week: HW #5
<b>11</b>	Chapter 7, 8	Data Query Language SQL	12 <sup>th</sup> Week: Project Rough Draft
<b>12</b>	Chapter 7, 8	Data Query Language SQL	13 <sup>th</sup> Week: Discussion Board Post 13 <sup>th</sup> Week: HW #6
<b>13</b>	Article 2 of other Resources	Principles of Information Integrity, security, and confidentiality to a database (HIPPA, EHRS, HIEs)	14 <sup>th</sup> Week: Discussion Board Post
<b>14</b>	Thanksgiving Break!	Thanksgiving Break! No Reading Assigned	15 <sup>th</sup> Week: Discussion Board Post 15 <sup>th</sup> Week: HW #7
<b>15</b>	Articles 3	Issues with Database Management in Healthcare	16 <sup>th</sup> Week: Discussion Board Post
<b>16</b>	Finals Week		Exam Day: Final Project Due (1 point extra credit for each day a complete project is turned in early)
* TextBook for listed Chapters: <i>Database Systems: Design, Implementation, &amp; Management</i>			



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:

I S 5 4 5

Title Abbreviation:

H e a l t h c a r e D a t a A n a l y t i c s

(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



Date

Jan. 11, '18

Registrar

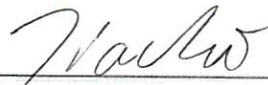


110401

Date

1-11-18

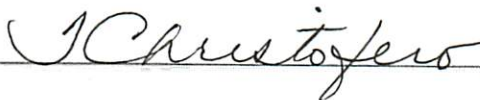
College Curriculum Chair



Date

1/19/18

Graduate Council Chair



Date

3-6-18

## Request for Graduate Course Addition - Page 2

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College: CITE

Department/Division: Computer Science

Alpha Designator/Number: IS/545

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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.

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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 department(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



## **Request for Graduate Course Addition - Page 3**

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### **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*

<b>Course Title/Number IS 545 – Healthcare Data Analytics and Visualization</b>	
<b>Semester/Year</b>	Fall 2018
<b>Days/Time</b>	Online Course – No Meeting times or dates
<b>Location</b>	Online
<b>Instructor</b>	TBA
<b>Office</b>	TBA
<b>Phone</b>	
<b>Email</b>	
<b>Office/Hours</b>	By Appointment; Open communication via email at any time
<b>University Policies</b>	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to <a href="http://www.marshall.edu/academic-affairs/policies/">http://www.marshall.edu/academic-affairs/policies/</a> . 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

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### ***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.

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

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#### **Attendance Policy**

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Online class: Not applicable.

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#### **Required Texts, Additional Reading, and Other Materials**

<i>Data Analytics in Healthcare Research: Tools and Strategies</i>	
<b>Author</b>	David Marc, MBS, CHDA, and Ryan Sandefer, MA, CPHIT
<b>ISBN</b>	978-1584264439
<b>Publisher</b>	AHIMA Press
<b>Pub. Date</b>	2016

<b>Course Requirements/Due Dates</b>		
<b>Discussion Board Posts</b>		
Most weeks, there will be a discussion board post due.		
<b>Homework:</b> The homework assignments will utilize health care data sets.		
#	Description	Due beginning of:
1	Advanced Excel Orientation Homework	2 <sup>nd</sup> Week
2	Advanced Charts/Graphs -> Visualization Homework	3 <sup>rd</sup> Week
3	Advanced Excel Pivot Tables Homework	5 <sup>th</sup> Week
4	Project 1	6 <sup>th</sup> Week
5	SAS Orientation Homework	7 <sup>th</sup> Week
6	SAS Homework 1	9 <sup>th</sup> Week
7	SAS Homework 2	11 <sup>th</sup> Week
8	Project 2	13 <sup>th</sup> Week
9	Final Report & Presentation	14 <sup>th</sup> Week
10	Final Presentation Discussion Posts	15 <sup>th</sup> Week
<b>Final Report &amp; Presentation: Due beginning of the 14<sup>th</sup> week of class.</b>		
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):		
<div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> SAS  <input type="checkbox"/> SPSS  <input type="checkbox"/> Google Analytics  <input type="checkbox"/> Crystal Reports  <input type="checkbox"/> SSAS (SQL Server Analysis Services) </div> <div> <input type="checkbox"/> Redcap  <input type="checkbox"/> Tableau  <input type="checkbox"/> POWERBI  <input type="checkbox"/> SQL Server and Visual Studio Data Tool  <input type="checkbox"/> Jaspersoft </div> </div>		
<i>Discussion Post/Response to all other students' presentations due by Midnight the last day of class.</i>		

<b>Grading Policy</b>	
A	90-100%
B	80-89%
C	70-79%
F	Below 70%
<b>Activities &amp; Points</b>	
15%	Discussion Board Posts
20%	Homework Assignments
15%	Project 1
15%	Project 2
20%	Final Report
10%	Final Presentation
5%	Final Discussion Post
<b>Late Assignments will be deducted 10% for each day they are turned in late.</b> 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.*

<b>Course Schedule</b>		
<b>Week</b>	<b>Text Book</b>	<b>Topic</b>
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, Odds Ratio (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



## 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: Pharmacy

Dept/Division: Pharm Sci (DPSR)

Alpha Designator/Number: MSPS 512

☒ Graded ☐ CR/NC

Contact Person: V. Blair Journigan/Kim Broedel-Zaugg

Phone: 304-696-5003

## NEW COURSE DATA:

New Course Title: Medicinal Chemistry and Drug Discovery Principles

Alpha Designator/Number: M S P S 5 1 2

Title Abbreviation: M e d C h e m &amp; D r u g D i s c

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

This course gives an overview of drug discovery principles and techniques for the practicing medicinal chemist.

Co-requisite(s):

First Term to be Offered: Fall 2018

Prerequisite(s): Admission to MSPS program

Credit Hours: 1

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

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

Dept. Chair/Division Head Faruk KhanDate 12/27/17

Registrar

Sonya H C

512 D10

Date 1/25/18

College Curriculum Chair

How JansongDate 1/12/2018

Graduate Council Chair

ChristoferoDate 3-6-18



## Request for Graduate Course Addition - Page 2

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College: Pharmacy

Department/Division: Pharm Sci (DPSR)

Alpha Designator/Number: MSPS 531

---

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.

Blair Journigan, Ph.D.

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 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)

See attached syllabus

## **Request for Graduate Course Addition - Page 3**

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

See attached syllabus

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

Burger's Medicinal Chemistry and Drug Discovery, 9th Edition. Author: Donald J. Abraham; Publisher: John Wiley and Sons, Inc, 1999-2014. Online ISBN: 9780471266945

Comprehensive Organic Transformations: A Guide to Functional Group Preparations, 3rd Edition. Editor: Richard C. Larock; Publisher: John Wiley and Sons, Inc. March 2018. ISBN: 978-0-470-92795-3.

Strategic Applications of Named Reactions in Organic Synthesis, 1st Edition. Authors: Laszlo Kurti, Barbara Czako. Publisher: Elsevier. March 2005. Paperback ISBN: 9780124297852. eBook ISBN: 9780080919164

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

Lecture, Computational Chemistry Laboratory, Pharmacology Laboratory

## **Request for Graduate Course Addition - Page 4**

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

Midterm and Final Exams

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

N/A

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

Handouts, Primary and Secondary Scientific Literature

Burger's Medicinal Chemistry and Drug Discovery, 9th Edition. Author: Donald J. Abraham, Ph.D.; Publisher: John Wiley and Sons, Inc, 1999-2014. Online ISBN: 9780471266945

Comprehensive Organic Transformations: A Guide to Functional Group Preparations, 3rd Edition. Editor: Richard C. Larock; Publisher: John Wiley and Sons, Inc. March 2018. ISBN: 978-0-470-92795-3.

Strategic Applications of Named Reactions in Organic Synthesis, 1st Edition. Authors: Laszlo Kurti, Barbara Czako. Publisher: Elsevier. March 2005. Paperback ISBN: 9780124297852. eBook ISBN: 9780080919164

## 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: Pharmaceutical Sciences and Research/School of Pharmacy

Course Number and Title: MSPS 512 Medicinal Chemistry and Drug Discovery Principles

Catalog Description: This course gives an overview of drug discovery principles and techniques for the practicing medicinal chemist.

Prerequisites: Admission to MSPS Program

First Term Offered: Fall 2018

Credit Hours: 1



www.marshall.edu

School of Pharmacy

## SYLLABUS

### Medicinal Chemistry and Drug Discovery Principles

### MSPS 512 (Fall 2018)

This syllabus is not to be construed as a contract with the student and is subject to change.

The School of Pharmacy reserves the right to change the course syllabus. *The School should notify the students through the course notification system or by an email preferably through the Blackboard system.*

Course meeting days and time	
Location	L05
Team Leader / Instructor	Blair Journigan, Ph.D.
Office	Coon Education Building 232
Phone	(304) 696-5003
Email	<a href="mailto:journigan@marshall.edu">journigan@marshall.edu</a>
Office hours/Appointments accepted	By appointment

**Student:** If the instructor accepts appointments, then please email the instructor for availability. The student can expect the instructor to respond to e-mails and phone messages within 72 hours.

**Course Description:** This course gives an overview of drug discovery principles and techniques for the practicing medicinal chemist. Concepts include an overview of therapeutic structures pursued in the field, and drug discovery strategies for hit identification, hit to lead generation and preclinical lead optimization. Synthetic approaches and commonly used organic methodologies will be covered, along with structural characterization techniques. Further topics include hands-on learning exercises in computational drug discovery and pharmacology. Topics will be illuminated with small molecule and biologic preclinical and clinical candidates, well-represented in the scientific and patent literature, where applicable.

