



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

New Graduate Degree Program

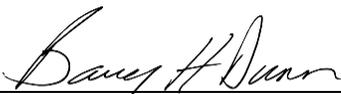
UNIVERSITY:	SDSU
PROPOSED GRADUATE PROGRAM:	Pharmaceutical Sciences (M.S.)
EXISTING OR NEW MAJOR(S):	Existing
DEGREE:	M.S.
EXISTING OR NEW DEGREE(S):	Existing
INTENDED DATE OF IMPLEMENTATION	2021-2022 Academic Year
PROPOSED CIP CODE:	51.2010
SPECIALIZATIONS:	NA
IS A SPECIALIZATION REQUIRED (Y/N):	NA
DATE OF INTENT TO PLAN APPROVAL:	5/21/20
UNIVERSITY DEPARTMENT:	Pharmaceutical Sciences
BANNER DEPARTMENT CODE:	SPRS
UNIVERSITY DIVISION:	Pharmacy & Allied Health Professions
BANNER DIVISION CODE:	3P

Please check this box to confirm that:

- The individual preparing this request has read [AAC Guideline 2:10](#), which pertains to new graduate degree program requests, and that this request meets the requirements outlined in the guidelines.
- This request will not be posted to the university website for review of the Academic Affairs Committee until it is approved by the Executive Director and Chief Academic Officer.

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.



 President of the University

12/9/2020

 Date

1. What is the nature/purpose of the proposed program? Please include a brief (1-2 sentence) description of the academic field in this program.

South Dakota State University (SDSU) requests authorization for the Master of Science in Pharmaceutical Sciences degree program complementing the existing Ph.D. program in Pharmaceutical Sciences. The pharmaceutical sciences encompass multiple disciplines to discover, test, and manufacture new drugs and therapies, as well as evaluate their strength, effectiveness and safety. The pharmaceutical sciences include biomedical sciences, medicinal chemistry, pharmacology, and pharmaceuticals. This interdisciplinary field of study prepares students for further education and/or careers in the pharmaceutical industry and regulatory agencies. This program will provide students with knowledge across all areas of the pharmaceutical sciences as well as research and technical expertise for future careers.

While the higher education landscape in the United States includes graduate programs with similar goals, the proposed program is unique to the SDBOR system and the region.¹ This program will strengthen the graduate program offerings at SDSU and expands career opportunities for students with background in pharmaceutical, biological and chemical sciences. In addition, the M.S. program will also serve as a good foundation for students interested in pursuing Ph.D. program in pharmaceutical and biomedical sciences.

The University does not request new state resources. It is anticipated that most students enrolled in the program will be new to the University. The base curriculum offered as part of SDSU's current Ph.D. program in Pharmaceutical Sciences will be utilized for the M.S. program. There is extra capacity in the graduate courses to add new students from the M.S. program.

2. How does the proposed program relate to the university's mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020?

The M.S. in Pharmaceutical Sciences is within the statutory mission of SDSU as provided in SDCL 13-58- 1: *Designated as South Dakota's land grant university, South Dakota State University, formerly the state college of agriculture and mechanical arts, shall be under the control of the Board of Regents and shall provide undergraduate and graduate programs of instruction in the liberal arts and sciences and professional education in agriculture, education, engineering, home economics, nursing and pharmacy, and other courses or programs as the Board of Regents may determine.*

Board Policy 1:10:2 South Dakota State University Mission Statement provides: *The legislature established South Dakota State University as the Comprehensive Land Grant University to meet the needs of the State and region by providing undergraduate and graduate programs of instruction in the liberal arts and sciences and professional education in agriculture, education, engineering, human sciences, nursing, pharmacy, and other courses or programs as the Board of Regents may determine (SDCL 13-58-1).*

As the state's land-grant institution, SDSU provides opportunities for all students of the state and region to prepare themselves for successful careers in health sciences. The Department of Pharmaceutical Sciences has a long history of preparing students for careers as scientists, professionals and future leaders in healthcare and this program continues to build upon that previous success. This program is designed to help prepare and make competitive residents of the state, region, nation and the world to find success in professional and scientific careers in health sciences.

The proposed program provides trained individuals who can contribute to the nation's and South Dakota industries through advanced technical innovation in the areas proposed.

The SDSU M.S. in Pharmaceutical Sciences supports the Board of Regents' Strategic Plan² the following ways:

Goal 1: Student Success (*this program will*)

- Grow the number of graduate degrees awarded.
- Attract more resident and non-resident students and encourage them to remain in South Dakota because of industry collaborations and technology transfer.

¹ <https://www.pharmgrad.org/program-directory/graduate-directory>

² https://www.sdbor.edu/the-board/agendaitems/Documents/2014/October/16_BOR1014.pdf

Goal 2: Academic Quality and Performance (*this program will*)

- Grow the number of new graduate programs.
- Increase the student cohort and thereby enhance graduate programs.

Goal 3: Research and Economic Development (*this program will*)

- Offer an additional graduate degree oriented to STEM students.
- Meet existing and future workforce needs in the target industries (human health) identified in the 2020 Science & Technology plan.³
- Encourage private/public partnerships, including in the target industries (human health).
- Further enhance SDSU commercialization efforts through research innovation and productivity critical for starting new business ventures.

The M.S. in Pharmaceutical Sciences also supports South Dakota State University's strategic plan⁴ IMAGIME 20203, specifically:

Goal 1 – Academic Excellence through transformative education

- Develop and grow high-quality and distinct academic programs designed to meet the needs of diverse students and market demands.

Goal 3 – Foster innovation and increase research, scholarship and creative activity (RSCA)

- Differentiate SDSU RSCA to build and maintain preferred status among sponsors and partners.

3. Describe the workforce demand for graduates of the program, including national demand and demand within South Dakota.

Employment projections for medical scientists (including pharmaceutical scientists) continue to grow according to the data from Bureau of Labor Statistics. The recent Bureau of Labor Statistics projects 6% employment growth for medical scientists from 2019-2029, which is higher than the average growth rate.⁵ Regionally, the employment growth for medical scientists from 2016-2026 has been projected to be 12.7%.⁶ The state workforce report projects 13% growth in employment for scientific services from 2018-28.⁷ Human health and Nutrition is identified as target sector in the South Dakota's Science and Technology Plan. According to the data presented in this plan, the human health and nutrition sector experienced 12.7% employment growth from 2006-2011, which was double the growth seen nationally during the same period.⁴ Furthermore, the 2018 Biosciences Industry report indicates drugs and pharmaceuticals as a rapid-growth area nationally (13.7%), and South Dakota's growth is outpacing the national average in new industry and average annual wage growth in this sector (50% and 167.8%, respectively).⁸ Given these employment trends, there is a demand for pharmaceutical scientists nationally and regionally. Especially, the master's program will support the workforce needs of the growing biotech sector in the region.

