QUORUM = 7

Marshall University Faculty Senate
Executive Committee Agenda
Monday, February 13, 2022, 12:00 Noon
John Spotts Room/Microsoft Teams

1. Approval of Proposed Agenda
2. Approval of January 9, 2023, Executive Committee Minutes
3. Announcements – Shawn Schulenberg
4. Recommendations/Resolutions

    a. **SR 22-23-29 FPC** Resolves to create Ad Hoc Course Evaluation Steering Committee
    b. **SR 22-23-30 FPC** Resolves to create an Ad-Hoc Committee on Post-Tenure Review
    c. **SR 22-23-31 CC** Recommends approval of the listed UNDERGRADUATE COURSES ADDITIONS in the following college and/or schools/programs: SST 301, CMM 410, BSPS 101, BSPS 201, BSPS 202, BSPS 301, BSPS 302, BSPS 320, BSPS 330, BSPS 340, BSPS 350, BSPS 360, BSPS 401, BSPS 470.
    d. **SR 22-23-32 CC** Recommends approval of the listed UNDERGRADUATE MAJOR ADDITION, DELETION, CHANGE in the following college and/or schools/programs: Major Addition: BSPS
    e. **SR 22-23-33 CC** Recommends approval of the listed UNDERGRADUATE DEGREE PROGRAM ADDITION, DELETION, CHANGE in the following college and/or schools/programs: Degree Change: TE60; Degree Addition: B.S. in Pharmaceutical Sciences
    f. **SR 22-23-34 APC** Recommends the approval of the intent to plan a Bachelor of Science in Data Science at Marshall University

5. Guest Speakers: Title IX - Lori Howard and Jessica Rhodes
6. Set Agenda for the Faculty Senate Meeting, February 23, 2023

    a. Approval of Proposed Agenda
    b. Approval of Minutes (pending presidential approval)
    c. Announcements – Shawn Schulenberg
    d. Recommendations/Resolutions
    e. Reports
        i. Office of the President – Brad Smith/Ginny Painter
        ii. Provost – Avinandan Mukherjee
        iii. Board of Governors – Robin Riner
        iv. Advisory Council of Faculty – Amine Oudghiri-Otmani
        v. Graduate Council – Scott Davis
        vi. Student Government Association – Isabella Griffiths
    f. Standing Committee Reports
        i. Faculty Personnel Committee – Timothy Bryan
        ii. Legislative Affairs Committee – Kyle Palmquist
        iii. Research Committee – Yousef Fazea Alnadesh
        iv. Student Conduct and Welfare Committee – Penny Koontz
        v. University Curriculum Committee – Timothy Melvin
    g. Guest Speakers: Title IX - Lori Howard and Jessica Rhodes
    h. Other Requests to Speak to the Senate (5 minutes)

7. Agenda Requests for Future Meetings
8. Adjournment

QUORUM = 7

Marshall University Faculty Senate
Executive Committee Agenda
Monday, January 9, 2023. 12:00 Noon
John Spotts Room/Microsoft Teams

Members present

EC Officers – Shawn Schulenberg (Chair), Eryn Roles (Assistant Chair), Uyi Lawani, Sujoy Bose, Heather Stark, Andrew Burck, Ross Salary, Rick Gage, Mindy Varney
Ex Officio, Voting Members – Amine Oudhiri-Otmani, Scott Davis
Ex Officio Non-Voting members – Allison Carey, Robin Riner, Isabella Griffiths
Guests – Stephen Tipler, Karen McComas, Carl Mummert, Marybeth Reynolds, Nancy Lankton, Jim Booth
Parliamentarian – Zelideth Rivas
Senate Staff – Jeb Dickerson
Members absent – Eva Patton-Tackett

There being a quorum, Shawn Schulenberg, Faculty Senate Chair, called the Executive Committee meeting to order at approximately 12:05 pm.

1. Approval of Proposed Agenda – Motion to approve agenda as circulated. MSAP.

2. Approval of November 14, 2022, Executive Committee Minutes –Motion made to approve the previous minutes - MSAP

    1. Announcements – Shawn Schulenberg – Eryn Roles, Assistant Chair, is taking minutes today on behalf of our recording secretary, Sujoy Bose, who could not be here. Thank you, Eryn!
    2. The following documents have been signed by the President.
        a. October 10 Executive Committee Meeting Minutes
        b. October 20 Faculty Senate Meeting Minutes
        c. Senate Recommendations/Resolutions 13-16
        d. Summary: all pending documents have been signed
    3. Faculty Ombudsman Search: The Faculty Ombuds Search is live, and the announcement went to all faculty this morning. Qualified full professors are encouraged to apply before February 1 to receive full consideration.
    4. Personnel: Senator Marybeth Beller is on sabbatical this semester. Cody Lumpkin was elected as a temporary one-semester replacement to represent COLA in her place. I have appointed Senator Kyle Palmquist (COS) as the Senate's liaison to the Legislative Affairs Committee (LAC).
    5. Teaching Evaluations: The Student Government Association has passed a resolution asking the university to allow student evaluations to remain open during final exam week to give students more time to complete them during a busy time in the semester. I have asked the Faculty Personnel Committee (FPC) to investigate this, while also consulting with the Budget and Academic Policy Committee (BAPC), given
    6. Title IX: I nominated two candidates to represent faculty on the President's Title IX Taskforce: Philippe Georgel, former Faculty Senate Chair, and Lori Howard, former Graduate Council Chair. Both have served on the Faculty Senate's Title IX Ad Hoc Committee since its formation. The committee's recommendations are due to President Smith on March 1, and I will ask our representatives on this important task force to report to us at our February 23 Faculty Senate Meeting.
    7. Upcoming Dates
        a. Next FS Meeting: January 26, 2023, at 4:00 PM – MSC BE5 (and streaming for viewing only)
        b. Next EC Meeting: February 13, 2023, at Noon – John Spotts (streaming, with remote participation possible for EC members)
            i. Recommendations due February 3, 2023.

3. Recommendations/Resolutions
    a. **SR 22-23-17 APC** Recommends that the following undergraduate degree programs continue at their current level of activity: Bachelor of Business Administration; BA, General Business; BBA, Accounting, BA/BS, Geography, Undergraduate Certificate in Geospatial Information Science; BA, International Affairs; BA, Political Science *Discussion – None - MSAP*
    b. **SR 22-23-18 APC** Recommends that the following undergraduate degree program be discontinued: BA, Economics. *Discussion – None - MSAP*
    c. **SR 22-23-19 CC** Recommends approval of the listed UNDERGRADUATE COURSE DELETION in the following college and/or schools/programs: ART 113. *Discussion – None - MSAP*
    d. **SR 22-23-20 CC** Recommends approval of the listed UNDERGRADUATE AREA OF EMPHASIS ADDITION, DELETION, CHANGE in the following college and/or schools/programs: AB11-BA. *Discussion – None - MSAP*
    e. **SR 22-23-21 CC** Recommends approval of the listed UNDERGRADUATE COURSE ADDITIONS in the following college and/or schools/programs: DAN 112, CE 415, PSY 405. *Discussion – None - MSAP*
    f. **SR 22-23-22 CC** Recommends approval of the listed UNDERGRADUATE COURSES CHANGES in the following college and/or schools/programs: HST 427. *Discussion – None - MSAP*
    g. **SR 22-23-23 CC** Recommends approval of the listed UNDERGRADUATE MAJOR ADDITIONS, DELETIONS, CHANGES in the following college and/or schools/programs: AM10, AB30, AB60, ES00, ESM5. *Discussion – None - MSAP*
    h. **SR 22-23-24 CC** Recommends approval of the listed UNDERGRADUATE MINOR ADDITIONS, DELETIONS, CHANGES in the following college and/or schools/programs: VMUS, MGT/HC MGT, BM10, SM40. *Discussion – None - MSAP*
    i. **SR 22-23-25 EC** Confidential Recommendation for Spring Commencement Speaker(s) and Honorary Degree(s). Motion to enter executive session under the authority of WV Code §6-9A-4. Exceptions" Section 10, "To avoid the premature disclosure of an honorary degree, scholarship, prize or similar award." MSAP. Entered executive session. *Discussion – in executive session*. Entered back into general session. - *MSAP*
    j. **SR 22-23-26 FPC** Recommendation to Amend MU BOG AA-26 Faculty Promotion – *Discussion* - Carey discusses providing feedback to the FPC about terminal degrees of instructors not being able to teach graduate-level courses. Also, MU's inconsistent terminology of personnel differs from departments/colleges and HLC. The EC will send the FPC a list of its concerns/comments (Specifically, sections 4.1.3 and 4.5). Accept a motion to refer back to FPC citing a few concerns. - *MSAPA*
    k. **SR 22-23-27 FPC** Recommendation to Amend MU BOG AA-28 Faculty Tenure *Discussion* – In light of SR 22-2326 FPC being referred back to the FPC, a motion was made to refer this back to the FPC as well - *MSAPA*

4. Set Agenda for the Faculty Senate Meeting, January 26, 2023 – *Discussion – None - MSAP*
    a. Approval of Proposed Agenda
    b. Approval of Minutes (pending presidential approval)
    c. Announcements – Shawn Schulenberg
    d. Recommendations/Resolutions
    e. Reports
        i. University President – Brad Smith
        ii. Provost – Avinandan Mukherjee
        iii. Board of Governors – Robin Riner
        iv. Advisory Council of Faculty – Amine Oudghiri-Otmani
        v. Graduate Council – Scott Davis
        vi. Student Government Association – Isabella Griffiths
    f. Standing Committee Reports
        i. Academic Planning – Sean McBride
        ii. Athletic – Tom Hisiro
        iii. Budget and Academic Policy – Kelli Prejean
        iv. Library – Megan Marshall
        v. Faculty Development – Gayle Brazeau
        vi. Physical Facilities & Planning – Bill Gardner
    g. Other Requests to Speak to the Senate (5 minutes)

5. Agenda Requests for Future Meetings – Dr. Salary (following Title IX discussions) proposes MU consider a new course for Title IX-related information. This information is critical for students coming to MU. Integrated with Title IX committee.

6. Adjournment - Meeting adjourned at 12:38 pm

Respectfully submitted,

_____ _____
Eryn Roles, Assistant Chair Date signed
Marshall University

MINUTE APPROVED BY EXECUTIVE COMMITTEE:

_____
_____ _____
Shawn Schulenberg, Chair Date signed
Marshall University

MINUTES READ:

_____ _____
Brad Smith, President Date signed
Marshall University

*MSAP – Motion seconded and passed

*MSAPA = Motion seconded and passed as amended

Faculty Personnel Committee Resolution

SR 22-23-29 FPC Resolves to create Ad Hoc Course Evaluation Steering Committee

Whereas AA-24 requires the administration of course evaluations in every course, every semester. These evaluations are a way for the instructor and the department to gauge areas of strengths and weaknesses and should be regarded as a constructive professional development tool for faculty. They are also used in promotion and tenure documentation.

Whereas the Student Government Association passed a resolution in November 2022 asking the university to extend the student evaluation period until the day before grades are posted (Sunday). However, such a change would make those instructors who keep running totals vulnerable to students who are upset about their final exam grades and potentially take it out on the instructor in their evaluations.

Whereas the validity and reliability of student course evaluations has been questioned by numerous studies. For example, researchers have demonstrated that course evaluations suffer from measurement bias. Specifically, classes with lighter workloads or higher grading distributions have better scores from students, nonelective and quantitative courses are rated lower than others, and higher-level discussion-based courses are rater higher than large introductory courses. Additionally, studies suggest there is significant equity bias in course evaluations as instructor's gender, race, ethnicity, accent, sexual orientation, and disability status all impact how student ratings.

Whereas the new modality of teaching i.e., synchronous versus asynchronous, online versus in person, traditional versus HyFlex, a one-size fits all approach to course evaluations is problematic and needs revision as questions may not be applicable in all courses.

Whereas online course evaluations have significantly lower response rates than traditional paper formats impacting their generalizability.

Whereas current student evaluations do not represent an instructor's effectiveness (i.e., whether students are meeting course learning objectives), but instead focus more on instructor characteristics such as personality.

Be it resolved that the Marshall University Faculty Senate Executive Committee creates an Ad-Hoc Course Evaluation Steering Committee. The Committee will be led by the chair of the Faculty Personnel Committee and voting members of the committee shall consist of one representative from the faculties of each academic unit as defined in Bylaw #14 of the Faculty Constitution, two members of the student government association, one member from the BAPC & FDC faculty senate standing committees. Each voting member shall be appointed by the Faculty Senate Chair with the advice and consent of the Executive Committee. Ex-Officio, non-voting members shall consist of the Assistant Provost for Online Learning, Assistant Provost for Graduate Studies, and Associate Provost and Associate Vice President for Assessment and Quality Initiatives.

Faculty Personnel Committee Resolution

SR 22-23-29 FPC Resolves to create Ad Hoc Course Evaluation Steering Committee

Be it further resolved that the Faculty Personnel Committee suggests that the Faculty Senate Executive committee charge this committee to create an innovative course assessment plan that includes multiple data points and multiple types of assessment to improve student experiences and provide useful reliable data for faculty members regarding their teaching. This Ad Hoc Committee will submit its recommendations to the Faculty Senate for review before the end of the 2023-2024 Academic Year.

We so resolve.

FACULTY SENATE CHAIR:

APPROVED BY THE FACULTY
SENATE EXECUTIVE COMMITTEE: _____ DATE:_____

DISAPPROVED BY THE FACULTY
SENATE EXECUTIVE COMMITTEE: _____ DATE:_____

UNIVERSITY PRESIDENT:

READ: _____DATE:_____

COMMENTS: _____
_____
_____
_____
_____

Faculty Personnel Committee Resolution

SR 22-23-30 FPC Resolves to create an Ad-Hoc Committee on Post-Tenure Review

Whereas tenure supports the principle of academic freedom, but it does not support freedom from accountability.

Whereas AA-28 indicates that tenure at Marshall University provides for a continuing series of appointments which may be terminated by the university only for cause or under extraordinary circumstances or reduction or discontinuance of a program.

Whereas AA-22 indicates that faculty members be evaluated according to the criteria established under AA-21 Faculty Workload, and related Department, College, or School policies and guidelines.

Whereas annual / yearly reviews as defined in AA-22 provide zero benefits for tenured faculty who received an Exemplary rating; moreover, there are no disincentives/corrective actions for faculty receiving the Unacceptable rating.

Whereas to remain competitive and innovative faculty must continue to engage in the scholarly pursuit of knowledge, engage with students and develop timely and needed curriculum, and continue being of service to their departments, college, university, and community.

Whereas the purpose of a post-tenure review is to examine, recognize, and enhance the performance of tenured faculty members. The post-tenure review is directed toward multi-year accomplishments and plans for professional development. It is retrospective as well as prospective and takes into account that faculty will have different emphases and assignments at various points in their careers. The post-tenure review is not a reconsideration of tenure, but rather a constructive five-year performance review, which serves to highlight contributions, incentive exemplary performance, and identify future opportunities as well as identify any deficiencies in performance and, in those cases, provide a plan for addressing concerns.

Be it resolved that the Marshall University Faculty Senate Executive Committee votes to create an Ad-Hoc Committee on Post-Tenure Review. The Committee will be led by the chair of the Faculty Personnel Committee and voting members of the committee shall consist of one representative from the faculties of each academic unity as defined in Bylaw #14 of the Faculty Constitution. Each voting member shall be appointed by the Faculty Senate Chair with the advice and consent of the Executive Committee. Ex-Officio, non-voting members shall consist of the Senior Vice President of Academic Affairs/Provost

Be it further resolved that the Faculty Senate Executive committee charge this Ad-Hoc committee to consider the merits of an incentivized post-tenure review process for faculty at Marshall University, and to propose a policy for the Faculty Senate, if needed.

We so resolve.

FACULTY SENATE CHAIR:

Faculty Personnel Committee Resolution

SR 22-23-30 FPC Resolves to create an Ad-Hoc Committee on Post-Tenure Review

APPROVED BY THE FACULTY
SENATE EXECUTIVE COMMITTEE: _____ DATE:_____

DISAPPROVED BY THE FACULTY
SENATE EXECUTIVE COMMITTEE: _____ DATE:_____

UNIVERSITY PRESIDENT:

READ: _____DATE:_____

COMMENTS: _____
_____
_____
_____
_____

University Curriculum Committee
RECOMMENDATION

SR-22-23-31 CC

Recommends approval of the listed **UNDERGRADUATE COURSES ADDITIONS** in the following college and/or schools/programs:

College of Liberal Arts

SST 301 Intro to Sexuality Studies

- **Rationale:** An introductory, interdisciplinary study of sexuality drawing material from the humanities, social sciences, and natural sciences.
- **Curriculum:** Undergrad Course Addition - SST 301_signed.pdf

CMM 410 Crisis & Risk Communication

- **Rationale:** This application-based course introduces communication theories of crisis and risk management.
- **Curriculum:** Ungrad Course Addition - CMM 410_signed.pdf

School of Pharmacy

BSPS 101 Intro to Careers in Pharm Sci

- **Rationale:** Careers in the Pharmaceutical Sciences will introduce students to the future career and educational opportunities available following the completion of a BS in the Pharmaceutical Sciences.
- **Curriculum:** BSPS 101.pdf

BSPS 201 Intro to Pharmaceutical Sci

- **Rationale:** This course introduces students to pharmaceutical sciences. Topics include an overview of drug discovery, development, basic principles of drug properties, drug structure, drug delivery, drug disposition, drug action and therapy.
- **Curriculum:** BSPS 201.pdf

University Curriculum Committee
RECOMMENDATION

SR-22-23-31 CC

BSPS 202 Drug Regulatory Affairs

- **Rationale:** This course provides an overview of pharmaceutical regulatory affairs, particularly USFDA's regulation of drug products approved in the United States.
- **Curriculum:** BSPS 202.pdf

BSPS 301 Introduction to Pharmacology I

- **Rationale:** This introductory pharmacology course covers basic principles of pharmacology. Mechanism of action, physiological effects, and the rational basis for use of commonly used therapeutic drug classes are emphasized.
- **Curriculum:** BSPS 301.pdf

BSPS 302 Cardiovascular Pharmacology

- **Rationale:** This course is a survey of cardiovascular pharmacology. Emphasis is on the rationale for therapeutic drug use, mechanism of action, physiological effects, and contraindications of drugs in the cardiovascular system.
- **Curriculum:** BSPS 302.pdf

BSPS 320 Pharmaceutical Analysis

- **Rationale:** This class covers analytical techniques commonly employed in pharmaceutical sciences, including traditional chemical analysis, spectrometric methods, and separation strategies along with the applications of proteomics and metabolomics to the pharmacy.
- **Curriculum:** BSPS 320.pdf

BSPS 330 Introduction to Cancer Biology

- **Rationale:** Introduction to Cancer Biology covers current concepts and knowledge of cancer, including carcinogenesis (cancer pathogenesis) and cancer treatment.
- **Curriculum:** BSPS 330.pdf

BSPS 340 Immunotherapeutics

- **Rationale:** This course introduces students to the role of the immune system in the pathophysiology of inflammatory diseases including autoimmunity and allergies.

University Curriculum Committee
RECOMMENDATION

SR-22-23-31 CC

- **Curriculum:** BSPS 340.pdf

BSPS 350 Pharmacology of Illicit Drugs

- **Rationale:** Fundamentals of the interactions of illicit drugs with the human body. Provides scientific background in substance use disorder for students pursuing clinical or research careers.
- **Curriculum:** BSPS 350.pdf

BSPS 360 Prin of Infectious Diseases

- **Rationale:** This course focuses on the pathophysiology of infectious diseases and the pharmacology of antimicrobials used in treatment.
- **Curriculum:** BSPS 360.pdf

BSPS 401 Pharm Sciences Seminar

- **Rationale:** This course is designed to teach critical literature search and evaluation skills, prepare, and present pharmaceutical scientific material in written and oral format.
- **Curriculum:** BSPS 401.pdf

BSPS 470 Capstone exper in Pharm Sci

- **Rationale:** Capstone experience in Pharmaceutical Sciences provides students with the opportunity to apply their classroom knowledge by completing a research project or internship at an approved experiential site.
- **Curriculum:** BSPS 470.pdf

FACULTY SENATE CHAIR:

APPROVED BY THE
FACULTY SENATE: _____ DATE: _____

DISAPPROVED BY THE
FACULTY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

University Curriculum Committee
RECOMMENDATION

SR-22-23-31 CC

APPROVED: _____ DATE: _____

DISAPPROVED: _____ DATE: _____

COMMENTS: _____

_____

_____

_____

NOTE: Recommendations should be sent to the Faculty Senate office via email. Recommendations longer than one page or those with attachments are to be sent in final format with this as a cover page. Any incomplete recommendations or those requiring extensive formatting changes will be returned to the recording secretary/committee.

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: COLA Department/Division: Women's, Gender, and Sexuality Studies Alpha Designator/Number: SST 301

Contact Person: Rachel Danford, danfordr@marshall.edu Phone: 304 696 2896

NEW COURSE DATA:

Course Title: Intro to Sexuality Studies (Limit of 30 characters & spaces.)

Alpha Designator/Number: SST 301

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): An introductory, interdisciplinary study of sexuality drawing material from the humanities, social sciences, and natural sciences.

Co-requisite(s): none First Term to be Offered: Sp 24

Prerequisite(s): none Credit Hours: 3

Grading Mode: Graded: x Credit/No Credit: _____

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: Hilary Brewster	Date: 10/24/22
Registrar: [signature] 050207	Date: 10/26/2022
College Dean: [signature]	Date: 10/26/2022
College Curriculum Chair: Jonathan Kozar	Date: 12/2/22
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: COLA Department/Division: Women's, Gender, and Sexuality Studies Alpha Designator/Number: SST 301

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

   Shawn Schulenberg (Political Science), Hilary Brewster (English), Robin Riner (Anthropology), Clinton Brown (Communications), Walter Squire (English), Greta Rensenbrink (History), Jeffery Ruff (Humanities), Del Chrol (Humanities)

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   n/a

3. If this course will be required by a department/division other than your own, identify by name.

   n/a

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   n/a

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   n/a

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   n/a

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   n/a

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

Course Addition, Additional Rationale: SST 301: Intro to Sexuality Studies

This course is required for the Sexuality Studies minor. It was taught for several years (with special permission from the registrar) as a special topics course in political science while we awaited approval from the SST alpha designator. The SST designator has been approved.

In January 2022, the Women's and Gender Studies and Sexuality Studies programs merged into a single entity. The two undergraduate minors remain separate degrees, but the combined program is now managed by a single director, with the support of an assistant director and faculty advisory committee. The transfer of leadership delayed filing the paperwork to get SST 301 on the books. However, now that we've had a chance to settle in and assess the program, we would like to move forward with formalizing SST 301 as a course.

Finally, SST 301 is a 300-level course, even though it serves as an introduction to sexuality studies. The reason for offering it as an upper-level is twofold. First, the difficulty and quantity of the assigned readings is better suited for an upper-level course. Second, most sexuality studies minors come to the degree later in their careers at Marshall. They often declare sexuality studies as a minor when they are juniors or seniors and need upper-level courses to make progress toward graduation. Designing the course as an upper-level better serves the needs of our students.

SST 301 INTRO TO SEXUALITY STUDIES

Spring 2024 · Time TBD · Location TBD

Appointment only
calendly.com/schulenberg

DR. SHAWN SCHULENBERG
PROFESSOR

(304) 696-2767
schulenberg@marshall.edu
Smith Hall 737

Twitter @drschulenberg
#musst101

Catalog Description

An introductory, interdisciplinary study of sexuality drawing material from the humanities, social sciences, and natural sciences

Longer Course Description

This course will provide a foundational background for the Sexuality Studies minor. We will approach this class from an interdisciplinary perspective by drawing material from the humanities as well as the natural and social sciences. Topics studied will include how sexuality is understood by various peoples and cultures from ancient times to the present with a focus on: sexuality in classical literature; essentialism vs. constructionism; intersectionality; intersexuality; trans issues; bodies, pregnancy, and birth; political activism; and globalization. (3 credit hours)

Student Learning Outcomes, Practice, and Assessment Measures

Course Student Learning Outcomes	How students will practice each outcome	How student achievement will be assessed
Students will accurately use key terms and concepts from field of sexuality studied in classroom discussions and writings.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers
Students will determine the origins of their own core beliefs and ethical principles regarding human sexuality.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers
Students will explain the relationship between sexuality and power, as related to other forms of oppression in the form of intersectionality.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers
Students will draw from the course materials to understand and situate preconceived understandings of sexualities.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers
Students will evaluate generalizations about their own cultural groups and other cultural groups regarding sexuality.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers
Students will deploy concepts studied in course to understand and evaluate current events.	In-class discussion & non-graded writings	Thought Pieces and Analytical Papers

Sexuality Studies Minor

This course fulfills one of the requirements for the Sexuality Studies minor. For more information on the interdisciplinary minor visit the Women's, Gender, and Sexuality Studies website: https://www.marshall.edu/wgss/.

Assignments and Grading

Grades for the course will be calculated based on an assessment of your work on the following items:

- **Attendance & Participation (10%)** – This is my subjective assessment about whether you 1) show up (attendance) and 2) attempt to meaningfully engage with the material and the rest of the class in a civil manner (participation). Regarding **attendance**, students with more than two unexcused absences will see their course grade negatively affected. This class will follow Marshall University's policy on Class Attendance regarding excused/unexcused absences and makeup. Note that family vacations and weddings are not acceptable excuses according to this policy. The **participation** grade is calculated at the discretion of the professor. You significantly improve your chances of receiving a good grade by making meaningful and thoughtful contributions to the classroom discussion.

- **Analysis Papers (5 total assignments, 15% each, 75% total)** – You must complete a total of five, 5-page (double-spaced) papers for the course. **ALL PAPERS MUST BE COMPLETED TO RECEIVE A PASSING COURSE GRADE**. See last page of syllabus for paper topics. Papers will be graded on both content and style. **THIS PAPER IS NOT AN OPINION PIECE OR A TIME FOR SELF-RELFECTION**. Instead, it will be a critical analysis of the question at hand using the readings for the course. You must upload an electronic version of your final draft to MU Online BEFORE class on the due date. You will not submit a paper copy. Your paper will be considered late if it is submitted after class begins and will be penalized 10 percent for each day that it is late (with a maximum deduction of 30 percent). Emailed papers will not be accepted, but if you are having technical problems with MU Online, it is always good to email me a copy to timestamp your work. The last date and time in which late work can be submitted for course credit is the beginning of the final exam period. I will give more details in class. **SEE LAST PAGE OF SYLLABUS FOR TOPICS.**

    - **Analysis 1** Due: Thursday, January 31
    - **Analysis 2** Due: Thursday, February 28
    - **Analysis 3** Due: Thursday, March 21
    - **Analysis 4** Due: Tuesday, April 16
    - **Analysis 5** Due: Thursday, May 2 (8 pages)

- **Thought Pieces (3 total assignments, 5% each, 15% total)** – You must complete a total of three, 2-page (double-spaced) thought pieces for the course. **ALL THOUGHT PIECES MUST BE COMPLETED TO RECEIVE A PASSING COURSE GRADE**. Whereas the analysis papers will be based on a critical evaluation of a specific question that I ask you, these papers will give you more freedom to talk about an article or topic of interest to you that is happening today. For these assignments, you will search the news for some event or article that deals with sexuality. Using at least two readings from the course, you will write a two-page analysis of this event. In the analysis papers, I am not looking for your own personal opinion. With this assignment, you have more freedom to do so. I will give more details about this assignment in class.

    - **Thought Piece 1 Due:** Tuesday, February 19
    - **Thought Piece 2 Due:** Tuesday, March 12
    - **Thought Piece 3 Due:** Tuesday, April 9

All course assignments must be completed to receive a passing grade. An incomplete (I) will only be granted in legitimate and exceptional cases, and students must inform the instructor of such cases before the final exam. There will be no extra credit offered. Your course will use the following scale:

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F ≤ 59%

Texts

All course readings are available in the following books or MU Online. You must complete all assigned readings before class begins.

- Ferber, Abby L., Kimberly Holcomb, and Tre Wentling. 2017. *Sex, Gender, and Sexuality: The New Basics*, 3rd ed. New York: Oxford University Press. ISBN: 978-0190278649.
- Plato. 1999. *The Symposium*. Christopher Gill, trans. London: Penguin Classics. ISBN: 978-0140449273.
- Warner, Michael. 1999. *The Trouble with Normal: Sex, Politics, and the Ethics of Queer Life*. Cambridge, MA: Harvard University Press. ISBN: 978-0674004412.
- I will tweet course-relevant articles throughout the semester from my Twitter @drschulenberg using the hashtag #mupsc280.

Expectations

- **Be prepared**. The readings should be completed before the class period in which they are assigned. The more prepared you are, the better able you are to develop connections between the readings and the lecture.
- **Show respect**. Many of you will have strong opinions about the topics we will be discussing in this course, and I hope this enthusiasm will transform into active participation in the class. However, it goes without saying that it is important to respect your fellow classmates' positions and to express a willingness to be open to opposing viewpoints. Strive to be fair-minded in evaluating all points of view.
- **Be an active participant**. The expectation is that you come to lecture to learn and participate in class discussions. All other forms of "talking" should be reserved for before or after class. Thus, please turn off your cell phones and pagers (no text messaging either). If you do not want to pay attention, you do not need to come. However, there is a strong correlation between attendance and final grade. Many of my exam questions will come directly from lecture.
- **Be on time**. This means to be on time for lecture as well as turning in your assignments and taking examinations. If you need to arrive late or leave early, please let me know ahead of time.