**Prerequisites:** Admission to MSPS program

#### Required Textbooks:

**Burger's Medicinal Chemistry and Drug Discovery**, 9<sup>th</sup> Edition. Author: Donald J. Abraham; Publisher: John Wiley and Sons, Inc, 1999-2014. Online ISBN: 9780471266945. *Note: Link to all volumes provided on Blackboard (register for access online).*

**Strategic Applications of Named Reactions in Organic Synthesis**, 1<sup>st</sup> Edition. Authors: Laszlo Kurti, Barbara Czako. Publisher: Elsevier. March 2005. Paperback ISBN: 9780124297852. eBook ISBN: 9780080919164

#### Recommended Textbooks:

**Comprehensive Organic Transformations: A Guide to Functional Group Preparations**, 3<sup>rd</sup> Edition. Editor: Richard C. Larock; Publisher: John Wiley and Sons, Inc. March 2018. ISBN: 978-0-470-92795-3.



**Software Required:**

Scifinder Scholar: <http://libguides.marshall.edu/c.php?g=343334&p=2312555>

AutoDock 4 and AutoDock Vina: <http://autodock.scripps.edu/>

PyMOL: <https://www.pymol.org/>

Graphpad Prism:

\*All software is free to academics and educational-based activities

**Course Objectives:**

Apply medicinal chemistry strategies used in various stages of the early drug discovery process, including hit identification techniques, hit to lead generation, and preclinical lead optimization.

Apply synthetic medicinal chemistry/organic chemistry approaches to the accession and characterization of biologically active small molecules and biologics, including peptides.

**Tentative Schedule of Activities\*:**

Date	#	Meeting Topic	Learning Outcomes
Week 5	1	Therapeutic molecules	<ul style="list-style-type: none"> <li>• Overview of various therapeutic molecules pursued as drug structures and their origins: small molecules, natural products, oligomers, peptidomimetics, biologics</li> <li>• Interpreting biological activity: <i>In vitro</i> binding and functional assays: target engagement and selectivity, <i>In vivo</i> assays</li> </ul>
Week 6	2	Early drug discovery strategies for hit identification	<ul style="list-style-type: none"> <li>• Structure-based drug design: x-ray crystal structures and homology models, mutagenesis studies, docking, virtual screening, and computational chemistry principles and theories</li> </ul>
Week 7	3	Early drug discovery strategies for hit identification	<ul style="list-style-type: none"> <li>• Ligand- and fragment- based drug design, the concept of privileged structures</li> <li>• Screening approaches: High throughput screening, combinatorial library design, NMR-based screening</li> </ul>
Week 8	4	Synthetic approaches and reactions: organic chemistry	<ul style="list-style-type: none"> <li>• Approaches for synthesis of various chemotypes: retrosynthesis, total synthesis, analog synthesis from common synthons</li> <li>• Reactions most utilized in medicinal chemistry, including mechanisms: reductions, oxidations, protections/deprotections, functional group interconversion, functional group addition</li> </ul>
Week 9	5	Synthetic reactions and database searching: organic chemistry	<ul style="list-style-type: none"> <li>• Reactions most utilized in medicinal chemistry, including mechanisms (cont): heteroatom alkylation and arylation, acylation and related processes, C-C bond formation, heterocycle formation</li> <li>• Introduction to Scifinder Scholar: Structure and reaction searching in publications and patents, text-based searches</li> </ul>
<b>Midterm (Lectures 1-5)</b>			
Week 10	6	Structural characterization: organic chemistry	<ul style="list-style-type: none"> <li>• Structural characterization methods: Principles of Chromatography, Mass Spectrometry, and Nuclear Magnetic Resonance Spectroscopy and data interpretation</li> </ul>

Week 11	7	Hit to lead generation: understanding the early drug discovery process	<ul style="list-style-type: none"> <li>•Structure-activity relationship (SAR) studies</li> <li>•Mining the SAR results: 2D and 3D pharmacophores, docked and crystallized structures within the active site, the concept of ligand efficiency</li> </ul>
Week 12	8	ADMET Profiling and Lead Optimization	<ul style="list-style-type: none"> <li>•ADMET (Absorption, Distribution, Metabolism, Excretion, Toxicity) in vitro profiling: microsomal stability, plasma protein binding, hERG liabilities, P-gp efflux</li> <li>•Physicochemical properties for oral bioavailability: molecular weight, <math>pK_a</math>, log D, Hydrogen bond acceptors/donors, Modifications to Lipinski's Rule of 5</li> <li>•Additional physicochemical considerations for CNS penetration: topological polar surface area (TPSA)</li> <li>•Lead optimization strategies: Bioisosteric replacement, chiral centers, designing out P-gp and hERG liabilities</li> </ul>
Week 13	9	Computational drug design laboratory	Docking small molecules into the active site of a receptor with AutoDock 4 and AutoDock Vina, Visualization with PyMOL
Week 14	10	Drug discovery laboratory Guest Lecturer: Dr. Jinsong Hao	<ul style="list-style-type: none"> <li>•Calculation of <math>K_i</math> and <math>EC_{50}</math> with Graphpad Prism</li> </ul>
Final Exam (Comprehensive)			

### Course Evaluation (grading):

Mid-term exam (paper-based):	50%
Final Exam (paper-based):	50%
Total:	100%

### Letter grades distribution:

A	= 89.50 to 100%
B	= 79.50 to less than 89.50%
C	= 69.50 to less than 79.50%
F	= Less than 69.50%

**Course Evaluation (grading):** Grading for this course consists of both the mid-term and final exam, each worth 50%. Conceptual understanding of the material will be assessed at a higher level than that assessed at the Pharm D. level, in line with the expectations of the Master's program and Marshall University Graduate College.

**Course Evaluation (assessment):** At or near the end of the course, students are expected to complete an evaluation of the course content, learning approaches, student assessment and instructors according to School of Pharmacy procedures.

Assignment and examination grades will be posted in Blackboard within 7 business days unless otherwise stated.



**Attendance policy:** Each student is expected to attend class. Attendance at graded events is mandatory. Only excused absences accepted – see university and school policies. The instructor must be contacted prior to the exam, unless circumstances are prohibitory. Please note – the student is solely responsible for any materials missed.

## **UNIVERSITY POLICIES**

University policies regarding **Grades, Probation and Dismissal, Responsible Conduct of Research and other topics can be found at** <http://www.marshall.edu/graduate/graduate-student-handbook/>

University policies regarding **Academic Dishonesty, Students with Disabilities, University Computing Services' Acceptable Use, Affirmative Action, and Sexual Harassment** can be found at <http://www.marshall.edu/wpmu/academic-affairs/policies/>.

## **School of Pharmacy Policies**

### **SOCIAL JUSTICE POLICY STATEMENT**

Marshall University is committed to bringing about mutual understanding and respect among all individuals and groups at the University. As part of Marshall University, School of Pharmacy has made a commitment to social justice. Therefore, no one will be discriminated against on the basis of race, gender, ethnicity, age, sexual orientation, religion, social class, or differing viewpoints. Each student will be viewed as a valuable member of this class and as the faculty for the course, I will strive to facilitate an atmosphere/learning environment where mutual understanding and respect are actualized.

### **ACADEMIC, ETHICAL, AND PROFESSIONAL CONDUCT**

Student expectorations for academic, ethical, and professional conduct are defined within the school's [Ethical and Professional Conduct Policy](#) and the university's [Academic Dishonesty Policy](#).

### **Test Security Policy**

Refer to the following link for MUSOP's secure testing policies.

[http://www.marshall.edu/pharmacy/faculty\\_staff/faculty-and-staff-policies/400-003-secure-testing-environment-standards/](http://www.marshall.edu/pharmacy/faculty_staff/faculty-and-staff-policies/400-003-secure-testing-environment-standards/)



## 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: PharmacyDept/Division: Pharm Sci & ResAlpha Designator/Number: MSPS 513☒ Graded ☐ CR/NCContact Person: Cynthia B. JonesPhone: 304.696.7363

## NEW COURSE DATA:

New Course Title: Biopharmaceutics 2Alpha Designator/Number: 

M	S	P	S		5	1	3		
---	---	---	---	--	---	---	---	--	--

Title Abbreviation: 

B	I	O	P	H	A	R	M		2										
---	---	---	---	---	---	---	---	--	---	--	--	--	--	--	--	--	--	--	--

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

Topics include mechanisms immediate and sustained drug release in formulations; novel drug delivery systems; drug pre-formulation; the drug approval process; drug preparation, liberation, absorption and stability of dosage forms.

Co-requisite(s): N/AFirst Term to be Offered: SPRING 2019Prerequisite(s): BIOPHARMACEUTICS 1Credit Hours: 1Course(s) being deleted in place of this addition (must submit course deletion form): NOT APPLICABLE

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

Dept. Chair/Division Head Faruk KhanDate 1/3/18Registrar Song AC5120, 0Date 1-25-18College Curriculum Chair Hew JinsongDate 1/12/2018Graduate Council Chair ChristoferoDate 3-6-18

## Request for Graduate Course Addition - Page 2

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College: School of Pharmacy

Department/Division: Pharm Sci & Research

Alpha Designator/Number: MSPS 542

---

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.

Cynthia B. Jones, Ph.D.

Jinsong Hao, Ph.D.

Brian Train, Ph.D.

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 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)

1. Recognize and interpret drug regulations and the drug approval process
2. Discuss, examine and interpret technological advances in pre-formulation and drug delivery systems
3. Describe, compare and contrast the mechanisms of modified release in solid and semisolid formulations
4. Explain, devise and evaluate drug preparation, liberation, absorption and stability of various dosage forms

## **Request for Graduate Course Addition - Page 3**

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

See Syllabus

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

Martin's Physical Pharmacy & Pharmaceutical Sciences  
Editors: Patrick J. Sinko & Yashveer Singh  
ISBN 978-0-7817-9766-5

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

Lab Lectures and in-class activities will be used throughout the semester.