4. How will the proposed program benefit students?

³<https://www.sdstate.edu/imagine-2023-aspire-discover-achieve>

⁴<https://sdepacor.org/sdepacorHome/wp-content/uploads/2015/07/2020-Vision.pdf>

⁵Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, Medical Scientists, on the Internet at <https://www.bls.gov/ooh/life-physical-and-social-science/medical-scientists.htm> (visited September 01, 2020).

⁶<https://www.sdbor.edu/dashboards/Pages/Employment-Projections-Dashboard.aspx>

⁷https://dlr.sd.gov/lmic/publications/labor_market_reports/workforce_report_2019.pdf

⁸<https://www.sdbio.org/pdf/doc-teconomyreport2018-1557262852.pdf>

The M.S. program is designed to prepare graduates to obtain employment in pharmaceutical and biotechnology industry, research institutions, and regulatory agencies. The program will provide M.S. level training to those students interested in pharmaceutical sciences, but unable or unwilling to pursue the Ph.D. The degree will allow most students who do not complete the doctoral program to earn a graduate level credential. For those completing the Ph.D., the additional M.S. degree is an added benefit. Since the curriculum overlaps with the Ph.D. curriculum, the proposed program would be stackable with the Ph.D. in Pharmaceutical Sciences that is currently offered by the department. While Option A is designed for traditional students interested in pursuing a research project, Option B and C will provide expanded opportunities for working professionals in pharmaceutical/biotech industry and regulatory agencies who are interested in career advancement. The Option B and C will also expand dual degree program offerings for professional pharmacy (PharmD) students and graduate students in other majors (biological and chemical sciences) interested in pursuing careers in pharmaceutical and biotech industry.

5. Program Proposal Rationale:

A. If a new degree is proposed, what is the rationale⁹

A new degree is not being proposed.

B. What is the rationale for the curriculum?

The curriculum is designed to provide broad knowledge and research experience in the pharmaceutical and biomedical sciences. The core pharmaceutical science disciplines of pharmacology, pharmaceutics, medicinal chemistry, and biomedical sciences and pharmacogenomics are required courses. Statistics is required for data analysis and interpretation, and scientific communication instruction is provided through a required seminar course. Students selecting the thesis option will be provided hands-on experience through a research techniques course and a thesis project. Students in Option B will complete a written paper describing a research problem in the pharmaceutical sciences. Elective courses in Options B and C allow students to further explore topics in the pharmaceutical sciences and related disciplines. The curriculum is consistent with other pharmaceutical sciences master's programs and with national core competencies for graduate education in the pharmaceutical sciences.

C. Demonstrate/provide evidence that the curriculum is consistent with current national standards. Complete the tables below and explain any unusual aspects of the proposed curriculum?

The American Association of Colleges of Pharmacy Research and Graduate Affairs Committee published a report in 2017 outlining core competencies that should be included in graduate education in the pharmaceutical sciences.¹⁰ The core competencies include six educational domains: Foundational Knowledge; Research; Scientific Communication; Education; Leadership and Management; and Personal and Professional Development. Through the formal curriculum and co-curricular experiences, graduates of the M.S. in

⁹ "New Degree" means new to the university. Thus if a campus has degree granting authority for a Ph.D. program and the request is for a new Ph.D. program, a new degree is not proposed.

¹⁰ Poloyac SM et al. Competency, Programming, and Emerging Innovation in Graduate Education within Schools of Pharmacy: The Report of the 2016-2017 Research and Graduate Affairs Committee. Am J Pharm Educ. 2017, 81, S11

Pharmaceutical Sciences program will receive training in these graduate education domains. Therefore, the program is consistent with current national standards in pharmaceutical sciences graduate education.

D. Summary of the degree program (complete the following tables):

Option A: Thesis

M.S. Program in Pharmaceutical Sciences	Credit Hours	Percent
Required courses, all students	30	100%
Electives	0	0%
Total Required for the Degree Total	30	

Required Courses

Prefix	Number	Course Title	Credit Hours	New (yes, no)
PHA	720	Introduction to Advanced Concepts in Pharmaceutical Sciences	3	No
PHA	721	Advanced Concepts in Medicinal Chemistry	3	No
PHA	725	Advanced Concepts in Biomedical Sciences and Pharmacogenomics	3	No
PHA	740	Advanced Concepts in Pharmacology	3	No
PHA	760	Advanced Concepts in Pharmaceutics	3	No
PHA	765	Techniques in Pharmaceutical Sciences	3	No
PHA	790	Seminar	1	No
PHA	798	Thesis	8	Yes
STAT	541	Statistical Methods	3	No
Subtotal			30	

Option B: Project

M.S. Program in Pharmaceutical Sciences	Credit Hours	Percent
Required courses, all students	26	81%
Electives	6	19%
Total Required for the Degree Total	32	

Required Courses

Prefix	Number	Course Title	Credit Hours	New (yes, no)
PHA	720	Introduction to Advanced Concepts in Pharmaceutical Sciences	3	No
PHA	721	Advanced Concepts in Medicinal Chemistry	3	No
PHA	725	Advanced Concepts in Biomedical Sciences and Pharmacogenomics	3	No
PHA	740	Advanced Concepts in Pharmacology	3	No
PHA	760	Advanced Concepts in Pharmaceutics	3	No
PHA	765	Techniques in Pharmaceutical Sciences	3	No
PHA	788	Master's Research Problems/Projects	4	Yes
PHA	790	Seminar	1	No

Prefix	Number	Course Title	Credit Hours	New (yes, no)
STAT	541	Statistical Methods	3	No
Subtotal			26	

Elective Courses: List courses available as electives in the program. Indicate any proposed new courses added specifically for the program.

Electives (6 credits) can be taken from graduate level PHA-prefix courses and from related disciplines (CHEM, BIOL, etc).

Prefix	Number	Course Title	Credit Hours	New (yes, no)
BIOL	570	Cancer Biology	3	No
BIOL	645L	Microimaging Techniques Laboratory	1-3	No
BIOS	662	Advanced Molecular Biology	3	No
CHEM	701	Advanced Organic Chemistry I	3	No
CHEM	706	Advanced Analytical Chemistry	3	No
CHEM	724-724L	Structural Determination of Organic Compounds & Lab	3, 0	No
PHA	738	Health Informatics	1	No
PHA	743	Pharmacogenomics	1	No
PHA	752	Drugs of Abuse and Addiction	2	No
PHA	792	Topics	1-3	No
PUBH	767	Public Health Toxicology	3	No
		Other courses as approved by advisor and/or committee		

Option C: Coursework Only

M.S. Program in Pharmaceutical Sciences	Credit Hours	Percent
Required courses, all students	24	69%
Electives	11	31%
Total Required for the Degree Total	35	

Required Courses

Prefix	Number	Course Title	Credit Hours	New (yes, no)
PHA	720	Introduction to Advanced Concepts in Pharmaceutical Sciences	3	No
PHA	721	Advanced Concepts in Medicinal Chemistry	3	No
PHA	725	Advanced Concepts in Biomedical Sciences and Pharmacogenomics	3	No
PHA	740	Advanced Concepts in Pharmacology	3	No
PHA	760	Advanced Concepts in Pharmaceutics	3	No
PHA	765	Techniques in Pharmaceutical Sciences	3	No
PHA	769	Pharmaceutical Sciences Capstone	2	Yes
PHA	790	Seminar	1	No
STAT	541	Statistical Methods	3	No
Subtotal			24	

Elective Courses: List courses available as electives in the program. Indicate any proposed new courses added specifically for the program.