Personal Electronic Devices

Many studies have shown that using electronic devices in the classroom is a distraction to yourself and others, which negatively affects both learning and grades. Yet, I do not want to take this option away from you. You are free to use electronic devices in class—just use them responsibly and do not interrupt others. If they become a problem, I reserve the right to ban all electronic devices, for either an individual or the entire class.

University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to http://www.marshall.edu/academic-affairs/policies.

Academic Dishonesty / Academic Dismissal / Academic Forgiveness / Affirmative Action / Dead Week / D/F Repeat Rule / Excused Absence Policy for Undergraduates / Inclement Weather / Sexual Harassment / Students with Disabilities (Policies and Procedures) / University Computing Services Acceptable Use

Students suspected of academic dishonesty will receiving a failing grade in the course.

Email

You must have and use your MU email account. Your personal email accounts will not be used for official communication with Marshall University programs and personnel. You may redirect your MU email to your own personal email account, but you must sign in to your MU account to do that. Marshall University uses Office 365 email. For more information, visit https://www.marshall.edu/it/office365/.

Please check your Marshall email account and MU Online regularly. Articles, assignments, and other important announcements may be sent to your marshall.edu email address during the course of the semester. Be professional in email correspondence. Please address me at the beginning and sign your name at the end. I want to be sure the communication is intended for me, and I would like to know with whom I am speaking. Please email me from your Marshall account. I will not respond otherwise.

Disclaimer

The instructor of this course reserves the right to alter the contents, requirements, grading and/or scheduling of this course as he sees fit in order to best fulfill the objectives of the course. Any changes to the syllabus will be announced in class. It is your responsibility to be in class to hear of any changes.

Course Schedule

Tuesday, January 15	Introduction/Syllabus ➢ See Syllabus (available online)
Thursday, January 17	Classics ➢ Plato. *The Symposium*, pp. 3-32 (172a-197e)
Tuesday, January 22	Classics ➢ Plato. *The Symposium*, pp. 32-64 (198a-223d)
Thursday, January 24	Guest Lecture: Dr. Chrol ➢ Readings "Knocking Sandals" (MU Online) ➢ ATTENDANCE MANDATORY
Tuesday, January 29	What is a Sexuality? ➢ Warner. *The Trouble with Normal*, Ch. 1. ➢ Ingraham. "Heterosexuality: It's Just Not Natural" (SGS #4) ➢ Katz. "The Invention of Heterosexuality" (MU Online)

Thursday, January 31 ANALYSIS 1 DUE	What is a Sexuality? ➢ McIntosh, "The Homosexual Role" (MU Online) ➢ Ward. "Nowhere Without It: The Homosexual Ingredient in the Making of Straight White Men" (SGS #8) o Optional: Ward. "Straight Dude Seeks Same" ➢ Halperin. "How to Be Gay" (MU Online) ➢ Begin Movie: *Ma Vie en Rose*
Tuesday, February 5	The Construction of Sex, Gender, and Sexuality ➢ Lorber. "'Night to his Day': The Social Construction of Gender" (MU Online) ➢ D'Emilio. "Capitalism and Gay Identity" (MU Online) ➢ Eisner. "What is Bisexuality?" (SGS #12) ➢ End Movie: *Ma Vie en Rose*
Thursday, February 7	The Construction of Sex, Gender, and Sexuality ➢ Wittig. "One Is Not Born a Woman" (MU Online) ➢ Harding. "How Do You Fuck a Fat Woman" (SGS #23) ➢ Cruikshank. "Aging and Identity Politics (SGS #17) ➢ Bolus. "Loving Outside Simple Lines (SGS # 18)
Tuesday, February 12	Guest Lecture: Dr. Greta Rensenbrink ➢ Readings TBA (MU Online) ➢ ATTENDANCE MANDATORY
Thursday, February 14	Structures, Standpoint, and Privilege ➢ Johnson. "Patriarchy, the System: An It, Not a He, a Them, or an Us" (MU Online) ➢ Schilt and Westbrook. "Doing Gender, Doing Heteronormativity: 'Gender Normals,' Transgender People, and the Social Maintenance of Heterosexuality" (SGS #5)
Tuesday, February 19 THOUGHT PIECE 1 DUE	Structures, Standpoint, and Privilege ➢ McIntosh. "White Privilege" (MU Online) ➢ Rochlin. "Heterosexism in Research: The Heterosexual Questionnaire" (SGS #9) ➢ Coston and Kimmel. "Seeing Privilege Where It Isn't: Marginalized Masculinities and the Intersection of Privilege" (SGS # 2)
Thursday, February 21	Intersectionality ➢ Smith. "Homophobia: Why Bring It Up" (MU Online) ➢ Hill Collins. "Prisons for Our Bodies, Closets for Our Minds" (MU Online) ➢ Cohen. "Contested Membership: Black Gay Identities and the Politics of AIDS" (MU Online)
Tuesday, February 26	Intersectionality ➢ Waters. "Optional Ethnicities: For Whites Only?" (MU Online) ➢ Bailey, Kandawamy, and Richardson. "Is Gay Marriage Racist?" (MU Online)

Thursday, February 28 ANALYSIS 2 DUE	Infighting: Who Is "The Movement?" ➢ Frye. "Lesbian Feminism and the Gay Rights Movement" vs. Preston. "Goodbye to Sally Gerhart" (MU Online) ➢ Weiss. "GL vs. BT: The Archaeology of Biphobia and Transphobia Within the U.S. Gay and Lesbian Community" (MU Online)
Tuesday, March 5	Outfighting: Religion ➢ Sullivan, Ch. 2 (MU Online) ➢ Caramagno. *Irreconcilable Differences*, Chs. 3-4 (MU Online)
Thursday, March 7	"Science" and Sexuality ➢ Caramagno. *Irreconcilable Differences*, Ch. 7 (MU Online)
Tuesday, March 12 THOUGHT PIECE 2 DUE	"Science" and Sexuality ➢ Martin. "The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles" (SGS #27) ➢ Blackledge. "The Function of the Orgasm" (MU Online) ➢ Somerville. "Scientific Racism and the Invention of the Homosexual Body" (SGS #28)
Thursday, March 14	Class and Labor ➢ Allison. "A Question of Class" (MU Online) ➢ Mecca. "It's All about Class" (MU Online) ➢ DeFilippis. "Common Ground: The Queerness of Welfare Policy" (http://sfonline.barnard.edu/a-new-queer-agenda/common-ground-the-queerness-of-welfare-policy/0/)
Tuesday, March 19	Pregnancy and Birth ➢ Harjo. "Three Generations of Native American Women's Birth Experience" (MU Online) ➢ Aracana. "Abortion is a Motherhood Issue" (MU Online) ➢ Saxton. "Reproductive Rights" (MU Online) ➢ Documentary: *The Business of Being Born* (I will start this five minutes early so we can finish it in one class. Please show up a little early if possible.)
Thursday, March 21 ANALYSIS 3 DUE	Pregnancy and Birth. Guest Speaker: Angelita Nixon ➢ ATTENDANCE MANDATORY
Friday, March 22	NO CLASS - LAST DAY TO DROP AN INDIVIDUAL COURSE WITH A "W"
Tuesday, March 26	NO CLASS – SPRING BREAK
Thursday, March 28	NO CLASS – SPRING BREAK
Tuesday, April 2	Intersex ➢ Fausto-Sterling: "Dualing Dualisms" (SGS #1) ➢ Preves. "Intersex Narratives: Gender, Medicine, and Identity" (SGS #29) ➢ Begin Documentary: *Is It a Boy or a Girl?*

Thursday, April 4	Intersex ➢ Coventry. "The Tyranny of the Esthetic" (MU Online) ➢ Hawbecker. "Who Did This to You" (MU Online) ➢ End Documentary: *Is It a Boy or a Girl?*
Tuesday, April 9 THOUGHT PIECE 3 DUE	Trans ➢ Bornstein. "Naming All the Parts" (MU Online) ➢ Califia. "Legalized Sodomy Is Political Foreplay (MU Online) ➢ O'Brian. "Stayin' Alive" (MU Online)
Thursday, April 11	Trans ➢ Matzner. "'O Au No Keia: Voice from Hawai'I's Mahu and Transgender Communities" (SGS #11) ➢ Chess, Kafer, Quizar, and Richardson. "Calling All Restroom Revolutionaries" (MU Online)
Tuesday, April 16 ANALYSIS 4 DUE	Violence ➢ Smith. "Rape and the War Against Native Women" (SGS #22) ➢ Enloe. "Wielding Masculinity inside Abu Ghraib" (MU Online) ➢ Kempadoo. "Women of Color and the Global Sex Trade: Transnational Feminst Perspectives" (SGS #24)
Thursday, April 18	Queer ➢ Cohen. "Punks, Bulldaggers, and Welfare Queens" (MU Online) ➢ Ruskola. "What Is Left of Sodomy After Lawrence v. Texas" (MU Online) ➢ Stoddard. "Why Gay People Should Seek the Right to Marry" and Ettelbrick. "Since when is Marriage a Path to Liberation?" (MU Online)
Tuesday, April 23	Sex, Power, and Sex Panics ➢ Warner. *The Trouble with Normal*, Chs. 2-4.
Thursday, April 25	Sex, Power, and Sex Panics: The Kids ➢ Levine. *Harmful to Minors: The Perils of Protecting Children from Sex*. (MU Online) ➢ Global Information Society Watch. 2015. "Problematising the dominant discourse around children, youth and the internet." (MU Online)
Tuesday, April 30	Sex, Power, and Sex Panics: The University ➢ Kipnis, Laura. 2017. *Unwanted Advances*. (MU Online) ➢ https://www.theguardian.com/world/2017/apr/02/unwanted-advances-on-campus-us-university-professor-laura-kipnis-interview ➢ Wellesley Statement from CERE faculty re: Laura Kipnis Freedom Project visit and aftermath: https://www.thefire.org/subject-facstaffdiscuss-statement-cere-faculty-re-laura-kipnis-freedom-project-visit-aftermath/
Thursday, May 2 ANALYSIS 5 DUE	Where to Go from Here? ➢ Kirk and Okazawa-Rey. "Creating Change" (MU Online) ➢ Lorber. "A World without Gender: Making the Revolution" (SGS #50) ➢ Feinberg. "We Are All Works in Progress" (SGS #52)

Analysis Paper Topics

You will write five different **five-page** essays addressing each of the following topics. Each paper must be typed in black ink; in 12-point Times New Roman font; double-spaced; set to print on ordinary 8.5 x 11 paper; and 1-inch margins. On the first page in the upper-right hand corner, be sure to include your name, the course name and number, and the instructor's name. You will upload your paper to MU Online before class begins (no paper copy submission). Papers will be graded for strength of argument (thesis), organization, knowledge of concepts and material, use of evidence, and prose (grammar, spelling and style). Plagiarism of any sort will not be tolerated! See course plagiarism policy. For tips on avoiding plagiarism, see http://www.marshall.edu/muonline/plagiarism.asp.

1. **Due: January 31.** The readings for the first several weeks of class from the classics (Plato's *The Symposium* and Dr. Chrol's *Knocking Sandals* collection) touch on a number of important concepts that relate to how they define or understand sexuality. Some of these concepts are: Beauty, Desire, Love, Gender, Age, Sex, Other? (please check with me before you use another concept). For this paper, you will compare and contrast how these authors (or the various speakers within them) *define or understand* **what *is* a sexuality** based on their use of these concepts. You don't need to deploy all of these concepts, nor must you discuss every speaker. You are free to choose which concepts you decide to focus on and which authors/speakers that you would like to reference. The only requirement is that you must in some way discuss at least **FOUR** speakers **AND** incorporate readings from **BOTH** *The Symposium* and *Knocking Sandals*. For example, how would you compare/contrast Agathon's, Alicibades's, Diotima's and Ovid's (pp. 11-18 of Knocking Sandals) understandings of sexuality? What role does sex (intercourse) play in each of their conceptualizations? What about love? What similarities/differences do you see in the relationship between love and sex in their models? Be sure to organize your paper around THEMES/TOPICS, not READINGS.

2. **Due: February 28.** For this paper, make a strong argument that sexuality is social constructed, not an essential or innate characteristic. Use at least six course readings from January 29 – February 12 to support your case. Be sure to organize your paper around THEMES/TOPICS, not READINGS.

3. **Due: March 21.** Recently in this class, we have been studying standpoint theory and intersectionality. For paper three, write an essay that considers how sexism, racism, and classism inform the ways that people see and experience sexuality. Feel free to refer to your own experiences and to expand your discussion to include additional perspectives (ie: ableism, ageism, sizeism, etc.). Use at least six course readings from February 14 – 28 to support your case. Be sure to organize your paper around THEMES/TOPICS, not READINGS.

4. **Due: April 16.** In this course, we have discussed the centrality of bodies as they relate to intersexuality, trans issues, pregnancy and birth, and labor—just to name a few. For this paper, write an essay that considers how social ideologies impact our physical bodies. How do social/cultural understandings of our bodies impact the real-life experiences of our physical bodies? In what ways does this destabilize/reverse conventional thinking on this topic? Use at least six course readings from March 5 – April 16 to support your case. Be sure to organize your paper around THEMES/TOPICS, not READINGS.

5. **Due: May 2.** In this course, we have studied sexuality and sexual oppression from a number of different angles. Activism seems like the next logical step, but where does one go from here? In other words, explain how studying sexuality *academically* can inform activism and activist efforts. Use at least six course readings to support your case. Be sure to organize your paper around THEMES/TOPICS, not READINGS.

SST 301 – SELECTED BIBLIOGRAPHY

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Weeks, Jeffrey. 1995. *Invented Moralities: Sexual Values in an Age of Uncertainty*. New York: Columbia University Press.

Wolfson, Evan. 2004. *Why Marriage Matters: America, Equality, and Gay People's Right to Marry*. New York: Simon & Schuster.

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: COLA Department/Division: CMM Studies Alpha Designator/Number: CMM-410

Contact Person: Clinton Brown Phone: x64007

NEW COURSE DATA:

Course Title: Crisis & Risk Communication (Limit of 30 characters & spaces.)

Alpha Designator/Number: CMM-410

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)
Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This application-based course introduces communication theories of crisis and risk management.

Co-requisite(s): _____ First Term to be Offered: FA2023

Prerequisite(s): _____ Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: _____

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 10/25/22
Registrar: [signature] 090101	Date: 10/25/2022
College Dean: [signature]	Date: 10/25/2022
College Curriculum Chair: Jonathan Kozar	Date: 12/2/22
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: COLA Department/Division: CMM Alpha Designator/Number: CMM-410

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

   Clinton Brown, Molly Mao, Barbara Tarter, Julie Snyder-Yuly

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   N/A

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

CMM-410

Criss and Risk Communication

Bibliography

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Brataas, K. (2018). *Crisis communication: Case studies and lessons learned from international disasters.* Routledge.

Coombs, T. W. (2014). *Applied crisis communication and crisis management: Cases and exercises* (1st edition). Sage.

Coombs, T. W. (2022). *Ongoing crisis communication: Planning, managing, and responding* (6th ed.). Sage.

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Fearn-Banks, K. (2017) Crisis communication: A casebook approach 5th ed. Routledge.

Jordan, T. A., Upright, P., & Tice-Owens, K. (2016). Crisis Management in nonprofit organizations: A case study of crisis communication and planning. *Journal of Nonprofit Education and Leadership, 6*(2). https://doi.org/10.18666/jnel-2016-v6-i2-6996

Perepu, I., & Mikkilineni, S. (2021). Leadership and communication during a crisis: The case of Tony Fernandes (AirAsia) and Ahmad Jauhari Yahya (Malaysia Airlines). *IUP Journal of Organizational Behavior, 20*(4).

Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication, (10)*1, 43-55. https://doi.org.10.1080/10810730590904571

Troy, C. L. C., Pinto, J., & Cui, Z. (2022). Managing complexity during dual crises: Social media messaging of hurricane preparedness during COVID-19. *Journal of Risk Research*, 1–18. https://doi.org/10.1080/13669877.2022.2116086

Zafra, N., & Maydell, E. (2018). Facing the information void: A case study of Malaysia Airlines' media relations and crisis communication during the MH370 disaster. *Asia Pacific Public Relations Journal*, 19.

Marshall University Syllabus
College of Liberal Arts
Communication Studies

Course

Crisis and Risk Communication CMM ~~4XX~~ 410 web.

Catalog Course Description

This application-based course introduces communication theories of risk and crisis management.

Full Description

Minimizing organizational damage is one of the most important aspects of crisis communication. This course is devoted to introducing the class members to communication theories and methods of risk and crisis management. Throughout the semester, students will examine many types of risks and crises including: natural disasters, technology and system failures, health emergencies, and humanitarian crisis. The course will consist of three sections, following three stages of crisis communication management processes: pre-crisis, crisis, and post-crisis. Students will examine goals, challenges, and strategic practices in each stage of crisis. Emphasis is placed on preparing individuals for ethical and effective risk and crisis communication, as well as the formulation of strategic crisis communication plans.

Credits
3 Undergraduate Credits

Prerequisites
None

Term/Year

TBD

Class Meeting Days/Times

Online

Location

Online

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Clinton Brown, PhD

Contact Information

- Office: 245 Smith Hall
- Office Hours: Tuesday/Thursday 10-noon & virtual by appointment
- Office Phone: 304-696-4007
- Marshall Email: browncl@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information.

Key policies at the start of the Fall 2021 semester include the following:

- **Masks are required for everyone in all public indoor spaces on university property, regardless of one's vaccination status.** These spaces include classrooms, labs, office suites, hallways, lobbies, stairwells, etc. Instructors may choose to teach either while wearing a mask or face shield or while standing behind the plexiglass barrier in the classroom.

- **In order to remain in in-person classes, students must sign the Marshall Return to Campus Student Agreement** that outlines public health expectations and University COVID-19 policies: https://bit.ly/2VP3Naa (URL: https://bit.ly/2VPENaa).

- **In order to remain in in-person classes for the Fall 2021 semester, students must submit their current vaccination status** in the online Student Vaccination Registry here: https://mubert.marshall.edu/vaccinerecord.php (URL: https://mubert.marshall.edu/vaccinerecord.php/). The registry offers several possible responses, including an option to not disclose vaccination status.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Brataas, K. (2018). *Crisis communication: Case studies and lessons learned from international disasters.* Routledge.

Coombs, T. W. (2022). *Ongoing crisis communication: Planning, managing, and responding* (6th ed.). Sage.

Additional Readings Posted to Blackboard

Agyepong, L. A., & Liang, X. (2022). Mapping the knowledge frontiers of public risk communication in disaster risk management. *Journal of Risk Research*, 1–22. https://doi.org/10.1080/13669877.2022.2127851

Atwell Seate, A., Liu, B. F., Stanley, S., Yan, Y., & Chatham, A. (2022). Relational constellations in disasters: Theorizing multiparty relationships through ethnographic research. *Journal of Public Relations Research*, 1–19. https://doi.org/10.1080/1062726x.2022.2093203

Coombs, T. W. (2014). *Applied crisis communication and crisis management: Cases and exercises* (1st edition). Sage.

Eriksson, M. (2018). Lessons for crisis communication on social media: A systematic review of what research tells the practice. *International Journal of Strategic Communication, 12*(5), 526–551. https://doi.org/10.1080/1553118x.2018.1510405

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Perepu, I., & Mikkilineni, S. (2021). Leadership and communication during a crisis: The case of Tony Fernandes (AirAsia) and Ahmad Jauhari Yahya (Malaysia Airlines). *IUP Journal of Organizational Behavior, 20*(4).

Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication, (10)*1, 43-55. https://doi.org.10.1080/10810730590904571

Troy, C. L. C., Pinto, J., & Cui, Z. (2022). Managing complexity during dual crises: Social media messaging of hurricane preparedness during COVID-19. *Journal of Risk Research*, 1–18. https://doi.org/10.1080/13669877.2022.2116086

Zafra, N., & Maydell, E. (2018). Facing the information void: A case study of Malaysia Airlines' media relations and crisis communication during the MH370 disaster. *Asia Pacific Public Relations Journal*, 19.

Recommended/Optional Texts and Materials

American Psychological Association. (2020). Publication manual of the American Psychological Association (7th ed.). American Psychological Association.

Fearn-Banks, K. (2017) Crisis communication: A casebook approach 5th ed. Routledge.

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course	NACE Outcomes (Workforce Outcomes)
Students will describe the unique goals and challenges associated with each stage of crisis communication management.	Class discussions, reflection writing, concept mapping	Quizzes & exams, case study reflection papers	Communication, Critical thinking
Students will define the stages of crisis communication management.	Class discussion, concept mapping, mini presentations (non-graded), simulation	Quizzes, exams, crisis communication plan	Critical thinking, Leadership, Professionalism, Communication
Students will summarize the major theories concerning risk and crisis management.	Class discussion, lecture, case studies	Quizzes, exams	Career and self-development, Critical thinking, Communication,
Students will evaluate a crisis communication response and its social, cultural, and ethical implications.	Class discussion, cultural awareness simulation, cultural awareness inventory & discussion	Quizzes, exams, discussion, case study reflection papers	Critical thinking, Equity and inclusion, Career and self-development

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course	NACE Outcomes (Workforce Outcomes)
Students will create targeted messages for different audiences impacted by crisis event and choose appropriate communication channels for dissemination.	Message design workshop, formative research activity, in-class discussion, case study review & discussion	Quizzes, exams, discussion, targeted message design portfolio	Critical thinking, Communication, Leadership, Technology
Students will develop a theory-driven strategic crisis communication plan for an organization.	Class workshops, discussion, lecture, peer review	Crisis communication plan (written) & crisis communication plan presentation	Career and self-development, Communication, Critical thinking, Leadership, Professionalism

Course Requirements

1. **Quizzes (10 quizzes at 10 points each).** Over the course of ten weeks, you will be required to complete 10 reading quizzes. These quizzes are multiple/choice, true/false, and short answer and covers material from the week's reading. The course schedule, below, lists specific due dates and quiz materials.

2. **Virtual (asynchronous) video discussions (10 posts at 10 points each).** Student discussion is an important aspect of the learning process. To facilitate this in an online asynchronous course, over the course of 10 weeks you will make 10 brief (5-minutes max) videos in which you respond to a discussion prompt related to the weekly readings. You are expected to incorporate and orally cite the week's readings, to create a sound and coherent argument, and response to the discussion prompt. A grading rubric will be posted.

3. **Student Centered Exam Questions (10 posts at 15 points each).** Exams are difficult, but writing a good exam is equally challenging. Although instructors typically write exam questions, research has demonstrated that students develop a better understanding of course content and perform better on exams if they work on creating exam questions themselves. Hence, each week, for 10 weeks, you will be required to create and submit five

multiple choice test questions relevant to the readings of the week. For each question, you will provide the correct answer and a brief explanation. Simply stating "see page 43 in the textbook" is not a good explanation. Instead, your explanations should focus on why one answer is correct while the others are not. Once you have submitted your five questions, you will then answer another student's questions and provide constructive feedback. The questions should be directly relevant to the week's readings (both textbook readings and additional readings posted to Blackboard). Your initial posts will be due on Fridays by 8am while your response posts are due by Sundays at 11:59pm.

4. **Case Study Reflection (3 reflections at 50 points each).** Over the course of the semester, you will be asked to complete three case study reflection assignments. These reflections are designed for you to summarize, and the theory(ies) employed in the specific crisis communication event, discuss the goals and challenges at each stage of the event, and evaluate the crisis communication response and its social, cultural, and ethical implications. Additionally, you are expected to write a written report 8-10 pages that accurately describes three or more theories event in the event, provide a thoughtful and critical analysis of the communication response, and offer theory-driven critiques and recommendations.

5. **Exams (Midterm (50 points, Final 150 points).** Over the course of the semester, you will have two exams. The midterm exam will cover content from the first half of the semester and the final exam will cover all content from the semester. The tests will consist of multiple-choice questions (written by students) as well as short answer application questions. The exams are open book, open notes etc., as it is more important that you understand and can appropriately apply the material rather than worrying about whether or not you can memorize it.

6. **Message Design Portfolio (50 points).** You will be tasked with creating a digital message portfolio that will consist of specific messages that will take into account the unique sociocultural needs of the communities impacted by the crisis. Included in your portfolio is an analysis of the impacted community and explanation of specific messaging strategies.

7. **Crisis Communication Plan (150 points).** The culminating project for the semester is selecting an organization from the list provided and developing a comprehensive crisis communication plan. Details will be provided over the course of the semester, and you will be expected to incorporate messages from your message design portfolio into your final communication plan. In addition to submitting your written plan, students will be asked to develop a professional presentation the reviews your communication plan with organizational stakeholders.

Grading Policy

900-810	A
809-720	B
719-630	C
629-540	D
536-0	F

Attendance/Participation Policy

Although there are no meetings or scheduled events associated with the class, you are still expected to be highly engaged and involved. Your participation is an integral component of this course. In other words, you should engage with class materials and the Blackboard site multiple times per week. Regular and prompt engagement with the course is necessary. You are responsible for obtaining an excused absence from the Dean of Students in the case of major illness or other university-excused reason for major assignment deadlines.

Online Communication Expectations

Be nice and don't be rude. If you are rude / disrespectful you will receive a warning and asked to write an apology letter. If you threaten and harass other students or instructional staff you will be removed from the class, not receive credit for your work, and be referred to student affairs.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Week [or Lesson, Unit, etc.]	Topic	Assignments	Due Date
1	Course Introductions Introduction to Crisis Management • Read Chapter 1 of textbook • Read Reynolds and Seeger (2005) (posted on Blackboard)	1. Reading Quiz 2. Exam Questions 3. Video Discussion	
2	Introduction to the Case Study Method • Read Coombs (2014) chapter 1 (posted on Blackboard) • Read Brataas (2018) chapter 4	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Assign Case Study 1	
3	Crisis Mitigation: Building a Crisis Resistant Organization & Working with the Media • Read Chapter 2 & 3 of textbook • Read Agyepong & Liang (2022) (posted on Blackboard) • Read Brataas (2018) chapter 5 & 6	1. Reading Quiz 2. Exam Questions 3. Video Discussion	
4	Crisis Preparing Part I • Read Chapter 4 of textbook • Read Jordan et al., (2016) (posted on Blackboard) • Read Brataas (2018) chapter 7	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Case Study 1	

Week [or Lesson, Unit, etc.]	Topic	Assignments	Due Date
5	Crisis Preparing Part II Read Chapter 5 of textbook Read Eriksson (2018) posted on Blackboard) Read Brataas (2018) chapter 8 & 11	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Assign Case Study 2	
6	Recognizing Crises Part I Read Chapter 6 of textbook Read Brataas (2018) chapter 10	1. Reading Quiz 2. Exam Questions 3. Video Discussion	
7	Recognizing Crises Part II Read Troy et al. (2022) (posted on Blackboard) Read Atwell Seate et al. (2022) posted on Blackboard) Read Brataas (2018) chapter 12	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Case Study 2	
8	Midterm Exam	1. Assign Case Study 3	
9	Crisis Responding Part I: Transportation and Natural Disasters Read Chapter 7 of textbook Read Brataas (2018) chapters 1, 2, 9	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Assign Message Design Portfolio	
10	Crisis Responding Part II: Terror Read Brataas (2018) chapter 3 Read NIOSH (2022) – website Read CPNI (2022) - website	1. Reading Quiz 2. Exam Questions 3. Video Discussion 4. Case Study 3 5. Assign Final Project	
11	Postcrisis Concerns Crisis Post-Mortem Read Chapter 8 textbook	1. Reading Quiz 2. Exam Questions 3. Video Discussion	

Week [or Lesson, Unit, etc.]	Topic	Assignments	Due Date
12	Case Study: Malaysia Airlines Read Zafra & Maydell (2018) Read Perepu & Mikkilineni (2021)	1. First Section of Crisis Communication Plan	
13	Preparing and Finalizing Crisis Communication Plan Review of Organizational Crisis Plans University of Washington Virginia Department of Education	1. Message Design Portfolio	
14	Putting Pieces Together Workshop Week	1. Final Project (Crisis Communication Plan) 2. Video Presentation of Crisis Communication Plan	
Final Exam Week	Final Exam	1. Final Exam	

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 101

Contact Person: Gayle Brazeau, Ph.D. Phone: 304-696-7390

NEW COURSE DATA:

Course Title: Intro to Careers in Pharm Sci (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 101

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)
Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): Careers in the Pharmaceutical Sciences will introduce students to the future career and educational opportunities available following the completion of a BS in the Pharmaceutical Sciences.

Co-requisite(s): None First Term to be Offered: Fall2023

Prerequisite(s): None Credit Hours: 2

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.22
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 101

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

   Gayle A. Brazeau, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   No

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   No

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   No

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   No

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   No

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 101: Introduction to Careers in the Pharmaceutical Sciences

There is no specific textbook available for this material. The material will be provided from on-line available sources about careers and educational opportunities for students completing a Bachelor's Degree in Pharmaceutical Sciences.