## **Request for Graduate Course Addition - Page 4**

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

Student mastery of the material will be evaluated by quizzes and exams administered throughout the semester.

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

Not Applicable

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

Not Applicable

## **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:** Pharmaceutical Sciences and Research

**Course Number and Title:** MSPS 542 Biopharmaceutics 2

**Catalog Description:** Topics covered include mechanisms of both immediate and sustained drug release in formulations involving solid and semi-solid systems; introduction to novel drug delivery systems; drug pre-formulation; the drug approval process, and regulations governing the pharmaceutical industry; drug preparation, liberation, absorption and stability of dosage forms.

**Prerequisites:** Biopharmaceutics 1

**First Term Offered:** Spring 2019

**Credit Hours:** 1

**SYLLABUS**  
**Biopharmaceutics II**  
**MSPS 513**  
**(Spring 2019)**

This syllabus is not to be construed as a contract with the student and is subject to change.

The School of Pharmacy reserves the right to change the course syllabus. *The School should notify the students through the course notification system or by an email preferably through the Blackboard system.*

*Materials used in this class may be copyrighted and should not be shared with individuals not enrolled in this course.*

<b>Course meeting days and time</b>	TBD
<b>Location</b>	TBD
<b>Team Leader / Instructor</b>	Cynthia B. Jones, Ph.D.
<b>Office</b>	MEB 228A/230
<b>Phone</b>	(304) 696-7363
<b>Email</b>	Jonescy@marshall.edu
<b>Office hours</b>	Tuesday and Thursday 12:30 p.m. - 1:30 p.m. and by appointment

<b>Faculty</b>	<b>Email</b>	<b>Office</b>	<b>Phone Number</b>	<b>Office Hours / Appointments</b>
Cynthia B. Jones, Ph.D.	Jonescy@marshall.edu	228A	(304)696-7363	Tue & Thurs. 12:30 to 1:30 p.m. or by appointment

**Student:** If the instructor accepts appointments, then please email the instructor for availability. The student can expect the instructor to respond to E-mails and phone messages within 72 hours.

**Course Description:** Topics covered include mechanisms of both immediate and sustained drug release in formulations involving solid and semi-solid systems; introduction to novel drug delivery systems; drug pre-formulation; the drug approval process, and regulations governing the pharmaceutical industry; drug preparation, liberation, absorption and stability of dosage forms.

**Prerequisites:** None

**Text Book(s)**

**Required:**

Martin's Physical Pharmacy & Pharmaceutical Sciences

Editors: Patrick J. Sinko & Yashveer Singh

ISBN 978-0-7817-9766-5

**Recommended:**

None

**Materials:**

Required

**Course Objectives**

<b>Number</b>	<b>Objective</b>	<b>How Assessed</b>
1	Understand the new drug application (NDA) process, cGMPs, GCPs, quality system compliance, and corresponding documentation requirements	Quizzes and Exams
2	Examine and interpret technological advances in research approaches for pre-formulation and drug delivery systems	Quizzes and Exams
3	Identify and describe formulation methods for modified release in solid and semisolid formulations	Quizzes and Exams
4	Explain, devise and evaluate stability-testing protocols of various dosage forms	Quizzes and Exams

**Schedule of Activities:**

<b>Week</b>	<b>Meeting Format</b>	<b>Meeting Topic</b>	<b>Course Student Learning Outcomes</b>	<b>Instructor</b>
Week 1	Lab Lecture	Biopharmaceutics (Molecular & Cellular)	<ul style="list-style-type: none"> <li>Describe drug transport</li> <li>Construct plasma concentration v/s time curve</li> </ul>	Dr. Jones
Week 2	Lab Lecture	Biopharmaceutics (Organ Level)	<ul style="list-style-type: none"> <li>Calculate pharmacokinetic parameters related to organ level biopharmaceutics</li> </ul>	Dr. Jones
Week 3	Lab Lecture	Solubility & Distribution	<ul style="list-style-type: none"> <li>Describe the influence of solvents and surfactants on solubility</li> </ul>	Dr. Jones
Week 4	Lab Lecture	Diffusion	<ul style="list-style-type: none"> <li>Define and calculate concept of Fick's First and Second Law of Diffusion</li> </ul>	Dr. Jones
Week 5	Lab Lecture	Drug Release and Dissolution	<ul style="list-style-type: none"> <li>Design drug release delivery systems</li> </ul>	Dr. Jones
Week 6	Lab Lecture	Chemical Kinetics & Stability	<ul style="list-style-type: none"> <li>Model reaction rate, reaction order and molecularity</li> </ul>	Dr. Jones
Week 7	Lab Lecture	Colloidal Dispersions	<ul style="list-style-type: none"> <li>Develop a modern colloidal drug delivery system</li> </ul>	Dr. Jones
Week 8	Lab Lecture	Coarse Dispersions	<ul style="list-style-type: none"> <li>Develop a pharmaceutical suspension and discuss the desirable qualities of pharmaceutical suspensions</li> </ul>	Dr. Jones

**\*Midterm Exam**

Week 9	Lab Lecture	Rheology	<ul style="list-style-type: none"> <li>Model Newtonian and Non-Newtonian systems</li> </ul>	Dr. Jones
Week 10	Lab Lecture	Micromeritics	<ul style="list-style-type: none"> <li>Describe and identify derived properties of powders and develop a novel formulation using micromeritics</li> </ul>	Dr. Jones
Week 11	Lab Lecture	Oral Solid Dosage Forms	<ul style="list-style-type: none"> <li>Apply basic physicochemical properties to active pharmaceutical ingredients</li> <li>Design oral dosage form performance test to ensure product quality and performance</li> </ul>	Dr. Jones
Week 12	Lab Lecture	Routes of Delivery	<ul style="list-style-type: none"> <li>Design a formulation for specific sites of drug absorption for each route</li> </ul>	Dr. Jones
Week 13	Lab Lecture	Drug Delivery Systems	<ul style="list-style-type: none"> <li>Design a drug delivery system designed for specific routes of administration</li> </ul>	Dr. Jones
Week 14	Lab Lecture	Polymers	<ul style="list-style-type: none"> <li>Develop a formulation using three types of polymers used in pharmaceutical preparations</li> </ul>	Dr. Jones
Week 15	Lab Lecture	Biotechnology	<ul style="list-style-type: none"> <li>Develop strategy to produce stable formulations of peptides, proteins, nucleic acids and viruses</li> </ul>	Dr. Jones
Week 16	Lab Lecture	Targeted Drug Delivery	<ul style="list-style-type: none"> <li>Create a prodrug approach for a chronic disease and list its benefit in drug delivery</li> </ul>	Dr. Jones
<b>*Final Exam</b>				

**\* indicates major assessment**

**Course Evaluation (grading):** Student mastery of the material will be evaluated by quizzes and exams administered throughout the semester. The majority of testable material will originate from instructor-provided handouts ( $\geq 80\%$ ). The remaining testable material will be presented during class sessions. In-class activities will assess student understanding of the material and will be graded based on completeness and accuracy.

**Point or Percentage Distribution:** Quizzes: 10%  
Midterm Exam: 40%



Final Exam: 50%

**Letter grades distribution:** A = 89.50 to 100%  
B = 79.50 to less than 89.50%  
C = 69.50 to less than 79.50%  
D = 59.50 to less than 69.50%  
F = Less than 59.50%

**Course Evaluation (assessment):** At or near the end of the course, students are expected to complete an evaluation of the course content, learning approaches, student assessment and instructors according to School of Pharmacy procedures.

**Assignment and examination grades will be posted in Blackboard within 7 days unless otherwise stated.**

**Attendance policy:** Each student is required to attend class. Attendance is mandatory at graded events. Only excused absences accepted – see university and school policies.

## UNIVERSITY POLICIES

University policies regarding **Academic Dishonesty, Students with Disabilities, University Computing Services' Acceptable Use, Affirmative Action, and Sexual Harassment** can be found at <http://www.marshall.edu/wpmu/academic-affairs/policies/>.

### School of Pharmacy Policies

#### **SOCIAL JUSTICE POLICY STATEMENT**

Marshall University is committed to bringing about mutual understanding and respect among all individuals and groups at the University. As part of Marshall University, School of Pharmacy has made a commitment to social justice. Therefore, no one will be discriminated against on the basis of race, gender, ethnicity, age, sexual orientation, religion, social class, or differing viewpoints. Each student will be viewed as a valuable member of this class and as the faculty for the course, I will strive to facilitate an atmosphere/learning environment where mutual understanding and respect are actualized.

#### **ACADEMIC, ETHICAL, AND PROFESSIONAL CONDUCT**

Student expections for academic, ethical, and professional conduct are defined within the school's [Ethical and Professional Conduct Policy](#) and the university's [Academic Dishonesty Policy](#).

## 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: Pharmacy

Dept/Division: Pharmaceutical Sciences

Alpha Designator/Number: MSPS 514

☒ Graded ☐ CR/NC

Contact Person: Brain Train, Ph.D.

Phone: (304)696-5807

**NEW COURSE DATA:**

New Course Title: Responsible Conduct of Research

Alpha Designator/Number: 

M	S	P	S	5	1	4			
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Title Abbreviation: 

R	E	S	B		C	O	N	D	U	C	T		R	E	S	E	A	R	C	H			
---	---	---	---	--	---	---	---	---	---	---	---	--	---	---	---	---	---	---	---	---	--	--	--

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

This course will help graduate students in pharmaceutical sciences become familiar with the general ethical issues that will arise through the course of basic science research. This course will help graduate students understand how to conduct ethical research, identify and focus on unethical situations in research, and how to solve future unethical dilemmas that may arise in the workplace

Co-requisite(s): None

First Term to be Offered: Fall 2018

Prerequisite(s): None

Credit Hours: 1

Course(s) being deleted in place of this addition (must submit course deletion form): Not Applicable

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

Dept. Chair/Division Head	Date <u>1/23/2018</u>
Registrar  5/2010	Date <u>1-25-18</u>
College Curriculum Chair	Date <u>1/12/2018</u>
Graduate Council Chair	Date <u>3-6-18</u>

## Request for Graduate Course Addition - Page 2

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College: School of Pharmacy

Department/Division: Pharmaceutical Science

Alpha Designator/Number: MSPS 514

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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.