Electives (11 credits) can be taken from graduate level PHA-prefix courses and from related disciplines (CHEM, BIOL, etc).

Prefix	Number	Course Title	Credit Hours	New (yes, no)
BIOL	570	Cancer Biology	3	No
BIOL	645L	Microimaging Techniques Laboratory	1-3	No
BIOS	662	Advanced Molecular Biology	3	No
CHEM	701	Advanced Organic Chemistry I	3	No
CHEM	706	Advanced Analytical Chemistry	3	No
CHEM	724-724L	Structural Determination of Organic Compounds & Lab	3, 0	No
PHA	738	Health Informatics	1	No
PHA	743	Pharmacogenomics	1	No
PHA	752	Drugs of Abuse and Addiction	2	No
PHA	792	Topics	1-3	No
PUBH	767	Public Health Toxicology	3	No
		Other courses as approved by advisor and/or committee		

6. Student Outcomes and Demonstration of Individual Achievement

A. What specific knowledge and competencies, including technology competencies, will all students demonstrate before graduation?

Individual Student Outcome	Program Courses that Address the Outcomes								
	PHA 720	PHA 721	PHA 740	PHA 760	PHA 725	PHA 765	PHA 790	PHA 769/788 /798	STAT 541
1. Demonstrate knowledge of key fundamental concepts in the pharmaceutical and biomedical sciences.	X	X	X	X	X			X	
2. Apply pharmaceutical and biomedical science knowledge and research techniques to drug discovery and development.						X		X	
3. Retrieve and critically evaluate the scientific literature.	X						X	X	X
4. Utilize effective written and oral communication skills.							X	X	
5. Demonstrate professionalism and ethical conduct.	X							X	

B. Are national instruments (i.e., examinations) available to measure individual student achievement in this field? If so, list them.

No, there are no national instruments in the pharmaceutical sciences to measure student achievement.

C. How will individual students demonstrate mastery? Describe the specific examinations and/or processes used, including any external measures (including

national exams, externally evaluated portfolios, or student activities, etc.). What are the consequences for students who do not demonstrate mastery?

- Annual evaluations - Graduate students are evaluated annually for their performance in course work, research, and professionalism by the graduate advisory committee or the faculty advisor. Students will submit a written report on coursework and/or project progress to their faculty advisor at the end of the academic year. This is followed by a meeting with the graduate advisory committee or faculty advisor to discuss progress in the program. Appropriate remediation steps, if needed, should be described in the annual evaluation form. Lack of satisfactory progress may lead to termination from the program. Professionalism is evaluated as part of the annual evaluation.
- Ethical behavior – Students will complete the CITI training modules in animal care and use and human subjects in research.
- Journal club - Students taking the seminar course will present an evaluation of an original research article. The presentation is evaluated on presentation skills and literature evaluation skills by at least three pharmaceutical sciences faculty members using a rubric. Students who do not successfully complete the requirements are required to repeat the journal club.
- Thesis – Option A students will prepare a thesis based on their research project in accordance with SDSU graduate school policy. The thesis will be evaluated by the graduate advisory committee using a rubric. The results will also be shared in a public presentation.
- Research paper – Option B students will present a written report on a research problem in the pharmaceutical sciences. The research report will be reviewed by the advisor and at least one other faculty member using a rubric.
- Capstone project - Option C students will complete a capstone project demonstrating integration and application of program content. The research report will be reviewed by the faculty advisor and at least one other faculty member using a rubric.
- Final examination - A final oral examination will be used to evaluate pharmaceutical and biomedical science knowledge and application to the thesis for Option A students. The final oral examination will be conducted by the graduate advisory committee. Option B and C students will complete a final written examination. The written examination will be administered in the capstone course or the research problems course and will include questions from all required courses.

7. What instructional approaches and technologies will instructors use to teach courses in the program? *This refers to the instructional technologies and approaches used to teach courses and NOT the technology applications and approaches expected of students.*

The instructional approach for the program will vary from lecture based instruction to hybrid courses, to fully online delivery using D2L. Group discussions (in-person and online), student presentations, review paper, hands-on laboratory techniques, review and research articles would complement the instructional approaches. Faculty will utilize a variety of approaches to deliver course content including lecture, student presentations and papers, and small and large group discussion. In addition, students in Option A will receive hands-on instruction in laboratory techniques through the pharmaceutical sciences techniques course and the thesis experience. Courses in the online format will be taught live synchronous

(seminar course) and asynchronously using recorded lectures, videos, readings, and discussion.

8. Did the University engage any developmental consultants to assist with the development of the curriculum? Did the University consult any professional or accrediting associations during the development of the curriculum? What were the contributions of the consultants and associations to the development of curriculum? *(Developmental consultants are experts in the discipline hired by the university to assist with the development of a new program, including content, courses, and experiences, etc. Universities are encouraged to discuss the selection of developmental consultants with Board staff.)*

The curriculum is based on the existing Ph.D. program and was developed by the current faculty. The core curriculum was reviewed by a consultant in 2007 at the time of the doctoral program approval. The curriculum was modified in 2017 with inputs from the current faculty and Ph.D. students. Two new courses were developed and added to the curriculum. During this process, the Department also updated the student learning outcomes and assessment plan. Furthermore, a comprehensive self-study was completed very recently (2018-19) as part of the institutional review of the Ph.D. program in pharmaceutical Sciences. The curriculum was deemed appropriate and contemporary by two external reviewers (report attached in Appendix B). These elements are well represented by the current faculty and the curriculum. The base curriculum from the Pharmaceutical Sciences Ph.D. program is shared with the M.S. program with additional required courses and electives.

9. Are students enrolling in the program expected to be new to the university or redirected from other existing programs at the university? Complete the table below and explain the methodology used in developing the estimates?

