

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 [Signature] Date Fall 2018

Registrar [Signature] 5/20/18 Date 1-25-18

College Curriculum Committee Chair [Signature] Date 1/23/2018
(or Dean if no college curriculum committee)

Graduate Council Chair _____ Date _____

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 Anatomy4 credit hours or 1 semester

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

Microbiology4 credit hours or 1 semester

Organic Chemistry with Lab9 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 Anatomy4 credit hours or 1 semester
Human Physiology.....4 credit hours or 1 semester
Microbiology4 credit hours or 1 semester
Organic Chemistry with Lab9 credit hours or 2 semesters,
Physics with Lab8 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 Anatomy4 credit hours or 1 semester

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

Microbiology4 credit hours or 1 semester

Organic Chemistry with Lab9 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

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 Scie Alpha Designator/Number: MSPS 631 ⁵³² ⁵³² ⁵³² Graded CR/NC

Contact Person: Faruk Khan Phone: 63094

NEW COURSE DATA:

New Course Title: _____

Alpha Designator/Number:

M	S	P	S	⁵ 6	3	1	5	3	2
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⁵³² ⁵³² ⁵³²

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: 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.
(Limit of 30 words)

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 <u>Faruk Khan</u>	Date <u>12/22/17</u>
Registrar <u>512010</u>	Date <u>1-25-18</u>
College Curriculum Chair <u>Hwa Jinsong</u>	Date <u>1/12/2018</u>
Graduate Council Chair _____	Date _____

Request for Graduate Course Addition - Page 2

College: Pharmacy

Department/Division: DPSR

Alpha Designator/Number: MSPS 634 ⁵³²

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

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-634, 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

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.

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

Faculty	Email	Office	Phone Number	Office Hours / Appointments accepted?
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:

3rd Edition, Editor: David Mantus, Douglas J. Pisano, Publisher: CRC Press

ISBN-13: 978-1841849195

2. Burger's Medicinal Chemistry and Drug Discovery,

9th 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"> Describe an overview on Pharmaceutical Regulatory Affairs
Khan	TBA	FDA and Drug Development	<ul style="list-style-type: none"> Explain different functions and roles of US FDA in drug approval processes Review the FDA drug development laws and policies Describe drug development process
Khan	TBA	Investigational New Drug (IND) Application - FDA	<ul style="list-style-type: none"> Describe the content and format of IND application Explain IND Amendments Distinguish between different types of IND applications
Khan	TBA	The New Drug Application	<ul style="list-style-type: none"> Review the content and format of NDA application (Module 1 -5 of CTD formats) Describe the processes related to submission and review of the NDA
Khan	TBA	EXAM 1	On above 4 class materials
Khan	TBA	Meeting with the FDA	<ul style="list-style-type: none"> Explain different types of FDA meetings and meeting objectives Illustrate FDA expectations and preparations for FDA meetings
Khan	TBA	FDA Medical Device Regulation	<ul style="list-style-type: none"> Classify medical devices Describe the medical device clinical research and their approval processes

Khan	TBA	A premier of Drug/Device Law	<ul style="list-style-type: none"> Describe Federal and States Laws Debate the difference between regulation and law Devise different FDA guidelines
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: https://www.fda.gov/Drugs/default.htm
Khan	TBA	The Development of Orphan Drugs	<ul style="list-style-type: none"> Explain the Orphan Drug development process Describe and analyze the Orphan Drug Act Illustrate the Orphan Drug Designation
Khan	TBA	Chemistry, Manufacturing, and Control	<ul style="list-style-type: none"> Differentiate between pharmaceutical API and excipients Explain stability study, quality assurance, quality control, product specification etc.
Khan	TBA	Good Manufacturing/Laboratory Practices (GxPs)	<ul style="list-style-type: none"> Explain and Differentiate between GLP, GMP, and GCP Interpret and apply GxPs US Regulations
Khan	TBA	FDA Regulation of the Advertisement and Promotion	<ul style="list-style-type: none"> Revise FDA Regulation and general policies of the Advertisement and Promotion of the prescription drugs Develop plan of the Advertisement and Promotion of the prescription drugs
Khan	TBA	EXAM 3	On Classes 8-11
Khan	TBA	FDA Advisory Committees	<ul style="list-style-type: none"> Investigate structure and composition of FDA Advisory Committees and their operation
Khan	TBA	Biologics	<ul style="list-style-type: none"> Evaluate FDA oversight and biologics development Investigate biologics approval process
Khan	TBA	Regulation of Combination products in the US	<ul style="list-style-type: none"> Review the Regulation of Combination products Classify and assign combination products
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: https://www.fda.gov/Drugs/default.htm
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"> Demonstrate the mastery in the essential knowledge and skills required to help pharmaceuticals companies on regulatory related issues.