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

Brian Train, Ph.D.

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 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)

- 1- Understand and become familiar with the best practices in experimental research and design.
- 2- Understand the best practices and rules for intellectual property and who owns data in an academic setting.
- 3- Understand the best practices for research using human and animal participants.

## **Request for Graduate Course Addition - Page 3**

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

See Syllabus

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

No text books are required.

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

Lectures, videos, Online modules from NIH

## **Request for Graduate Course Addition - Page 4**

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

quizzes, active learning exercises and exams

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

Not Applicable

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

## 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 Pharmaceutical Sciences and Research

Course Number and Title: MSPS 514, Responsible Conduct of Research

Catalog Description: This course will help graduate students in pharmaceutical sciences become familiar with the general ethical issues that will arise through the course of basic science research. This course will help graduate students understand how to conduct ethical research, identify and focus on unethical situations in research, and how to solve future unethical dilemmas that may arise in the workplace.

Prerequisites: None

First Term Offered: Fall 2018

Credit Hours: 1



**SYLLABUS**  
**Responsible Conduct of Research**  
**MSPS 514**  
**(Fall 2018)**

School of Pharmacy

This syllabus is not to be construed as a contract with the student and is subject to change.

The School of Pharmacy reserves the right to change the course syllabus. *The School should notify the students through the course notification system or by an email preferably through the Blackboard system.*

*Materials used in this class may be copyrighted and should not be shared with individuals not enrolled in this course.*

<b>Course meeting days and time</b>	TBA
<b>Location</b>	TBA
<b>Team Leader / Instructor</b>	Brian C. Train
<b>Office</b>	CEB 235
<b>Phone</b>	(304) 696-5807
<b>Email</b>	trainb@marshall.edu
<b>Office hours</b>	TBA

<b>Faculty</b>	<b>Email</b>	<b>Office</b>	<b>Phone Number</b>	<b>Office Hours / Appointments accepted?</b>
TBD				

**Student:** If the instructor accepts appointments, then please email the instructor for availability. The student can expect the instructor to respond to E-mails and phone messages within 72 hours.

**Course Description:** This course will help graduate students in pharmaceutical sciences become familiar with the general ethical issues that will arise through the course of basic science research. This course will help graduate students understand how to conduct ethical research, identify and focus on unethical situations in research, and how to solve future unethical dilemmas that may arise in the workplace.

**Prerequisites:** None

**Text Books:**

Required: TBD

**Course Objectives: Instructor added (5 to 7 total)**

<b>Number</b>	<b>Objective</b>	<b>How Assessed</b>
<b>1</b>	Understand and become familiar with the best practices in experimental research and design	Quizzes, ALEs Reflection Papers, Group Presentation
<b>2</b>	Understand the best practices and rules for intellectual property and who owns data in an academic setting	Quizzes, ALEs Reflection Papers, Group Presentation
<b>3</b>	Understand the best practices for research using human and animal participants	Quizzes, ALEs Reflection Papers, Group Presentation

**Example Schedule of Activities:**

<b>Date Week of</b>	<b>Meeting Format</b>	<b>Meeting Topic</b>	<b>Course Student Learning Outcomes</b>	<b>Instructor</b>
Week 1	Overview Discussion & ALE	Course overview and expectations	<ul style="list-style-type: none"> <li>• Become familiar with the course design and syllabus</li> </ul>	TBD
Week 2	Overview Discussion & ALE	Research and Experimental Design	<ul style="list-style-type: none"> <li>• Become familiar with best practices of conducting research and proper experimental design</li> </ul>	TBD
Week 3	Overview Discussion & ALE	Authorship	<ul style="list-style-type: none"> <li>• Become familiar with ethical dilemmas in assigning authorship in research publications</li> </ul>	TBD
Week 4	Overview Discussion & ALE	Intellectual Property	<ul style="list-style-type: none"> <li>• Become familiar with the ethical dilemmas with ownership of data and intellectual property</li> </ul>	TBD
Week 5	Overview Discussion & ALE	Data Management	<ul style="list-style-type: none"> <li>• Become familiar with the best practices for management of research data</li> </ul>	TBD

Week 6	Overview Discussion & ALE	Human Subjects Research	<ul style="list-style-type: none"> <li>• Become familiar with the best practices for conducting research involving human subjects</li> <li>• Appreciate the ethical dilemmas that may arise during research involving human subjects</li> </ul>	TBD
Week 7	Overview Discussion & ALE	Research Misconduct	<ul style="list-style-type: none"> <li>• Become familiar with best practices for handling research misconduct</li> <li>• Learn from case examples of previous research misconduct to prevent and handle misconduct in the workplace</li> </ul>	TBD
Week 8	Overview Discussion & ALE	Mentorship and Conflicts of Interest	<ul style="list-style-type: none"> <li>• Become familiar with the best practices of conducting ethical research and avoiding conflicts of interest</li> </ul>	TBD
Week 9	Overview Discussion & ALE	Animal Subjects Research	<ul style="list-style-type: none"> <li>• Understand the best practices for conducting research using animal subjects</li> <li>• Understand the best practices for proper handling and care of animal subjects in research</li> </ul>	TBD
Week 10	Overview Discussion & ALE	Peer Review and Collaboration	<ul style="list-style-type: none"> <li>• Understand the best practices for (?)</li> </ul>	TBD

Week 11	Overview Discussion & ALE	Current Ethical Issues in Research	<ul style="list-style-type: none"> <li>Become familiar with current ethical issues in academic laboratories and in the pharmaceutical industry</li> </ul>	TBD
Week 12	Overview Discussion & ALE	TBD		TBD
Week 13	Overview Discussion & ALE	TBD		TBD

#### Course Evaluation (assessment):

At or near the end of the course, students are expected to complete an evaluation of the course content, learning approaches, student assessment and instructors according to School of Pharmacy procedures.

#### Course Evaluation (grading):

##### Point or Percentage Distribution:

Quizzes	25%
ALEs	10%
Reflection Papers	40%
Group Presentation	25%

**Letter grades distribution:** A = 89.50 to 100%

B = 79.50 to less than 89.50%

C = 69.50 to less than 79.50%

F = Less than 69.50%

**Assignment grades will be posted in Blackboard within 7 days unless otherwise stated.**

**Attendance policy:** Each student is required to attend class. Attendance is mandatory at graded events. Only excused absences accepted – see university and school policies.

## UNIVERSITY POLICIES

University policies regarding **Academic Dishonesty, Students with Disabilities, University Computing Services' Acceptable Use, Affirmative Action, and Sexual Harassment** can be found at <http://www.marshall.edu/wpmu/academic-affairs/policies/>.

### School of Pharmacy Policies

#### **SOCIAL JUSTICE POLICY STATEMENT**

Marshall University is committed to bringing about mutual understanding and respect among all individuals and groups at the University. As part of Marshall University, School of Pharmacy has made a commitment to social justice. Therefore, no one will be discriminated against on the basis of race, gender, ethnicity, age, sexual orientation, religion, social class, or differing viewpoints. Each student will be viewed as a valuable member of this class and as the faculty for the course, I will strive to facilitate an atmosphere/learning environment where mutual understanding and respect are actualized.

## ACADEMIC, ETHICAL, AND PROFESSIONAL CONDUCT

Student expectations for academic, ethical, and professional conduct are defined within the school's [Ethical and Professional Conduct Policy](#) and the university's [Academic Dishonesty Policy](#).



## 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: Pharmacy

Dept/Division: Pharmaceutical Sciences

Alpha Designator/Number: MSPS 631

☒ Graded☐ CR/NC

Contact Person: Faruk Khan

Phone: 63094

## NEW COURSE DATA:

New Course Title: \_\_\_\_\_

Alpha Designator/Number:

M S P S 6 3 1 5 3 2

Title Abbreviation:

P h a r m R e g u l a t o r y A f f a i r s

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

An overview of USFDA's regulation on drug. Topics covered include pharmaceutical regulatory agencies and organizations around the world and their International Regulatory Audits for Pharma, International Conference on Harmonization (ICH) guidelines, Pharmacopoeias and national formulary, US Food and Drug Administration (USFDA): History of USFDA Law and Regulation, GLP, MMP, NDA, and ANDA.

Co-requisite(s): None

First Term to be Offered: Fall 2018

Prerequisite(s): MSPS Enrollment

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

Faruk Khan

Date

12/22/17

Registrar

Sonja G

512010

Date

1-25-18

College Curriculum Chair

Hwa Sonmy

Date

1/12/2018

Graduate Council Chair

Christofero

Date

3-6-18



## Request for Graduate Course Addition - Page 2

College: Pharmacy

Department/Division: DPSR

Alpha Designator/Number: MSPS 631

532

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.

Faruk Khan

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 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)

See Attached Course Syllabus

## **Request for Graduate Course Addition - Page 3**

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

See Attached Course Syllabus

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

Will be developed based on the referred Book

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

Lecture, Active learning

## **Request for Graduate Course Addition - Page 4**

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

Exams, IRATs, GRATs, Presentations, Projects

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

None

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

See Attached Course Syllabus

## 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: DPSR

532

Course Number and Title: MSPS-631, Pharmaceutical Regulatory Affairs

Catalog Description: An overview of USFDA's regulation on drug. Topics covered include pharmaceutical regulatory agencies and organizations around the world and their International Regulatory Audits for Pharma, International Conference on Harmonization (ICH) guidelines, Pharmacopoeias and national formulary, US Food and Drug Administration (USFDA): History of USFDA Law and Regulation, GLP, MMP, NDA, and ANDA.