It is anticipated that most students enrolled in the program will be new to the University. Although students enrolled in the Pharm.D. program or other majors will have the option of pursuing the M.S. dual degree option, the cohort will be primarily students new to the University. Estimates are based on the general student enrollment trends in similar programs, class capacity, faculty FTE, and research infrastructure.

Estimates	Fiscal Years*			
	1 st	2 nd	3 rd	4 th
	FY 22	FY 23	FY 24	FY 25
Students new to the university	5	7	7	7
Students from other university programs	0	0	0	0
Continuing students	0	5	7	7
=Total students in the program (fall)	5	12	14	14
Program credit hours (major courses)**	75	180	210	210
Graduates	0	5	7	7

*Do not include current fiscal year.

**This is the total number of credit hours generated by students in the program in the required or elective program courses. With a 30 credit degree minimum (option A), we assume 15 credits per year per student. The same numbers in are used in Appendix A – Budget.

10. Is program accreditation available? If so, identify the accrediting organization and explain whether accreditation is required or optional, the resources required, and the University’s plans concerning the accreditation of this program.

No

11. Does the University request any exceptions to any Board policy for this program? Explain any requests for exceptions to Board Policy. If not requesting any exceptions, enter “None.”

The requirement for an outside reviewer was waived for this request. An institutional program review (spring 2019) for the Pharmaceutical Sciences Ph.D. program with the same base curriculum was recently completed by two external reviewers.

12. Delivery Location

Note: The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.

A. Complete the following charts to indicate if the university seeks authorization to deliver the entire program on campus, at any off campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or deliver the entire program through distance technology (e.g., as an online program)?

	Yes/No	Intended Start Date
On campus	Yes	2021-2022 Academic Year

	Yes/No	If Yes, list location(s)	Intended Start Date
Off campus	No		

	Yes/No	If Yes, identify delivery methods <i>Delivery methods are defined in AAC Guideline 5.5.</i>	Intended Start Date
Distance Delivery (online/other distance delivery methods)	Yes	015 - Internet Asynchronous– Term Based Instruction 018 - Internet Synchronous	2022-2023 Academic Year
Does another BOR institution already have authorization to offer the program online?	No	If yes, identify institutions:	

The conversion to hybrid/online delivery will be phased in over a period of three years of program inception.

B. Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the program through distance learning (e.g., as an online program)? This question responds to HLC definitions for distance delivery.

	Yes/No	If Yes, identify delivery methods	Intended Start Date
Distance Delivery (online/other distance delivery methods)	Yes	015 – Internet Asynchronous– Term Based Instruction, 018 - Internet Synchronous	2022-2023 Academic Year

SDSU will start the program in fall 2021 with the traditional on-campus offerings and intend to have sufficient course offerings online within three years of program inception.

13. Cost, Budget, and Resources: Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other operations and maintenance, facilities, etc., needed to implement the proposed major. Address off-campus or distance delivery separately. Complete Appendix A – Budget and briefly summarize to support Board staff analysis.

The program is not requesting new resources but will reallocate existing resources and use the program revenue. The program is expected to bring new students to SDSU. The University does not anticipate any significant faculty FTE salary expenses and the program will be using existing courses in the Ph.D. curriculum in pharmaceutical sciences. Faculty workload will be adjusted to meet the program needs. Given that the M.S. program shares the base curriculum from the current Ph.D. program, the Department will achieve efficiency in administering the program. Two new courses in the existing x9x series and a new capstone course will be added to the program. To ensure that the students complete the M.S. program within two years, one to two courses will be offered during the summer. The faculty will supervise the thesis work of the students during all semesters as needed. Prorated salary is included in the budget to cover the faculty’s efforts during the academic year and summer term.

The program administration will be supported by the current graduate program coordinator (0.25 FTE). The graduate program coordinator will serve as the main point of contact for program management. Based on the percent effort (60%) in the M.S. program, the academic year stipend and summer salary for the coordinator is pro-rated for program administration.

The budget includes materials and supplies for student thesis work, laboratory courses, recruitment/marketing materials and travel expenses for recruitment. The existing program fee will be used for on-campus courses and online/hybrid courses. The specific intent is to leverage existing courses and transition these courses to a hybrid and online delivery model over a three year timeframe. The students in the online courses will have access to all the resources (library resources and access to faculty for individual and group meetings etc.) available to on-campus campus. The existing discipline fee will be used to cover these expenses including online faculty support for students. With the current discipline fee, the program will be able to meet the academic and instructional needs while remaining at a price point for students that is competitive in the regional market.

No new facilities will be needed, but we will invest in faculty development for online course delivery using campus Instructional Design Services for this specific purpose. As the budget attachment shows, existing funds and revenue generated by enrollments will be used to fund the program.

14. Board Policy 2:1 states: “Independent external consultants retained by the Board shall evaluate proposals for new graduate programs unless waived by the Executive Director.”

Identify five potential consultants (including contact information and short 1-2 page CVs) and provide to the System Chief Academic Officer (the list of potential consultants may be provided as an appendix). In addition, provide names and contact information (phone numbers, e-mail addresses, URLs, etc.) for accrediting bodies and/or journal editors who may be able to assist the Board staff with the identification of consultants.

The requirement for an outside reviewer was waived for this request. The Department completed an institutional program review spring 2019 for the Pharmaceutical Sciences Ph.D. program with the same base curriculum was recently completed by two external reviewers. The curriculum was deemed appropriate and contemporary by two external reviewers. The reviewers recommended to offer an M.S. program in addition to the Ph.D. program. The reviewer's report and the response to the review are added as appendices to this document (Appendix B). As the shared curriculum for the Ph.D. program was already examined by consultants, the addition of an M.S. degree is not considered necessary to be reviewed again by a consultant. The base curriculum is shared with the Pharmaceutical Sciences Ph.D., with additional required courses and electives which complement the already successful Pharmaceutical Sciences Ph.D. program, with forty graduates placed in industry, academia, research institutes and regulatory agencies to date.

15. Is the university requesting or intending to request permission for a new fee or to attach an existing fee to the program? If yes, explain.

Yes No

Explanation (if applicable):

The on-campus courses for the M.S. in Pharmaceutical Sciences program will be supported through the discipline fee that is currently applied to graduate courses in pharmaceutical sciences. The students in the online courses will have access to all the resources (library resources and access to faculty for individual and group meetings etc.) available to on-campus classes. The existing discipline fee will be charged to online courses to cover these expenses including online faculty support for students.

16. New Course Approval: New courses required to implement the new graduate program may receive approval in conjunction with program approval or receive approval separately. Please check the appropriate statement:

YES, the university is seeking approval of new courses related to the proposed program in conjunction with program approval. All New Course Request forms are included as Appendix C and match those described in section 5D.

NO, the university is not seeking approval of all new courses related to the proposed program in conjunction with program approval; the institution will submit new course approval requests separately or at a later date in accordance with Academic Affairs Guidelines.