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: 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 & 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 <u>Faruk Khan</u>	Date <u>12/27/17</u>
Registrar <u>Sonya H G</u> 512 010	Date <u>1/25/18</u>
College Curriculum Chair <u>How Jinsong</u>	Date <u>1/12/2018</u>
Graduate Council Chair _____	Date _____

Request for Graduate Course Addition - Page 2

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

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

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.*

Course meeting days and time	
Location	L05
Team Leader / Instructor	Blair Journigan, Ph.D.
Office	Coon Education Building 232
Phone	(304) 696-5003
Email	journigan@marshall.edu
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, 9th 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, 1st 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, 3rd 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"> •Overview of various therapeutic molecules pursued as drug structures and their origins: small molecules, natural products, oligomers, peptidomimetics, biologics •Interpreting biological activity: <i>In vitro</i> binding and functional assays: target engagement and selectivity, <i>In vivo</i> assays
Week 6	2	Early drug discovery strategies for hit identification	<ul style="list-style-type: none"> •Structure-based drug design: x-ray crystal structures and homology models, mutagenesis studies, docking, virtual screening, and computational chemistry principles and theories
Week 7	3	Early drug discovery strategies for hit identification	<ul style="list-style-type: none"> •Ligand- and fragment- based drug design, the concept of privileged structures •Screening approaches: High throughput screening, combinatorial library design, NMR-based screening
Week 8	4	Synthetic approaches and reactions: organic chemistry	<ul style="list-style-type: none"> •Approaches for synthesis of various chemotypes: retrosynthesis, total synthesis, analog synthesis from common synthons •Reactions most utilized in medicinal chemistry, including mechanisms: reductions, oxidations, protections/deprotections, functional group interconversion, functional group addition
Week 9	5	Synthetic reactions and database searching: organic chemistry	<ul style="list-style-type: none"> •Reactions most utilized in medicinal chemistry, including mechanisms (cont): heteroatom alkylation and arylation, acylation and related processes, C-C bond formation, heterocycle formation •Introduction to Scifinder Scholar: Structure and reaction searching in publications and patents, text-based searches
Midterm (Lectures 1-5)			
Week 10	6	Structural characterization: organic chemistry	<ul style="list-style-type: none"> •Structural characterization methods: Principles of Chromatography, Mass Spectrometry, and Nuclear Magnetic Resonance Spectroscopy and data interpretation

Week 11	7	Hit to lead generation: understanding the early drug discovery process	<ul style="list-style-type: none"> •Structure-activity relationship (SAR) studies •Mining the SAR results: 2D and 3D pharmacophores, docked and crystallized structures within the active site, the concept of ligand efficiency
Week 12	8	ADMET Profiling and Lead Optimization	<ul style="list-style-type: none"> •ADMET (Absorption, Distribution, Metabolism, Excretion, Toxicity) in vitro profiling: microsomal stability, plasma protein binding, hERG liabilities, P-gp efflux •Physicochemical properties for oral bioavailability: molecular weight, pK_a, log D, Hydrogen bond acceptors/donors, Modifications to Lipinski's Rule of 5 •Additional physicochemical considerations for CNS penetration: topological polar surface area (TPSA) •Lead optimization strategies: Bioisosteric replacement, chiral centers, designing out P-gp and hERG liabilities
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"> •Calculation of K_i and EC_{50} with Graphpad Prism
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 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](#).

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/

Request for Graduate Course Addition - Page 2

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

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)

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.

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

Faculty	Email	Office	Phone Number	Office Hours / Appointments
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

Number	Objective	How Assessed
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:

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

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

*** 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

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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 Sci 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

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  512010	Date <u>1-25-18</u>
College Curriculum Chair 	Date <u>1/12/2018</u>
Graduate Council Chair _____	Date _____

Request for Graduate Course Addition - Page 2

College: School of Pharmacy

Department/Division: Pharmaceutical Science

Alpha Designator/Number: MSPS 514

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.

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

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.

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

Faculty	Email	Office	Phone Number	Office Hours / Appointments accepted?
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)*

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

Example Schedule of Activities:

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

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

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

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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 Scie 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			
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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:

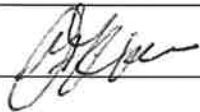


This course will help graduate students in the pharmaceutical sciences learn the basics of scientific communication and how to critically evaluate scientific literatures. Students must complete four versions of this course for credit. For the first three course offerings, the student will receive a "CR" (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 <u>1/23/2018</u>
Registrar  5/2018	Date <u>1-25-18</u>
College Curriculum Chair 	Date <u>1/23/2018</u>
Graduate Council Chair _____	Date _____

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

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

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.

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

Faculty	Email	Office	Phone Number	Office Hours / Appointments accepted?
A.R.M. Ruhul Amin, Ph. D.	amina@marshall.edu	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">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. Jones/Amin
Week 2	Seminar	TBD	<ol style="list-style-type: none">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.	Dr. Amin

			3. Demonstrate the ability to prepare clear and concise written critiques.	
Week 3	Seminar	TBD	<ol style="list-style-type: none"> 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 4	Seminar	TBD	<ol style="list-style-type: none"> 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 5	Seminar	TBD	<ol style="list-style-type: none"> 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 6	Seminar	TBD	<ol style="list-style-type: none"> 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 7	Seminar	TBD	<ol style="list-style-type: none"> 1. Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research. 2. Demonstrate the ability to 	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"> 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 13	Seminar	TBD	<ol style="list-style-type: none"> 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 14	Seminar	TBD	<ol style="list-style-type: none"> 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 15	Seminar	TBD	<ol style="list-style-type: none"> 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

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/>.