Prerequisites: None

First Term Offered: Fall 2018

Credit Hours: 3

This syllabus is not to be construed as a contract with the student and is subject to change.

The School of Pharmacy reserves the right to change the course syllabus. *The School should notify the students through the course notification system or by an email preferably through the Blackboard system.*

*Materials used in this class may be copyrighted and should not be shared with individuals not enrolled in this course.*

<b>Course meeting days and time</b>	TBA
<b>Location</b>	TBA
<b>Team Leader / Instructor</b>	M. O. Faruk Khan, Ph. D.
<b>Office</b>	CEB 209
<b>Phone</b>	304-696-3094
<b>Email</b>	khanmo@marshall.edu
<b>Office hours</b>	TBA

<b>Faculty</b>	<b>Email</b>	<b>Office</b>	<b>Phone Number</b>	<b>Office Hours / Appointments accepted?</b>
M. O. Faruk Khan, Ph. D.	khanmo@marshall.edu		304-696-3094	TBA

**Student:** If the instructor accepts appointments, then please email the instructor for availability. The student can expect the instructor to respond to E-mails and phone messages within 72 hours.

### **Course Description:**

This course gives an overview of pharmaceuticals regulatory affairs, particularly USFDA's regulation on drug. Topics covered include pharmaceutical regulatory agencies and organizations around the world and their International Regulatory Audits for Pharma, International Conference on Harmonization (ICH) guidelines, Pharmacopoeias and national formulary, US Food and Drug Administration (USFDA): History of Food and Drug Regulation, USFDA Law and Regulation, Good Laboratory Practice (GLP), Good Manufacturing Practice (GMP), USFDA Organizations and Responsibilities, New Drug Approval Process; Investigator new drug (IND) application, the new drug (NDA) application, Abbreviated New Drug Application (ANDA) and Effective Dossier Management.

**Prerequisites:** Enrolled in MSPS Program

**Text Books/Other resources:**

**Required:**

**1. FDA Regulatory Affairs:**

3<sup>rd</sup> Edition, Editor: David Mantus, Douglas J. Pisano, Publisher: CRC Press

ISBN-13: 978-1841849195

**2. Burger's Medicinal Chemistry and Drug Discovery,**

9<sup>th</sup> Edition. Author: Donald J. Abraham, Ph.D.; Publisher: John Wiley and Sons, Inc, 1999-2014. ISBN: 9780471266945

**Resource:**

- 3.** <https://www.fda.gov/Drugs/default.htm>



**Course Objectives: Instructor added (5 to 7 total)**

At the conclusion of this course the student should be able to:

Number	Objectives	How Assessed
1	Interpret the USFDA's regulation on drug	Class participation/Exams/IRAT/GRAT/ALEs
2	Apply the regulatory requirements to get a new drug approved by the FDA	Class participation/Exams/IRAT/GRAT/ALEs
3	Explain the drug/device/biologic evaluation process including all phases of product development in clinical research	Class participation/Exams/IRAT/GRAT/ALEs
4	Practice regulations involved in the investigation, production, labeling and distribution of drugs.	Class participation/Exams/IRAT/GRAT/ALEs
5	Demonstrate the mastery in the essential knowledge and skills required to help pharmaceuticals companies on regulatory related issues.	Class participation/Exams/IRAT/GRAT/ALEs

**Example Schedule of Activities: (Each session is a two-hrs session.)**

Instructor	Date & Session #	Topic	Course Student Learning Outcomes
Khan	TBA	Introduction to Phar 531	<ul style="list-style-type: none"> <li>Describe an overview on Pharmaceutical Regulatory Affairs</li> </ul>
Khan	TBA	FDA and Drug Development	<ul style="list-style-type: none"> <li>Explain different functions and roles of US FDA in drug approval processes</li> <li>Review the FDA drug development laws and policies</li> <li>Describe drug development process</li> </ul>
Khan	TBA	Investigational New Drug (IND) Application - FDA	<ul style="list-style-type: none"> <li>Describe the content and format of IND application</li> <li>Explain IND Amendments</li> <li>Distinguish between different types of IND applications</li> </ul>
Khan	TBA	The New Drug Application	<ul style="list-style-type: none"> <li>Review the content and format of NDA application (Module 1 -5 of CTD formats)</li> <li>Describe the processes related to submission and review of the NDA</li> </ul>
Khan	TBA	EXAM 1	On above 4 class materials
Khan	TBA	Meeting with the FDA	<ul style="list-style-type: none"> <li>Explain different types of FDA meetings and meeting objectives</li> <li>Illustrate FDA expectations and preparations for FDA meetings</li> </ul>
Khan	TBA	FDA Medical Device Regulation	<ul style="list-style-type: none"> <li>Classify medical devices</li> <li>Describe the medical device clinical research and their approval processes</li> </ul>

Khan	TBA	A premier of Drug/Device Law	<ul style="list-style-type: none"> <li>Describe Federal and States Laws</li> <li>Debate the difference between regulation and law</li> <li>Devise different FDA guidelines</li> </ul>
Khan	TBA	EXAM 2	On class 5-7 contents
Khan	TBA	ALE	Examine different examples of Regulatory Affairs on topics learned in the first 7 classes available online from the FDA site: <a href="https://www.fda.gov/Drugs/default.htm">https://www.fda.gov/Drugs/default.htm</a>
Khan	TBA	The Development of Orphan Drugs	<ul style="list-style-type: none"> <li>Explain the Orphan Drug development process</li> <li>Describe and analyze the Orphan Drug Act</li> <li>Illustrate the Orphan Drug Designation</li> </ul>
Khan	TBA	Chemistry, Manufacturing, and Control	<ul style="list-style-type: none"> <li>Differentiate between pharmaceutical API and excipients</li> <li>Explain stability study, quality assurance, quality control, product specification etc.</li> </ul>
Khan	TBA	Good Manufacturing/Laboratory Practices (GxPs)	<ul style="list-style-type: none"> <li>Explain and Differentiate between GLP, GMP, and GCP</li> <li>Interpret and apply GxPs US Regulations</li> </ul>
Khan	TBA	FDA Regulation of the Advertisement and Promotion	<ul style="list-style-type: none"> <li>Revise FDA Regulation and general policies of the Advertisement and Promotion of the prescription drugs</li> <li>Develop plan of the Advertisement and Promotion of the prescription drugs</li> </ul>
Khan	TBA	EXAM 3	On Classes 8-11
Khan	TBA	FDA Advisory Committees	<ul style="list-style-type: none"> <li>Investigate structure and composition of FDA Advisory Committees and their operation</li> </ul>
Khan	TBA	Biologics	<ul style="list-style-type: none"> <li>Evaluate FDA oversight and biologics development</li> <li>Investigate biologics approval process</li> </ul>
Khan	TBA	Regulation of Combination products in the US	<ul style="list-style-type: none"> <li>Review the Regulation of Combination products</li> <li>Classify and assign combination products</li> </ul>
Khan	TBA	EXAM 4	Classes 12-14
Khan	TBA	ALE	Examine different examples of Regulatory Affairs on topics learned in the last 7 classes available online from the FDA site: <a href="https://www.fda.gov/Drugs/default.htm">https://www.fda.gov/Drugs/default.htm</a>
Khan	TBA	Project Report: The students will work on group project on their assigned drug products to prepare a submission to FDA for approval	<ul style="list-style-type: none"> <li>Demonstrate the mastery in the essential knowledge and skills required to help pharmaceuticals companies on regulatory related issues.</li> </ul>

### Course Evaluation (grading)

#### Point or Percentage Distribution:

\*Four block exams = 65% (Points based on # of sessions covered, 8 questions (16 points) per session)

\*Project report = 15% (will need 70% to pass course)

IRATS/GRATS combined = 10%

Active Learning Events/Assignments/Participation = 10%

\*Signifies a major assessment

IRAT – Individual readiness assurance test

GRAT = Group readiness assurance test

**Letter grades distribution:**

A	= 89.50 to 100%
B	= 79.50 to less than 89.50%
C	= 69.50 to less than 79.50%
F	= Less than 69.50%

#### **Course Evaluation (assessment):**

##### **Student Evaluation:**

Survey: each student will have the opportunity to evaluate each instructor as well as course content via the school's universal evaluation survey

**Faculty Evaluation:** Faculty members participating in the course will attend class as often as possible to evaluate overall performance

**Assignment and examination grades will be posted in Blackboard within 7 days unless otherwise stated.**

#### **Attendance policy:**

Each student is expected to attend class. Attendance at graded events is mandatory. Only University or school of pharmacy approved excuses will be accepted. The instructor must be contacted prior to the exam, unless circumstances are prohibitory. Please note that the student is solely responsible for any materials missed.

#### **UNIVERSITY POLICIES:**

University policies regarding **Academic Dishonesty, Students with Disabilities, University Computing Services' Acceptable Use, Affirmative Action, and Sexual Harassment** can be found at <http://www.marshall.edu/wpmu/academic-affairs/policies/>.

#### **SCHOOL OF PHARMACY POLICIES:**

##### **Social Justice Policy Statement**

Marshall University is committed to bringing about mutual understanding and respect among all individuals and groups at the University. As part of Marshall University, School of Pharmacy has made a commitment to social justice. Therefore, no one will be discriminated against on the basis of race, gender, ethnicity, age, sexual orientation, religion, social class, or differing viewpoints. Each student will be viewed as a valuable member of this class and as the faculty for the course; I will strive to facilitate an atmosphere/learning environment where mutual understanding and respect are actualized.

##### **Academic, Ethical, and Professional Conduct**

Student expectations for academic, ethical, and professional conduct are defined within the school's Ethical and Professional Conduct Policy and the university's Academic Dishonesty Policy.