17. Additional Information:

Additional Admission Requirements

GRE: Not Required

TOEFL: Minimum score of 550 paper-based, 79 Internet-based

IELTS: 6.0 or higher

1. **Letters of Recommendation** Two personal reference letters from people acquainted with the academic ability and professional competence of the applicant are required.
2. **TOEFL/GRE Scores** Test of English as a Foreign Language (TOEFL) scores are required for international students from non-English speaking countries. A minimum score of 550 paper-based, 79 Internet-based or above is required. The International English Language Testing System (IELTS) band score is also acceptable (6.0 or higher). No minimum score is set for GRE test. The Institutional Code for SDSU is 6653.
3. **A Statement of Personal Goals and Philosophy** The statement should be brief and no more than one page.

Appendix A- Budget

Appendix-B- Ph.D. program IPR external review and responses.

Appendix C- New course request

Appendix A
Budget

South Dakota State University, M.S. in Pharmaceutical Sciences

1. Assumptions

		1st FY 22	2nd FY23	3rd FY24	4th FY25
<i>Headcount & hours from proposal</i>					
Fall headcount (see table in proposal)		5	12	14	14
Program FY cr hrs, On-Campus		75	89	98	98
Program FY cr hrs, online courses			91	112	112
Faculty, Regular FTE	See p. 3	0.07	0.15	0.18	0.18
Faculty Salary & Benefits, average	See p. 3	\$123,672	\$123,672	\$123,672	\$123,672
Faculty, Adjunct - number of courses	See p. 3	0	0	0	0
Faculty, Adjunct - per course	See p. 3		\$0	\$0	\$0
Other FTE (see next page)	See p. 3	0.33	0.53	0.58	0.58
Other Salary & Benefits, average	See p. 3	\$99,281	\$99,281	\$99,281	\$99,281

2. Budget

<i>Salary & Benefits</i>					
Faculty, Regular		\$8,657	\$18,551	\$22,261	\$22,261
Faculty, Adjunct (rate x number of courses)		\$0	\$0	\$0	\$0
Other FTE		<u>\$32,763</u>	<u>\$52,619</u>	<u>\$57,583</u>	<u>\$57,583</u>
S&B Subtotal		\$41,420	\$71,170	\$79,844	\$79,844
<i>Operating Expenses</i>					
Travel					
Faculty development for online courses		\$2,000	\$2,000	\$2,000	\$2,000
Supplies & materials		\$8,000	\$15,000	\$17,000	\$17,000
Graduate program coordinator stipend		<u>\$2,000</u>	<u>\$2,000</u>	<u>\$2,000</u>	<u>\$2,000</u>
OE Subtotal		\$12,000	\$19,000	\$21,000	\$21,000
Total		\$53,420	\$90,170	\$100,844	\$100,844

3. Program Resources

Online course tuition/hr, HEFF net	GR	\$336.80	\$336.80	\$336.80	\$336.80
Online course tuition revenue	hrs x amt	\$0	\$30,649	\$37,722	\$37,722
On-campus support tuition/hr, HEFF net	GR	\$336.80	\$336.80	\$336.80	\$336.80
On-campus tuition revenue	hrs x amt	\$25,260	\$29,975	\$33,006	\$33,006
Program fee, per cr hr (if any)	\$250.10	\$18,758	\$22,259	\$24,510	\$24,510
Program fee, per cr hr (if any)	\$250.10		\$22,759	\$28,011	\$28,011
University redirections		\$9,402	\$0	\$0	\$0
Community/Employers		\$0	\$0	\$0	\$0

Grants/Donations/Other	\$0	\$0	\$0	\$0
Total Resources	\$53,420	\$105,642	\$123,249	\$123,249

Resources Over (Under) Budget **(\$0)** **\$15,472** **\$22,405** **\$22,405**

Provide a summary of the program costs and resources in the new program proposal.

Estimated Salary & Benefits per FTE	Faculty	Other
Estimated salary (average) - explain below	\$99,281	\$99,281
University's variable benefits rate (see below)	0.1442	
Variable benefits	\$14,320	\$0
Health insurance/FTE, FY20	\$10,071	
<i>Average S&B</i>	\$123,672	\$99,281

Explain faculty used to develop the average salary & fiscal year salaries used. Enter amount above.

We do not anticipate any significant FTE salary expenses as we are leveraging existing curriculum and courses to fill additional seats in our classes. The FY_20 salaries & benefits for 8 faculty in the pharmaceutical sciences department are averaged. No new faculty FTE is requested, but the faculty workload will be adjusted to meet the program needs. The faculty FTE is prorated based on the percent workload for the thesis or project/capstone courses (new courses).

Explain adjunct faculty costs used in table:

0 courses per year to be taught by adjuncts.

Explain other [for example, CSA or exempt] salary & benefits. Enter amount above.

Summer salary is included for faculty teaching the graduate course (based on 8% of base salary for a 3 credit course) and thesis supervision (@ 1week summer salary per student). Graduate program coordinator summer salary (2 weeks) is included in the budget based on the anticipated effort for M.S. program administration.

\$1000/student/year to cover supplies and materials for the student's thesis work is included in the budget. In addition, the budget also includes recruitment/marketing materials (\$1000/yr), and supplies/materials (\$2000/yr) required for the laboratory courses. Faculty development and support for converting on-campus classes to hybrid/online delivery. The on-campus courses will be charged a program fee consistent with the current graduate courses in pharmacy. Graduate program coordinator stipend for the academic year is included in the budget based on the anticipated effort for M.S. program administration. This is a faculty position with 25% assigned professional service for graduate program administration.

Summarize resources available to support the new program (redirection, donations, grants, etc).

The program will be supported through tuition and fee generated from the program. The College will redirect portions of faculty and staff workload for program startup in Year 1 with incremental increases as enrollments grow over the first four years. The conversion of face-to-face classes to hybrid and online delivery format will be phased in over a three-year time frame. The students in the online courses will have access to all the learning resources available to on-campus classes. The

current program discipline fee is applied to on-campus and online courses. The cr.hr calculation is based on 15 credits/year for a total of 30 credits for 2 years.

State-support: Change cell on page 1 to use the UG or GR net amount.

Off-Campus Tuition, HEFF & Net	FY19			
	Rate	HEFF	Net	
Undergraduate	\$340.05	\$39.11	\$300.94	<i>Change cell on page 1</i>
Graduate	\$450.90	\$51.85	\$399.05	<i>to point to your net</i>
Externally Supported	\$40.00			

State-support: Change cell on page 1 to use the UG or GR net amount for your university.