1. Understanding Pharma: The Professional's Guide To How Pharmaceutical And Biotech Companies Really Work, John J. Campbell, Syneos Health; 3rd edition, 2018

2. Understanding Pharmaceutical industry, 2019, Starweaver, https://youtu.be/JoX3xoCMW7g

3. Careers in Pharmaceutical Sciences
   https://pharmacy.unc.edu/education/phd/phd-careers/

4. Pharmaceutical Scientist | explorehealthcareers.org
   https://explorehealthcareers.org/career/pharmacology/pharmaceutical-scientist/

5. What Can I Do with a Pharmaceutical Science Degree
   https://learn.org/articles/What_Can_You_Do_with_a_Pharmaceutical_Science_Degree.html

6. Medicine Explained – American Association of Pharmaceutical Scientists
   https://youtu.be/MHC91r-Zs6A

7. Areas of Study – Pharmacy Graduate Application Service
   https://www.pharmgrad.org/pharmaceutical-graduate-education/areas-of-study

8. 10 Jobs You Can Get in Pharmaceutical Science
   https://www.indeed.com/career-advice/finding-a-job/pharmaceutical-sciences-jobs

9. Drug Approval Process
   https://www.drugs.com/fda-approval-process.html

10. 8.FDA Drug Approval Process Infographic
    https://www.fda.gov/drugs/information-consumers-and-patients-drugs/fda-drug-approval-process-infographic-horizontal

11. 9. Basic Research Concepts US HHS Office of Research Integrity
    https://ori.hhs.gov/basic-research-concepts-brc

12. The Scientific Method - National Science Foundation
    https://www.nsf.gov/news/classroom/images/Scientific_Method_v06.pdf

Marshall University Syllabus
School of Pharmacy
BS Pharmaceutical Sciences

Course

BSPS 101 Introduction to Careers in the Pharmaceutical Sciences

Course Description

Careers in the Pharmaceutical Sciences will introduce students to the future career and educational opportunities available following the completion of a BS in the Pharmaceutical Sciences. At the end of this course, students will be able to define the components of the pharmaceutical industry, elements of the scientific method, the drug development and approval process, and the types of educational and career choices in the pharmaceutical sciences. Students will have the opportunity to interact with individuals who have pursued these various career pathways. Students will also be asked to present what career pathways they are currently interested in pursuing through written a reflection and an oral presentation.

Credits

Undergraduate 2 Credit Hours

Prerequisites

None

Term / Year

Fall Semester 2023

Class Meeting Days / Times

One 2 Hour class per week

Location

Stephen J. Kopp Hall - TBD

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Gayle A. Brazeau, Ph.D.

Contact Information

- Office: SJK Hall 345
- Office Hours: TBD
- Office Phone: TBD
- Marshall Email: brazeau@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Students will be provided with required reading materials that are available on-line about the various career and educational opportunities.

Recommended/Optional Texts and Materials

None

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will be able to define and differentiate between the specialties in the pharmaceutical sciences.	Students will be provided with required on-line reading and background materials discussing the various specialty areas in the pharmaceutical sciences.	Students will be asked to complete an on-line end of the class assessment (EOCA) and provide a short reflection of their thoughts about these specialty areas in the pharmaceutical sciences.
Students will be able to discuss and differentiate the structure and elements of a pharmaceutical company.	Students will be provided with required on-line reading and background materials discussing the structure and elements of a pharmaceutical company	Students will be asked to complete an on-line end of the class assessment (EOCA) and provide a short reflection of their thoughts on the structure and elements of pharmaceutical company.
Students will be able to discuss the key skills needed as a pharmaceutical scientist and the steps/elements of the drug development and approval process.	Students will be provided with required on-line reading and background materials discussing the key skills needed as a pharmaceutical scientist.	Students will be asked to complete an on-line end of the class assessment (EOCA) and provide a short reflection on the key skills needed as pharmaceutical scientist and the drug approval process.
Students will be able to discuss and differentiate the key elements in with the scientific method and the	Students will be provided with required on-line reading and background materials discussing the key elements in scientific method.	Students will be asked to complete an on-line end of the class assessment (EOCA) and provide a short reflection on what they have learned about the scientific method.

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will be able to discuss and differentiate between the key elements of career and educational opportunities in the pharmaceutical sciences.	Students will be provided with required on-line reading and background materials discussing the career and education opportunities in the pharmaceutical sciences. They will have the opportunity to interact with individuals who have pursued these career and educational pathways.	Students will be asked to complete an on-line end of the class assessment (EOCA) and provide a short, guided reflection of their thoughts about these specific career and educational opportunities in the pharmaceutical sciences.
Students will complete a guided written reflection on what career or educational pathway they are most interested in pursuing at this stage in their education.	Students will complete a guided reflection on what career or educational pathway they are most interested in pursuing at this stage in their education.	The guided student reflection will be graded using a rubric to assist in their learning.
Students will give an oral guided presentation on what career or educational pathway they are most interested in pursuing at this stage in their education.	Students will give an oral guided presentation on what career or educational pathway they are most interested in pursuing at this stage in their education.	The guided student oral presentation will be graded using a rubric to assist in their learning.

Course Requirements/Due Dates

Deadlines for the written reflections and oral presentation are provided on the syllabus.

Students will be asked to complete a short written guided reflection (to be turned in at the next class) and finish an end of the class assessment (EOCA) for each weekly topic. Students will also be asked to provide a guided oral presentation.

Grading Policy

The following is the grading scale for this course.

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance / Participation Policy

Attendance is required as there will be guest speakers sharing their experiences about the career and educational offerings that students can pursue upon completion of the BSPS. Students who cannot attend should contact the Course coordinator and follow the polices for COVID-19. The course materials will be recorded using Echo360 and students who need to miss class can work with the course coordinator.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Week	Activity / Assignment	Course Percentage
Week 1	• Introduction to the pharmaceutical sciences, and specialties in the pharmaceutical sciences. • Skills of the pharmaceutical scientists. • Structure and organization of a pharmaceutical company • Types of industries associated with the use of pharmaceutical sciences (pharmaceutical industry, Contract Research Organization, Clinical Research Organizations, Biotechnology, Government, Foundations)	15%
Week 2	• Introduction to the scientific method • Introduction to the process of drug development and approval.	15%
Week 3	Overview of the careers and educational opportunities in the pharmaceutical sciences.	15%
Week 4	Pharmaceutical Industry – Drug Discovery – Medicinal Chemistry and Pharmacology	5%
Week 5	Pharmaceutical Industry – Drug Development and Pre-Clinical – Pharmaceutics, Pharmacokinetics and Toxicology	5%
Week 6	Pharmaceutical Industry – Quality Control and Quality Assurance – Analytical Chemistry	5%
Week 7	Pharmaceutical Industry – Clinical Research	5%
Week 8	Pharmaceutical Industry – Regulatory Affairs	5%
Week 9	Pharmaceutical Industry – Medical Science Liaison	5%
Week 10	Pharmaceutical Industry - Marketing and Sales	5%
Week 11	Governmental Agencies – Food and Drug Administration, Center for Disease Control, State and Local Organizations	5%
Week 12	Graduate Study and Academic Career – Pharmacy, medicine, pharmaceutical, biomedical, socio-administrative, forensics, toxicology, law, and business.	5%

Week	Activity / Assignment	Course Percentage
Week 13	Student Presentations	10%
Week 14	Student Presentations	

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 201

Contact Person: Cynthia B. Jones Phone: 304-696-7363

NEW COURSE DATA:

Course Title: Intro to Pharmaceutical Sci (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 201

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course introduces students to pharmaceutical sciences. Topics include an overview of drug discovery, development, basic principles of drug properties, drug structure, drug delivery, drug

Co-requisite(s): None First Term to be Offered: Fall 2024

Prerequisite(s): CHM 212 and BSC 121 Credit Hours: 2

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 201

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

   Cynthia B. Jones

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   No

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   No

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   No

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   No

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   No

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 201: Introduction to Pharmaceutical Sciences

There is one textbook required for the course for students completing a Bachelor's Degree in Pharmaceutical Sciences.

1. Introduction to Pharmaceutical Sciences
   Nita K. Pandit
   Lippincott, Williams & Wilkins
   ISBN: 13:978-0-7817-4478-2

2. Jafari M. A unique degree program for pre-pharmacy education: An undergraduate degree in pharmaceutical sciences. *Curr Pharm Teach Learn*. 2018;10(2):243-251. doi:10.1016/j.cptl.2017.10.004

3. Drug Approval Process: https://www.drugs.com/fda-approval-process.html

4. Katoue MG, Schwinghammer TL. Competency-based education in pharmacy: A review of its development, applications, and challenges. *J Eval Clin Pract*. 2020;26(4):1114-1123. doi:10.1111/jep.13362

5. Robinson JD, Persky AM. Developing Self-Directed Learners. *Am J Pharm Educ*. 2020;84(3):847512. doi:10.5688/ajpe847512

6. Harrison M, Quisias J, Frew EJ, Albon SP. A Cost-Benefit Analysis of Teaching and Learning Technology in a Faculty of Pharmaceutical Sciences. *Am J Pharm Educ*. 2019;83(6):6834. doi:10.5688/ajpe6834

7. Freeman S, Eddy SL, McDonough M, et al. Active learning increases student performance in science, engineering, and mathematics. *Proc Natl Acad Sci U S A*. 2014;111(23):8410-8415. doi:10.1073/pnas.1319030111

8. Feller MB. The Value of Undergraduate Teaching for Research Scientists. *Neuron*. 2018;99(6):1113-1115. doi:10.1016/j.neuron.2018.09.005

Marshall University Syllabus
College Of Pharmacy
Bachelor of Science Pharmaceutical Science

Course

BSPS 201 Introduction to Pharmaceutical Sciences

Course Description

This course introduces students to pharmaceutical sciences. Topics include an overview of drug discovery, development, basic principles of drug properties, drug structure, drug delivery, drug disposition, drug action and therapy.

Credits
2 undergraduate

Prerequisites
CHM 212 Principles of Chem II with a minimum grade of C

BSC 121 Biology II with a minimum grade of C

Term / Year

Fall 2024

Class Meeting Days / Times

Tuesday/Thursday 2:30 – 3:20

Location

SKH

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Cynthia B. Jones

Contact Information

- Office: SKH 343
- Office Hours: TBD

- Office Phone: (304)696-7363
- Marshall Email: jonescy@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Introduction to Pharmaceutical Sciences

Nita K. Pandit

Lippincott, Williams & Wilkins

ISBN:13:978-0-7817-4478-2

Recommended/Optional Texts and Materials

None

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will be able to outline the drug approval process	Class Discussions, in-class activities, chapter reviews	Quizzes and exams
Students will be able to define drug solubility, lipophilicity, and rates of pharmacokinetic processes	Class Discussions, in-class activities, chapter reviews	Quizzes and exams
Students will be able to list drug targets and routes of drug delivery	Class Discussions, in-class activities, chapter reviews	Quizzes and exams
Students will be able to determine describe drug structure activity relationships	Class Discussions, in-class activities, chapter reviews	Quizzes and exams

Grading Policy

Course Evaluation (assessment): Quizzes, exams and student presentations.

Course Evaluation (grading):

Point or Percentage Distribution: Exams: 80%

Quizzes: 20%

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

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

Attendance / Participation Policy

[State attendance and/or participation policy. Be sure that your policy considers COVID-19 related absences.]

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

[Provide the course schedule. You may enter it in the table below or provide it in another format.

Week	Activity / Assignment	Grade percentage	Book Chapter
1	Introduction to the Drug approval process		1
2	Basic principles of drug properties part I/Quiz #1		2
3	Basic principles of drug properties part II / Quiz #2		3
4	Basic principles of drug properties part III / Quiz #3		4
5	Exam 1		Chapters 1-4
6	Basic principles of drug structure and design Part I/ Quiz #4		6

Week	Activity / Assignment	Grade percentage	Book Chapter
7	Basic principles of drug structure and design Part II/ Quiz #5		7
8	Basic principles of drug action part I/ Quiz #6		15
9	Basic principles of drug action part II/ Quiz #7		16
10	Exam 2		Chapters 6,7,15,16
11	Introduction to drug delivery/ Quiz #8		10
12	Introduction to Drug Therapy Part I/ Quiz #9		18
13	Introduction to Drug Therapy Part II/ Quiz #10		19
14	Final Exam		Comprehensive

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 202

Contact Person: Cynthia B. Jones, Ph.D. Phone: 304.696.736.

NEW COURSE DATA:

Course Title: Drug Regulatory Affairs (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 202

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course provides an overview of pharmaceutical regulatory affairs, particularly USFDA ' s regulation of drug products approved in the United States

Co-requisite(s): None First Term to be Offered: Spring 2025

Prerequisite(s): BSPS 101 and BSPS 201 Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 202

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

   Cynthia B. Jones, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   N/A

3. If this course will be required by a department/division other than your own, identify by name.

   N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   N/A

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 202: Drug Regulatory Affairs

There is one textbook required for the course for students completing a Bachelor's Degree in Pharmaceutical Sciences. There is one book that is recommended as a reference source for course.

1. FDA Regulatory Affairs
3rd Edition, Editor: David Mantus, Douglas J. Pisano, Publisher: CRC Press
ISBN-13: 978-1841849195

2. Burger's Medicinal Chemistry, Drug Discovery and Development
9th Edition. Author: Donald J. Abraham, Ph.D.; Publisher: John Wiley and Sons, Inc, 1999-2014.
ISBN: 9780471266945Recommended/Optional Texts and Materials

Marshall University Syllabus
College of Pharmacy
Bachelor of Science Pharmaceutical Sciences

Course

BSPS 202 Drug Regulatory Affairs

Course Description

This course provides an overview of pharmaceutical regulatory affairs, particularly USFDA's regulation of drug products approved in the United States.

Credits

3 undergraduate

Prerequisites

BSPS 101 Careers in Pharmaceutical Sciences with a minimum grade or C

BSPS 201 Introduction to Pharmaceutical Sciences with a minimum grade of C

Term / Year

Spring 2025

Class Meeting Days / Times

Tuesday/Thursday 2:30 – 3:50

Location

Kopp Hall

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Cynthia B. Jones

Contact Information

- Office: SKH 343
- Office Hours: M, W, F 12 pm – 1pm
- Office Phone: (303)696-7363
- Marshall Email: jonescy@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

FDA Regulatory Affairs:

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

ISBN-13: 978-1841849195

Recommended/Optional Texts and Materials

Burger's Medicinal Chemistry, Drug Discovery and Development

9th Edition. Author: Donald J. Abraham, Ph.D.; Publisher: John Wiley and Sons, Inc, 1999-2014. ISBN: 9780471266945Recommended/Optional Texts and Materials

Course Student Learning Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Examine the coordination of the US Federal Food, Drug, and Cosmetic Act with international regulations on human drug, biologics and device development, research, manufacturing, and marketing	Class discussion, active learning activities, chapter reviews	Quizzes and Exams
Describe the new drug application (NDA) process, cGMPs, GCPs, quality system compliance, and corresponding documentation requirements	Class discussion, active learning activities, chapter reviews, student presentation	Quizzes and Exams and presentation
Recognize updates to the FDA Safety and Innovation Act (FDASIA), incorporating pediatric guidelines and follow-on biologics regulations from the 2012 Prescription Drug User Fee Act (PDUFA) V	Class discussion, active learning activities, chapter reviews	Quizzes and Exams
Explain current FDA inspection processes, enforcement options, and how to handle FDA meetings and required submissions	Class discussion, active learning activities, chapter reviews	Quizzes and Exams

Course Requirements/Due Dates

Presentation due week 13

Grading Policy

Course Evaluation (assessment): Quizzes, exams and student presentations.

Course Evaluation (grading):

Point or Percentage Distribution: Exams: 75%

Quizzes: 10%

Presentations: 15%

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

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

Attendance / Participation 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

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Week	Meeting Format	Meeting Topic	Course Student Learning Outcomes
Week 1	Lecture and Discussion	Overview of FDA and Regulations for Drug Development	• Examine the coordination of the US Federal Food, Drug, and Cosmetic Act with international regulations
Week 2	Lecture and Discussion Quiz #1	The Practice of Regulatory Affairs	• Summarize the regulatory affairs quality standards
Week 3	Lecture and Discussion	Meetings with the FDA	• Explain current FDA inspection processes, enforcement options, and how to handle FDA meetings
Week 4	Lecture and Discussion Quiz #2	FDA Medical Device Regulation	• Survey regulations on human drug, biologics and device development, research, manufacturing, and marketing
Week 5	Lecture and Discussion	A Primer of Drug/Device Law	• Identify the Law and how to interpret it
Week 6	Mid-Term Exam		
Week 7	Lecture and Discussion	Regulations for investigational drug application and new drug applications	• Describe the investigational drug application (IDA) and new drug application (NDA) proceses
Week 8	Lecture and Discussion & Quiz #3	The Development of Orphan Drugs	• Define orphan drugs • Evaluate the development

			process for orphan drugs
Week 9	Lecture and Discussion	Biologics	• Recognize updates to the FDA Safety and Innovation Act (FDASIA), incorporating pediatric guidelines and follow-on biologics regulations
Week 10	Lecture and Discussion Quiz #4	Overview of the GxPs for the Regulatory Professional	• Determine Good Practice quality guidelines and regulations
Week 11	Lecture and Discussion	FDA Regulation of the Advertising and Promotion of Prescription Drugs, Biologics, and Medical Devices	• Demonstrate an understanding of regulations on human drug, biologics and device marketing
Week 12	Lecture and Discussion	Regulation of Combination Products in the United States	• Understand the regulations combination product development, research, and manufacturing
Week 13	Student presentations	IND application Presentations	
Week 14	Final Exam		

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 301

Contact Person: Boyd Rorabaugh Phone: 304-696-7289

NEW COURSE DATA:

Course Title: Introduction to Pharmacology I (Limit of 30 characters & spaces.)

Alpha Designator/Number: ~~BSPS333~~BSPS 301

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This introductory pharmacology course covers basic principles of pharmacology. Mechanism of action, physiological effects, and the rational basis for use of commonly used therapeutic drug classes

Co-requisite(s): _____ First Term to be Offered: Fall 2025

Prerequisite(s): BSC 228 Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 301

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

   Boyd Rorabaugh, Michael Hambuchen, Cynthia Jones, Mindy Varney, Jeremy McAleer, Ruhu

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   no additional faculty, equipment, or materials are needed

3. If this course will be required by a department/division other than your own, identify by name.

   not applicable

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   Library resources are adequate

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   None. This is a lecture and group discussion based course.

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 301: Introduction to Pharmacology I

The following publications were researched to create this course. Each of the textbooks below may be beneficial to students taking the course. However, only one of them (Katzung) is a required text.

Text books

Brunton LL, Chabner BA, Knollman BC, editors. *Goodman and Gilman's: The Pharmacological Basis of Therapeutics*. 14th edition. New York; McGraw-Hill: 2022.

DiPiro JT, Yee Gc, Posey LM, Haines ST, Nolin TD, Ellingrod VL editors. Dipiro's Pharmacotherapy: a pathophysiologic approach. 12th edition. New York; McGraw-Hill: 2020.

Katzung GB, *Basic and Clinical Pharmacology*, 15th edition, McGraw Hill Publishing, 2021.

Syllabi from pharmacology courses at another institution

Creighton University School of Medicine, Department of Pharmacology and Neuroscience Syllabus for PHR241 Pharmacology I

Creighton University School of Medicine, Department of Pharmacology and Neuroscience Syllabus for PHR242 Pharmacology II

Marshall University
School of Pharmacy

Course

BSPS 301 Introduction to Pharmacology I

Course Description

This introductory pharmacology course covers basic principles of pharmacology. Mechanism of action, physiological effects, and the rational basis for use of commonly used therapeutic drug classes are emphasized.

Credits
3, undergraduate

Prerequisites
BSC228 (Human Physiology)

Term / Year

Fall 2025

Class Meeting Days / Times

Monday, Wed, Friday (time TBA). This course meets 2 hours / session for 7 weeks (total of 21 sessions = 42 contact hours)

Location

Kopp Hall 145

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Boyd Rorabaugh, Ph.D.

Contact Information

- Office: Kopp 355
- Office Hours: 8:00 – 10:00 am or by appointment.
- Office Phone: 304-696-7289

- Marshall Email: rorabaughb@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Basic and Clinical Pharmacology, by Bertram G. Katzung, 15th edition, McGraw Hill Publishing, 2021.

Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will understand the mechanism of action, therapeutic uses, adverse effects, and contraindications commonly used drug classes.	Group discussions, problem solving activites in class	Exams and quizzes
Students will be able to apply their knowledge of pharmacology to make rationale drug choices for patients with specific conditions.	Group discussions, in class problem solving activities	Exams and quizzes
Students will understand the function of the autonomic nervous system and understand the rationale for therapeutic targets within the autonomic nervous system.	Group discussions	Exams and quizzes
Students will apply basic principles of pharmacodynamics such as drug-receptor interactions, quantification of concentration-response relationships, and signal transduction.	Group discussions, practice questions in class	Exams and quizzes

Grading Policy

Assignment of Final Grades: Final course grades will be determined based on performance on quizzes and exams as outlined below:

Exam 1 25 % of final grade
Exam 2 25 % of final grade

Exam 3	25 % of final grade
Quiz 1	5 % of final grade
Quiz 2	5 % of final grade
Quiz 3	5 % of final grade
Quiz 4	5 % of final grade
Quiz 5	5 % of final grade
Total	**100 %**

Assignment of grades will be based on the percentage of total points earned in the course according following scale:

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance / Participation Policy

Attendance and participation in group discussions is required. Quizzes or other in-class activities that are missed cannot be made up without an excused absence that is approved by the School of Pharmacy Student Services Office.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

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- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Session # (Each Session is 2 hours)	**Topic**	**Percentage of total grade**	**Reading Assignment from Katzung**
Session 1	Receptor pharmacodynamics I		Chapter2
Session 2	Receptor pharmacodynamics II		Chapter 2
Session 3	Signal transduction		Chapter2
Session 4	Drug Metabolism **Quiz 1 (sessions 1-3)**	5 %	Chapter 4
Session 5	Autonomic Pharmacology I		Chapters 6-10
Session 6	Autonomic Pharmacology II		Chapters 6-10
Session 7	Hypertension and antihypertensive agents I		Chapter 11
Session 8	Hypertension and antihypertensive agents II **Quiz 2 (sessions 6-7)**	5 %	Chapter 11
Session 9	**Exam I (sessions 1-6)**	25 %	
Session 10	NSAIDs and other anti-inflammatory drugs		Chapter 18
Session 11	Antihistamines		Chapter 16
Session 12	Drugs used to treat asthma / COPD **Quiz 3 (Sessions 7 – 11)**	5 %	Chapter 20
Session 13	Drugs used to treat migraine		Chapter 16
Session 14	Antidepressants I		Chapter 30
Session 15	Antidepressants II		Chapter 30

Session # **(Each Session is 2 hours)**	**Topic**	**Percentage of total grade**	**Reading Assignment from Katzung**
Session 16	Ethanol and sedative hypnotics **Quiz 4 (sessions 14 – 15)**	5%	Chapters 22-23
Session 17	**Exam II (sessions 6-15)**	25%	
Session 18	Diabetes, insulin, and other hypoglycemic drugs I		Chapter 41
Session 19	Diabetes, insulin, and other hypoglycemic drugs II		Chapter 41
Session 20	Opioids and treatment of pain **Quiz 5 (sessions 18-19)**	5%	Chapter 31
Session 21	Substance Use Disorders		Chapter 32
Finals week	**Final Exam**	25%	

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 302

Contact Person: Boyd Rorabaugh Phone: 304-696-7289

NEW COURSE DATA:

Course Title: Cardiovascular Pharmacology (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 302

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)
Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course is a survey of cardiovascular pharmacology. Emphasis is on the rationale for therapeutic drug use, mechanism of action, physiological effects, and contraindications of drugs in

Co-requisite(s): _____ First Term to be Offered: _____

Prerequisite(s): BSPS 301 Credit Hours: 3

Grading Mode: Graded: Yes Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: Boyd Rorabaugh	Date: 12/19/22
Registrar: Sonya A C 512010	Date: 1.4.2023
College Dean: Boyd Rorabaugh	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 302

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

   Boyd Rorabaugh, Ruhul Amin

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   no additional faculty, equipment, or materials are needed

3. If this course will be required by a department/division other than your own, identify by name.

   not applicable

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   No.

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   Library resources are adequate

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   None. This is a lecture and group discussion based course.

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

Bibliography for Cardiovascular Pharmacology Course Addition Form

The following publications were researched to create this course. Each of the textbooks below may be beneficial to students takin the course. However, only one of them (Katzung) is a required text.

Text books

Brunton LL, Chabner BA, Knollman BC, editors. *Goodman and Gilman's: The Pharmacological Basis of Therapeutics*. 14th edition. New York; McGraw-Hill: 2022.

DiPiro JT, Yee Gc, Posey LM, Haines ST, Nolin TD, Ellingrod VL editors. Dipiro's Pharmacotherapy: a pathophysiologic approach. 12th edition. New York; McGraw-Hill: 2020.

Katzung GB, *Basic and Clinical Pharmacology*, 15th edition, McGraw Hill Publishing, 2021.

Syllabi from pharmacology courses at another institution

Creighton University School of Medicine, Department of Pharmacology and Neuroscience Syllabus for PHR241 Pharmacology I

Creighton University School of Medicine, Department of Pharmacology and Neuroscience Syllabus for PHR242 Pharmacology II

Marshall University Syllabus
School of Pharmacy

Course

BSPS 302

Cardiovascular Pharmacology

Course Description

This course is a survey of cardiovascular pharmacology. Emphasis is on the rationale for therapeutic drug use, mechanism of action, physiological effects, and contraindications of drugs in the cardiovascular system.

Credits
3, undergraduate

Prerequisites
BSC228 (Human Physiology)

BSPS333 (Pharmacology I)

Term / Year

Spring 2026

Class Meeting Days / Times

Monday, Wed, Friday (time TBA). This course will meet 2 hours / session for 7 weeks (total of 21 sessions = 42 hours)

Location

Kopp Hall 145

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Boyd Rorabaugh, Ph.D.

Contact Information

- Office: Kopp 355

- Office Hours: 8:00 – 10:00 am or by appointment.
- Office Phone: 304-696-7289
- Marshall Email: rorabaughb@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Basic and Clinical Pharmacology, by Bertram G. Katzung, 15th edition, 2021.

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will understand the mechanism of action, therapeutic uses, adverse effects, and contraindications of drugs classes used to treat cardiovascular disorders.	Group discussions, problem solving activites in class	Exams and quizzes
Students will understand the underlying pathophysiology of common cardiovascular disorders	Group discussions, problem solving activites in class	Exams and quizzes
Students will be able to apply their knowledge of pharmacology to make rationale drug choices for patients with specific cardiovascular disorders.	Group discussions, problem solving activites in class	Exams and quizzes
Students will understand the function of receptors and other drug targets that regulate cardiovascular function.	Group discussions, problem solving activites in class	Exams and quizzes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will understand how drugs that are used to treat cardiovascular disorders impact systems other than the cardiovascular system.	Group discussions, problem solving activites in class	Exams and quizzes

Grading Policy

Assignment of Final Grades: Final course grades will be determined based on performance on quizzes and exams as outlined below:

Exam 1	20 % of final grade
Exam 2	20 % of final grade
Exam 3	20 % of final grade
Paper	15 % of final grade
Presentation	10 % of final grade
Quiz 1	5 % of final grade
Quiz 2	5 % of final grade
Quiz 3	5 % of final grade
Total	**100 %**

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance / Participation Policy

Attendance and participation in group discussions during class time is required. Quizzes and other in-class activities that are missed cannot be made up without an excused absence that is approved by the School of Pharmacy Student Services Office.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Session (each session is 2 hours)	**Activity / Assignment**	**Percentage of Total Grade**	**Reading Assignment from Katzung**
Session 1	Cardiovascular Physiology I		
Session 2	Cardiovascular Physiology II		
Session 3	Congenital heart diseases and heart valve disorders		
Session 4	Hypertension and antihypertensive agents I **Quiz 1 (sessions 1-3)**	5 %	Chapter 11
Session 5	Hypertension and antihypertensive agents II		Chapter 11
Session 6	Diuretics		Chapter 15
Session 7	**Exam I (sessions 1-5)**	20 %	

Session (each session is 2 hours)	Activity / Assignment	Percentage of Total Grade	Reading Assignment from Katzung
Session 8	Pathophysiology of heart failure / drugs used to treat heart failure		Chapter 13
Session 9	Atherosclerosis and dyslipidemias I		Chapter 35
Session 10	Atherosclerosis and dyslipidemias II		Chapter 35
Session 11	Deep vein thrombosis, anticoagulants, and thrombolytics I **Quiz 2 (sessions 4-8)**	5%	Chapter 34
Session 12	Deep vein thrombosis, anticoagulants, and thrombolytics II		Chapter 34
Session 13	Peripheral artery disease		
Session 14	Angina / drugs used to treat angina		Chaper 12
Session 15	**Exam 2 (sessions 6-13)**	20 %	
Session 16	Myocardial infarction and ischemic heart disease		
Session 17	Arrhythmias and antiarrhythmic drugs I		Chapter 14
Session 18	Arrhythmias and antiarrhythmic drugs II		Chapter 14
Session 19	Pathophysiology and treatment of stroke		
Session 20	Student presentations; papers due **Quiz 3 (sessions 17-18)**	5%	
Session 21	Student presentations	15 % paper 10 % presentation	
Finals week	**Exam 3 (sessions 14-21)**	20 %	

Paper and Presentation

Each student will write a paper and give an oral presentation on a cardiovascular disease of their choice. The topic of the paper and presentation must be a cardiovascular disease that is not otherwise covered by lectures or assigned readings in this course. The paper is limited to a maximum of 5 pages (single spaced, 1 inch margins, 12 point font) and the presentation should be approximately 20 minutes. The paper and presentation should address each of the issues below.