##### **Test Security Policy**

In order to ensure the security of all examinations, please refer to the MUSOP Secure Testing Policy. The policy can be found on the Marshall University School of Pharmacy website in section 400.003 Secure Testing Environment Standards.



## 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: Pharmacy

Dept/Division: Pharmaceutical Sciences

Alpha Designator/Number: MSPS542

☒ Graded ☐ CR/NC

Contact Person: ARM Ruhul Amin

Phone: 304-696-7371

## NEW COURSE DATA:

New Course Title: Graduate Research Seminar

Alpha Designator/Number: M S P S 5 4 2

Title Abbreviation: S c i e n c e S e m i n a r s

(Limit of 25 characters and spaces)

Course Catalog Description:  
(Limit of 30 words)

This course will help graduate students in the pharmaceutical sciences learn the basics of scientific communication and how to critically evaluate scientific literatures. Students must complete four versions of this course for credit. For the first three course offerings, the student will receive a "CR" (credit) or "NC" (no credit). Upon completion of the fourth version of the course the student will receive a letter grade

Co-requisite(s): None

First Term to be Offered: Fall 2018

Prerequisite(s): Enrolled in MSPS program

Credit Hours: 04

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

Date

1/23/2018

Registrar

5/20/18

Date

1-25-18

College Curriculum Chair

Date

1/23/2018

Graduate Council Chair

Date

3-16-18

## Request for Graduate Course Addition - Page 2

College: Pharmacy

Department/Division: Pharmaceutical Sciences and Alpha Designator/Number: PHAR542

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.

Dr. A.R.M. Ruhul Amin  
Dr. Omar Faruk Khan  
Dr. Eric Blough  
Dr. Cynthia Jones  
Dr. Tim Long

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 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)

Please see the attached syllabus

## **Request for Graduate Course Addition - Page 3**

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

Please see the attached syllabus

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

Not Applicable

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

Presentation and Discussion



## **Request for Graduate Course Addition - Page 4**

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

In class evaluation based on developed rubric

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

Students must complete all four versions of the seminar as partial fulfillment of the degree requirement.

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

Not Applicable

## 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: Pharmaceutical Science and Research

Course Number and Title: MSPS542, Graduate Sciences Seminar

Catalog Description: This course will help graduate students in the pharmaceutical sciences learn the basics of scientific communication and how to critically evaluate scientific literatures. Students must complete four versions of this course for credit. For the first three course offerings, the student will receive a "CR" (credit) or "NC" (no credit). Upon completion of the fourth version of the course the student will receive a letter grade. Completion of four course series is worth four credits and is required to successfully complete the MSPS program

Prerequisites: Enrollment in MSPS program

First Term Offered: Fall 2018

Credit Hours: 04

**SYLLABUS**  
**Graduate Research Seminar**  
**MSPS 542**  
**Fall 2018**

This syllabus is not to be construed as a contract with the student and is subject to change.

The School of Pharmacy reserves the right to change the course syllabus. *The School should notify the students through the course notification system or by an email preferably through the Blackboard system.*

*Materials used in this class may be copyrighted and should not be shared with individuals not enrolled in this course.*

<b>Course meeting days and time</b>	TBA
<b>Location</b>	TBA
<b>Team Leader / Instructor</b>	A.R.M. Ruhul Amin, Ph. D.
<b>Office</b>	CEB 235A
<b>Phone</b>	(304)696-7371
<b>Email</b>	<a href="mailto:amina@marshall.edu">amina@marshall.edu</a>
<b>Office hours</b>	TBA

<b>Faculty</b>	<b>Email</b>	<b>Office</b>	<b>Phone Number</b>	<b>Office Hours / Appointments accepted?</b>
A.R.M. Ruhul Amin, Ph. D.	<a href="mailto:amina@marshall.edu">amina@marshall.edu</a>	235A	(304)696-7371	TBA

**Student:** If the instructor accepts appointments, then please email the instructor for availability. The student can expect the instructor to respond to E-mails and phone messages within 72 hours.

**Course Description:** This course will help graduate students in the pharmaceutical sciences learn the basics of scientific communication and how to critically evaluate scientific literatures. Students must complete four versions of this course for credit. For the first three course offerings, the student will receive a "CR" (credit) or "NC" (no credit). Upon completion of the fourth version of the course the student will receive a letter grade. Completion of four course series is worth four credits and is required to successfully complete the MSPS program.

**Prerequisites:** None

**Text Books:**

Required: None

**Course Objectives:**

Number	Objective	How Assessed
1	Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research	Evaluations
2	Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format	Class participation
3	Demonstrate the ability to prepare clear, concise written critiques	Class Participation

**Course Activities:**

In order to become proficient at delivering different types of common scientific presentations, students will be required to deliver presentations in each of the following formats:

1. Group Discussion/Journal club: An article will be selected based on one of the concepts taught in the class. Students will critically discuss the article. One student will lead the group discussion and this will rotate. MA students are required to complete two (2) presentations of this type while MS students are required to complete one (1) presentation of this type before finishing the course.
2. Student Presentation/progress report: Students will report their research progress or research proposal. Each student must present two of these talks. Each student is required to complete two (2) presentations of this type before finishing the course.
3. Thesis defense: MS students will defend their thesis. Each MS student is required to complete one (1) presentation of this type before finishing the course.

**Example Schedule of Activities:**

Date Week of	Meeting Format	Meeting Topic	Course Student Learning Outcomes	Instructor
Week 1	Seminar	TBD	<ol style="list-style-type: none"><li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li><li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li><li>3. Demonstrate the ability to prepare clear and concise written critiques.</li></ol>	Dr. Jones/Amin
Week 2	Seminar	TBD	<ol style="list-style-type: none"><li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li><li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li></ol>	Dr. Amin

			3. Demonstrate the ability to prepare clear and concise written critiques.	
Week 3	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 4	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 5	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 6	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 7	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to</li> </ol>	Dr. Amin

			critically evaluate research presented in a peer-reviewed article or in any other format. 3. Demonstrate the ability to prepare clear and concise written critiques.	
Week 8	Seminar	TBD	1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research. 2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format. 3. Demonstrate the ability to prepare clear and concise written critiques.	Dr. Amin
Week 9	Seminar	TBD	1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research. 2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format. 3. Demonstrate the ability to prepare clear and concise written critiques.	Dr. Amin
Week 10	Seminar	TBD	1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research. 2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format. 3. Demonstrate the ability to prepare clear and concise written critiques.	Dr. Amin
Week 11	Seminar	TBD	1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research. 2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format. 3. Demonstrate the ability to prepare clear and concise written critiques.	Dr. Amin



Week 12	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 13	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 14	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin
Week 15	Seminar	TBD	<ol style="list-style-type: none"> <li>1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research.</li> <li>2. Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format.</li> <li>3. Demonstrate the ability to prepare clear and concise written critiques.</li> </ol>	Dr. Amin

**Course Evaluation (assessment):** Faculty evaluations, peer evaluations and written reports. Faculty will evaluate seminar presentations using an evaluation rubric with eight criteria that links to the course objectives. A minimum of two faculty will evaluate presentation and the average of all faculty evaluations will be taken for final presentation assessment.

## Course Evaluation (grading):

**Point or Percentage Distribution:** Faculty evaluation: 60%  
Written reports: 10%  
Peer evaluation: 10%  
Class Participation: 20%

**Letter grades distribution:** A = 89.50 to 100%

B = 79.50 to less than 89.50%

C = 69.50 to less than 79.50%

F = Less than 69.50%

**Attendance policy:** Attendance is mandatory regardless of whether or not students are scheduled to give a presentation. Active participation in presentation analysis is an integral part of developing presentation skills. Students are encouraged to give one presentation per semester and may give more than one if scheduling allows. In order to monitor attendance, a sign-up sheet will be sent around at the beginning of class. It is the student's responsibility to sign this sheet, otherwise credit for attendance cannot be guaranteed. Arriving late to class or leaving early may result in an unexcused absence. The University's policy on class attendance is described within the [Board of Governors Policy No. AA-13 Class Attendance](#) document. For more information about excused absences and professional leave, please refer to the MUSOP Student Leave Policy ([MUSOP Policy 200.010](#)). ***Only one unexcused absence will be allowed each semester.*** Should a situation arise where a student will miss a second class, the course director must be notified **in advance**. Acceptance of the excuse is at the course director's discretion and only legitimate (see official University policy), documented excuses will be accepted.

**Documentation must be received within 2 weeks of the absence. More than one unexcused absence will result in a no credit grade.**

## Test Security Policy

Please refer to the MUSOP Secure Testing Policy ([MUSOP Policy 400.003](#)).

## School of Pharmacy Policies

### SOCIAL JUSTICE POLICY STATEMENT

Marshall University is committed to bringing about mutual understanding and respect among all individuals and groups at the University. As part of Marshall University, School of Pharmacy has made a commitment to social justice. Therefore, no one will be discriminated against on the basis of race, gender, ethnicity, age, sexual orientation, religion, social class, or differing viewpoints. Each student will be viewed as a valuable member of this class and as the faculty for the course, I will strive to facilitate an atmosphere/learning environment where mutual understanding and respect are actualized.

### ACADEMIC, ETHICAL, AND PROFESSIONAL CONDUCT

Student expections for academic, ethical, and professional conduct are defined within the school's [Ethical and Professional Conduct Policy](#) and the university's [Academic Dishonesty Policy](#).

## UNIVERSITY POLICIES

University policies regarding **Academic Dishonesty, Students with Disabilities, University Computing Services' Acceptable Use, Affirmative Action, and Sexual Harassment** can be found at <http://www.marshall.edu/wpmu/academic-affairs/policies/>.