On-Campus Tuition, HEFF & Net	FY19			
	Rate	HEFF	Net	
UG Resident - DSU, NSU	\$243.30	\$27.98	\$215.32	<i>Change cell on page 1</i>
UG Resident - SDSU, USD	\$248.35	\$28.56	\$219.79	
UG Resident - BHSU	\$254.20	\$29.23	\$224.97	<i>to point to your net</i>
UG Resident - SDSMT	\$249.70	\$28.72	\$220.98	
GR Resident - DSU, NSU	\$319.40	\$36.73	\$282.67	<i>Change cell on page 1</i>
GR Resident - SDSU, USD	\$326.05	\$37.50	\$288.55	
GR Resident - BHSU	\$328.20	\$37.74	\$290.46	<i>to point to your net</i>
GR Resident - SDSMT	\$324.85	\$37.36	\$287.49	
UG Nonresident - DSU, NSU	\$342.40	\$39.38	\$303.02	<i>Change cell on page 1</i>
UG Nonresident - BHSU	\$355.70	\$40.91	\$314.79	<i>to point to your net</i>
UG Nonresident - SDSU, USD	\$360.50	\$41.46	\$319.04	
UG Nonresident - SDSMT	\$391.10	\$44.98	\$346.12	
GR Nonresident - DSU, NSU	\$596.30	\$68.57	\$527.73	<i>Change cell on page 1</i>
GR Nonresident - BHSU	\$612.40	\$70.43	\$541.97	<i>to point to your net</i>
GR Nonresident - SDSU, USD	\$626.85	\$72.09	\$554.76	
GR Nonresident - SDSMT	\$652.00	\$74.98	\$577.02	
UG Sioux Falls Associate Degree	\$275.40	\$31.67	\$243.73	<i>Change cell on page 1 to point to your net</i>

Variable Benefits Rates

University	FY19	
BHSU	14.64%	<i>Change the benefits rate cell in the table on page 2 to point to the rate for your university.</i>
DSU	14.36%	
NSU	14.31%	
SDSM&T	14.20%	
SDSU	14.42%	
USD	14.34%	

Appendix B Ph.D. Program IPR External Review and Responses.

1

Institutional Review of Ph.D. Program in Pharmaceutical Sciences

South Dakota State University

April 3-5, 2019

Report from Review Team Visit

Ajay K. Banga, Mercer University

David Ferguson, University of Minnesota

Tom Stenvig, Nursing Program, South Dakota State University

The Ph.D. program offered by the Department of Pharmaceutical Sciences within the College of Pharmacy and Allied Health Professions at the South Dakota State University was reviewed as per the invitation extended to us. Drs. Banga and Ferguson provided an external perspective and Dr. Stenvig was a resource for the team to provide a perspective on University policies, procedures, as well as culture. A self-study report was provided to us prior to the site visit on April 3-5, 2019. The program spans the pharmaceutical sciences offering tracks or emphasis areas in medicinal chemistry, pharmaceuticals, pharmacology, and genomics/informatics. Since the inception of the program in 2007, a total of 29 students have graduated from the program with an average time to completion of 5.1 years and a 71% completion rate. The quality and productivity of the program over the last 5 years has been excellent as evidenced by the publications reported and high placement rate among graduates in both academic and industrial positions. The program is traditionally structured with students completing approximately 2 years of coursework followed by a written comprehensive and oral examination, and final defense of independent research and scholarship. Student financial support for the program is mainly provided by 11 Teaching Assistant position in the College of Pharmacy. Students are given a competitive stipend and financial aid package and have access to state of the art facilities within the College to conduct learning and research activities.

Strengths: We were provided a well-written report that described the program in details with supporting documentation as appendices. Further information was provided in response to our questions during the site visit, starting with an entrance interview with Department chair, Dean, Vice Provost for Academic affairs, and VP and Provost for Academic affairs. Based on our interviews with faculty, staff, students, and alumni, we identified the following areas that provide significant evidence of strengths in the program:

Administration: During the initial visit with administration (as well as exit interview), it was clear that the administration is engaged and supportive, which bodes well for the program. The Dean and Provost offices have continued to provide financial support through T.A. lines to the program which is a critical component to long term viability and growth. Similarly, the staff were committed and dedicated to the success of the program. The program coordinator demonstrated a clear knowledge of the program requirements and policies and is well placed in a leadership role with staff support from the business office and other related support staff. A grant specialist is available who dedicates 50% of his time to the College of Pharmacy.

Facilities: Physical facilities for carrying out research are first class, as was evident during our tour of the research laboratories. The facilities are located within the College of Pharmacy facilitating faculty-student interactions and mentorship. The location and high quality of the lab facilities also provides opportunities for inclusion of PharmD students in research which may attract PharmD-PhD students to the program and bring more visibility to the program.

Faculty: The department also has two endowed positions, which will be helpful to further grow research activities and bring recognition to the program. Faculty interests are diverse which helps attract students to the program. Publications are primarily in high impact peer reviewed journals indicating student research is of high quality. In general, the faculty showed passion and dedication to the graduate program and were receptive to change in moving the program forward.

Alumni: Several alumni were interviewed during the site visit and all were enthusiastic and spoke highly of faculty mentors and the administration of the program. All students find employment in industrial, government, or academic settings.

Limitations: One of the primary limitations to the continued success of the graduate program is funding. Even with eleven teaching assistantship lines, there is a concern about the viability of the program, especially in the short time. This concern stems from (1) upcoming graduation of some self-funded students without any means to replace them (2) distribution of these positions to all faculty, and (3) limited extramural funding to support R.A. positions. Of these 3 points, the lack of extramural funds

to shift students from TA lines to RA lines may be the most limiting since this prevents the recruitment of incoming student to the program in the coming years. Related to the issue of funding is the current student population which is exclusively international. This prevents students from being placed on training grants or applying for fellowships that are require US citizenship.

Geographical location can also be perceived as a limitation. Students receive limited exposure to outside speakers and guests (at the national and international level). This reduces opportunities for networking and potential job placement. This issue is further exacerbated by the diverse interests of the faculty that span multiple disciplines in the pharmaceutical sciences. Students within certain labs feel isolated due to a lack of critical mass within their sub-discipline in the department. It was also evident that there may not be enough students to form organizations within disciplines. There was also concerns raised that connections across departments are not valued or appropriately supported to a level that is meaningful to the students. A need was also expressed by the students and alumni to receive mentoring from faculty outside of just the dissertation project. This mentoring can include coaching on soft skills as well as personal empathy and understanding/involvement in student life.

The process used to assign incoming students to faculty is not clear to the graduate students or some graduate students. The process used can be clarified on the website and communicated clearly to the applicants. Safety training should be repeated (and documented) every year and not just provided once at the time the student joins the program.