1. Pathophysiology of the chosen cardiovascular disorder (what causes it?, risk factors, what are the stages of development of the disease?, how does it progress?, etc.)

2. What are the symptoms and what is the underlying physiological process by which the symptoms occur?

3. How is it diagnosed?

4. Explain the rationale basis for pharmacotherapies used to treat the disease.

5. If possible, interview someone that has the cardiovascular disease and describe their experience with it (how was the disorder diagnosed, what symptoms did they experience, what pharmacotherapies or other treatments have they used, have treatments been successful,? etc.) The identity of this person should remain confidential and not be disclosed.

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 320

Contact Person: Hasan Koc, Ph.D. Phone: 304-696-7368

NEW COURSE DATA:

Course Title: Pharmaceutical Analysis (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 320

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This class covers analytical techniques commonly employed in pharmaceutical sciences, including traditional chemical analysis, spectrometric methods, and separation strategies along with the

Co-requisite(s): None First Term to be Offered: Fall2026

Prerequisite(s): ~~None~~ CHM 255, CHM 356, CHM 212 CHM 218 Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature] 512010	Date: 12/19/22
Registrar: [signature]	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS

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

   Hasan Koc, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   No

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   No

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   No

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   No

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   No

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BIBLIOGRPAHY FOR BSPS 4XX – Pharmaceutical Analysis

1. Hansen, Steen, et al. *Introduction to Pharmaceutical Chemical Analysis*. Available from: VitalSource Bookshelf, Wiley Global Research (STMS), 2011.

Marshall University Syllabus
School of Pharmacy
BS in Pharmaceutical Sciences

Course

BSPS 320 Pharmaceutical Analysis

Course Description

This class covers analytical techniques commonly employed in pharmaceutical sciences, including traditional chemical analysis, spectrometric methods, and separation strategies along with the applications of proteomics and metabolomics to the pharmacy.

Credits

3

Prerequisites

CHM 255 Organic Chemistry I

CHM 356 Organic Chemistry II

CHM 212 Principles of Chemistry II

CHM 218 Principle of Chemistry Lab II

Term/Year

Spring 2023

Class Meeting Days/Times

TBD

Location

TBD

Academic Calendar

For the beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Hasan Koc

Contact Information

SKH 341
By appointment
304 – 696 -7368
kocha@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Hansen, Steen, et al. *Introduction to Pharmaceutical Chemical Analysis*. Available from: VitalSource Bookshelf, Wiley Global Research (STMS), 2011.

Print ISBN (Hardback): 9780470661215
Print ISBN (Paperback): 9780470661222
ePDF ISBN: 9781119953609
oBook ISBN: 9781119953647
ePub ISBN: 9781119954330
Mobi ISBN: 9781119954347

Recommended/Optional Texts and Materials

None

Course Student Learning Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Discuss analytical techniques commonly employed in the analysis of small organic molecules /drug molecules	group work, discussion, in-class exercises, chapter reviews	Exams QUIZs
Devise a strategy for the separation of a given small molecule based on chemical properties	group work, discussion, in-class exercises, chapter reviews	Exams QUIZs
Explain various mass spectrometric approaches to be taken for a given drug molecule	group work, discussion, in-class exercises, chapter reviews	Exams QUIZs
Describe strategies to analyze mixtures of small molecules/drug	group work, discussion, in-class exercises, chapter reviews	Exams QUIZs
Devise a flowchart to analyze proteins and PTMs as applied to biosimilars and protein drugs	group work, discussion, in-class exercises, chapter reviews	Exams QUIZs

Course Requirements/Due Dates

None

Grading Policy

Course Evaluation (grading):

Midterm exams: 66%

Final Exam: 20%

QUIZ: 14%

Letter grades distribution*:
A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%
***** Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance/Participation Policy

Attendence is required

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

[Provide the course schedule. You may enter it in the table below or provide it in another format.

Week [or Lesson, Unit, etc.]	**Activity/Assignment**	**Points (Percentage)**	**Textbook chapter**
1	QUIZ Introduction	1%	1
2	QUIZ Classical methods	1%	4-5
3	QUIZ Qualitative analysis	1%	
4	QUIZ Quantitative analysis	1%	
5	QUIZ Spectrometric techniques	1%	6-9
6	QUIZ Separation techniques- small molecules	1%	10-12
7	QUIZ Separation of proteins	1%	12

Week [or Lesson, Unit, etc.]	Activity/Assignment	Points (Percentage)	Textbook chapter
	Exam1	33%	
8	QUIZ HPLC	1%	12
9	QUIZ Chiral separations	1%	
10	QUIZ GC-MS	1%	16
11	QUIZ Large molecule analysis	1%	
12	QUIZ Protein sample preparation	1%	
13	QUIZ Proteomics	1%	
	Exam 2	33%	
14	QUIZ Metabolomics	1%	
	Final Exam	20%	

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 330

Contact Person: A. R. M. Ruhul Amin, Ph.D. Phone: 304-696-7371

NEW COURSE DATA:

Course Title: Introduction to Cancer Biology (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 330

General Education Designator(s) (check all that apply): CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): Introduction to Cancer Biology covers current concepts and knowledge of cancer, including carcinogenesis (cancer pathogenesis) and cancer treatment.

Co-requisite(s): None First Term to be Offered: Fall2024

Prerequisite(s): BSC 120 and BSC 121 Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 330

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

   A. R. M. Ruhul Amin, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   No

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   No

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   No

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   No

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   No

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 330: Introduction to Cancer Biology

1. "The Biology of Cancer" By Robert A. Weinberg, Garland Publishing.
2. Hanahan D, Weinberg RA. The hallmarks of cancer. Cell. 2000;100(1):57-70. doi: 10.1016/s0092-8674(00)81683-9.
3. Hanahan D, Weinberg RA. Hallmarks of cancer: the next generation. Cell. 2011;144(5):646-74. doi: 10.1016/j.cell.2011.02.013.
4. Hanahan D. Hallmarks of Cancer: New Dimensions. Cancer Discov. 2022;12(1):31-46. doi: 10.1158/2159-8290.CD-21-1059.
5. Jeggo PA, Pearl LH, Carr AM. DNA repair, genome stability and cancer: a historical perspective. Nat Rev Cancer. 2016;16(1):35-42. doi: 10.1038/nrc.2015.4.
6. Amin AR et al. Evasion of anti-growth signaling: A key step in tumorigenesis and potential target for treatment and prophylaxis by natural compounds. Semin Cancer Biol. 2015;35 Suppl:S55-S77. doi: 10.1016/j.semcancer.2015.02.005.
7. Riley RS, June CH, Langer R, Mitchell MJ. Delivery technologies for cancer immunotherapy. Nat Rev Drug Discov. 2019;18(3):175-196. doi: 10.1038/s41573-018-0006-z.
8. Igarashi Y, Sasada T. Cancer Vaccines: Toward the Next Breakthrough in Cancer Immunotherapy. J Immunol Res. 2020;2020:5825401. doi: 10.1155/2020/5825401. eCollection 2020.

Marshall University Syllabus
School of Pharmacy
BSPS

Course

BSPS 330 Introduction to Cancer Biology

Course Description

Introduction to Cancer Biology covers current concepts and knowledge of cancer, including carcinogenesis (cancer pathogenesis) and cancer treatment. Students will learn about various genetic and molecular changes normal cells undergo during the transformation into malignant cells. This course will discuss the cellular (histopathological) and molecular (genetic) mechanisms underlying cancer development with the aim of understanding how changes in the normal growth and division processes lead to the formation of tumors. Topics include the natural history of cancer, hallmarks of cancers, oncogenes, tumor suppressors, cancer-causing viruses, cancer microenvironment, immune escape mechanisms, and current therapeutic approaches to cancer treatment.

Credits
3 credits

Prerequisites
Complete BSC 120, BSC 121 with minimum D

Term/Year

Fall

Class Meeting Days/Times

Two days: 1.5 h/day

Location

TBD

Academic Calendar

For the beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

A. R. M. Ruhul Amin

Contact Information

- Office: SKH349
- Office Hours: TBD
- Office Phone: 304-696-7371
- Marshall Email: amina@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

"The Biology of Cancer" By Robert A. Weinberg, Garland Publishing.

Recommended/Optional Texts and Materials

Course Student Learning Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Understand the basic mechanism of carcinogenesis – hallmarks of cancer	Group discussions and problem-solving activities in class	Quiz Exam

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Able to comment on the severity of the disease and treatment options based on staging	Group discussions and problem-solving activities in class	Quiz Exam
Know the about treatment options available for cancer patients	Group discussions and problem-solving activities in class	Quiz Exam
Distinguish different types of cancer	Group discussions and problem-solving activities in class	Quiz Exam
Explain different types of genetic changes that drive carcinogenesis	Group discussions and problem-solving activities in class	Quiz Exam

Course Requirements/Due Dates

None

Grading Policy

Course Grades. Final course grades will be calculated as follows:

Point Distribution:

- Attendance, Assignments, Homework, Quizzes: 15%
- Exam 1: 25%
- Exam 2: 25%
- Exam 3: 35% (10% from cumulative)

Letter Grade Distribution:

- A = 90 to 100% = A
- B = 80 to less than 89%
- C = 70 to less than 79%
- D = 60 to less than 69%
- F = Less than 60%

***** Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% to 90%).

Attendance/Participation Policy

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 200.010 Student Leave

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 1 Day 1	Introduction: Basics of Cancer	• Understand the difference between normal and malignant cells • Explain different cancer types and risk factors • Explain histological changes associated with malignant transformation • Analyze cancer staging and able to comment on the severity of the disease based on staging	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 1 Day 2	Introduction: Basics of Cancer	• Understand the difference between normal and malignant cells • Explain different cancer types and risk factors • Explain histological changes associated with malignant transformation • Analyze cancer staging and able to comment on the severity of the disease based on staging	
Week 2 Day 1	Oncogenes: Receptor Tyrosine kinases	• Understand RTK and non-RTK and GPCR signaling • Explain how RTKs, non-RTKs and GPCRs contribute to tumorigenesis • Identify major RTKs, non-RTKs and GPCRs in carcinogenesis and the mechanisms of their activation	
Week 2 Day 2	Oncogenes: Non-receptor tyrosine kinases	• Understand RTK and non-RTK and GPCR signaling • Explain how RTKs, non-RTKs and GPCRs contribute to tumorigenesis • Identify major RTKs, non-RTKs and GPCRs in carcinogenesis and the mechanisms of their activation	
Week 3 Day 1	Oncogenes: GPCR	• Understand RTK and non-RTK and GPCR signaling • Explain how RTKs, non-RTKs and GPCRs contribute to tumorigenesis • Identify major RTKs, non-RTKs and GPCRs in carcinogenesis and the mechanisms of their activation	
Week 3 Day 2	Tumor Suppressor Genes	• Identify the major tumor suppressors and the mechanisms of their inactivation • Understand p53 signaling and how p53 contributes to tumorigenesis • Explain the mechanism of Rb signaling in cell cycle progression	
Week 4 Day 1	Tumor Suppressor Genes	• Identify the major tumor suppressors and the mechanisms of their inactivation • Understand p53 signaling and how p53 contributes to tumorigenesis • Explain the mechanism of Rb signaling in cell cycle progression	
Week 4 Day 2	Tumor Microenvironment	• Understand the components of tumor microenvironment • Explain how tumor microenvironment contributes to carcinogenesis	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 5 Day 1	Exam 1		
Week 5 Day 2	Tumor Angiogenesis, Invasion, Metastasis	• Understand tumor angiogenesis and identify the major players in angiogenesis • Identify the steps in tumor invasion and metastasis	
Week 6 Day 1	Genomic Integrity and Cancer	• Understand major mechanisms used to maintain genomic integrity • To understand the regulatory networks that coordinate tumorigenesis-modulating pathways with genome maintenance. • Explain microsatellite instability and its role in cancer	
Week 6 Day 2	Genomic Integrity and Cancer	• Understand major mechanisms used to maintain genomic integrity • To understand the regulatory networks that coordinate tumorigenesis-modulating pathways with genome maintenance. • Explain microsatellite instability and its role in cancer	
Week 7 Day 1	Cancer Epigenetics	• Understand the basic mechanisms of epigenetic regulation of gene expression • Explain how epigenetic changes contribute to carcinogenesis	
Week 7 Day 2	Immune Surveillance and Cancer	• Understand the basic immune surveillance mechanisms • Explain how cancer cells evade immune surveillance	
Week 8 Day 1	Cancer Cell Metabolism	• Understand how cancer cells differ from normal cells in terms of metabolism • Explain “Warburg Effects” • Analyze the role of IDH1/2 in carcinogenesis	
Week 8 Day 2	Cancer Stem Cells	• Understand the difference between normal cells and stem cells • Explain how cancer stem cells contribute o tumorigenesis and treatment failure	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 9 Day 1	Tumor Viruses	• Understand how viruses contribute to carcinogenesis • Identify major cancer viruses and the cancer they cause • Explain the mechanism of virus-mediated carcinogenesis	
Week 9 Day 2	Exam 2		
Week 10 Day 1	Cancer Chemotherapy	• Define terms associated with chemotherapy and cancer classification • Identify chemotherapy agents based target and whether it is cell-cycle specific • Understand treatment goals and problems associated with chemotherapy • Describe classes of anticancer drugs and learn general MOA	
Week 10 Day 2	Cancer Chemotherapy	• Define terms associated with chemotherapy and cancer classification • Identify chemotherapy agents based target and whether it is cell-cycle specific • Understand treatment goals and problems associated with chemotherapy • Describe classes of anticancer drugs and learn general MOA	
Week 11 Day 1	Cancer Chemotherapy	• Define terms associated with chemotherapy and cancer classification • Identify chemotherapy agents based target and whether it is cell-cycle specific • Understand treatment goals and problems associated with chemotherapy • Describe classes of anticancer drugs and learn general MOA	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 10 Day 2	Cancer Targeted Therapy	▪ Understand the basic concept of precision medicine or personalized treatment ▪ Describe the concept of molecularly targeted drugs ▪ Recognize the scopes for molecularly targeted drugs in cancer treatment ▪ Explain the mechanism of action of various classes of molecularly targeted drugs used in cancer ▪ Recognize the problems of targeted therapy and how to overcome the problems	
Week 11 Day 1	Cancer Targeted Therapy	▪ Understand the basic concept of precision medicine or personalized treatment ▪ Describe the concept of molecularly targeted drugs ▪ Recognize the scopes for molecularly targeted drugs in cancer treatment ▪ Explain the mechanism of action of various classes of molecularly targeted drugs used in cancer ▪ Recognize the problems of targeted therapy and how to overcome the problems	
Week 11 Day 2	Cancer Targeted Therapy	▪ Understand the basic concept of precision medicine or personalized treatment ▪ Describe the concept of molecularly targeted drugs ▪ Recognize the scopes for molecularly targeted drugs in cancer treatment ▪ Explain the mechanism of action of various classes of molecularly targeted drugs used in cancer ▪ Recognize the problems of targeted therapy and how to overcome the problems	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 12 Day 1	Cancer Immune Therapy	• Understand different types of cancer immune therapy • Explain the mechanisms of mAbs • Explain the mechanisms of immune checkpoint inhibitors • Explain the role of oncolytic viruses in the treatment of cancer • Explain the mechanism of tumor vaccines	
Week 12 Day 2	Cancer Immune Therapy	• Understand different types of cancer immune therapy • Explain the mechanisms of mAbs • Explain the mechanisms of immune checkpoint inhibitors • Explain the role of oncolytic viruses in the treatment of cancer • Explain the mechanism of tumor vaccines	
Week 13 Day 1	Cancer Immune Therapy	• Understand different types of cancer immune therapy • Explain the mechanisms of mAbs • Explain the mechanisms of immune checkpoint inhibitors • Explain the role of oncolytic viruses in the treatment of cancer • Explain the mechanism of tumor vaccines	
Week 13 Day 2	Cell Therapy	• Understand different types of cancer immune therapy • Explain the mechanisms of mAbs • Explain the mechanisms of immune checkpoint inhibitors • Explain the role of oncolytic viruses in the treatment of cancer • Explain the mechanism of tumor vaccines	

Date	Meeting Topic	Student Learning Outcomes	Instructor
Week 14 Day 1	Cancer Vaccines	• Understand different types of cancer immune therapy • Explain the mechanisms of mAbs • Explain the mechanisms of immune checkpoint inhibitors • Explain the role of oncolytic viruses in the treatment of cancer • Explain the mechanism of tumor vaccines	
Week 14 Day 2	Final		

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 340

Contact Person: Jeremy McAleer Phone: 304-696-7336

NEW COURSE DATA:

Course Title: Immunotherapeutics (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 340

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)
Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course introduces students to the role of the immune system in the pathophysiology of inflammatory diseases including autoimmunity and allergies.

Co-requisite(s): N/A First Term to be Offered: Fall 2023

Prerequisite(s): BSC 302 or 322 or 334 or 448 Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 340

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

   Jeremy McAleer, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   N/A

3. If this course will be required by a department/division other than your own, identify by name.

   N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   N/A

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE

Mathias CB, McAleer JP, and Szollosi DE. Pharmacology of Immunotherapeutic Drugs. ©2020, Springer. ISBN 978-3-030-19921-0

Marshall University Syllabus
School of Pharmacy
B.S. in Pharmaceutical Sciences

Course

BSPS 340 Immunotherapeutics

Course Description

The role of the immune system in the pathophysiology of inflammatory diseases including autoimmunity and allergies. Overview of treatments that are used to suppress inflammation during these conditions, or treatments to boost immunity in the context of primary immunodeficiencies, cancer and vaccines.

Credits

3 undergraduate

Prerequisites

BSC 302 Principles of Microbiology with a minimum grade of C, or

BSC 322 Principles of Cell Biology with a minimum grade of C, or

BSC 334 Principles of Human Physiology with a minimum grade of C, or

BSC 448 Introductory Immunology with a minimum grade of C

Term / Year

Fall / 2023

Class Meeting Days / Times

Tuesday, Thursday 1:30pm-2:45pm

Location

SKH

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Jeremy McAleer, Ph.D.

Contact Information

- Office: SKH 347
- Office Hours: Thursday 1-2pm, or by appointment
- Office Phone: 304-696-7336
- Marshall Email: mcaleer@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Pharmacology of Immunotherapeutic Drugs, ©2020 Springer.

ISBN Hardcover: 978-3-030-19921-0
Softcover: 978-3-030-19924-1
eBook: 978-3-030-19922-7

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will describe the role of the immune system in host defense against infectious agents	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments
Students will discuss how the immune system contributes to inflammatory disorders including autoimmunity and allergies	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments
Students will identify the most common genes, receptors and cytokines required for immune system activation, and how they may be exploited as therapeutic drug targets	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments
Students will describe how vaccines stimulate immunological memory	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments
Students will identify major drug targets for immune-mediated diseases and describe their mechanism of action	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments
Students will discuss the role of the immune system in tumor immunosurveillance and different strategies for immunotherapy	group discussions, in-class exercises, chapter reviews	exams, quizzes, assignments

Course Requirements / Due Dates

None

Grading Policy

Quizzes: 18%

Assignments: 18%

Exam 1: 16%

Exam 2: 16%

Exam 3: 16%

Final Exam: 16%

Letter grades distribution*: A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance / Participation Policy

Attendance is mandatory for graded activities, with only excused absences accepted as described in the Board of Governor's policy AA-13 (https://www.marshall.edu/board/board-of-governors-policies/).

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates

- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Week [or Lesson, Unit, etc.]	**Activity / Assignment**	**Points (Percentage)**	**Textbook chapter**
Session 1	Introduction: Innate Immunity		1, 2
Session 2	Introduction: Adaptive Immunity		1, 3
Session 3	Vaccines for Viruses	QUIZ (3%)	9
Session 4	Vaccines for Bacteria		9
Session 5	Primary Immunodeficiencies: Genetic causes	Vaccine assignment (2%)	3
Session 6	Primary Immunodeficiencies: Treatments	QUIZ (3%)	3
Session 7	*Research article*	Presentation (3%)	
Session 8	**Exam 1 (sessions 1-6)**	**16%**	
Session 9	Autoimmunity: Autoimmune Polyendocrine Syndrom Type 1		7
Session 10	Autoimmunity: Rheumatoid Arthritis		7
Session 11	Autoimmunity: Systemic Lupus Erythematosus	QUIZ (3%)	7
Session 12	Hypersensitivities: Type 1		4
Session 13	Hypersensitivities: Asthma	Autoimmunity assignment (2%)	4
Session 14	Hypersensitivities: Type 4	QUIZ (3%)	5

Week [or Lesson, Unit, etc.]	**Activity / Assignment**	**Points (Percentage)**	**Textbook chapter**
Session 15	*Research article*	Presentation (3%)	
Session 16	**Exam 2 (sessions 9-14)**	**16%**	
Session 17	Disorders of the Gastrointestinal Tract: Inflammatory Bowel Diseases		6
Session 18	Disorders of the Gastrointestinal Tract: Food Allergies		6
Session 19	Transplantation: immunological principles	QUIZ (3%)	8
Session 20	Transplantation: medications used for patient conditioning		8
Session 21	Tumor immunity: tumor immunosurveillance	Transplantation assignment (2%)	10
Session 22	Tumor immunity: immunotherapies	QUIZ (2%)	10
Session 23	*Research article*	Presentation (3%)	
Session 24	**Exam 3 (sessions 17-22)**	**16%**	
Session 25	Student Presentations	2%	
Session 26	Student Presentations	2%	
Session 27	Pre-finals exam review		
Session 28	**FINAL EXAM (comprehensive)**	**16%**	

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: School of Pharmacy Department/Division: Pharmaceutical Science Alpha Designator/Number: BSPS 350

Contact Person: Michael Hambuchen Phone: 304-696-7297

NEW COURSE DATA:

Course Title: Pharmacology of Illicit Drugs (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 350

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): **Fundamentals of the interactions of illicit drugs with the human body. Provides scientific background in substance use disorder for students pursuing clinical or research careers.**

Co-requisite(s): _____ First Term to be Offered: Fall 2023

Prerequisite(s): BSC 121 with a minimum grade of D Credit Hours: 3

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Science Alpha Designator/Number: BSPS 350

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

   Michael Hambuchen

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   N/A

3. If this course will be required by a department/division other than your own, identify by name.

   N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   Classroom with computer and projector or screen.

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

Bibliography

This course is designed to provide scientific knowledge on major illicit and misused drugs in the US and throughout the world. The National Institute on Drug Abuse (subdivision of the National Instititutes of Health) provided "Commonly Used Drug Charts" (https://nida.nih.gov/research-topics/commonly-used-drugs-charts) were used to identify key drugs to cover for this course.

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Leffers P, Johnson B, Aaronson P. Substance Use Disorders I: Opioids, Cannabis, and Stimulants. In: DiPiro JT, Yee GC, Michael Posey LL, Haines ST, Nolin TD, Ellingrod VL. eds. DiPiro: Pharmacotherapy A Pathophysiologic Approach, 12e. McGraw Hill; 2021.

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Marshall University Syllabus
School of Pharmacy
BS in Pharmaceutical Science

Course

PHAR 350 Pharmacology of Illicit Drugs

Course Description

Fundamentals of the interactions of illicit drugs with the human body. Provides scientific background in substance use disorder for students pursuing clinical or research careers.

Credits
3 undergraduate

Prerequisites
BSC 121 with a minimum grade of D

Term / Year

Fall 2023

Class Meeting Days / Times

Monday, Wednesday, Friday/Times TBA

Location

TBA

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Michael Hambuchen, PharmD, PhD

Contact Information

- Office: SKH 353
- Office Hours: TBA; or by appointment.
- Office Phone: 304-696-7297

- Marshall Email: hambuchen@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

None are required; any materials and assigned reading will be provided by the professor or through textbooks on the Marshall University provided Access Pharmacy website.

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will understand how key illicit and misused drugs can produce addiction and/or toxicity	Discussion, in-class activities, presentations	Exams, homework, group presentation
Students will understand how therapeutic interventions can treat addiction and/or reduce illicit and misused drug toxicity	Discussion, in-class activities, presentations	Exams, homework, group presentation

Course Requirements/Due Dates

Small assignment due dates announced on day of assignment.

Group presentations on class days November 10th – 17th

Exams 1 – 3 during normal class time, Exam 4 (final) TBA:

- Exam 1: Sep 15th – Background sessions and Amphetamine-type stimulants
- Exam 2: Oct 13th – Cocaine and related drugs, Synthetic cathinones, Nicotine, and Non-opioid Sedatives
- Exam 3: Nov 8th – Opioids, Cannabinoids, Dissociative anesthetics, Hallucinogens
- Exam 4: Miscellaneous agents, Polysubstance use, and COMPREHENSIVE ("big picture" information e.g., mechanism of action, key toxicity, etc.)

Grading Policy

Course Grades. Final course grades will be calculated as follows:

Point Distribution:

- Assignments, presentation, and homework: 20%
- Exam 1: 18%
- Exam 2: 21%
- Exam 3: 20%
- Exam 4 (final): 22%

Letter grades distribution*:

- A = 90 to 10
- B = 80 to 89%
- C = 70 to 79%
- D = 60 to 69%
- F = Less than 60%

  * Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance / Participation Policy

Attendance / participation required and part of grade on group project presentation days. Any in-class graded activities graded as zero without formal excuse.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

After covering needed background information on central nervous system function, basic pharmacokinetics and pharmacology, and the general pathophysiology of addiction, the course will be divided into topic blocks by illicit or misused drugs. For each topic, the following will be covered as appropriate:

- History
- Epidemiology
- Pharmacology
- Toxicology (in brain and peripheral organs)
- Pharmacokinetics
- Pharmacology of available treatments for addiction and/or overdose

Class will include lecture, active learning exercises, group presentations, guest speakers, journal club, and other activities.

Dates	**Topic covered**
Aug 21 – Aug 28	Background sessions: • Introduction to the central nervous system (physiology) • Introduction to pharmacokinetics and pharmacology • Addiction pathophysiology
Aug 30 – Sep 11	Amphetamine-type stimulants • Methamphetamine and amphetamine • Ephedra • MDMA
Sep 13 – Sep 21	Cocaine and related drugs • Cocaine • Methylphenidate • Bupropion
Sep 22	Synthetic cathinones (“bath salts”) • Khat (natural product) • Synthetic agents (amphetamine-like vs cocaine-like mechanism of action)
Sep 25 – Sep 29	Nicotine
Oct 2 – Oct 9	Non-opioid sedatives • Benzodiazepines • Barbiturates • GHB • Alcohol
Oct 11 – Oct 23	Opioids • Morphine analogues • Synethetic agents • Novel agents

Dates	**Topic covered**
Oct 25 – Oct 30	Cannabinoids • Delta-9 THC • Synthetic cannabinoids • Non-delta-9 THC cannabinoids (e.g,. Delta-8 THC)
Nov 2	Dissociative anesthetics • PCP • Ketamine • Dextromethorphan • Salvia
Nov 4	Hallucinogens • LSD • Psilopsybin • DMT • Mescaline
Nov 6	Miscellaneous agents • Inhalants • Kratom • Natural toxins • Pyrethroids (“wasp spray dope”) • Anabolic steroids • Scopolomine (“devil’s breath”)
Nov 10 – Nov 17	Group presentations: Informative talk on substance use disorder topic targeted to a high school age audience level
Nov 27 – Nov 29	Polysubstance use • Intentional (e.g., “goofballs” and “speedballs,” “sherms,” etc.) • Unintentional (or very dangerous; e.g., fentanyl contamination of METH, combining opioids and other sedatives, etc.)
Dec 1	Class overview • Review previously covered topics

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 360

Contact Person: Timothy Long Phone: 304-696-7393

NEW COURSE DATA:

Course Title: Prin of Infectious Diseases (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 360

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course focuses on the pathophysiology of infectious diseases and the pharmacology of antimicrobials used in treatment.

Co-requisite(s): N/A First Term to be Offered: Spring 2024

Prerequisite(s): BSC302 or BSC250 Credit Hours: 4

Grading Mode: Graded: x Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair*:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 360

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

   Timothy Long

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None.

3. If this course will be required by a department/division other than your own, identify by name.

   None.

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   None.

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   Resources needed are in place.

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   None.

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   None.

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

- Jeffres MN, Kufel WD, Biehle LR, Cho JC, Narayanan N, Gruenberg K, Garcia J, MacDougall C. A Comprehensive Survey of Infectious Diseases Curriculum Among US Pharmacy Schools. Am J Pharm Educ. 2019 Nov;83(9):7168. doi: 10.5688/ajpe7168. PMID: 31871346; PMCID: PMC6920648.

Marshall University Syllabus
School of Pharmacy
Bachelor of Pharmaceutical Sciences

Course

BSPS 360 Principles of Infectious Diseases

Course Description

This course focuses on the pathophysiology of infectious diseases and the pharmacology of antimicrobials used in treatment.