**Request for Graduate Course Change**

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: College of Science Dept/Division: Physics

Current Alpha Designator/Number: PHY 630

Contact Person: Huong Nguen, Wilson Thomas

Phone: x6-2754

**CURRENT COURSE DATA:**

Course Title: Classical Mechanics

Alpha Designator/Number:

P H Y 6 3 0

Title Abbreviation:

C l a s s i c a l M e c h a n i c s

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form*).
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

Dept. Chair/Division Head		Date	Dec 7, 2017
Registrar	 400801	Date	12-8-17
College Curriculum Chair		Date	12-15-17
Graduate Council Chair		Date	3-6-18





## Request for Graduate Course Change - Page 3

Change in COURSE CREDIT HOURS: ☒ YES ☐ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From 3

In the time allotted for the course, only 2/3 of the textbook Classical Mechanics (Third Edition), by Herbert Goldstein, Charles P. Poole and John L. Safko could be covered.

To 4

This will allow students to cover the remaining part from the textbook, thus providing them with a more in-depth knowledge of Electrodynamics at the graduate level.

Change in COURSE CONTENT: ☒ YES ☒ NO

From

Chapters 1 through 8 from the textbook Classical Mechanics (Third Edition), by Herbert Goldstein, Charles P. Poole and John L. Safko.

To

Chapters 1 through 12 from the textbook Classical Mechanics (Third Edition), by Herbert Goldstein, Charles P. Poole and John L. Safko.

Rationale

In a one-semester 3-hour sequence, time does not usually allow for an introduction to Canonical Transformations, Hamilton-Jacobi Theory and Action-Angle Variables problems. Increasing the lecture time by 33% (from 3 to 4 hours) should now allow for these topics to be included and considered in some depth.

## Request for Graduate Course Change-Page 4

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College: College of Science

Department: Department of Physics

Course Number/Title PHY 630

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1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NOT APPLICABLE

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. 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



## Request for Graduate Course Change - Page 5

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

### COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description: (new)

Catalog Description:

### COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

### COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

### COURSE CREDIT HOURS CHANGE

Department: Physics

Current Course Credit Hours: 3

Current Course Credit Hours: 4

Rationale: In a one-semester 3-hour sequence, time does not usually allow for an introduction to Canonical Transformations, Hamilton-Jacobi Theory and Action-Angle Variables problems. Increasing the lecture time by 33% (from 3 to 4 hours) should now allow for these topics to be included and considered in some depth.

Catalog Description: Study of variational principles and Lagrange's equations, the two-body central force problem, the kinematics and dynamics of rigid-body motion, Hamilton's equations of motion, canonical transformations, Hamilton-Jacobi theory, and small oscillations.

## Request for Graduate Course Change

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: COHP

Dept/Division: Physical Therapy

Current Alpha Designator/Number: PT 788

Contact Person: D. Scott Davis PT, EdD, OCS (Chairperson)

Phone: 304-696-5614

### CURRENT COURSE DATA:

Course Title: Rehabilitation Considerations in Selected Populations III

Alpha Designator/Number:

P	T	7	8	8					
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Title Abbreviation:

R	e	h	a	b		i	n		S	e	l	e	c	t		P	o	p	s		I	I	I	
---	---	---	---	---	--	---	---	--	---	---	---	---	---	---	--	---	---	---	---	--	---	---	---	--

1. Complete this **five** page form in its entirety and route through the departments/committees below for changes to a course involving: course title, alpha designator, course number, course content, credit hours, or catalog description.
2. If this change will affect other departments that require this course, please send a memo to the affected department and include it with this packet, as well as the response received from the affected department.
3. If the changes made to this course will make the course similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet as well as the response received from the affected department.
4. List courses, if any, that will be deleted because of this change (*must submit course deletion form*).
5. If the faculty requirements and/or equipment need to be changed upon approval of this proposal, attach a written estimate of additional needs.

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

Dept. Chair/Division Head <u>D. Scott Davis</u>	Date <u>12-7-17</u>
Registrar <u>Sonyia G</u> <u>512001</u>	Date <u>12-8-17</u>
College Curriculum Chair <u>[Signature]</u>	Date <u>1/26/18</u>
Graduate Council Chair <u>Christofero</u>	Date <u>3-6-18</u>

College: COHP      Department/Division: Physical Therapy      Alpha Designator/Number: PT 788

Change in CATALOG TITLE: ☐ YES ☒ NO

[illegible]

If Yes, Rationale	

From: 

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 To 

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☐ YES ☒ NO

If Yes, Rationale	
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From: 

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 To: 

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If Yes, Rationale	
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From ☐ Grade To ☐ Credit/No Credit

Rationale	
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**Change in CATALOG DESCRIPTION:** ☐ YES ☒ NO IF YES, fill in below:

From

To

If Yes Rationale	
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## Request for Graduate Course Change - Page 3

Change in COURSE CREDIT HOURS: ☒ YES ☐ NO If YES, fill in below:

NOTE: If credit hours increase/decrease, please provide documentation that specifies the adjusted work requirements.

From 2 Credit Hours

To 1 Credit Hour

Change in COURSE CONTENT: ☒ YES ☐ NO

From This course previously included content related to patient motivation and behavioral change.

To Content related to patient motivation and behavioral change associated with various physical and psychosocial co-morbidities were removed from this course and moved earlier in the curriculum in a previously added course (PT 758). This course will no longer include foundational content related to patient motivation and behavioral change used to promote human movement, function, and overall physical and mental health. The course will now only focus on the more advanced physical therapy evaluation and treatment strategies for selected patient populations and techniques that are often considered niche practice, advanced practice, or sub-specialty practice. These will include women's health, diseases of the genitourinary system, oncology, osteoporosis, organ transplant, ergonomics, work hardening, workplace safety, and dry needling. Removal of this content resulted in a reduction of credit hours from two (2) to one (1).

Rationale Half of the course content is being moved earlier in the Doctor of Physical Therapy curriculum to serve as foundational content for other courses in the curriculum that relate to patient motivation and behavioral change. The content from this course was moved to a new course PT 758 titled Patient Motivation and Behavior Change in Physical Therapy. The new course was added in early fall and has been approved at all levels.

## Request for Graduate Course Change-Page 4

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College: COHP

Department: School of Physical Therapy

Course Number/Title PT 788/ Rehabilitation Considerations in Selected Populations III

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1. REQUIRED COURSE: If this course is required by another department(s), identify it/them by name and attach the written notification you sent to them announcing to them the proposed change and any response received. Enter NOT APPLICABLE if not applicable.

NA

2. COURSE DELETION: List any courses that will be deleted because of this change. A *Course Deletion* form is also required. Enter NOT APPLICABLE if not applicable.

NA

3. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials as a result of this change, attach an estimate of the time and cost etc. required to secure these items. (NOTE: approval of this form does not imply approval for additional resources. Enter NOT APPLICABLE if not applicable.

NA

## Request for Graduate Course Change - Page 5

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

### COURSE DESCRIPTION CHANGE

Department:

Course Number and Title:

Rationale:

Course Description (old)

Course Description; (new)

Catalog Description:

### COURSE NUMBER CHANGE

Department:

Current Course Number/Title:

New Course Number:

Rationale:

Catalog Description:

Credit hours:

### COURSE TITLE CHANGE

Department:

Current Course Number/Title:

New Course Title:

Rationale:

Catalog Description:

Credit Hours: Change from two (2) credit hours to one (1) credit hour.



**PT 788: Rehabilitation Considerations in Selected Patient Populations III**  
**Fall 2018**

Course Title/Number	<b>PT 788: Rehabilitation Considerations in Selected Patient Populations III</b>
Semester/Year	<b>Fall 2018</b>
Days/Time	<b>Thursdays *Except where noted</b> <b>Time: 1-4 pm *Except where noted</b> <b>The instructor(s) reserve the right to alter the syllabus or schedule at any time.</b> <b>Students will receive due notification of any changes.</b>
Location	<b>SOPT Room 105</b>
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 <a href="http://www.marshall.edu/academic-affairs">www.marshall.edu/academic-affairs</a> and clicking on "Marshall University Policies." Or, you can access the policies directly by going to <a href="http://www.marshall.edu/academic-affairs/?page_id=802">http://www.marshall.edu/academic-affairs/?page_id=802</a> 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

<b>Course Coordinator/Instructor:</b> Brad Profitt, PT, DPT, CSCS, DC, CFCE, OCS School of Physical Therapy Office 147 (304) 696-5619 <a href="mailto:Profitt2@marshall.edu">Profitt2@marshall.edu</a>	<b>Course Instructors:</b> Gretchen Pfost PT, DPT, NCS James Dauber PT, DPT, DSc, OCS, SCS
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**Catalog Description:** Principles of physical therapy management of select patient populations including bariatrics, women's health, cancer, and selected progressive and chronic diseases.

**\*Course Description**

Principles of physical therapy management of select patient populations including bariatrics, women's health, oncology, and selected progressive and chronic diseases. Other special topics to be covered include dry needling and ergonomics. The student must have successfully completed all prior curricular course work.

**Credit Hours:** 1, total scheduled hours: 17 total contact hours: (16) lecture contact hours, 2 lab contact hours

**\*Required Text, Additional Reading, and Other Materials**

Goodman CC, Fuller KS, Boissonnault WG. Pathology: Implications for the physical therapist, 3rd ed. Philadelphia: Saunders, 2009.  
 Umphred DA, Lazaro RT, Roller ML, Burton GU. Neurological Rehabilitation, 3<sup>rd</sup> ed. St. Louis: Elsevier, 2013.  
 Additional Readings and Material will be provided for specific cases and topics.

**Recommended Materials**

None – Lab materials provided.

**Computer Requirements**

Students must have access to the internet for research of evidence, and Blackboard to access course documents, notes, and other materials.

**Program's Student Learning Outcomes**

**Upon completion of the DPT in Physical Therapy, students will be able to:** Apply to take the National Physical Therapy Examination in order to become licensed to practice Physical Therapy in the US.