There is some concern among faculty about workload calculations. There seems to be a perception among some faculty that even a large number of contact hours seem to be translating to a relatively low teaching load, and high service load is not assigned a proportionally high percentage. This leads to an unreasonably high research expectation. Part of this may need some revisit at the University level, or this could be miscommunication that could be resolved by the Department Chair; internal policies may need to assign a certain minimal workload to research for tenure track faculty. Another limitation may be that layers of approval are needed for the simplest of tasks, though some of it (but not all of it) may be part of University procedures.

Recommendations

The department needs to find ways to increase research productivity leading to extramural funding. Teaching assistantship positions can be re-distributed based on research productivity. In our meeting with Department faculty, several faculty members with high teaching loads are willing to give up TA position assigned to them provided they are not then held accountable to an unrealistic research productivity expectation. Many of them are great teachers and will be happy that their potential is being utilized to the fullest. This will allow giving more TA positions to research active faculty, thereby further enhancing their research by virtue of being able to have more than one graduate student. In addition, this will help to retain them by virtue of having a successful thriving laboratory with multiple graduate students.

However, redistribution of TA positions can only be a first step. Further growth of the program will have to come from faculty funded RA positions. New hires can be given more release time for research and then held more accountable for number of grant submissions expected. Another means to generate more funding for support of graduate students may be to recruit more US Citizens into the program, as they would be eligible for many scholarships and grants not open to international students. This will also add further diversity to the program. Recruiting is therefore critical to program growth. A strategic plan targeting schools in the upper mid-west should be developed and implemented to attract high quality domestic students to SDSU. This could be coordinated with chemistry and biology as well. Partnerships with Sanford and Avera should be explored as a method to increase visibility of the program and obtain funding.

Another means to generate revenue would be to initiate a self-funded MS program, with some of the net tuition revenue staying within the Department. Students graduating from the MS program may also add to the applicant pool for the Ph.D. program. Specialty certificate program offerings in summer could also be explored, and may be a means to supplement the limited funds available for summer salary support, as faculty are on 9-month appointments.

It is also recommended to standardize the comprehensive qualifying examination. Currently, the exam is compiled separately for each student by his or her graduate committee and may vary in length from 1-3 days. The level of difficulty and even the passing score does not appear to be uniform, based on the

feedback we received from our interviews. As everyone is getting the same degree in pharmaceutical sciences, the exam should instead have a core area of testing which is common for everyone and is compiled by the graduate coordinator. This core area of testing can carry majority of points (for example, 80 percent). The remaining points can come from specialty questions prepared by the graduate student advisory committee based on the area of focus for the student. For example, a student specializing in pharmaceuticals may have 20% of the grade based on focused questions in pharmaceuticals. Still, the length of exam and passing percentage should be the same for every student. In addition, the oral part of the examination seems subjective; many Universities do not have an oral examination. In addition, comprehensive exam should be offered no later than by the end of the second year. This is the norm in many other Universities, even if they offer graduate courses every other year, as is done at SDSU.

Stipends are reasonable for the upper Midwest and were not viewed as a limiting factor on enrollment. However, housing costs have greatly increased in the Brookings area and students expressed concerns over the quality of living given the current stipend. A survey of current stipends in the upper Midwest should be completed and adjustments made if necessary. Alternatively, faculty should strive to supplement these stipends by providing partial research assistantship (RA) support.



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

**Institutional Program Review
Report to the Board of Regents**

Use this form to submit a program review report to the system Chief Academic Officer. Complete this form for all units/programs undergoing an accreditation review, nationally recognized review process, or institutional program review. The report is due 30 days following receipt of the external and internal review reports.

UNIVERSITY:	SDSU
DEPARTMENT OR SCHOOL:	Pharmaceutical Sciences,
PROGRAM REVIEWED:	Ph.D. Pharmaceutical Sciences
DATE OF REVIEW:	4/4/2019
TYPE OF REVIEW:	Institutional Program Review

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this report, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

President of the University

Click here to enter a
date

6-13-2019

Date

1. Identify the program reviewers and any external accrediting body:

1. Ajay Banga, Ph.D.,
Chair and Professor of Pharmaceutical Sciences
Co-Director of the Center for Drug Delivery Research
T.P. Haines Endowed Chair in Transdermal Delivery Systems
Department of Pharmaceutical Sciences
College of Pharmacy
Mercer University
Atlanta, GA

2. David Ferguson, Ph.D.,
Professor
Department of Medicinal Chemistry
College of Pharmacy
University of Minnesota
Minneapolis, MN

2. Items A & B should address the following issues: mission centrality, program quality, cost, program productivity, plans for the future, and assessment of progress.

The review team commended the quality and productivity of the program. The team emphasized people as one of the strengths of the program. This includes graduate students, faculty and the support staff. The strong support from the College and University administration was also identified as a strength. Other strengths identified by the review team include the high-quality research facility, high impact publications and TA support from the state and the College. The reviewers identified two main areas of weakness: The number of currently available TA funded lines limits the future growth of the program. Another area of weaknesses noted was the limited extramural funding to support RAs.

Describe the strengths and weaknesses identified by the reviewers

The reviewers commended the comprehensive and well-written self-study report. The reviewers commented that the University and College administration is engaged and committed to the success of the Ph.D. program. The financial support of TA positions from the College was viewed favorably by the reviewers.

The reviewers found that the research facility is of high-quality to support graduate student support and also provides research opportunities for professional pharmacy students. The reviewers identified the faculty's passion and commitment to the Ph.D. program as a major strength. The two endowed faculty positions were viewed as strengths and the reviewers recognized this will grow and bring visibility to the research program.

The reviewers found that the alumni had a positive view of the program and their faculty mentors. Reviewers viewed the 100% placement of graduates as a positive outcome of the program.

The reviewers noted the recent graduation of several self-supported students impacts the total student numbers in the program in the short-term. The reviewers pointed out that the limited number of TAs and the limited extramural grant funding that hampers the ability to shift students from TA to RA lines are major limitations of the program. The reviewers also noted the lack of diversity of the student population as an area of improvement.

The reviewers found that there are limited opportunities for students to develop their soft-skills in the program. The reviewers noted that the geographic location of the program limits student's opportunities to network with pharmaceutical industry.

2(A). Briefly summarize the review recommendations

The reviewers made the following major recommendations to enhance and grow the graduate program.

- Align GTA assignment based on faculty's research expectations and productivity
- Increase extramural funding to support more GRAs.
- Increase the diversity of the program by recruiting US citizens who are eligible for scholarships.
- Expand program offerings by exploring the possibility of starting a self-funded MS program and graduate certificate program.

- Standardize the comprehensive exam.
- Conduct a survey of stipends in upper Midwest and make adjustments if necessary to address the lack of affordable family housing options for graduate students

2(B). Indicate the present and continuous actions to be taken by the college or department to address the issues raised by the review. What outcomes are anticipated as a result of these actions?