Credits
4 undergraduate

Prerequisites
BSC302 or BSC250 Minimum Grade C

Term / Year

Spring 2024

Class Meeting Days / Times

Tuesday/Thursday 1:30-3:20

Location

SKH TBD

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Timothy Long

Contact Information

- Office: SKH 335
- Office Hours: TBD (spring 2024)
- Office Phone: 304-696-7393
- Marshall Email: longt@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

Sanford Guide to Antimicrobial Therapy

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will describe the pathophysiology of infectious agents implicated in human diseases.	In class active-learning excercises (ALEs).	In class active-learning excercises (ALEs), quizzes (IRATs/GRATs), exams and case study presentation.

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will indentify the primary pathogens implicated in diseases based on organ systems.	In class active-learning excercises (ALEs).	In class active-learning excercises (ALEs), quizzes (IRATs/GRATs), exams and case study presentation
Students will define the pharmacology of antimicrobial agents and their adverse effects.	In class active-learning excercises (ALEs).	In class active-learning excercises (ALEs), quizzes (IRATs/GRATs), exams and case study presentation
Students will ascertain the activity spectrum of antimicrobial agents used in the treatment of infectious diseases	In class active-learning excercises (ALEs).	In class active-learning excercises (ALEs), quizzes (IRATs/GRATs), exams and case study presentation

Course Requirements/Due Dates

None

Grading Policy

Course Grades. Final course grades will be calculated as follow:

Point Distribution:
IRATs/GRATs/ALEs: 20%
Student presentation: 5%
Hourly Exams: 60% (Exams 1-4 x 15%)
Final Comprehensive Exam: 15%

Letter grades distribution*:
A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance/Participation Policy

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 200.010 Student Leave

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Week	Course Student Learning Outcomes and Assessments
1	• Group bacteria into classification schemes according to morphology, cell structure and growth requirements • Identify pathogenic bacteria based on organ systems • Describe the clinical methods to identify etiological agents based on infection site
2	• List the major etiological agents of bacterial skin, bone, and joints infections • Describe the epidemiology, transmission and pathophysiology of bacterial skin, bone, and joints infections • List the major etiological agents of gastrointestinal and genitourinary tract infections • Describe the epidemiology, transmission and pathophysiology of gastrointestinal and genitourinary tract infections
3	• List the major etiological agents of CNS and upper respiratory tract infections • Describe the epidemiology, transmission and pathophysiology of CNS and upper respiratory tract infections • Give examples of prototypical agents used in the pharmacotherapy of CNS and upper respiratory tract infections

Week	Course Student Learning Outcomes and Assessments
4	• **Exam I** • List the major etiological agents of lower respiratory tract infections, tuberculosis, and bacteremia • Describe the epidemiology, transmission and pathophysiology of lower respiratory tract infections, tuberculosis, and bacteremia • Give examples of prototypical agents used in the pharmacotherapy of lower respiratory tract infections, tuberculosis, and bacteremia
5	• List the etiological agents of zoonotic infections • Describe the epidemiology, transmission and pathophysiology of zoonotic infections • List the families and species of DNA and RNA viruses implicated in human diseases including CoVID. • Summarize the viral replication cycle • Describe the epidemiology, transmission, and pathologies of human herpesvirus infections
6	• Describe the epidemiology, transmission and pathologies of HIV and the viruses that cause hepatitis. • Describe the etiologies, transmission, and pathologies of superficial, cutaneous, and subcutaneous mycoses in humans
7	• **Exam II** • List the major causes of opportunistic illnesses in humans with immune system deficiencies • Identify the major parasitic pathogens implicated in human disease.
8	• Describe the pharmacological properties of synthetic antibacterials (i.e., sulfonamides, trimethoprim, quinolones, nitrofurantonin, nitroimidazoles, fosfomycin) • Describe the pharmacological properties of penicillins and β-lactamase inhibitors. • Define the mechanisms of β-lactam resistance.
9	• Describe the pharmacological properties of cephalosporins, carbapenems, and monobactams. • Describe the pharmacological properties of natural and semi-synthetic peptide antibacterials (i.e., glycopeptides, lipopeptides, polymyxin, colistin) • Describe the mechanism of vancomycin resistance
10	• **Exam III** • Describe the pharmacological properties of inhibitors of RNA (e.g., rifampin) and protein synthesis (e.g., fusidic acid, chloramphenicol, clindamycin, streptogramins, mupirocin, macrolides, aminoglycosides, oxazolidinones, tetracyclines)

Week	Course Student Learning Outcomes and Assessments
11	• Delineate the pharmacological properties of antiretrovirals, antiherpetic drugs, and antivirals used in treatment of hepatitis and respiratory infection. • Understand how vaccines are used to prevent viral infections from an immunological activation mechanism • Identify infectious diseases that can be prevented by vaccination
12	• Define pharmacological properties of antifungal drugs use in the treatment of superficial and systemic mycoses. • Identify antiparastic drugs used in the treatment of protozoal and helminthic infections.
13	• **Exam IV** • Student case study presentations
14	• Student case study presentations

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 401

Contact Person: Hasan Koc, Ph.D. Phone: 304-696-7368

NEW COURSE DATA:

Course Title: Pharm Sciences Seminar (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 401

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: ________)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): This course is design to teach critical literature search and evaluation skills, prepare, and present pharmaceutical scientific material in written and oral format.

Co-requisite(s): None First Term to be Offered: Fall2025

Prerequisite(s): None Credit Hours: 1

Grading Mode: Graded: Yes Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair *:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 401

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

   Hasan Koc, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None

3. If this course will be required by a department/division other than your own, identify by name.

   N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   N/A

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   N/A

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

BSPS 401: Seminar

There is no specific textbook available for this material. Students will be required to select a topic related to the pharmaceutical sciences and complete a written and oral presentation.

1. Rodin R, Rohailla S, Detsky AS. The Oral Case Presentation: Time for a "Refresh". *J Gen Intern Med*. 2021;36(12):3852-3856. doi:10.1007/s11606-021-06964-6

2. Williams DE, Surakanti S. Developing Oral Case Presentation Skills: Peer and Self-Evaluations as Instructional Tools. *Ochsner J*. 2016;16(1):65-69.

3. Haber RJ, Lingard LA. Learning oral presentation skills: a rhetorical analysis with pedagogical and professional implications. *J Gen Intern Med*. 2001;16(5):308-314. doi:10.1046/j.1525-1497.2001.00233.x

4. Chan MY. The oral case presentation: toward a performance-based rhetorical model for teaching and learning. *Med Educ Online*. 2015;20:28565. Published 2015 Jul 17. doi:10.3402/meo.v20.28565

Marshall University Syllabus
School of Pharmacy
BS in Pharmaceutical Sciences

Course

BSPS 401 Pharmaceutical Sciences Seminar

Course Description

This course is design to teach critical literature search and evaluation skills, prepare, and present pharmaceutical scientific material in written and oral format.

Credits

1

Prerequisites

None

Term/Year

Fall 2025

Class Meeting Days/Times

TBD

Location

TBD

Academic Calendar

For the beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Hasan Koc

Contact Information

SKH 341
By appointment
304 – 696 -7368
kocha@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

None

Recommended/Optional Texts and Materials

None

Course Student Learning Outcomes

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Develop literature search and appraisal skills	Lecture and assigned activities	Presentation evaluation
Demonstrate the ability to present scientific material of a peer-reviewed research article or his/her own research	Oral Presentation	Presentation Evaluation
Demonstrate the ability to critically evaluate research presented in a peer-reviewed article or in any other format	Class participation	Evaluation

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Demonstrate the ability to prepare clear, concise written critiques	Class participation	Evaluation

Course Requirements/Due Dates

None

Grading Policy

Course Evaluation (grading):

Faculty evaluation: 60%

Written documentation/slides: 20%

Participation: 20%

Letter grades distribution*:
A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%
***** Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance/Participation Policy

Attendence is required

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at

TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

[Provide the course schedule. You may enter it in the table below or provide it in another format.

Week [or Lesson, Unit, etc.]	**Activity/Assignment**	**Points (Percentage)**	**Textbook chapter**
1	Scientific method, literature search stragies, and reading and critiqueing peer-reviewed articles		
2	Presentation skills		
3	Seminar		
4	Seminar		
5	Seminar		
6	Seminar		
7	Seminar		
8	Seminar		
9	Seminar		
10	Seminar		
11	Seminar		
12	Seminar		
13	Seminar		
14	Seminar		

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition

1. Prepare ***one*** paper copy and obtain signatures from the Department Chair/Division Head, Registrar and College Dean.
2. Submit the form to your College Curriculum Committee.
3. After obtaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee Chair
4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in a single PDF file (PDF Portfolio recommended) to UCC chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 470

Contact Person: Timothy Long Phone: 304-696-7393

NEW COURSE DATA:

Course Title: Capstone exper in Pharm Sci (Limit of 30 characters & spaces.)

Alpha Designator/Number: BSPS 470

General Education Designator(s) (check all that apply): ☐ CT ☐ INTL ☐ MC ☐ Core II (Core II type: _____)

Note: Applications for Gen Ed attributes must be attached. http://www.marshall.edu/wpmu/gened/core-ii-courses-info/

Catalog Description (Limit of 30 words): Capstone experience in Pharmaceutical Sciences provides students with the opportunity to apply their classroom knowledge by completing a research project or internship at an approved

Co-requisite(s): — First Term to be Offered: Fall 2023

Prerequisite(s): ~~Senior: 90~~ or ~~more SH~~ — Credit Hours: 4

Grading Mode: Graded: X Credit/No Credit: Credit

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

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
   a. COURSE OBJECTIVES, COURSE OUTLINE, SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE, INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc.), and EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc.)
3. If this course will replace a course that is required by another department, 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. If this course will be 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.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: [signature]	Date: 12/19/22
Registrar: [signature] 512010	Date: 1.4.2023
College Dean: [signature]	Date: 12/19/22
College Curriculum Chair: Cynthia Jones	Date: 12/19/2022
General Education Council Chair*:	Date:
University Curriculum Committee Chair: Zach Garrett	Date: 1.27.23
Faculty Senate Chair:	Date:
VP Academic Affairs/VP Health Science	Date:

* - Signature necessary only if course is to be Core Curriculum Course

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Course Addition - Page 2

Additional Information Required for Undergraduate Course Addition

College: Pharmacy Department/Division: Pharmaceutical Sciences Alpha Designator/Number: BSPS 470

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

   Timothy Long

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

   None.

3. If this course will be required by a department/division other than your own, identify by name.

   None.

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

   None.

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

   Resources needed are in place.

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

   None.

7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

   None.

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

- Ross PM, Mercer-Mapstone L, Pozza LE, Poronnik P, Hinton T, Field DJ. An idea to explore: Interdisciplinary capstone courses in biomedical and life science education. Biochem Mol Biol Educ. 2022 Nov;50(6):649-660. doi: 10.1002/bmb.21673. Epub 2022 Oct 3. PMID: 36189918.

- Tripp B, Shortlidge EE. A Framework to Guide Undergraduate Education in Interdisciplinary Science. CBE Life Sci Educ. 2019 Jun;18(2):es3. doi: 10.1187/cbe.18-11-0226. PMID: 31120394; PMCID: PMC6755209.

Marshall University Syllabus
School of Pharmacy
Bachelor of Pharmaceutical Sciences

Course

BSPS 470 Capstone

Course Description

Capstone experience in Pharmaceutical Sciences provides students with the opportunity to apply their classroom knowledge by completing a research project or internship at an approved experiential site.

Credits

4 undergraduate

Prerequisites

80 or more SH

Term / Year

Fall/2023

Class Meeting Days / Times

Asynchronous

Location

Asynchronous

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Timothy Long (tentative)

Contact Information

- Office: SKH 335
- Office Hours: by apointment
- Office Phone: 304-696-7393
- Marshall Email: longt@marshall.edu

COVID-19 Related Information

Marshall's official COVID-19 protocols are online at https://www.marshall.edu/coronavirus (URL: https://www.marshall.edu/coronavirus/). Policies and protocols may change over time as we respond to changing conditions. The website will always contain the most recent information – check it frequently for the most current information.

Key policies and practices at the start of the Fall 2022 semester include the following:

- **Wear a mask inside university buildings, *when required*.** To see the campus current masking status, visit Marshall's COVID-19 Dashboard (www.marshall.edu/coronavirus). Masks are not required in personal residence hall rooms or workspaces.

- **Students will disinfect their personal workspaces and virtual learning hubs** with disinfectant wipes provided nearby.

- **All members of the Marshall University community are expected to observe all COVID-19 protocols at all times. Students who are unable to follow University requirements due to a disability** should seek reasonable accommodations from the Office of Disability Services (ODS; disabilityservices@marshall.edu) during the first week of class.

Required and/or Recommended Texts and Materials

Required Texts and Materials

None required.

Course Student Learning Outcomes

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

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
Students will apply pharmaceutical sciences knowledge and skills to complete a research project or internship experience.	Students will use the scientific method to conduct research or shadow a professional mentor who will provide hands-on experience of their work.	Students will write a mid-term and final report on their research project or reflection of their internship experience. Performance will be assessed by criteria listed in a rubric provided to the mentor by the BSPS Program Director.
Students will communicate pharmaceutical sciences concepts to their mentor.	Research students will describe their project rationale and results through writing and oral communication. Similarly, intern students will convey concepts in the pharmaceutical sciences for their site.	Research students will write a research report on their project. Intern students will write a reflection on how pharmaceutical sciences were used at their work site.

Course Requirements/Due Dates

A. Research Capstone. Students will conduct research with a faculty members in the Department Pharmaceutical Sciences or another department with approval by the BSPS Program Director. The student will identify a faculty by the first week of classes to design a research project to complete in one semester. Course requirements include with a minimum of 90 hours of research time and completing midterm and final written reports prior to the faculty mentor for grading.

B. Internship Capstone. Students will shadow a professional mentor whose's occupation is related to a pharmaceutical sciences discipline or related area approved by the BSPS Program Director. The student will arrange for a minimum of 90 hours of supervised shadowing of their choosen mentor without financial compensation (i.e., salary). The student will complete a mid-term and final written report reflecting on their experience. The BSPS Program Director will assign the final grade, based on the reports near the end of semester and in consultation with the mentor.

Grading Policy

Grades for research capstones will be assigned by the faculty member and will be based on the student's performace on their research project (50%) and written report grade (50%).

Grades for the internship capstones will be based on input from the student's mentor at the experiential site (50%) and the student's written reports (50%).

Letter grades distribution*:

A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

* Final percentages will be rounded, using traditional rounding rules, to the nearest integer to determine the final grade (e.g. 89.49% rounds to 89%, 89.50% rounds to 90%).

Attendance/Participation Policy

In-person attendance is required and will vary according to the type of capstone experience.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy-Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

The course schedule is established by the faculty or professional mentor.

University Curriculum Committee
RECOMMENDATION

SR 22-23-32 CC

Recommends approval of the listed **UNDERGRADUATE MAJOR ADDITION, DELETION, CHANGE** in the following college and/or schools/programs:

School of Pharmacy

Major Addition: Pharmaceutical Sciences

- **Rationale:** The purpose of the B.S. in Pharmaceutical Sciences (BSPS) program is to prepare students for targeted industries requiring BS-level pharmaceutical sciences skills in pharmaceutical, biomedical, and other healthcare fields. Pharmaceutical sciences encompass a wide range of sciences that link to the discovery and development of new drugs and therapies to improve people's lives. The BSPS program trains students for diverse positions in industrial, academic, or other research environments within the areas of drug discovery, development, and commercialization. These students will also have the option of completing an internship in the pharmaceutical industry.

  The program is offered as part of an accelerated 3 + 4 program in conjunction with the Doctor of Pharmacy degree (3 years B.S. + 4 years Pharm.D.). The first 3 years of the BSPS program include all prerequisite courses that are required for matriculation into the Pharm.D. program as well as all university core requirements for a B.S. The course work in the fourth year of the BSPS program is synonymous with the course work in the first year of the Pharm.D. program. This allows both degrees to be completed within 7 (3 + 4) years. This will enable Marshall University to have a “pre-pharmacy” program that is housed within the School of Pharmacy. This will facilitate recruitment of students into the Pharm.D. program by allowing us to recruit at the high school level rather than restricting our recruitment efforts to students that have met the 55 credit hours of college prerequisite course work that is required for entry into the Pharm.D. program.

  Currently, most students in the Pharm.D. program complete the 55 credit hours of prerequisite coursework at other institutions and then transfer into the Marshall Pharm.D. program. Some of these students successfully complete the first year of the Pharm.D. program and subsequently decide that a career as a pharmacist is not the right career path for them. These students have already completed all coursework that is required in years 1 and 2 of the BSPS program (because these courses are prerequisites for the PharmD program). Thus, the BSPS program will also serve as an “exit ramp” for students that transfer from outside of Marshall into the PharmD program and subsequently decide that the Pharm.D. is not the right career path for them. Transitioning from the Pharm.D. into the BSPS program would enable these students to leave Marshall with an undergraduate degree rather than leaving the university with a lot of debt and no degree. Students exiting the Pharm.D. program will have already completed most of the course work required for BSPS years 1 and 2 (because most of these courses are Pharm.D. prerequisites). Students that successfully complete year 1 of the

University Curriculum Committee
RECOMMENDATION

SR 22-23-32 CC

Pharm.D. program will also have completed year 4 of the BSPS. Thus, they will be able to earn a BSPS with minimal additional course work beyond what they have already completed.

- **Curriculum:** signed BSPS addition of major form 010522.pdf

FACULTY SENATE CHAIR:

APPROVED BY THE
FACULTY SENATE: _____ DATE: _____

DISAPPROVED BY THE
FACULTY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

APPROVED: _____ DATE: _____

DISAPPROVED: _____ DATE: _____

COMMENTS: _____

NOTE: Recommendations should be sent to the Faculty Senate office via email. Recommendations longer than one page or those with attachments are to be sent in final format with this as a cover page. Any incomplete recommendations or those requiring extensive formatting changes will be returned to the recording secretary/committee.

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Addition, Deletion, or Change of a Major

1. Prepare one paper copy and obtain signatures from the Department Chair/Head, Registrar, and College Dean. 2. Submit the form to your College Curriculum Committee. 3. After attaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee (UCC) Chair. 4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in PDF format by email to the current UCC Chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences

Contact Person: Boyd Rorabaugh Phone: 304-696-7289

ACTION REQUESTED:

Check action requested: X Addition ____Deletion ____Change

Name of Major (provide code if this is an existing major): Pharmaceutical Sciences

Within which Degree Program is/ will this Major be listed (please provide code as well): Pharmaceutical Sciences

RATIONALE:

See attached rationale.

CURRICULUM: (If addition or change, number of hours and courses; indicate if required or optional) May be submitted as separate document.

see attached curriculum. Note that years 1-4 represent the new bachelor's degree. Years 4-7 of the curriculum represent the currently existing PharmD. This program will enable year 4 to count toward both the B.S. and Pharm.D. such that both degrees can be earned in 7 years (rather than 8 years).

NOTIFICATION REQUIREMENTS:

Attach a copy of written notification regarding this curriculum request to the following:

1. **Statement of Non-Duplication:** If this major will be similar in title or content to an existing major at the university, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.
3. Send a copy of this completed form to the Marshall University Catalog Editor.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: Boyd Rorabaugh Date: 1/5/23

Registrar: William Biggs Date: 1/5/2023

College Dean: Eric B Lough Date: 1/5/2023

College Curriculum Chair: Cynthia B. Jones Date: 01-05-2023

University Curriculum Committee Chair: Zach Garrett Date: 1.27.23

Faculty Senate Chair: Date:

VP Academic Affairs/VP Health Science Date:

Rationale for B.S. in Pharmaceutical Sciences

The purpose of the B.S. in Pharmaceutical Sciences (BSPS) program is to prepare students for targeted industries requiring BS-level pharmaceutical sciences skills in pharmaceutical, biomedical, and other healthcare fields. Pharmaceutical sciences encompass a wide range of sciences that link to the discovery and development of new drugs and therapies to improve people's lives. The BSPS program trains students for diverse positions in industrial, academic, or other research environments within the areas of drug discovery, development, and commercialization. These students will also have the option of completing an internship in the pharmaceutical industry.

The program is offered as part of an accelerated 3 + 4 program in conjunction with the Doctor of Pharmacy degree (3 years B.S. + 4 years Pharm.D.). The first 3 years of the BSPS program include all prerequisite courses that are required for matriculation into the Pharm.D. program as well as all university core requirements for a B.S. The course work in the fourth year of the BSPS program is synonymous with the course work in the first year of the Pharm.D. program. This allows both degrees to be completed within 7 (3 + 4) years. This will enable Marshall University to have a “pre-pharmacy” program that is housed within the School of Pharmacy. This will facilitate recruitment of students into the Pharm.D. program by allowing us to recruit at the high school level rather than restricting our recruitment efforts to students that have met the 55 credit hours of college prerequisite course work that is required for entry into the Pharm.D. program.

Currently, most students in the Pharm.D. program complete the 55 credit hours of prerequisite coursework at other institutions and then transfer into the Marshall Pharm.D. program. Some of these students successfully complete the first year of the Pharm.D. program and subsequently decide that a career as a pharmacist is not the right career path for them. These students have already completed all coursework that is required in years 1 and 2 of the BSPS program (because these courses are prerequisites for the PharmD program). Thus, the BSPS program will also serve as an “exit ramp” for students that transfer from outside of Marshall into the PharmD program and subsequently decide that the Pharm.D. is not the right career path for them. Transitioning from the Pharm.D. into the BSPS program would enable these students to leave Marshall with an undergraduate degree rather than leaving the university with a lot of debt and no degree. Students exiting the Pharm.D. program will have already completed most of the course work required for BSPS years 1 and 2 (because most of these courses are Pharm.D. prerequisites). Students that successfully complete year 1 of the Pharm.D. program will also have completed year 4 of the BSPS. Thus, they will be able to earn a BSPS with minimal additional course work beyond what they have already completed.

Accelerated 3 year (BSPS) + 4 year (PharmD) Plan of Study

Fall, Year 1			Spring, Year 1		
BSC 120	Biology I (w/ lab)	4	BSC 121	Biology II (w/ lab)	4
CHM 211	Principles of Chem I	3	CHM 212	Principles of Chem II	3
CHM 217	Principles of Chem Lab I	2	CHM 218	Principles of Chem Lab II	2
ENG 101	Beginning Composition	3	ENG 201	Advanced Composition	3
FYS 100	Core I First Yr Sem	3	STA 225	Introductory Statistics (CT)	3
	Social Science Core II	3	BSPS 101	Careers in Pharm Sci*	2
	Total	18		Total	17

Fall, Year 2			Spring, Year 2		
CHM 355	Organic Chemistry I	3	CHM 356	Organic Chemistry II	3
BSC 227	Human Anatomy	3	CHM 361	Intro Organic Chm Lab	3
BSC 227L	Human Anatomy Lab	1	BSC 228	Human Physiology	3
MTH 140	Applied Calculus	3	BSC 228L	Human Physiology Lab	1
BSPS 201	Intro to Pharm Sci*	2		Core II Communication	3
PHY 201	General Physics	3	BSC302	Principles of Microbiology	3
PHY 202	General Physics Lab	1	BSC304	Microbiology Lab	2
	Total	16		Total	18

Fall, Year 3			Spring, Year 3		
	Multicultural / Intl req.	3		Core II: Humanities	3
BSPS 202	Drug Regulatory Affairs*	3	BSPS 401	Seminar*	1
	Core II Fine Arts req	3	BSPS 470	Capstone*	4
BSPS 401	Seminar*	1		BSPS Elective*	3
BSPS ###	BSPS Elective*	3		300 or 400 level electives chosen from CHM, BSC, or BSPS courses	3
	300 or 400 level electives chosen from CHM, BSC, or BSPS courses	3	BSPS 301	Pharmacology	3
		16		Total	17

Fall, Year 4			Spring, Year 4		
PHAR 501	Pharmacy Continuing Professional Development	0	PHAR 502	Pharmacy Continuing Professional Development	0
PHAR 512	Pharmacy Skills 1[#]	1	PHAR 523	Pharmacogenomics	2
PHAR 524	Drug information and communication[#]	2	PHAR 532	Biopharmaceutics 2	3
PHAR 531	Biopharmaceutics 1	3	PHAR 536	Intro to Pharmacy 2[#]	3
PHAR 533	Intro to Pharmacy 1[#]	3	PHAR 537	Pharmacokinetics	3
PHAR 542	Immunology and Microbiology	4	PHAR 538	Pharmacy Skills Lab 2[#]	3
PHAR 547	Pharmaceutical Chemistry	4	PHAR 544	Principles of Disease and Drug Action	4
BSPS 401	Seminar[±]	1	PHAR 811	IPPE Community 1[#]	1
	Total	12-17		Total	12-19

Conferral of BSPS after year 4

Summer: IPPE Institutional (hospital, 2 weeks) PHAR821 2 credit hours

Fall, Year 5 (P2)			**Spring, Year 5 (P2)**		
PHAR 503	Pharmacy continuing professional development	0	PHAR504	Pharmacy Continuing professional development	0
PHAR 623	Patient Safety	2	PHAR637	Pharmacy skills lab 4	3
PHAR 636	Pharmacy skills lab 3	3	PHAR652	Therapeutics II cardiology	5
PHAR 635	Res Methods and Stats	3	PHAR643	Therapeutics III Renal / GI / hepatic	4
PHAR 641	Therapeutic I- OTC	4	PHAR644	Therapeutics IV endocrine	4
PHAR 662	Pharmacy Administration	6		Elective	2-3
PHAR 813	IPPE Community	1			
	Elective	**2-3**			
	Total	**21-22**		**Total**	18-19

Summer: IPPE inpatient Clinical Skills (hospital; 1 week) PHAR816 1 credit hour

Fall, Year 6 (P3)			**Spring, Year 6 (P3)**		
PHAR505	Pharmacy Continuing Professional Development	0	PHAR506	Pharmacy Continuing Professional Development	0
PHAR433	Pharmacy Law	3	PHAR723	Therapeutics VI-Special Populations	2
PHAR734	Pharmacy Skills Lab 5	3	PHAR735	Therapeutics VII - musculoskeletal disorders	3
PHAR752	Therapeutics IV- Neuro	5	PHAR736	Pharmacy Skills Lab 6	3
PHAR761	Therapeutics VI -ID	6	PHAR743	Therapeutics VIII Heme Onc	4
PHAR815/ 817	IPPE	1	PHAR 815/817	IPPE	1
	Total	**18**		**Total**	**13**

Year 7 (P4) (May – March)		
PHAR881	APPE1 Adv. In Patient Clinical Skills	5
PHAR882	APPE2 Adv outpatient Clinical Skills	5
PHAR883	APPE3 Adv Community	5
PHAR884	APPE4 Adv Institutional	5
PHAR885	APPE5 Transitions of Care	5
PHAR886	APPE6 Diverse Populations	5
PHAR887	APPE7 elective	**5**
PHAR887	APPE8 elective	**5**
PHAR891	Capstone 1 naplex / law review	**2**
PHAR892	Capstone 2 naplex / law review	**2**
	total	**44**

Statement of Nonduplication

This degree program does not duplicate any existing degree program at the university or at other institutions within the state of West Virginia.

This degree program does not require additional faculty , equipment, or specialized materials.

University Curriculum Committee
RECOMMENDATION

SR 22-23-33 CC

Recommends approval of the listed **UNDERGRADUATE DEGREE PROGRAM ADDITION, DELETION, CHANGE** in the following college and/or schools/programs:

College of Engineering and Computer Sciences

Degree Change: B.S. in Civil Engineering (TE60)

- **Summary of Changes:** Updates to courses that fulfill degree requirements.
- **Rationale:** Changes clarify which degree requirements are satisfied by one new (CE 415) and one recently-added (CE 426) Civil Engineering course. Additionally, EBGR 215 would be excluded as a course that can count as a Technical Elective, due to overlapping topics with CE 321, and certain 200-level special topic and internship designators would be excluded as technical electives.
- **Curriculum:** Civil Engineering - catalog change request 2022.pdf

School of Pharmacy

Degree Addition: B.S. Pharmaceutical Sciences

- **Rationale:** The purpose of the B.S. in Pharmaceutical Sciences (BSPS) program is to prepare students for targeted industries requiring BS-level pharmaceutical sciences skills in pharmaceutical, biomedical, and other healthcare fields. Pharmaceutical sciences encompass a wide range of sciences that link to the discovery and development of new drugs and therapies to improve people's lives. The BSPS program trains students for diverse positions in industrial, academic, or other research environments within the areas of drug discovery, development, and commercialization. These students will also have the option of completing an internship in the pharmaceutical industry.

  The program is offered as part of an accelerated 3 + 4 program in conjunction with the Doctor of Pharmacy degree (3 years B.S. + 4 years Pharm.D.). The first 3 years of the BSPS program include all prerequisite courses that are required for matriculation into the Pharm.D. program as well as all university core requirements for a B.S. The course work in the fourth year of the BSPS program is synonymous with the course work in the first year of the Pharm.D. program. This allows both degrees to be completed within 7 (3 + 4) years. This will enable Marshall University to have a “pre-pharmacy” program that is housed within the School of Pharmacy. This will facilitate recruitment of students into the Pharm.D. program by allowing us to recruit at the high school level rather than restricting our recruitment efforts to students that have met the 55 credit hours of college prerequisite course work that is required for entry into the Pharm.D. program.