**The table below shows the following relationships: How each student learning outcomes will be practiced and assessed in the course.**

<b>Course Student Learning Outcomes</b>	<b>Students will gain practice to achieve the learning outcome through:</b>	<b>Students will be assessed using the following methods:</b>	<b>CAPTE Curriculum Content</b>
1. Discuss the pathogenesis of many common conditions, including both cellular and clinical presentations of pathology within the realms of: a. Women's Health and Pelvic Floor Dysfunction b. Diseases and Conditions of the Genitourinary System c. Oncology d. Osteoporosis e. Organ Transplantation	Reading Assignment Case Studies Lecture	✓ Case & Assignments ✓ Exam	CC 1.0 CC 3.0
2. Analyze common pathological conditions within the realms of: Women's Health, Pelvic Floor Dysfunction, Genitourinary conditions, Oncology, Osteoporosis, and Organ Transplantation and identify when to refer patients to other health care professionals.	Reading Assignments Lecture Case Studies	✓ Exam	CC 1.0, 3.0, 5.20, 5.27, 5.36

<b>Course Student Learning Outcomes</b>	<b>Students will gain practice to achieve the learning outcome through:</b>	<b>Students will be assessed using the following methods:</b>	<b>CAPTE Curriculum Content</b>
3. Discuss ways to modify and monitor physical therapy intervention for patients with pathology within the above medical realms.	Reading Assignments Lecture Lab	✓ Case Assignments ✓ Exam	CC 5.35, 5.36, 5.38, 5.43, 5.51, 5.52
4. Given a case scenario, the student will be able to: <ul style="list-style-type: none"> <li>a. complete examination, evaluation and develop a plan of care related to areas of workspace design, work hardening for a return to work and functional capacity evaluation</li> <li>b. work with industry personnel in the case management process</li> <li>c. Provide consulting to industry/workplace personnel to maintain/set-up an ergonomically safe workplace.</li> </ul>	Readings Case Studies Lecture Discussion	✓ Case Assignments ✓ Exam	CC 5.30 h, x
5. Identify and effectively progress physical therapy interventions to achieve patient goals with regard to use of proper body mechanics in the home and work environments, functional retraining in work and prevention of (re)-injury.	Case studies Peer Assessment Readings Lecture	✓ Case Assignments ✓ Exam	CC 5.39 c, i
6. Describe the theory and evidence behind the use of dry needling as a physical therapy intervention for pain modulation.	Readings Lecture	✓ Exam	CC 5.22, 5.30 p, 5.39 i
7. Recognize patients who may benefit from dry needling and locate common myofascial trigger points using basic physiological and biomechanical principles.	Readings Lecture Lab	✓ Exam	CC 5.30 p, 5.39 i

**Course Requirements/Due Dates: See Course Schedule Below for quiz/exam dates**

1. Case Studies & Assignments – Written, Discussion and Presentation
2. Written examinations
3. Lab and Class participation

### **Grading Policy**

		<b>Grading Criteria:</b>	
Exams (2 @ 25% each)	50%	89.50%-100%	A
Ergonomic Consult	15%	79.50%-89.49%	B
Patient Resources Assignment	10%	69.50%-79.49%	C
Interview & Reflection	10%	<69.50%	F
Presentation	10%		
Participation	5%		

Exams will be provided in a paper format with Scantron, where applicable, for the purposes of statistical analysis. Students may make an appointment with the course instructor(s) to view exam. Any refuting of examination questions must be handled in a professional manner and preferably in a written format within 24-48 hours of viewing the exam results. No make-up exams will be given unless you are absent for a justifiable reason (i.e., death in family, illness), with appropriate documentation.

Late submission of assignments will result in a zero '0.'

Participation will be graded on the 5 following items: Punctuality, Professionalism, and Interaction in small group discussion, ACTIVE lab participation and Preparedness.

**Attendance Policy:** Please see the School of Physical Therapy Student Handbook for details.

**\*Course Outline, including due dates for major projects:** The following topics will be covered.

Student's successful completion of this class will be determined by the completeness and participation in the group sessions as well as the final exam, and successful completion of ALL assignments. The Tentative Course Schedule is as follows:

<b>Date</b>	<b>Topic</b>	<b>Readings</b>	<b>Instructor</b>
X/X/18 (Tu) 1:00-3:00	Lecture: Dry Needling Theory and Concepts		<b>Dauber (2 hr lecture)</b>
X/X/18(Th) 1:00-3:30	Lecture: Ergonomics, Work Hardening & Work Space Design		<b>Profitt (2 hr lecture, .5hr lab)</b>
X/X/18 (W) 1:00-4:00	Lecture: PT Management following Organ Transplant	Goodman Ch 21	<b>Bose (3 hr lecture)</b>
X/X/18 (Th) 1:00-2:00	Written Exam I: Dry Needling, Ergo/work space, Organ Transplant,		<b>Profitt (1 hr)</b>
X/X/18 (F) 10:00–12:00 1:00-5:00	Lecture/Lab: Women's Health	Goodman Chs 19 & 20 Umphred Ch 29	<b>Marnie Clemens, PT, DPT, OCS, WCWS, FAAOMPT (4.5 hr lecture, 1.5 hr lab)</b>
X/X/18 (Tu) 1:00-3:30	Lecture: Oncology Rehabilitation	Goodman Ch 9	<b>Pfost (2.5 hr lecture)</b>
X/X/18 (Tu) 1:00-2:00	Written Exam II: Women's health, Oncology, Yoga,		<b>Profitt (1 hr)</b>

Please see Assignment Addendum.

## Request for Graduate Non-Curricular Changes

PLEASE USE THIS FORM FOR ALL NON-CURRICULAR CHANGE REQUESTS (changes in admission requirements or requirements for graduation, changes in existing or new policies/procedures, changes in program descriptions in catalog, general language changes in catalog).

SIGNATURES may not be required, depending on the nature of the request and from where it originates. Consult Graduate Council Chair.

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.
3. **The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: SOP Dept/Division: SOP  
 Contact Person: Eric Blough Phone: x7394

## Rationale for Request:

The school of pharmacy has recently reviewed the pre-requisite requirements that many of our peer institutions currently employ. This study suggested that many of our competitors only require one semester or 4 credit hours of physics with a laboratory for program entry. To remain competitive with our peer institutions we wish to reduce our current requirement of 2 semesters (or 8 credit hours) to 1 semester (or 4 credit hours) of physics with lab.

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.  
 NOTE: all requests may not require all signatures.

Department/Division Chair K. Bweal Jung Date Fall 2018  
 Registrar [Signature] 5/20/18 Date 1-25-18  
 College Curriculum Committee Chair Hew Jansony Date 1/23/2018  
 (or Dean if no college curriculum committee)  
 Graduate Council Chair Christofero Date 3-6-18

NOTE: please complete information required on the following pages before obtaining signatures above.



## Request for Graduate Non-Curricular Changes – Page 2

1. **Current Catalog Description (if applicable):** Please insert the catalog description from the current catalog for entries you would like to change.

1. Completed all required pre-pharmacy courses (note: inquiries regarding prerequisite course equivalency should be forwarded to MUSOP Student Affairs at 304-696-7354). These courses include:

English Composition.....6 credit hours or 2 semesters  
Calculus.....5 credit hours or 1 semester  
Statistics.....3 credit hours or 1 semester  
Biology with Lab.....8 credit hours or 2 semesters  
Chemistry with Lab.....10 credit hours or 2 semesters  
Human Anatomy .....4 credit hours or 1 semester  
Human Physiology.....4 credit hours or 1 semester  
Microbiology .....4 credit hours or 1 semester  
Organic Chemistry with Lab .....9 credit hours or 2 semesters,  
Physics with Lab ..... 8 credit hours or 2 semesters  
Social Science elective credit hours or 1 semester

## Request for Graduate Non-Curricular Changes – Page 3

2. **Edits to current description:** Attach or insert a PDF copy of the current catalog description prepared in MS WORD with strikethroughs to mark proposed deletions and use the highlight function to indicate proposed new text.

1. Completed all required pre-pharmacy courses (note: inquiries regarding prerequisite course equivalency should be forwarded to MUSOP Student Affairs at 304-696-7354). These courses include:

English Composition.....6 credit hours or 2 semesters

Calculus.....5 credit hours or 1 semester

Statistics.....3 credit hours or 1 semester

Biology with Lab.....8 credit hours or 2 semesters

Chemistry with Lab.....10 credit hours or 2 semesters

Human Anatomy .....4 credit hours or 1 semester

Human Physiology.....4 credit hours or 1 semester

Microbiology .....4 credit hours or 1 semester

Organic Chemistry with Lab .....9 credit hours or 2 semesters,

Physics with Lab .....8 4 credit hours or 2 1 semesters

Social Science elective credit hours or 1 semester

## Request for Graduate Non-Curricular Changes – Page 4

3. **New Catalog Description:** Provide a “clean” copy of your proposed description without strikethroughs or highlighting. This should be what you are proposing for the new description.

1. Completed all required pre-pharmacy courses (note: inquiries regarding prerequisite course equivalency should be forwarded to MUSOP Student Affairs at 304-696-7354). These courses include:

English Composition.....6 credit hours or 2 semesters

Calculus.....5 credit hours or 1 semester

Statistics.....3 credit hours or 1 semester

Biology with Lab.....8 credit hours or 2 semesters

Chemistry with Lab.....10 credit hours or 2 semesters

Human Anatomy .....4 credit hours or 1 semester

Human Physiology.....4 credit hours or 1 semester

Microbiology .....4 credit hours or 1 semester

Organic Chemistry with Lab .....9 credit hours or 2 semesters,

Physics with Lab ..... 4 credit hours or 1 semesters

Social Science elective credit hours or 1 semester

## **Request for Graduate Non-Curricular Changes – Page 5**

Please insert below your proposed change information for the Graduate Council agenda.

Type of change request: Pre-requisite requirements for entry into program

Department: SOP

Degree program: PharmD

Effective date (fall/spring/summer, year): Fall 2018