- Align graduate student admission, TA assignment with faculty research expectations and research productivity
 - Currently the faculty are assigned at least one GTA. Going forward the department will assign GTA based on the research expectations and research productivity of the faculty.
 - The Department has recently revised the process of assigning GTA to faculty. As per the new process, the faculty submit a form to the Department head. The Department head will use the information provided in the form and consult with the Associate Dean of Research and the Dean before approving the request.
- Increase the extramural research funding through the two endowed faculty positions and also by faculty workload optimization
 - In the last five years the department has established two endowed faculty positions. The second endowed faculty was hired recently. Since the hiring of the endowed faculty, the department's grant funding has increased significantly.
 - The faculty workload optimization is a continuous process. Majority of the department faculty teach in the professional pharmacy program. The new PharmD curriculum provides some opportunities to optimize the faculty work load. Our recent faculty hires have a >70% research expectation.
 - We expect to see an increase in GRAs with increase in grant funding through the endowed faculty positions and faculty workload optimization.
- The Department will develop a plan for starting an MS program
 - The department has formed an ad hoc committee to develop a plan for starting an MS program and potential graduate certificate program. The committee includes the graduate program coordinator, Associate Dean for Academic Programs, faculty, graduate student and alumni representative.
 - In addition to expanding the program offerings, the MS program will also serve as a pipeline for the PhD program.
 - The MS and graduate certificate programs will provide opportunities for professional pharmacy students interested in earning dual degrees.
- Review and modify the structure and administration of comprehensive exam.
 - Currently, the comprehensive exams are managed and administered by the respective graduate advisory committee. The minimum passing score and the total points are established by the Department. However, the length of the exam and duration varies based on the graduate advisory committee. The Graduate Studies and Research committee and the program coordinator will develop a plan to streamline the comprehensive exam to ensure consistency.

- Work with University stakeholders to explore affordable family housing options for graduate students
 - The current stipend was established based on the survey conducted in 2014. The stipends are comparable to other graduate programs in pharmaceutical sciences in the region. However, the lack of affordable family housing is a concern for some of the graduate students. The University is in the process of constructing new family housing units. We will work with the University residential life and other administrators to explore affordable family housing options for graduate students.
3. **Starting in Fall 2019 reporting year, campuses will identify the undergraduate cross-curricular skill requirements as part of programmatic student learning outcomes and identify assessment methods for cross-curricular skill requirements as outlined in Board Policy 2:11. Program review completed prior to Fall 2019 need not include cross curricular skills.**

Not Applicable

Appendix C
New Course Request



SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Course Request

SDSU	Pharmacy & Allied Health Professions / Pharmaceutical Sciences
Institution	Division/Department
Dennis D. Hedge	12/9/2020
Institutional Approval Signature	Date

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
PHA 769	Pharmaceutical Sciences Capstone	3

Course Description

A capstone project demonstrating integration and application of program content in pharmaceutical/biomedical sciences.

Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
None		

Registration Restrictions

Department approval.

Section 2. Review of Course

2.1. Was the course first offered as an experimental course? Yes No

2.2. Will this be a unique or common course?

Unique Course

Prefix & No.	Course Title	Credits
PHA 719	Pharmacy Capstone	1

Provide explanation of differences between proposed course and existing system catalog courses below:

The proposed capstone course is unique to the content in the pharmaceutical sciences disciplines covered in the M.S. degree. Students will be asked to integrate the content from all of the courses in the program in the completion of the capstone project. Other capstone courses are also specific to their disciplines. For example, the pharmacy capstone course listed above is specific to the content of the Doctor of Pharmacy program and focuses on integration and application of content unique to pharmacy practice.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

No. Schedule Management, explain below: The faculty workload will be adjusted to offer this course.

3.2. Existing program(s) in which course will be offered: Pharmaceutical Sciences (M.S.)

3.3. Proposed instructional method by university: J – Design/Research

3.4. Proposed delivery method by university: 001 – Face-to-Face Term Based Instruction; 015 - Internet Asynchronous – Term Based Instruction

3.5. Term change will be effective: Fall 2021

3.6. Can students repeat the course for additional credit? Yes No

3.7. Will grade for this course be limited to S/U (pass/fail)? Yes No

3.8. Will section enrollment be capped? Yes, max per section: 10 No

3.9. Will this course equate (i.e., be considered the same course for degree completion) with any other unique or common courses in the common course system database in Colleague and the Course Inventory Report? Yes No

3.10. Is this prefix approved for your university? Yes No

Section 4. Department and Course Codes (Completed by University Academic Affairs)

4.1. University Department Code: SPAH

4.2. Proposed CIP Code: 51.2010

Is this a new CIP code for the university? Yes No

**NEW COURSE REQUEST
Supporting Justification for On-Campus Review**

<u>Hemachand Tummala</u> Request Originator	<u>Hemachand Tummala</u> Signature	<u>11/5/2020</u> Date
<u>Omathanu Perumal</u> Department Chair	<u>Omathanu Perumal</u> Signature	<u>11/5/2020</u> Date
<u>Daniel Hansen</u> School/College Dean	<u>Daniel Hansen</u> Signature	<u>11/5/2020</u> Date

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.
The students will utilize their theoretical knowledge in pharmaceutical sciences, comprehend the latest literature in the field, and propose a project/ application program content in a written report. The course will enhance the ability of student to comprehend the theoretical knowledge gained during the program and apply to a relevant research field in pharmaceutical and biomedical sciences.
2. Note whether this course is: Required Elective
3. In addition to the major/program in which this course is offered, what other majors/programs will be affected by this course?
None
4. If this will be a dual listed course, indicate how the distinction between the two levels will be made.
N/A
5. Desired section size 10
6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).
Gudiseva Chandrasekher, Ph.D., Associate Professor
Hemachand Tummala, Ph.D., Professor
Hesham Fahmy, Ph.D., Associate Professor
Jayarama Gunaje, Ph.D., Associate Professor
Joshua Reineke, Ph.D., Assistant Professor
Komal Raina, Ph.D., Associate Professor

Omathanu Perumal, Ph.D., Professor & Head

Shafiqur Rahman, Ph.D., Professor

Teresa Seefeldt, PharmD, Ph.D., Associate Professor & Associate Dean for Academic Affairs

Wenfeng An, Ph.D., Professor

Xiangming Guan, Ph.D., Professor and Associate Dean for Research

7. Note whether adequate facilities are available and list any special equipment needed for the course.
Adequate resources are available to deliver the course.
8. Note whether adequate library and media support are available for the course.
Adequate resources are available through Briggs Library at SDSU and Wegner Health Science resource center.
9. Will the new course duplicate courses currently being offered on this campus? Yes No
10. If this course may be offered for variable credit, explain how the amount of credit at each offering is to be determined.
N/A