  Currently, most students in the Pharm.D. program complete the 55 credit hours of prerequisite coursework at other institutions and then transfer into the Marshall Pharm.D. program. Some of these students successfully complete the first year of the Pharm.D. program

University Curriculum Committee
RECOMMENDATION

SR 22-23-33 CC

and subsequently decide that a career as a pharmacist is not the right career path for them. These students have already completed all coursework that is required in years 1 and 2 of the BSPS program (because these courses are prerequisites for the PharmD program). Thus, the BSPS program will also serve as an "exit ramp" for students that transfer from outside of Marshall into the PharmD program and subsequently decide that the Pharm.D. is not the right career path for them. Transitioning from the Pharm.D. into the BSPS program would enable these students to leave Marshall with an undergraduate degree rather than leaving the university with a lot of debt and no degree. Students exiting the Pharm.D. program will have already completed most of the course work required for BSPS years 1 and 2 (because most of these courses are Pharm.D. prerequisites). Students that successfully complete year 1 of the Pharm.D. program will also have completed year 4 of the BSPS. Thus, they will be able to earn a BSPS with minimal additional course work beyond what they have already completed.

- **Curriculum:** signed BSPS addition of program form 010522.pdf

FACULTY SENATE CHAIR:

APPROVED BY THE
FACULTY SENATE: _____ DATE: _____

DISAPPROVED BY THE
FACULTY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

APPROVED: _____ DATE: _____

DISAPPROVED: _____ DATE: _____

COMMENTS: _____

_____

_____

_____

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Addition, Deletion, or Change of a Degree Program

1. Prepare one paper copy and obtain signatures from the Department Chair/Head, Registrar, and College Dean. 2. Submit the form to your College Curriculum Committee. 3. After attaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee (UCC) Chair. 4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in PDF format by email to the current UCC Chair.

College: CECS Department/Division: Civil Engineering

Contact Person: Isaac Wait Phone: 696-5444

ACTION REQUESTED:

Check action requested: ___ Addition ___ Deletion X Change

Name of Degree program (provide code if this is an existing program): BS in Civil Engineering (TE60)

If this request is for a Degree Program addition, please indicate if the Board of Governors has approved the Intent to Plan for this program? ___ Yes _____ Enter date of approval ___ No ___ N/A

RATIONALE:

Changes clarify which degree requirements are satisfied by one new (CE 415) and one recently-added (CE 426) Civil Engineering course. Additionally, ENGR 215 would be excluded as a course that can count as a Technical Elective, due to overlapping topics with CE 321, and certain 200-level special topic and internship designators would be excluded as technical electives.

CURRICULUM: (If addition or change, number of hours and courses; indicate if required or optional) May be submitted as separate document.

The changes requested do not substantively alter the BSCE degree requirements or curriculum, but rather these changes would merely clarify the applicability of certain electives.

NOTIFICATION REQUIREMENTS:

Attach a copy of written notification regarding this curriculum request to the following:

1. **Statement of Non-Duplication:** If this degree program will be similar in title or content to an existing degree program at the university, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.
3. Send a copy of this completed form to the Marshall University Catalog Editor.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head:	Isaac Wait	Date:	11/17/2022
Registrar:		Date:	11.17.2022
College Dean:		Date:	12/1/2022
College Curriculum Chair:		Date:	12/6/2022
University Curriculum Committee Chair:	Zach Garrett	Date:	1.27.23
Faculty Senate Chair:		Date:	
VP Academic Affairs/VP Health Science:		Date:	

CIVIL ENGINEERING, B.S.C.E.

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

A minimum of 124 credit hours of coursework is required to complete the B.S.C.E. degree.

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at https://www.marshall.edu/gened/.

Code	Title	Credit Hours
Core Curriculum		
Core I		
FYS 100	First Yr Sem Critical Thinking	3
Core I Critical Thinking		3
Core I Critical Thinking		3
Core II		
ENG 101	Beginning Composition	3
ENG 201	Advanced Composition	3
CMM 103	Fund Speech-Communication	3
or CMM 104H	Honors in Speech Comm	
or CMM 207	Bus & Prof Communication	
Core II Mathematics (Requirement met in major)		3
Core II Physical or Natural Science (Requirement met in major)		4
Core II Social Science		3
Core II Humanities		3
Core II Fine Arts		3
Additional University Requirements		
Writing Intensive		3
Writing Intensive		3
Multicultural or International		3
Major-Specific		
MTH 229	Calculus/Analytic Geom I (CT)	5
MTH 230	Calculus/Analytic Geom II	4
MTH 231	Calculus/Analytic Geom III	4
MTH 335	Ordinary Diff Equations	3
STA 345	Applied Prob and Stat	3
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
CHM 212	Principles Chemistry II	3
CHM 218	Principles of Chem Lab II	2
PHY 211	University Physics I	4
PHY 202	General Physics I Laboratory	1
ENGR 103	Freshman Engineering Seminar	1
ENGR 104	The Engineering Profession	1
ENGR 111	Engineering Computations	3
ENGR 213	Statics	3
ENGR 214	Dynamics	3
ENGR 216	Mech of Deformable Bodies	3
ENGR 217	Engineering Co-Op Preparation	1
ENGR 222	Engr Cost Analysis & Economy	3
ENGR 318	Fluid Mechanics	3
ENGR 451	Intro to Proj Management	3
CE 452	Senior Seminar of Civil Engr	1
CE 453	Capstone Senior Design	3
CE 102	Introduction to CAD	2
CE 241	Introduction to Geomatics	3
CE 312	Structural Analysis	3
CE 319	Civil Engr Fluid Mechanics Lab	1
CE 321	Civil Engineer Materials	4
CE 322	Geotechnical Engineering	4
CE 331	Hydraulic Engineering	3
CE 342	Transportation Engineering	3
CE 351	Environmental Engineering	3

Code	Title	Credit Hours
CE Design, Design Elective and Technical Electives		
CE 453	Capstone Senior Design	3

To be eligible to take Capstone Senior Design (CE 453), students must have completed Introduction to Project Management (ENGR 451) and at least one CE Design Elective.

CE Design Electives		*6*

Select at least two CE design electives from the following:

CE 413	Reinforced Concrete
or CE 414	Structural Steel Design
CE 425	Foundation Engineering
or CE 426	**Retaining Structures and Slope Stability**
CE 434	Water/Wastewater Trtmt Dsgn
CE 438	Pavement Design and Management
or CE 443	Transportation Systems Design

CE Electives		*6*

Select at least two CE electives from the following, excluding courses that are taken to satisfy the CE Design Electives:

CE 341	Advanced Geomatics
CE 413	Reinforced Concrete
CE 414	Structural Steel Design
CE 415	**Advanced Reinforced Concrete**
CE 425	Foundation Engineering
CE 426	Retaining Structures and Slope
CE 433	Hydrologic Engineering
CE 434	Water/Wastewater Trtmt Dsgn
CE 438	Pavement Design and Management
CE 443	Transportation Systems Design
Any 300 -level or higher CE course not taken to satisfy a CE Design Elective or a CE Elective.	

Technical Elective		*3*

Select one technical elective that satisfies one of the criteria below:

Any 300-level or higher CE course not taken to satisfy a CE Design Elective or CE Elective.

Any **3- or 4-credit hour** 200-level or higher ENGR, ME, or EE course **(except ENGR 215, ENGR 280-283, and ENGR 290), or other course** with advance approval from the student's advisor and chair.

Major Information

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.

See http://www.marshall.edu/senate/ucc/ for information on chair

Request for Undergraduate Addition, Deletion, or Change of a Degree Program

1. Prepare one paper copy and obtain signatures from the Department Chair/Head, Registrar, and College Dean. 2. Submit the form to your College Curriculum Committee. 3. After attaining the signature of the College Curriculum Chair, send the paper copy to the current University Curriculum Committee (UCC) Chair. 4. Send an identical (sans signatures) ELECTRONIC COPY and all supporting documentation in PDF format by email to the current UCC Chair.

College: Pharmacy Department/Division: Pharmaceutical Sciences

Contact Person: Boyd Rorabaugh Phone: 304-696-7289

ACTION REQUESTED:

Check action requested: X Addition ____Deletion ____ Change

Name of Degree program (provide code if this is an existing program): Pharmaceutical Sciences

If this request is for a Degree Program addition, please indicate if the Board of Governors has approved the Intent to Plan for this program? ___ Yes BOG approval not required Enter date of approval ___ No ___ N/A

RATIONALE:

See attached rationale.

CURRICULUM: (If addition or change, number of hours and courses; indicate if required or optional) May be submitted as separate document.

see attached curriculum. Note that years 1-4 represent the new bachelor's degree. Years 4-7 of the curriculum represent the currently existing PharmD. This program will enable year 4 to count toward both the B.S. and Pharm.D. such that both degrees can be earned in 7 years (rather than 8 years).

NOTIFICATION REQUIREMENTS:

Attach a copy of written notification regarding this curriculum request to the following:

1. **Statement of Non-Duplication:** If this degree program will be similar in title or content to an existing degree program at the university, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.
3. Send a copy of this completed form to the Marshall University Catalog Editor.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

Department Chair/Division Head: Boyd Rorabaugh Date: 1/5/23

Registrar: William Biggs Date: 1/5/2023

College Dean: Ric B Lough Date: 1/5/2023

College Curriculum Chair: Cynthia B. Jones Date: 01-05-2023

University Curriculum Committee Chair: Zach Garrett Date: 1.27.23

Faculty Senate Chair: Date:

VP Academic Affairs/VP Health Science: Date:

Statement of Nonduplication

This degree program does not duplicate any existing degree program at the university or at other institutions within the state of West Virginia.

This degree program does not require additional faculty , equipment, or specialized materials.

Rationale for B.S. in Pharmaceutical Sciences

The purpose of the B.S. in Pharmaceutical Sciences (BSPS) program is to prepare students for targeted industries requiring BS-level pharmaceutical sciences skills in pharmaceutical, biomedical, and other healthcare fields. Pharmaceutical sciences encompass a wide range of sciences that link to the discovery and development of new drugs and therapies to improve people's lives. The BSPS program trains students for diverse positions in industrial, academic, or other research environments within the areas of drug discovery, development, and commercialization. These students will also have the option of completing an internship in the pharmaceutical industry.

The program is offered as part of an accelerated 3 + 4 program in conjunction with the Doctor of Pharmacy degree (3 years B.S. + 4 years Pharm.D.). The first 3 years of the BSPS program include all prerequisite courses that are required for matriculation into the Pharm.D. program as well as all university core requirements for a B.S. The course work in the fourth year of the BSPS program is synonymous with the course work in the first year of the Pharm.D. program. This allows both degrees to be completed within 7 (3 + 4) years. This will enable Marshall University to have a “pre-pharmacy” program that is housed within the School of Pharmacy. This will facilitate recruitment of students into the Pharm.D. program by allowing us to recruit at the high school level rather than restricting our recruitment efforts to students that have met the 55 credit hours of college prerequisite course work that is required for entry into the Pharm.D. program.

Currently, most students in the Pharm.D. program complete the 55 credit hours of prerequisite coursework at other institutions and then transfer into the Marshall Pharm.D. program. Some of these students successfully complete the first year of the Pharm.D. program and subsequently decide that a career as a pharmacist is not the right career path for them. These students have already completed all coursework that is required in years 1 and 2 of the BSPS program (because these courses are prerequisites for the PharmD program). Thus, the BSPS program will also serve as an “exit ramp” for students that transfer from outside of Marshall into the PharmD program and subsequently decide that the Pharm.D. is not the right career path for them. Transitioning from the Pharm.D. into the BSPS program would enable these students to leave Marshall with an undergraduate degree rather than leaving the university with a lot of debt and no degree. Students exiting the Pharm.D. program will have already completed most of the course work required for BSPS years 1 and 2 (because most of these courses are Pharm.D. prerequisites). Students that successfully complete year 1 of the Pharm.D. program will also have completed year 4 of the BSPS. Thus, they will be able to earn a BSPS with minimal additional course work beyond what they have already completed.

Accelerated 3 year (BSPS) + 4 year (PharmD) Plan of Study

Fall, Year 1			Spring, Year 1		
BSC 120	Biology I (w/ lab)	4	BSC 121	Biology II (w/ lab)	4
CHM 211	Principles of Chem I	3	CHM 212	Principles of Chem II	3
CHM 217	Principles of Chem Lab I	2	CHM 218	Principles of Chem Lab II	2
ENG 101	Beginning Composition	3	ENG 201	Advanced Composition	3
FYS 100	Core I First Yr Sem	3	STA 225	Introductory Statistics (CT)	3
	Social Science Core II	3	BSPS 101	Careers in Pharm Sci*	2
	Total	18		Total	17

Fall, Year 2			Spring, Year 2		
CHM 355	Organic Chemistry I	3	CHM 356	Organic Chemistry II	3
BSC 227	Human Anatomy	3	CHM 361	Intro Organic Chm Lab	3
BSC 227L	Human Anatomy Lab	1	BSC 228	Human Physiology	3
MTH 140	Applied Calculus	3	BSC 228L	Human Physiology Lab	1
BSPS 201	Intro to Pharm Sci*	2		Core II Communication	3
PHY 201	General Physics	3	BSC302	Principles of Microbiology	3
PHY 202	General Physics Lab	1	BSC304	Microbiology Lab	2
	Total	16		Total	18

Fall, Year 3			Spring, Year 3		
	Multicultural / Intl req.	3		Core II: Humanities	3
BSPS 202	Drug Regulatory Affairs*	3	BSPS 401	Seminar*	1
	Core II Fine Arts req	3	BSPS 470	Capstone*	4
BSPS 401	Seminar*	1		BSPS Elective*	3
BSPS ###	BSPS Elective*	3		300 or 400 level electives chosen from CHM, BSC, or BSPS courses	3
	300 or 400 level electives chosen from CHM, BSC, or BSPS courses	3	BSPS 301	Pharmacology	3
		16		Total	17

Fall, Year 4			Spring, Year 4		
PHAR 501	Pharmacy Continuing Professional Development	0	PHAR 502	Pharmacy Continuing Professional Development	0
PHAR 512	Pharmacy Skills 1[#]	1	PHAR 523	Pharmacogenomics	2
PHAR 524	Drug information and communication[#]	2	PHAR 532	Biopharmaceutics 2	3
PHAR 531	Biopharmaceutics 1	3	PHAR 536	Intro to Pharmacy 2[#]	3
PHAR 533	Intro to Pharmacy 1[#]	3	PHAR 537	Pharmacokinetics	3
PHAR 542	Immunology and Microbiology	4	PHAR 538	Pharmacy Skills Lab 2[#]	3
PHAR 547	Pharmaceutical Chemistry	4	PHAR 544	Principles of Disease and Drug Action	4
BSPS 401	Seminar[±]	1	PHAR 811	IPPE Community 1[#]	1
	Total	12-17		Total	12-19

Conferral of BSPS after year 4

Summer: IPPE Institutional (hospital, 2 weeks) PHAR821 2 credit hours

Fall, Year 5 (P2)			**Spring, Year 5 (P2)**		
PHAR 503	Pharmacy continuing professional development	0	PHAR504	Pharmacy Continuing professional development	0
PHAR 623	Patient Safety	2	PHAR637	Pharmacy skills lab 4	3
PHAR 636	Pharmacy skills lab 3	3	PHAR652	Therapeutics II cardiology	5
PHAR 635	Res Methods and Stats	3	PHAR643	Therapeutics III Renal / GI / hepatic	4
PHAR 641	Therapeutic I- OTC	4	PHAR644	Therapeutics IV endocrine	4
PHAR 662	Pharmacy Administration	6		Elective	2-3
PHAR 813	IPPE Community	1			
	Elective	**2-3**			
	Total	**21-22**		**Total**	18-19

Summer: IPPE inpatient Clinical Skills (hospital; 1 week) PHAR816 1 credit hour

Fall, Year 6 (P3)			**Spring, Year 6 (P3)**		
PHAR505	Pharmacy Continuing Professional Development	0	PHAR506	Pharmacy Continuing Professional Development	0
PHAR433	Pharmacy Law	3	PHAR723	Therapeutics VI-Special Populations	2
PHAR734	Pharmacy Skills Lab 5	3	PHAR735	Therapeutics VII - musculoskeletal disorders	3
PHAR752	Therapeutics IV- Neuro	5	PHAR736	Pharmacy Skills Lab 6	3
PHAR761	Therapeutics VI -ID	6	PHAR743	Therapeutics VIII Heme Onc	4
PHAR815/ 817	IPPE	1	PHAR 815/817	IPPE	1
	Total	**18**		**Total**	**13**

Year 7 (P4) (May – March)		
PHAR881	APPE1 Adv. In Patient Clinical Skills	5
PHAR882	APPE2 Adv outpatient Clinical Skills	5
PHAR883	APPE3 Adv Community	5
PHAR884	APPE4 Adv Institutional	5
PHAR885	APPE5 Transitions of Care	5
PHAR886	APPE6 Diverse Populations	5
PHAR887	APPE7 elective	**5**
PHAR887	APPE8 elective	**5**
PHAR891	Capstone 1 naplex / law review	**2**
PHAR892	Capstone 2 naplex / law review	**2**
	total	**44**

ACADEMIC PLANNING COMMITTEE
RECOMMENDATION

SR 23-23-34 APC

Recommends the approval of the intent to plan a Bachelor of Science in Data Science at Marshall University.

RATIONALE:

The Intent to Plan document proposing a Bachelor of Science in Data Science to be offered by the Department of Mathematics and Statistics in the College of Science at Marshall University was approved by the Academic Planning Committee (APC). The College of Engineering and Computer Sciences will also participate in this program. APC members believe that the proposed program has the potential to increase academic/employment opportunities for Marshall University students.

The majority of the required core courses for the curriculum for the proposed Bachelor of Science in Data Science program are available in the Department of Computer Sciences and Electrical Engineering in the College of Engineering and Computer Sciences (CECS), and the Department of Mathematics in the College of Science (COS). Other courses in the proposed program are available through various programs at Marshall University. The infrastructure in place for Marshall University's current master's degree program in data science will minimize the investment for a new program.

The proposed program will utilize both classical face-to-face delivery and online methodologies. Benchmarked programs often have both online and on-campus options for programs, suggesting that providing both may be successful. The proposed program is designed to equip students with adequate cognitive knowledge and skills to enable them to use the latest computational and analytic tools to solve data-intensive problems that always arise in business, healthcare, and industry or government. It is a multi-faceted program designed to be attractive to a diverse college population, particularly those in this region of the country. The degree program will be a gateway to the newly created Master of Science in Data Science (MSDS) that is available at the College of Engineering and Computer Science (CECS)

The proposed program does not anticipate any need for additional faculty lines (in the first year of operation), major funding, or any other resources to establish. The proposed program will become viable from its first year and is expected to grow each year. The College of Science aims at enrolling 215 students and graduating 59 students with a B.S. in Data Science in the fifth year of the program. The projected net revenue in the fifth year is estimated at $2.8 million. The program is expected to generate close to $2.2 million in new revenue during its first five years.

The results of the Hanover Research study for the proposed degree include student and labor demand indicators suggesting strong potential demand for a new bachelor's degree program in data science in West Virginia. Degree conferrals rose across all geographic levels and West Virginia currently has no institutions reporting conferrals in the new field category. Labor projections are even more promising,

ACADEMIC PLANNING COMMITTEE
RECOMMENDATION

SR 23-23-34 APC

positioning students to find meaningful employment upon completion. The bachelor's degree is the most common requirement, being requested by 87.0 percent of recent regional job listings. Hanover Research rates BS in Data Science programs as having high growth at over 10%. Data analysts are among the most sought-after positions in America.

The program would help Marshall university recruit more students, including international students, because of the global impact and awareness of data science and analytics. It will also make Marshall University a pioneering institution of data science in the state of West Virginia. The APC feels that the program will successfully add to Marshall University's enrollment and provide potential students with a high-quality education that will enhance their success in a variety of career paths.

FACULTY SENATE CHAIR:

APPROVED BY THE
FACULTY SENATE: _____ DATE: _____

DISAPPROVED BY THE
FACULTY SENATE: _____ DATE: _____

UNIVERSITY PRESIDENT:

APPROVED: _____ DATE: _____

DISAPPROVED: _____ DATE: _____

COMMENTS: _____

_____

_____

_____

Intent to Plan

Bachelor of Science in Data Science (BSDS)

Marshall University Administrative Unit:

College of Science

Proposed Implementation Date: Fall 2023

*Contact Person:

Alfred Akinsete, Ph.D.

Chair, Department of Mathematics

College of Science

(akinsete@marshall.edu)

February 6, 2023

*Prepared by: Council for Academics and Research in Data Science & Analytics (CARDSA)

The proposed B.S. in Data Science will serve as a degree completion program for students seeking graduate degrees or professional careers in Data Science, Data Analytics, Statistics, and related fields.

Brief Summary Statement

In this document the Council for Academics and Research in Data Science & Analytics (CARDSA) outlines the curriculum for the Bachelor of Science degree in Data Science, which will be housed in the Department of Mathematics in the College of Science at Marshall University.

Data science and analytics are fast-growing fields that will be in high demand throughout the next decade and beyond. A National Science Foundation (NSF)-sponsored interdisciplinary panel asserts in its proposed guidelines for data science curricula [1] that, "Data science is inherently interdisciplinary. Working with data requires the mastery of a variety of skills and concepts, including many traditionally associated with the fields of statistics, computer science, and mathematics. Data science blends much of the pedagogical content from all three disciplines, but it is neither the simple intersection nor the superset of the three." Data science is an evolving interdisciplinary field that uses scientific methods, analytical processes, algorithms, and systems to extract knowledge and insights from data in various forms, either structured or unstructured. It involves the use of computational, statistical, and mathematical tools for analyzing data, as well as subject-area knowledge in application-specific fields, such as business and healthcare.

As we enter the era of big data, multiple studies of world-leading companies demonstrate that there is an increasing and continuing demand for talented graduates who are equipped with skills in data analytics. The top five lucrative jobs by Google Careers are in the area of data science [2]. The U.S. could have as many as 250,000 open data science jobs by 2024 [3], and the data science skills gap will find companies scrambling to train or hire talent in the coming years. McKinsey & Company, a global management and consulting firm, described big data as the next frontier for innovation, competition, and productivity, which will become a key basis of competition, underpinning new waves of productivity, growth, and quality [4]. It estimates that big data analytics annual revenue would be $325 billion in 2020; Their report also indicates that users of services enabled by personal-location data could capture $600 billion in consumer surplus. The United States Bureau of Labor Statistics reports that as of July 2022, the average salary for data scientists is $119,239, and states that now is a good time to enter the field, based on above-average job growth and strong salaries [5]; they also project that the job outlook for data scientists will grow faster than the average growth for other professions.

The proposed B.S. in Data Science provides students with technical expertise in computational modeling, statistical skills for data collection, mining and integration, analyses and inference, data storage and retrieval, data processing, modeling and analytics, and visualization. The curriculum for the BSDS program has impressive interdisciplinary collaboration and engagement, and comprises many courses that are fundamental in artificial intelligence, which is crucial in data science education, particularly when handling huge amounts of data. Data science essentially draws from the fields of computer science, statistics, and mathematics, with applications in many areas of human endeavors. The majority of the required core courses for the curriculum for the Bachelor of Science in Data Science are available in the Department of Computer Sciences and Electrical Engineering in the College of Engineering and Computer Sciences (CECS), and the Department of Mathematics in the College of Science (COS). Other courses in the proposed program are available through various programs at Marshall University. We believe the proposed degree program will not only provide

stimulating (and appealing) educational opportunities and career pathways for our students, but will also create exciting and productive new pathways for research and development, including enhanced inter-departmental collaborations with many academic programs across the campus.

The proposed program does not anticipate any need for additional faculty lines (in the first year of operation), major funding, or any other resources to establish. The program will become viable from its first year and is expected to grow each year. The College of Science aims at enrolling 215 students and graduating 59 students with a B.S. in Data Science in the fifth year of the program. The projected net revenue in the fifth year is estimated at $2.8 million. The program is expected to generate close to $2.2 million in new revenue during its first five years.

1 Program Description

Data Science is a broad term that encompasses many diverse types of data analyses that draw insights from raw information sources. A data scientist (sometimes called a data analyst in the work environment) identifies and/or articulates specific target questions and seeks to answer them from various data sources using insightful techniques such as data mining, machine learning, and other related methods (or mechanisms) to forecast the future. The information can then be used to optimize processes to increase the overall efficiency of a business or system. Essentially any type of information can be subjected to data analytics techniques to get insight that can be used to improve the operation of a system. Data science helps a business to optimize its performance. By incorporating data science into a company's business model, they can help reduce costs by identifying more efficient ways of doing business and perceptively storing and appropriately utilizing large amounts of data. A company can also use data science to make better business decisions and help analyze customer trends and satisfaction, leading to new (and better) products and services. Data science underpins many quality control systems in the financial world, including the ever-popular Six Sigma program.

The proposed B.S. in Data Science (BSDS) degree program is designed to equip students with adequate cognitive knowledge and skills to enable them to use the latest computational and analytic tools to solve data-intensive problems that always arise in business, healthcare, industry, or government. It is appropriate that the BSDS program is launched at this time to complement the Master of Science in Data Science (MSDS) that was recently created and is housed in the College of Engineering and Computer Sciences. The BSDS or MSDS or both offers a holistic approach to data science education by taking advantage of many existing courses and strong technical expertise in the Department of Computer Sciences and Electrical Engineering and the Department of Mathematics, the latter of which offers degree majors in mathematics and statistics. The curriculum of the BSDS also includes required general education courses that help develop critical and analytical thinking in students.

The BSDS degree program at Marshall is designed to prepare graduates to succeed in professional careers in a very rapidly growing data science field, thus leading to technological changes in industry and research fields, both locally and nationally. According to 2U Inc., data science is a dynamic field that is becoming increasingly valuable to many companies of all sizes [6]. From capturing

data to communicating results, data scientists play an important role in helping businesses both make strategic decisions and optimize outcomes. While data science had traditionally encompassed data mining, programming skills, and analyzing sets of data, today, it is now more expansive and evolutionary by looking at the entire data life cycle from the perspective of cognate disciplines.

1.1 Program Mission

The mission of the BSDS degree program is a new facet of the general mission of the university, an important element of which is to offer a wide range of high quality, affordable, and accessible undergraduate, graduate, and professional educational opportunities that prepares students to think, learn, work, and live in an evolving global society. Another portion of Marshall University's mission is to contribute to the quality of life of the community, region, and beyond through applied research, economic development, health care, and cultural enrichment. Marshall actively facilitates learning through the preservation, discovery, synthesis, and dissemination of knowledge. In the College of Science, students majoring in baccalaureate degree programs receive a broad education conducive to pursuing a wide range of career options. Course requirements include a solid grounding in the student's chosen area of scientific interest, along with studies in humanities and the social sciences. Students receive instruction in a learning environment that encourages competency in written and oral communication skills, along with the ability to work in groups. And special emphasis is placed on experiential learning through participation in activities such as undergraduate research and internships.

An important goal of the BSDS program is to equip its students with a strong foundation in the theory and practice of data science that builds on the broad core general education curriculum that reflects Marshall's mission. The proposed BSDS program will cover the fundamental concepts of data science and provides the opportunity to acquire technical knowledge and skills in the fields of computer science, mathematics, and statistics, and apply them to solve problems that arise in real-world scenarios. The Data Science degree program will embue students with the following skills:

1. Highly analytical and team-oriented problem solving with strong continuous learning skills;
2. Excellence in communication, collaboration, and innovation;
3. Excellent computational skills and a solid background in mathematical and statistical modeling to undertake complex scientific problems;
4. Ability to interpret underlying facts in any type of data, especially big data sets;
5. Highly experienced in statistical knowledge, capabilities, and implementation;
6. Exceptional research skills and ability to communicate complex concepts across various disciplines.

The proposed B.S. in Data Science program will assist graduates of the program in securing jobs in data science or a closely related data-driven and analytics profession by working closely with

various business organizations and governments. The graduates will be trained to contribute to the daily evolving technology at their workplace, identify opportunities for breakthrough research and lead in decision-making processes.

The program exposes the students to a range of disciplines, including ethics, natural sciences, social sciences, economics, political sciences, history, and philosophy, and thereby the students acquire the necessary broad knowledge to address real-world challenges. Graduates of the BSDS program will be encouraged to inculcate a sense of social responsibility and be alert to issues of safety and justice. They will make decisions reflecting their understanding of professional ethics and practice the ethics of their profession to promote social welfare. They will be effective communicators and offer active services to the community.

1.2 Program Features

The proposed B.S. in Data Science (BSDS) degree program is designed to equip students with adequate cognitive knowledge and skills to enable them to use the latest computational and analytic tools to solve data-intensive problems that always arise in business, healthcare, and industry or government.

1.2.1 Program Learning Outcomes

The proposed B.S. in Data Science degree program must have the following documented and publicly stated student outcome abilities:

1. **analyze** a problem, identify and define the computing requirements appropriate to its solution;
2. **design**, **implement** and **evaluate** a computer-based solution to meet a given set of computing requirements in the context of the discipline;
3. **communicate** effectively with a range of audiences about technical information;
4. **make informed judgments** in computing practice based on legal and ethical principles;
5. **function** effectively on teams to establish goals, plan tasks, meet deadlines, manage risk, and produce deliverables;
6. **apply** principles and tactics to the environmental, hardware, software, and human components of a system;
7. **analyze** and **evaluate** systems concerning maintaining operations.

1.2.2 Additional Program Outcomes

The B.S. in Data Science degree program will promote data science collaboration with industry, government, and educational institutions by:

1. developing partnerships and alliances with external corporate and industry organizations for pursuing joint educational and research opportunities in data science,
2. pursuing research and grant opportunities in data science related areas,
3. coordinating availability of data science coursework to assist West Virginia and the nation to meet their demand for data science professionals, and
4. providing outreach opportunities to K-12 education as well as other interested parties and organizations.

1.2.3 Admissions and Performance Standards

Admission into the BSDS program shall be through regular admission for entering freshmen and students transferring from other institutions of higher learning. Prospective students who wish to apply for admission to the BSDS program must meet the general admission requirements for Marshall University admissions.

1.2.4 Program Requirements

The requirements for the BSDS degree program, including the catalog description and the four-year study plan, are as follows: A minimum of 120 credit hours is required for graduation. Students are also required to complete a senior project course as a primary course where students will practice data science in a way that replicates scenarios in professional practice. Students will apply technical skills with economic, environmental, sustainable, ethical, health, safety, social, and political considerations in solving the problem of their senior project. The Data Science Council members are very excited about the initiation of this much-needed degree program and have committed to identifying suitable industrial projects for the required senior project course and strongly support the internship program.

The proposed B.S. in Data Science degree program has been carefully designed with 120 credit hours of coursework as summarized in Table 1.

The curriculum developed exhibits an excellent balance of courses in computer science, data science, mathematics, and statistics, as well as a range of general education courses, including some with writing-intensive and multi-cultural designations. The goal is to produce well-rounded graduates with a strong background in data science who are globally and culturally astute. The proposed B.S. in Data Science degree program will make Marshall a recognized leader in education, research, and practice in data sciences. The program will attract high school graduates in West Virginia, the Huntington-Ashland metropolitan area (Tri-State Region), and surrounding states. It will seek to recruit traditional and non-traditional students. The program's curriculum encourages the development and implementation of 2+2 year programs with other institutions and community colleges. The program will also recruit many international students and will partner with international universities in 2+2- or 2+3-year programs.

Core Curriculum	41 credit hours
Major Requirements	
Mathematics	15 credit hours
Computer Science	15 credit hours
Data Science	15 credit hours
Statistics	15 credit hours
Capstone Project	2 credit hours
Electives	17 credit hours
TOTAL	120 credit hours

Table 1: B.S. in Data Science Program Requirements

Catalog Description

The catalog description of the proposed B.S. in Data Science degree program will appear as follows:

DATA SCIENCE

The Bachelor of Science in Data Science program prepares students for careers in data science fields through a strong foundation in theory and practice and the broad education gained by the core curriculum. Data science is an evolving interdisciplinary field that uses scientific methods, processes, algorithms, and systems to extract knowledge and insights from data in various forms. It involves the use of computational, statistical, and mathematical tools for analyzing data, as well as subject-area knowledge in fields such as business and healthcare.

Data science is a fast-growing field that will be in high demand throughout the next decade. The proposed guideline for the data science curriculum by a National Science Foundation (NSF)-sponsored interdisciplinary panel states, "Data science is inherently interdisciplinary. Working with data requires the mastery of a variety of skills and concepts, including many traditionally associated with the fields of statistics, computer science, and mathematics. Data science blends much of the pedagogical content from all three disciplines, but it is neither the simple intersection nor the superset of the three." A graduate of the Bachelor of Science in Data Science program will possess a diverse range of knowledge, insights, and skills.

Admission and Transfer Criteria

Minimum requirements for admission into the Data Science major for first-time freshmen are

- an ACT composite score of 21 (SAT 1060) and
- an ACT mathematics score of 24 (SAT MATH section score of 570)

Minimum requirements for admission into the Data Science major for transfer students, whether from within Marshall University or from another institution, are:

- 15 earned semester credit hours of college-level coursework,
- an overall Grade Point Average of at least 2.0 in all college-level coursework,
- completion of ENG 101 (or equivalent) with a grade of C, and
- completion of MTH 132 Pre-Calculus, or MTH 127/130 College Algebra and MTH 122 (or equivalent) with a grade of C.

For those desiring to major in Data Science who do not meet the admission or transfer criteria listed above:

- students may be admitted to any of the pre-programs in Computer Science, Mathematics, or Statistics with a minimum ACT composite of 19 (SAT 940) and an ACT mathematics score of 19-23 (SAT MATH SEC score 510-560). Transfer students must be eligible for MTH 127/130 College Algebra and MTH 132 Pre-Calculus.

Pre-Computer Science or Pre-Mathematics or Pre-Statistics students must complete the criteria for transfer students to Data Science.

B.S. Degree Requirements

The B.S. degree program requires 120 credit hours (Cr.) of coursework. Students are advised to pay careful attention to the General Education requirements in consultation with an academic advisor.

I. **Core Curriculum (41 Cr)**

Core I (3 Cr)

FYS 100 or FYS 100H) . . . . . 3 hrs.

Two Critical Thinking courses (C.T.) (requirement met in major)

Core II (18 Cr)

ENG 101 and ENG 201 6 hrs.

CMM 103 or CMM 207 3 hrs.

Fine Arts (ART 112, MUS 142, MUS 200, MUS 210, or THE 112) . . . . . 3 hrs.

Humanities (CL, ENG, JMC, PHL, or RST labeled Humanities) . . . . . 3 hrs.

Math (requirement met in major)

Physical or Natural Science (requirement met in major)

Social Science . . . . . 3 hrs.

Additional University Requirements (9 Cr)

Writing Intensive courses (W) . . . . . 6 hrs.

Multicultural (M) or International (I) course . . . . . 3 hrs.

College of Science Specific Requirements: Eleven (11) hours of Natural and Physical Sciences are required, approved by the academic/program advisor.

Freshman transfer students with 29 or fewer hours must complete Core I at Marshall. Core II can be completed with Marshall or transfer courses.

Transfers with 30 or more credit hours must complete one CT course at Marshall but are exempt from the remaining Core I requirements. Core II can be completed with Marshall or transfer courses.

II. **Mathematics Core (15 Credit Hours)**

The following courses are required:

MTH 220: Discrete Structures (3)

MTH 229: Calculus with Analytic Geometry I (CT) (5)

MTH 230: Calculus with Analytic Geometry II (4)

MTH 329: Elementary Linear Algebra (3)

III. **Computer Science Core (15 Credit Hours)**

The following computer science courses are required:

CS 110: Computer Science I (3)

CS 120: Computer Science II (3)

CS 210: Data Structures and Algorithms (3)

CS 215: Advanced Data Structures and Algorithms (3)

CS 410: Database Engineering (3)

IV. Statistics Core (15 Credit Hours)

The following statistics courses are required:

STA 345: Applied Probability & Statistics (3)

STA 412: Regression Analysis (3)

STA 420: Non-Parametric Statistics (3)

STA 426: Statistical Methods and Applications (NEW) (3)

STA 435: Data Mining (3)

V. Data Science Core (15 Credit Hours)

The following Data Science courses are required:

DS 210: Data Science I: Foundations (NEW) (3)

DS 310: Data Science II: Toolkit (NEW) (3)

DS 430: Data Visualization/Analytics (NEW) (3)

DS 450: Machine Learning (NEW) (3)

DS 470: Big Data Analytics (NEW) (3)

VI. Capstone Course with Data-Driven Experience (2 Credit Hours)

DS 490 (NEW) (2)

To be eligible to take the capstone course, students must have a senior standing in the program.

VII. Electives (17 Credit Hours)

These hours may be taken to satisfy a minor in another program.

1.2.5 Program Delivery

The proposed B.S. program in Data Science will utilize both classical face-to-face delivery and online methodologies. We anticipate that the existing computer classrooms on campus will be heavily utilized by our courses to provide a first-class, hands-on experience to all students enrolled in the BSDS program. Additionally, the program will make use of the university's available cloud computing capability due to the computationally intensive nature of some of its courses. This hands-on experience, coupled with the equipped TECI classrooms and computer labs, will enhance the computational experience delivered by the program.

According to the Academic Program Assessment by Hanover Research, student demand for online learning rose at the onset of the COVID-19 pandemic; the report states that, out of the 1,413 students surveyed about online learning,

- 62% of them expressed interest in taking some of their courses in a hybrid format, and
- 95% reported they wanted some of their courses in a fully-online format.

The students gave many reasons for wanting to choose online learning including, but not limited to,

- flexible schedule,
- accessibility,
- cost-effectiveness, and
- the ability to revisit course materials.

The need to offer an asynchronous delivery format, in addition to the traditional in-class format, is strengthened by the fact that 75% of colleges and universities now offer online degrees, with a high percentage of students being optimistic about the future growth of online leaning.

Year 1

Fall Semester	**Cr**
FYS100 - First-Year Seminar	3
ENG 101 - English Comp I	3
CS 110 - Computer Science I	3
Core II Fine Arts	3
MTH 229 - Calculus with Analytic Geometry I (CT)	5
Semester Total	17

Spring Semester	Cr
Physical/Natural Science	4
CMM 103 or CMM 207	3
CS 120 - Computer Science II	3
MTH 220 - Discrete Structures	3
MTH 230 - Calculus with Analytic Geometry II	4
Semester Total	17

Year 2

Fall Semester	**Cr**
ENG 201 - English Comp II	3
Core II Humanities (W)	3
CS 210 - Data Structures and Algorithms	3
MTH 329 – Elementary Linear Algebra	3
STA 345 - Applied Probability & Statistics	3
Semester Total	15

Spring Semester	**Cr**
Multicultural or International Course	3
Core II Social Science	3
CS 215 - Adv. Data Structures and Algorithms	3
Physical/Natural Science	4
DS 210 - Data Science I: Foundations	3
Semester Total	16

Year 3

Fall Semester	**Cr**
STA 435 - Data Mining	3
DS 310 - Data Science II: Toolkit	3
CS 410 – Database Engineering	3
Writing Intensive	3
STA 426: Statistical Methods and Applications	3
Semester Total	15

Spring Semester	**Cr**
Physical/Natural Science	3
Writing Intensive	3
STA 420 - Non-Parametric Statistics	3
DS 450 - Machine Learning	3
300/400 Level Elective	3
Semester Total	15

Year 4

Fall Semester	**Cr**
DS 430 - Data Visualization & Analytics	3
STA 412 - Regression Analysis	3
300/400 Level Elective	2
Free Elective	4
Semester Total	12

Spring Semester	**Cr**
DS 470 - Big Data Analytics	3
DS 490 - Senior Project	2
Free Elective	3
Free Elective	3
Free Elective	2
Semester Total	13

Table 2: Four Year Study Plan of B.S. in Data Science Program, totalling 120 credit hours. New courses are labeled in red.

Program Needs and Justification

The program learning outcomes that are listed above are well-aligned with the Marshall University Baccalaureate Degree Profile requirements. For example, the BSDS program requires students to

(a) develop cohesive oral, written, and visual communications for effective dissemination of the computation analyses of data,

(b) be creative thinkers and explore multiple divergent solutions to a problem,

(c) collect and analyze data, integrate relevant information (data) from reliable sources, have the ability to query information, process and evaluate the complexity of the information to draw justifiable decisions, and

(d) analyze real-world problems quantitatively, which is what the program is about, formulate plausible estimates, assess the viability of visual representations of quantitative and differentiate valid from questionable statistical conclusions.

The BSDS degree program is aligned with Marshall 20/20 guiding principles that the university must make the necessary changes. The BSDS is expected to attract many students into the program, which will increase student enrollment and retention. The BSDS is designed to satisfy the Access-Success-Impact initiative in Leading the Way by the WVHEPC. The program aims at allowing students access to quality education and increasing the overall enrollment of students at Marshall, success at increasing the overall 4-year graduation rates, and increase the impact of Marshall University through the production of graduates that are ready to contribute to the workforce and the community by providing needed services and research development activities that advances the state's economy.

1 Existing Programs

This multi-faceted BSDS program is designed to be attractive to a diverse college population, particularly those in this region of the country. The degree program will be a gateway to the newly created Master of Science in Data Science (MSDS) that is available at the College of Engineering and Computer Science (CECS). The program would help the university recruit more students, including international students, because of the global impact and awareness of data science and analytics. It will also make Marshall University a pioneering institution of data science in the state of West Virginia.

2 Program Planning and Development

The development of this program is carried out by members of the Council for Academics and Research in Data Science & Analytics. The Council has not invested any financial or equipment,

other than the expertise of various members of the Council in the development and submission of the proposal.

2.1 Clientele and Need

Data analysts are among the most sought-after positions in America. With 163 zettabytes of data to be created by 2025 (10 times the amount of data in the digital universe in 2016), employers will have an extensive need for data experts who can manage and analyze the vast amount of information they collect. According to McKinsey research [7], wages for data scientists grew 14 percent over a recent two-year period (i.e., 2017-2019), eight times faster than the average U.S. wage growth. The same McKinsey report speculates that the U.S. data scientist shortage will reach the staggering height of 250,000 open positions by 2024. This data boom is challenging businesses in every industry to hire professionals with a master's degree in data science who are skilled in data management and governance. Nearly 40% of advanced data and business analytic positions require a master's degree or Ph.D. according to a research study performed by IBM [8].

Furthermore, the top 5 jobs, according to Google Careers, are related to data science [9]. According to **Indeed**, the average base salary of data scientists (derived from the 4.8k reported salaries) in the USA is $141,407 [10]. The International Data Corporation forecasts revenues for Big Data and Business Analytics Solutions ($189.1 Billion in 2019) to have double-digit annual growth through 2022 [11].

2.2 Employment Opportunities

Data science has been named the best job in America for three years running, according to Glassdoor's 2018 Rankings, with a median base salary of $110,000 [12]. The proposed B.S. in Data Science degree program is very timely for West Virginia, the nation, and the world. Common data science jobs are Chief Executive Officer, Chief Data Officer, Director of I.T., Human Resources Manager, Financial Manager, and Marketing Manager. Although the job of data science in West Virginia is still under growth, W.V. is located in the middle of states with a data science job market. Additionally, graduates, through appropriate advising, will be prepared to compete for admissions into graduate or doctoral level data science, analytics or statistics programs.

2.3 Program Impact

The B.S. in Data Science degree program will strengthen existing programs at Marshall University. Closely related programs will greatly benefit from the addition of the B.S. in Data Science degree program, as this new program will offer the students additional electives that can enrich their academic experience. Existing Marshall University undergraduate and graduate degree and certificate programs in all colleges at Marshall University will have the option of enhancing their offerings by incorporating Data Science courses. We expect several students to pursue the opportunity to double major in Data Science and a closely related field or may add a minor in one of these fields. The

options that will be made available to students with this new degree program will open many doors for them as they graduate and join the workforce.

The B.S. in Data Science program will create exciting and productive new paths for education and research. The students in both the B.S. in Data Science program and the existing M.S. program in Data Science will have many opportunities to learn and implement advanced technologies, in addition to participating in undergraduate and graduate research. Collaborative cutting-edge research in data science will be conducted in partnership with other universities and research institutions.

Program Implementation & Projected Resource Requirements

1 Program Administration

Program administration will be accomplished by the Dean, College of Science, and the Chair of the Department of Mathematics. The Chair will organize, administer, review, develop and assure program effectiveness through program assessment. The Chair will participate in the budget process through the dean's office and be responsible for a leadership role in the continued development of the program. It is expected that the chair will have a good knowledge of the professional discipline and educational methodologies. The proposed program does not require additional resources in its initial stage and can be sustainable for two years by leveraging already existing academic resources available at the university. However, additional resources will be needed either when the number of students reaches about 100 students or during the third year of the program. These additional resources, however, will cost much less than the expected revenues of the program. In short, the proposed program will provide multiple benefits at a very low cost upon its initiation. Scenarios to examine the Return on Investment (ROI) of this timely program have shown that this proposed program will be a great addition to Marshall University.

2 Program Projections

Based on the number of student inquiries and interest in the proposed degree, it is conservatively estimated that the B.S. in Data Science program will have about 35 full-time equivalent students in its first year and expect to grow 20 percent annually in the next five subsequent years with an annual attrition rate of 20 percent in students' first year in college and 5 percent per year afterward. In the meantime, it is anticipated that the program will have five transfer students in the sophomore year from various programs at Marshall University. Based on the estimate in Table 3, the program will service approximately 215 full-time equivalent students by the fifth year. Among them, we anticipate that 50 percent of students (96.5 FTE) are from WV, 20 percent (38.6 FTE) from Metro, and 30 percent (57.9 FTE) from out of state. Table 10 (Form 1) summarizes the five-year projection of students in the program.

3 Faculty Instructional Requirements

Based on the estimated number of students as shown in Table 3 and Table 4 combined with the number of course sections to be offered to support students in the proposed program, a new faculty line will be required in the third year of the program. Additional faculty and adjuncts may be needed, should the program succeed in recruiting a larger number of students than anticipated. The College of Science will be responsible for faculty instructional resources other than those provided

	First Year (2023)	Second Year (2024)	Third Year (2025)	Fourth Year (2026)	Fifth Year (2027)
Freshmen	35	42	50	60	72
Sophomore		33	34	40	48
Junior			31	32	38
Senior				29	30
Fifth Year					27
Total	35	75	115	161	215

Table 3: Projected Student Number by Year

	Number of Students Served through Course Offerings of the Program:				
	First Year (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)
Headcount	35	75	115	161	215
FTE	35	75	115	161	215
Number of student credit hours generated by courses in the program (entire academic year):	1120	2466	3812	5064	6255

	Number of Majors				
	First Year (2023)	Year 2 (2024)	Year 3 (2025)	Year 4 (2026)	Year 5 (2027)
Headcount	35	75	115	161	215
FTE majors	35	75	115	161	215
Number of student credit hours generated by majors in the program (entire academic year):	1050	2250	3450	4830	6450
Number of degrees	0	0	0	29	30

Table 4: Five-Year Projections of Program Size

in the classrooms, and benefits upon implementation of the BSDS program. All faculty will be required to hold a professional degree appropriate for the subject material taught.

4 Library Resources and Instructional Materials

Marshall University libraries have most of the resources needed to support the proposed B.S. in Data Science degree program. Students in the BSDS program will have access to all Marshall University library resources that are normally offered to students. Additionally, the program will share resources available in the Computer Science and Mathematics departments. A few additional library collections will be added over time to adequately complement the library resources to support the Data Science program.

5 Support Service Requirements

A dedicated data science lab system administrator and two part-time graduate students (lab assistants) will be needed after the program acquires a critical mass (probably after three years from the starting of the program). Also, the program will require state-of-the-art computing facilities to cope with the computationally intensive nature of the program.

6 Facilities Requirements

Marshall University will be responsible for all facilities necessary to operate and maintain the BSDS program. The University Computing Services currently supports all computing needs of the users on Marshall campuses. The program will benefit from the computer labs in the College of Engineering and Computer Science. The college houses a Data Science lab, Computer Science Project lab, and Computer Graphics lab. These facilities are shared amongst the existing programs in the college and will support the addition of other programs in the division, including the proposed BSDS program. As the program shows continuous growth, there would be a need for additional data science specialized lab to be housed in the College of Science. The cost of the additional data science lab is estimated at $250,000, being the cost for powerful computers and associated components.

7 Operating Resource Requirements

Faculty, personnel, and facilities are the responsibility of the university and the College of Science. The BSDS program will share the operating resources with the other programs available in the College of Science. The dean of the College of Science will make the appropriate request to the university for office spaces for additional faculty that will be hired in the second year of the program.

	Yearly	First Year		Second Year		Third Year		Fourth Year		Fifth Year	
	T & F	FTE	Revenue	FTE	Revenue	FTE	Revenue	FTE	Revenue	FTE	Revenue
WV	$8,512	17.5	$148,960	37.5	$325,584	57.5	$499,229	80.5	$698,920	107.5	$933,341
Metro	$14,596	7	$102,172	15	$223,319	23	$342,422	32.2	$479,391	43	$640,181
OoS	$19,366	10.5	$203,343	22.5	$444,450	34.5	$681,490	48.3	$954,085	64.5	$1,274,089
Total		35	$454,475	75	$993,353	115	$1,523,141	161	$2,132,397	215	$2,847,611

Table 5: Revenue Generated by the Proposed Program in 5 Years

Table 5 (FORM 2) provides a summary of operating resource requirements for the proposed program. Please note the estimated revenue generated by the proposed program during its first five years, as shown in Table 6, item line C. We rendered these amounts using the number of students in the program summarized in Table 4. The proposed program anticipates that 50% of students (107.5 FTE) are from WV, 20% (43 FTE) from Metro, and 30% (64.5 FTE) from out of state, which will generate the revenue (university tuition and fees) of $2,847,611 (WV: $933,341; Metro: $640,181; Out of State (OoS): $1,274,089) in its fifth year as shown in Table 5.

The program and lab fees for the program will be sufficient to cover the additional operating budget needs and will ensure the program's financial viability and sustainability.

8 Source of Operating Resources

Faculty, personnel, and facilities are the responsibility of the university. The source of the program's operational funds will be derived from tuition and program lab fees that will be collected from students in the program.

References

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[11] https://www.idc.com/.

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	FY2024			FY2025			FY2026			FY2027			FY2028		
A. FTE POSITIONS	Fa 2023	Sp 2024	Su 2024	Fa 2024	Sp 2025	Su 2025	Fa 2025	Sp 2026	Su 2026	Fa 2026	Sp 2027	Su 2027	Fa 2027	Sp 2028	Su 2028
2024	35	35	35	42	42	42	50	50	50	60	60	60	72	72	72
2025				33	33	33	34	34	34	40	40	40	48	48	48
2026							31	31	31	32	32	32	38	38	38
2027										29	29	29	30	30	30
2028													27	27	27
Total Regular Enrolled (FTE)	35	35	35	75	75	75	115	115	115	161	161	161	215	215	215
Enrollment from WV	17.50	17.50	17.50	37.50	37.50	37.50	57.50	57.50	57.50	80.50	80.50	80.50	107.50	107.50	107.50
Enrollment from Metro	7.00	7.00	7.00	15.00	15.00	15.00	23.00	23.00	23.00	32.20	32.20	32.20	43.00	43.00	43.00
Enrollment from OoS	10.50	10.50	10.50	22.50	22.50	22.50	34.50	34.50	34.50	48.30	48.30	48.30	64.50	64.50	64.50
Tuition															
WV Tuition & Fees	$8,512														
Metro Tuition & Fees	$14,596														
OoS Tuition & Fees	$19,366														
Revenue						2%			2%			2%			2%
WV Tuition & Fees	$148,960	$148,960	$148,960	$325,584	$325,584	$325,584	$499,229	$499,229	$499,229	$698,920	$698,920	$698,920	$933,341	$933,341	$933,341
Metro Tuition & Fees	$102,172	$102,172	$102,172	$223,319	$223,319	$223,319	$342,422	$342,422	$342,422	$479,391	$479,391	$479,391	$640,181	$640,181	$640,181
OoS Tuition & Fees	$203,343	$203,343	$203,343	$444,450	$444,450	$444,450	$681,490	$681,490	$681,490	$954,085	$954,085	$954,085	$1,274,089	$1,274,089	$1,274,089
Total Revenue			$454,475			$993,353			$1,523,141			$2,132,397			$2,847,611
Operating Expenses															
FTE Positions															
Administration	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Full-time Faculty	0	0	0	1	1	1	2	2	2	3	3	3	4	4	4
Adjunct Faculty	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2
Graduate Assistants	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2
Other Personnel															
Clerical Workers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Professionals	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
B. Operating Costs															
Personnel Services															
Administrators	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750	$18,750
Full-time Faculty	$0	$0	$0	$107,240	$107,240	$107,240	$214,480	$214,480	$214,480	$321,720	$321,720	$321,720	$428,960	$428,960	$428,960
Adjunct Faculty	$0	$0	$0	$3,000	$3,000	$3,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000
Graduate Assistants Stipend	$0	$0	$0	$10,000	$10,000	$10,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Non-Academic Personnel															
Clerical	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Professional	$0	$0	$0	$0	$0	$0	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500	$62,500
Total Salaries	$18,750	$18,750	$18,750	$138,990	$138,990	$138,990	$321,730	$321,730	$321,730	$428,970	$428,970	$428,970	$536,210	$536,210	$536,210
Recurrent Expenses: Office Supplies, etc.	$10,000	$10,000	$10,000	$15,000	$15,000	$15,000	$20,000	$20,000	$20,000	$30,000	$30,000	$30,000	$40,000	$40,000	$40,000
Repairs & Alterations	$0	$0	$0	$0	$0	$0	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Advertising	$10,000	$10,000	$10,000	$7,500	$7,500	$7,500	$7,500	$7,500	$7,500	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Travel															
Faculty Travel	$6,000	$6,000	$6,000	$6,000	$6,000	$6,000	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000	$10,000	$10,000	$10,000
Student Travel	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$5,000	$5,000	$5,000
Equipment															
Educational Equipment	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Printed Educational Resources	$10,000	$10,000	$10,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Nonrecurring Lab Expenses	$0	$0	$0	$0	$0	$0	$250,000	$250,000	$250,000	$0	$0	$0	$0	$0	$0
Total Costs	$62,750	$62,750	$62,750	$180,490	$180,490	$180,490	$626,230	$626,230	$626,230	$490,970	$490,970	$490,970	$611,210	$611,210	$611,210
C. Sources			$454,475			$993,353			$1,523,141			$2,132,397			$2,847,611
D. Net Revenue															
General Fund Appropriations			$391,725			$812,863			$896,911			$1,641,427			$2,236,401

Table 6: Five-Year Projection of Total Operating Resources Requirements

HANOVER RESEARCH

ACADEMIC PROGRAM ASSESSMENT

Bachelor's in Data Science

Prepared for Marshall University

November 2022

In the following report, Hanover assesses demand for bachelor's degree programs in data science, specifically highlighting demand trends within the Marshall Region. This report includes an examination of student and labor market demand, and an analysis of potential competitor programs.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

RECOMMENDATIONS

Based on an analysis of degree completions, labor market demand, and market competitors, Hanover recommends that Marshall University:

PROCEED WITH ESTABLISHING BOTH ONLINE AND ON-CAMPUS OPTIONS FOR A BACHELOR'S DEGREE IN DATA SCIENCE

Student and labor demand indicators suggest strong potential demand for a new bachelor's degree program in data science in West Virginia. Degree conferrals rose rising across all geographic levels and West Virginia currently has no institutions reporting conferrals in the new field category. Labor projections are even more promising, positioning students to find meaningful employment upon completion and a bachelor's is the most common requirement, being requested by 87.0 percent of recent regional job listings. Benchmarked programs often have both online and on-campus options for programs, suggesting that providing both may be successful. The infrastructure in place for Marshall University's current master's degree program in data science will minimize the investment for a new program.

CONSIDER REFINING THE PROPOSED CURRICULUM TO INCLUDE A FOCUS ON ARTICIFICAL INTELLIGENCE

Marshall University's proposed curriculum has impressive interdisciplinary breadth but a focus on artificial intelligence, as is offered in the current master's degree, will benefit bachelor's graduates. For students wishing to enter the data science field, strong skills in artificial intelligence will be one of the most marketable skills moving forward as companies increasingly turn to artificial intelligence solutions to untangle the many terabytes of data generated in today's digital world.

MARKET MARSHALL UNIVERSITY'S COMPETITIVE TUITION RATES AND STRENGTHS EXTRAPOLATED FROM THE MASTER'S DEGREE PROGRAM

Marshall University's current undergraduate tuition is competitive against benchmarked institutions and should be a highlight of marketing efforts. Additionally, the existence of the established master's degree in data science gives prospective students a yardstick for evaluating a new bachelor's degree program which might not be possible if the program were the first being offered. The institution should review strengths of the existing master's offering, such as faculty quality, and consider highlighting them as part of its marketing for the bachelor's program.

NOTE: The "Marshall Region" or "Marshall Custom Region" used throughout this report includes the states of Kentucky, Maryland, Ohio, Pennsylvania, Virginia, and West Virginia.

EXECUTIVE SUMMARY

KEY FINDINGS

Both student and labor demand trends indicate that a data science degree would be viable. Both student and labor demand indicators are rising across all geographic levels at impressive rates. West Virginia institutions report no conferrals under the new data science-specific CIP code, suggesting a gap in the market, but awards in related fields have risen at an annualized rate of 5.0 percent. Marshall region and national growth rates are more than double that in the state. Projected labor market growth is similarly expansive at over 25.0 percent in all geographies, outperforming the average growth for all occupations by more than double.

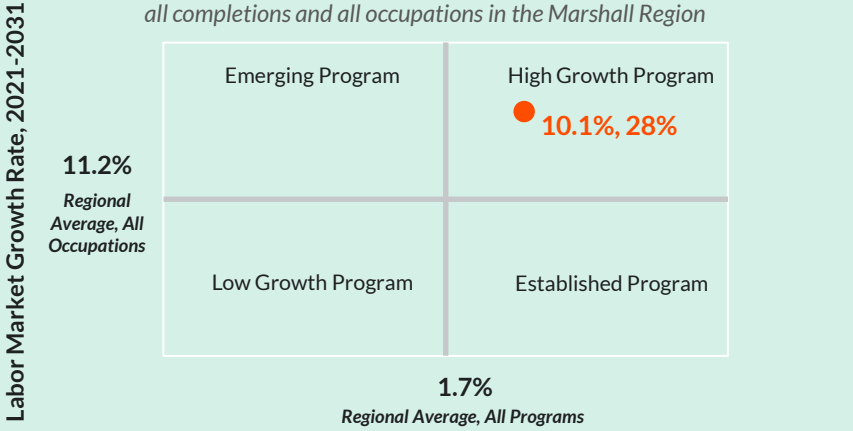
Marshall University's proposed curricular requirements align with those of benchmarked institutions. In their "Intent to Plan," Marshall University's breadth and scope of interdepartmental requirements to achieve a degree in data science are similar to those of several benchmarked institutions, particularly Indiana State University. This suggests that the requirements would suit prospective students.

Artificial intelligence is a crucial aspect of a data science education. The use of artificial intelligence has expanded to include fields as diverse as livestock management and radiology, and the needs of handling huge amounts of data require the capabilities of artificial intelligence to untangle the massive amounts of data generated in the digital world.

The median total in-state cost for competitor programs is $42,065 and the average is $83,621; most programs require 57 major-specific credits. Marshall University's current tuition rates are aligned with these levels and should be competitive. When seeking to complete nationally for online students, Marshall University should highlight these rates in marketing efforts. The 62 credits proposed in Marshall's "Intent to Plan" would not be misaligned with those of the benchmarked institutions.

MARSHALL CUSTOM REGION BENCHMARK ANALYSIS

Comparison of data science bachelor's degree completions and relevant labor market to all completions and all occupations in the Marshall Region



FAST FACTS

3

Three of 10 benchmarked institutions offer concentrations as part of their data science bachelor's degree programs. Three other institutions offer focus areas or tracks.

5

Five of 10 benchmarked institutions offer the bachelor's degree in data science online. Nine of 10 institutions offer the degree in-person. Only one institution offers the program solely online.

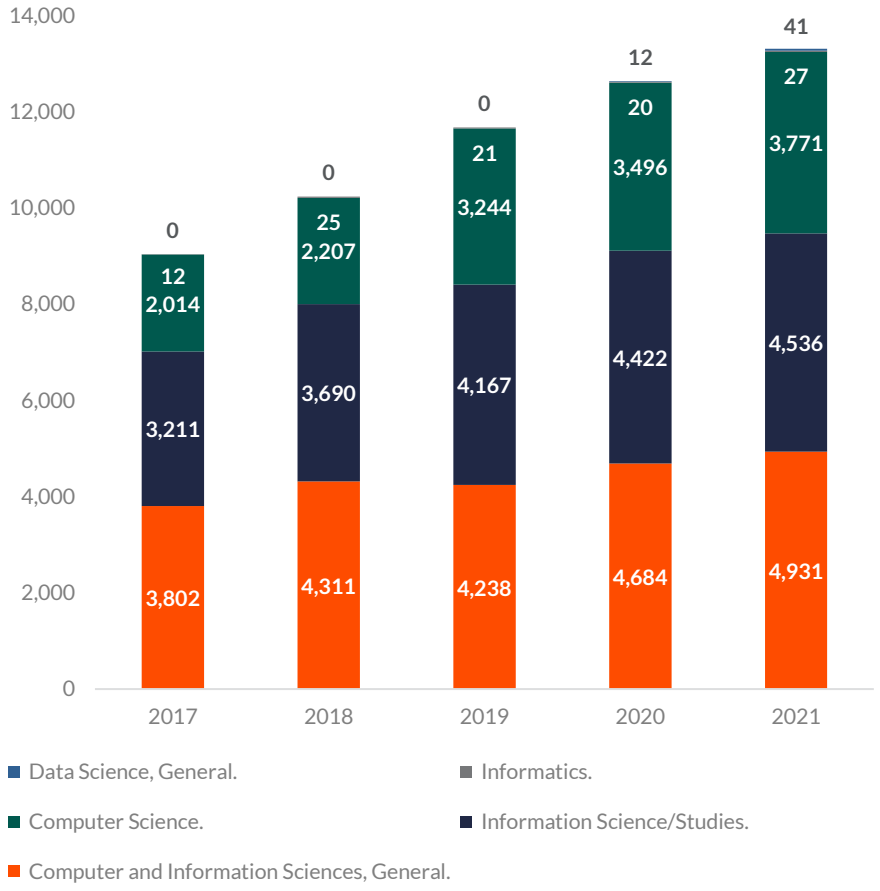
26.1%

Projected employment growth for Data Scientists in West Virginia.

STUDENT DEMAND ANALYSIS

MARSHALL CUSTOM REGION DEGREE COMPLETIONS

Regional distribution of degree completions from 2017 to 2021



Source: IPEDS

ANALYSIS

Student demand for data science-related bachelor's degrees is rising faster than average across all geographic levels. West Virginia degree conferrals in related fields grew at an annualized rate of 5.0 percent compared to 2.0 percent for all bachelor's degrees. Demand in Marshall's region rose at an annualized rate of 10.1 percent compared to 1.7 percent for all fields, while national demand grew by 10.5 percent compared to 1.3 percent for all fields.

West Virginia institutions reported no conferrals in *Data Science, General* suggesting a gap in the market. (West Virginia University has a major, but it does not report conferrals under this code.) Marshall is well-positioned to attract students because even students wishing to study online increasingly seek programs within 100 miles of their home. The small number programs in the state offers an opportunity for Marshall.

TOTAL DEGREE COMPLETIONS

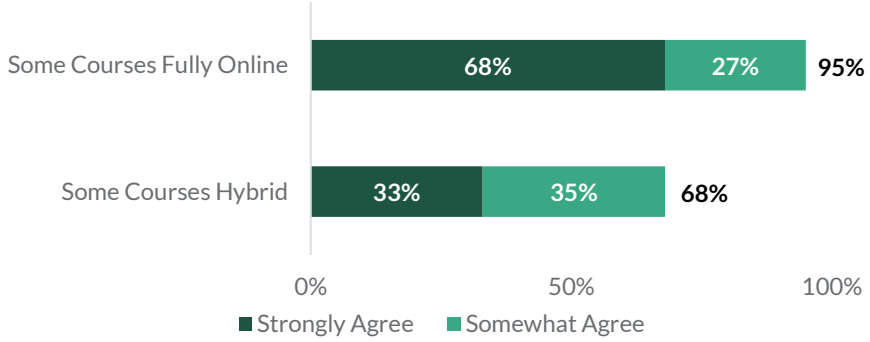
Aggregate degree completions by geographic level (2021)

	West Virginia	Marshall Region	National
Data Science, General	0	41	165
Computer and Information Sciences, General	76	4,931	25,963
Information Science/Studies	25	4,536	9,717
Computer Science	86	3,771	39,196
Informatics	0	27	1,407
Total Completions, Observed Fields	**187**	**13,306**	**76,448**
Growth Rate, Observed Fields	**5.0%**	**10.1%**	**10.6%**
Growth Rate, All Fields	**2.0%**	**1.7%**	**1.3%**

STUDENT DEMAND: ONLINE LEARNING

STUDENT INTEREST IN PURSUING ONLINE AND HYBRID LEARNING

Share of respondents to a 2021 survey reporting interest in online or hybrid courses.



Source: Inside Higher Ed

REASONS FOR CHOOSING ONLINE LEARNING:

- Flexible schedule
- Accessibility
- Cost-effective
- Personalized Learning paths
- Diverse learning environments
- Wide selection of courses
- Student-centered teaching
- Ability to revisit course materials
- Less intimidating than in-person learning
- Instructors more approachable online
- Expansion of technological skills

ANALYSIS

Student demand for online learning is rising. As the makeshift methods of online teaching in widespread use at the onset of the COVID-19 pandemic have given way to more sophisticated and inclusive models of online education, student demand has risen, especially among non-traditional students. A respondent to a Pulse survey attending the University of Nebraska-Lincoln stated that "offering all classes online that can be offered online" is a boon to "non-traditional students." Students cite flexibility, the greater variety of courses, and the cost-effectiveness of online learning as strong attractors. According to a 2021 survey of 1,413 students published by Bay View Analytics, 62.0 percent of students agreed that they would be interested in taking at least some of their courses in a hybrid format, and 95 percent of students reported they would like some of their courses in a fully-online format.

Data Science is well-positioned for online delivery. The data science curriculum is heavy in subjects that do not require extensive collaborative learning. While the guidance of students is essential, data science courses lend themselves to objective instruction more than discussion-heavy topics. Additionally, the interdisciplinary components of data science can be assisted by the asynchronous communication necessary for online learning by avoiding the necessity for different departments to collaborate at the same time.

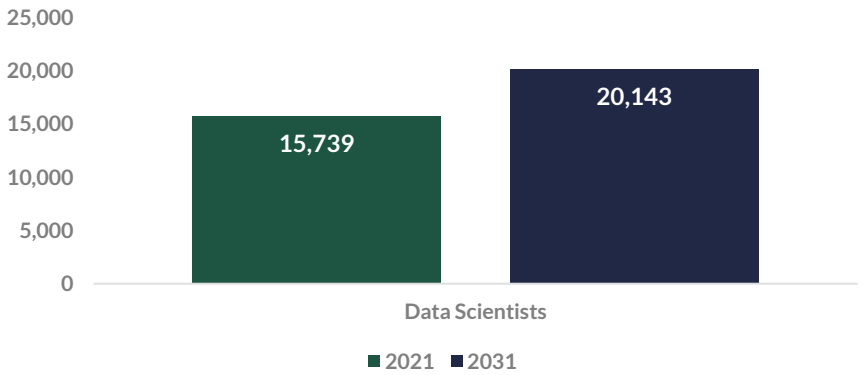
57 percent of student surveyed in 2021 reported being optimistic about the future of online learning.

75 percent of colleges and universities offer online degrees.

LABOR MARKET ANALYSIS

MARSHALL CUSTOM REGION CURRENT AND PROJECTED EMPLOYMENT

Regional data science-related positions as of 2021 and 2031 (projected)



TOTAL LABOR MARKET

Aggregate projected employment growth by geographic level

	West Virginia	Marshall Region	National
Estimated Employment (2021)	142	15,739	113,300
Projected Employment (2031)	179	20,143	153,900
Total Annual Openings, Observed Occupations	**15**	**1,673**	**13,500**
Employment Growth, Observed Occupations	**26.1%**	**28.0%**	**35.8%**
Employment Growth, All Occupations	**-4.4%**	**11.2%**	**5.3%**

Source: JobsEQ

ANALYSIS

Labor demand for data science-related careers is rising across all geographic levels. In the 2021-2031 period, West Virginia employment prospects for data science-related graduates are expected to rise by an impressive 26.1 percent, compared to a decline of -4.4 percent for all occupations. Similarly, demand in Marshall's region is projected to grow by 28.0 percent and national demand by 35.8 percent, dramatically outpacing growth for all occupations.

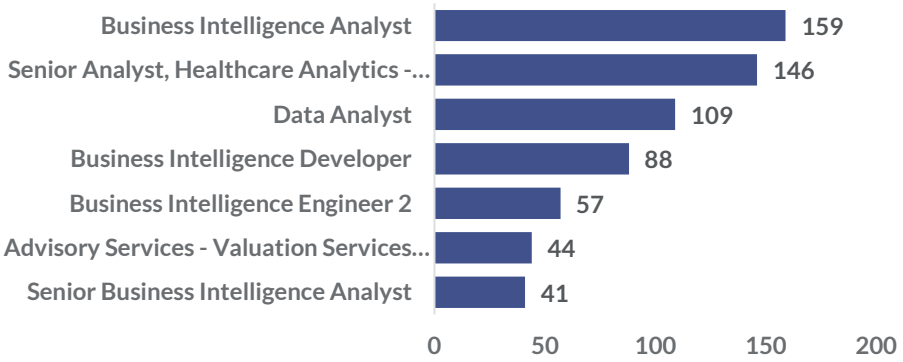
Managing "big data" is a key business skillset desired by employers and is expected to become even more crucial in the future. A Deloitte survey determined that 65.0 percent of businesses are currently using "various types of big data" to improve operations, and managing that data requires well-trained professionals. The market for big data is expected to reach 46.0 billion by the end of 2022, and employers find that jobs for experts in the field take five days longer to fill than other jobs, indicating a shortage of qualified potential employees. Businesses will increasingly need professionals who have "programming, analytics, and experimentation skills." These trends nearly guarantee that graduates of data science programs will have their choice of employment.

The labor market will require data science professionals proficient with artificial intelligence as data-handling requirements become more complex. Artificial intelligence is used in many fields from radiology to livestock management and supply chain logistics. The "tsunami of data" created by the computer age is unmanageable by human effort alone and will require people trained in autonomous system design to make sense of the sheer volume of data. As part of the fourth digital revolution, the management of artificial intelligence to handle big data will require skilled professionals to navigate this challenging landscape.

REAL-TIME JOB POSTINGS INTELLIGENCE

TOP DATA SCIENCE-RELATED JOB TITLES

Marshall Region data science-related positions by job title.



TOP CREDENTIALS AND SKILLS

Top Skills

- Structured Query Language (SQL)
- Tableau
- Python
- Data Analysis
- Coding
- Extract, Transform, Load (ETL)
- Statistical Analysis System (SAS)
- Oracle
- Business Intelligence

Top Certifications

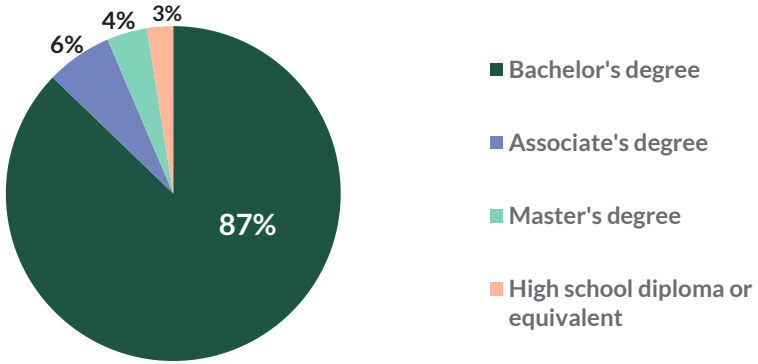
- Secret Clearance
- Certified Analytics Professional (CAP)
- Project Mgmt. Professional (PMP)
- Information Technology Infrastructure Library (ITIL)
- Certified ScrumMaster (CSM)
- Amazon Web Services (AWS)
- Risk and Information Systems Control (CRISC)

Note: For this analysis, Hanover retrieved job postings data for data science-related positions in the Marshall Region from JobsEQ, a proprietary database providing real-time job postings aggregated from thousands of websites. All data reflect the 180-day period as of November 2022.

ANALYSIS

Over the last six months employers in the Marshall region posted over 2,000 job openings for data science-related positions that require a bachelor's degree. A review of the top skills requested indicates that prospective employers seek employees with program-specific skills as well as general data analysis experience. The commonality of "secret clearance" among top certifications suggests numerous government or government contracting positions. The Washington, DC metro area is the location seeking the most employees, followed by Columbus, Ohio.

EDUCATIONAL REQUIREMENTS



Note: 912 listings did not specify educational attainment requirements.

TOP MARSHALL REGION EMPLOYERS

- Humana - 320
- General Dynamics - 52
- Eaton – 30
- Molina Healthcare-195
- Crowe – 45
- JP Morgan Chase & Co – 27
- Amazon - 55
- IQVIA - 34
- Verizon - 27

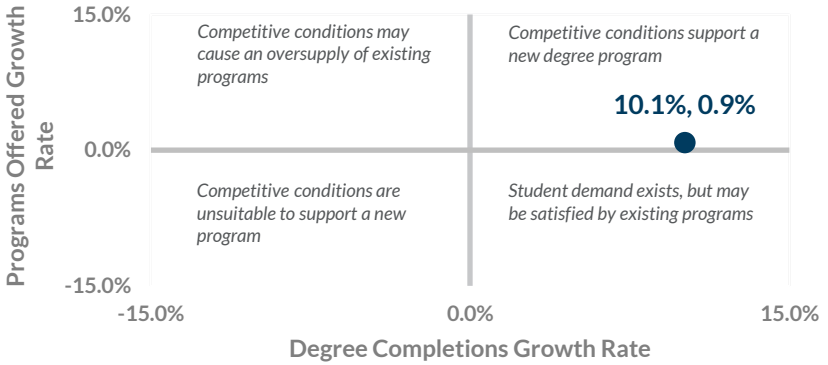
COMPETITOR ANALYSIS

ANALYSIS

The largest benchmarked data science-related bachelor's programs have all reported growth in degree conferrals. From 2017 to 2021, all five benchmarked institutions listed below increased conferrals, indicating strong national demand. Additionally, Marshall region conferral and program growth data indicates the market is likely to support a new bachelor's degree program in data science. In 2020, 38 programs reported conferrals nationally; in 2021 this expanded to 69 programs while degree conferrals continued to grow despite the new program offerings. Based on the size of Marshall University and the level of student demand, a goal of 35 students enrolled in the first year appears realistic.

REGIONAL MARKET SATURATION

Within the Marshall Region, do competitive conditions support an additional data science bachelor's degree program?



FIVE LARGEST BENCHMARKED PROGRAMS

Institution	2021 Degree Completions	Completions Growth Rate	Distance from Marshall University (miles)	State
University of Maryland Global Campus	2,260	15.0%	415	MD
Case Western Reserve University	144	9.5%	276	OH
Northern Kentucky University	96	5.7%	141	KY
Salisbury University	93	0.3%	519	MD
College of William and Mary	86	3.8%	416	VA
Total	**2,679**	**6.9%**	--	--

NOTE: "Data Science" is a new CIP designation which has only reported conferrals since 2020. Therefore, Hanover relied on the four related CIP designations included in the student demand analysis to measure demand growth.

PROGRAM TRENDS

CREDIT REQUIREMENTS

57

Benchmarked data science bachelor's degree programs require students to complete an average of 57 major credits to earn the degree. University of North Dakota requires the most at 100 credits, with College of William and Mary requires the least at 40 credits. Total required credits for the degree ranges from 120-128. Marshall University's proposed curriculum of 62 credits for the major and 120 credits for the degree aligns nicely with benchmarked programs.

CURRICULUM

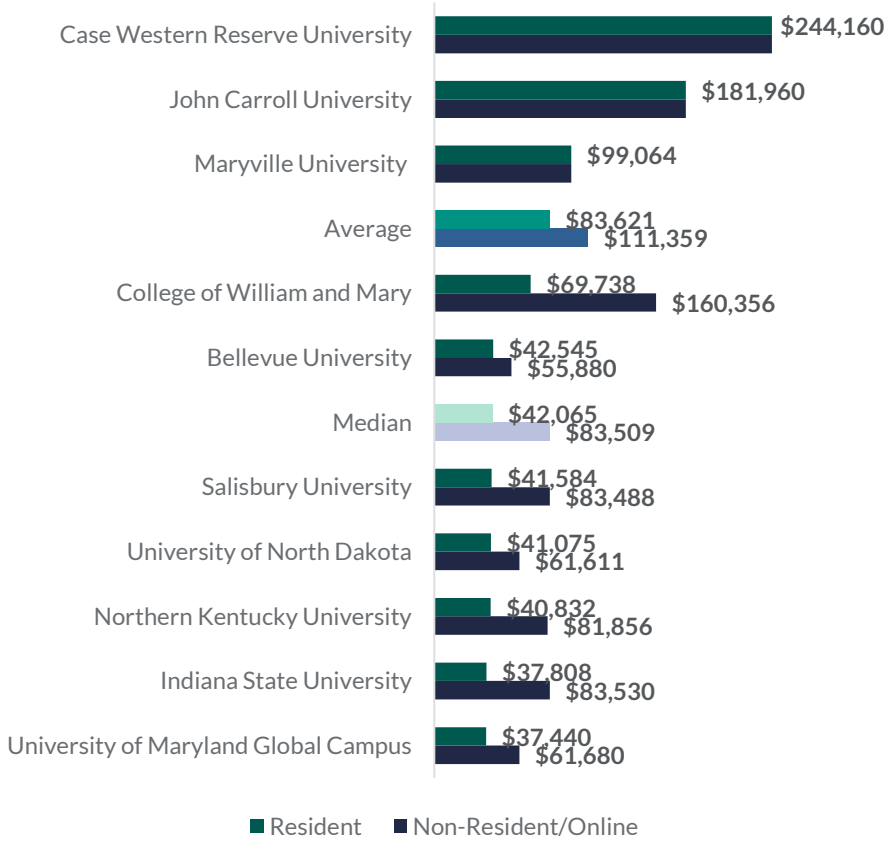
Benchmarked data science programs typically require students to complete a strict set of core major requirements plus additional interdisciplinary requirements ranging from an ideology series of courses at Bellevue University to courses in seven different subject areas at Northern Kentucky University. Outside of core credits, topics include mathematics, statistics, informatics, communications, and data literacy. Marshall University's proposed blend of data science, mathematics, computer science, statistics, and a capstone project are similar to Indiana State University's.

CONCENTRATIONS

Three benchmarked programs include concentrations, consisting of at least 12 credits in a specialty area. These include Data Science Design, Digital Humanities, and Astrostatistics. Three other institutions offer focus areas including Analytics: Artificial Intelligence, Algorithms, and Geographic Information Systems. The focus areas are included as part of the requirements for the degrees at these institutions.

TOTAL PROGRAM COST

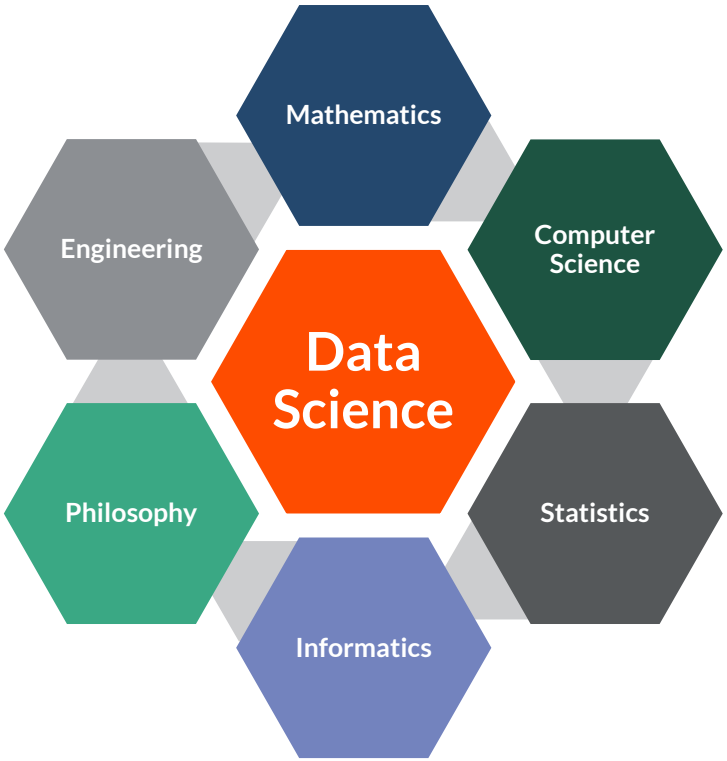
Total program cost for in-state students ranges from $37,440 at University of Maryland Global Campus to $244,160 at Case Western Reserve University. If Marshall University develops a data science bachelor's degree program, a total cost around or lower than the $42,065 median cost will be competitive on price. Out-of-state or online rates have a median of $83,509.



CURRICULUM

Benchmarked programs tend toward a fixed set of core required data science courses plus two or mores courses in other areas. All benchmarked programs include at least one set of interdisciplinary courses from other departments, most commonly mathematics and computer science. The structure is somewhat rigid with only two or three electives offered at each institution, if any.

CURRICULAR AREAS



SPECIALIZATION AREAS

Six benchmarked institutions offer either concentrations/specializations or focus areas as part of the curriculum. They tend to be institution-specific; “Data systems” is the only one offered at more than one institution. Others include:

- Biological and Health Data Science
- Analytics: Artificial Intelligence
- Algorithms
- Communications
- Geographic Information Systems
- Physics
- Analytics: Data Mining
- Engineering: Optimization
- Chemometrics

PROGRAM BENCHMARKING

Benchmarked programs are offered by institutions located in the nation. The Marshall region was prioritized, but the search was expanded nationwide to include online programs.

Institution	Program	Modality	Total Program Cost	Credits (minimum)	Curriculum	Concentrations
Bellevue University *Bellevue, NE*	Data Science, BS	Online In-person	$55,880 online $42,545 in-person*	▪ 45 credits ▪ (36 major plus 9 Kirkpatrick Signature Series credits) ▪ 127 total	Curriculum	
Case Western Reserve University *Cleveland, OH*	Data Science and Analytics, BS	In-person	$244,160**	• 62 credits • (41 major plus 9 foundational technical area, 6 application, and 6 elective credits) • 120 total	Curriculum	Foundational technical areas: • Systems • Statistics • Analytics: Artificial Intelligence • Analytics: Data Mining • Theory • Engineering: Signals • Engineering: Optimization
College of William and Mary *Williamsburg, VA*	Data Science, BS	In-person	$69,736 resident $160,356 non-resident***	• 40 credits • (22 major plus 9 mathematics and 9 track credits) • 120 total	Curriculum	Tracks: • Data Application • Algorithms • Spatial Data Analytics
Indiana State University *Terra Haute, IN*	Data Science, BS	Online In-person	$37,808 resident $49,152 reciprocal $83,520 non-resident****	▪ 68 credits ▪ (33 major plus 35 communications, computer science, mathematics, and statistics credits) ▪ 120 total	Curriculum	Concentrations (Specializations): • Biological and Health Data Science • Data Science Design • Data Systems • Foundational Data Science • Networks and Applied Data Analytics

* Total program cost calculated by multiplying $440 per credit by 127 total online credits and $335 per credit by 127 total in-person credits.
** Total program cost calculated by multiplying $61,040 per year by four years.
*** Total program cost calculated by multiplying $17,434 per year for residents and $40,089 for non-residents by four years.
**** Total program calculated by multiplying $9,452 per year for residents and $12,288 for reciprocal state residents and $20,880 for non-residents by four years.

Source: Institutional Websites (see embedded hyperlinks)

PROGRAM BENCHMARKING

Benchmarked programs are offered by institutions located in the nation. The Marshall region was prioritized, but the search was expanded nationwide to include online programs.

Institution	Program	Modality	Total Program Cost	Credits (minimum)	Curriculum	Concentrations
John Carroll University *University Heights, OH*	Data Science, BS	In-person	$181,960*	• 46 credits • (28 major plus 12 specialization and 6 elective credits) • 120 total	Curriculum	Concentrations (Specializations): • Communications • Digital Humanities • Entrepreneurship • Exercise Science • Health Disparities and Social Justice • Physics • Political Science • Psychology • Sociology and Criminology
Maryville University of Saint Louis *St. Louis, MO*	Data Science, BS	Online In-person	$99,064**	▪ 45 major credits (30 major plus 15 mathematics credits) ▪ 128 total	Curriculum	
Northern Kentucky University *Highland Heights, KY*	Data Science, BS	In-person	$40,832 resident $61,792 metro $81,856 non-resident***	• 75 major credits • (16 major plus 59 informatics, computer science, mathematics, statistics, philosophy, elective, and application area credits) • 120 total	Curriculum	Application areas: • Business Information Systems • Geographic Information Systems • Biological Sciences

* Total program cost calculated by multiplying $45,490 per year by four years.
** Total program cost calculated by multiplying $24,766 per year by four years.
*** Total program cost calculated by multiplying $5,104 per semester for residents, $7,724 for metro, and $10,232 for non-residents by eight semesters..

Source: Institutional Websites (see embedded hyperlinks)

PROGRAM BENCHMARKING

Benchmarked programs are offered by institutions located in the nation. The Marshall region was prioritized, but the search was expanded nationwide to include online programs.

Institution	Program	Modality	Total Program Tuition	Credits (minimum)	Curriculum	Concentrations
Salisbury University *Salisbury, MD*	Data Science, BS	In-person	$41,584 resident $83,488 non-resident*	• 48 credits (34 major plus 14-20 track credits) • 120 total	Curriculum	• Concentrations (Tracks): • Astrostatistics • Bioinformatics • Chemometrics • Computational Data Science • Geoanalytics • Mathematical Data Science
University of Maryland Global Campus *Adelphi, MD*	Data Science, BS	Online	$37,440 resident $61,680 non-resident**	▪ 43 (36 major plus 7 data literacy and calculus credits) ▪ 120 total	Curriculum	
University of North Dakota *Grand Forks, ND*	Data Science, BS	Online In-person	$41,075 resident $45,003 Minnesota resident $61,611 non-resident***	▪ 100 credits (71 major plus 29 mathematics credits) ▪ 124 total	Curriculum	

* Tuition includes fees. Total program cost calculated by multiplying $10,396 for residents and $20,872 for non-residents per year by four years.
** Total program cost calculated by multiplying $312 per credit by 120 total resident credits and $514 per credit by 120 total non-resident credits.
*** Total program cost calculated by multiplying $10,268.64 per year for residents, $11,500.80 for Minnesota residents, and $15,402.72 for non-residents by four years.

Source: Institutional Websites (see embedded hyperlinks)

HANOVER RESEARCH

CONTACT

Eve Proper, PhD
Content Director
E: eproper@hanoverresearch.com
P: 202-978-3019
hanoverresearch.com