



**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:	Civil & Environmental Engineering
PROGRAM REVIEWED:	M.S. and Ph.D. in Civil Engineering
DATE OF REVIEW:	4/12/2021
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

6-3-21

Date

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

Reviewers:

- Dinesh Katti, PhD, Professor. North Dakota State University
- Khalid Ksaibati, PhD, Professor. University of Wyoming.
- Cody Wright, PhD, Professor. SDSU.

External Accrediting Body: N.A. for the graduate programs in civil engineering.

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 committee found that the SDSU Civil Engineering graduate programs (M.S. and Ph.D.) are “strong, relevant, and an asset to further the department, college, and University’s mission and goals.”

2(A). Describe the strengths and weaknesses identified by the reviewers

Strengths

- Mission of the CE graduate programs is well aligned with the mission of the college and the university.

- The M.S. and Ph.D. programs in CE are of good quality and meet expectations of graduate programs in land grant universities; having three M.S. options provides enormous flexibility to students; the placement of graduate students in regional and major national companies and some in doctoral degrees, speak well to the quality of the programs.
- Faculty have obtained research grants to support graduate students and research activities; the research centers in the department play an important role in sustaining the programs.
- The department graduated a very healthy number of 117 M.S. and four Ph.D. students in the last six years.
- The CEE department has developed a detailed and realistic strategic plan that aligns with the University's strategic plan.
- The assessment plan is detailed, clear, and well written.

Weaknesses

- Some of the CE sub-disciplines (Hydraulics, Geotechnical) are supported by only one faculty; a critical mass of faculty is essential for the success of the programs.
- The department currently does not have a position for a technician; having a technician in the department is essential for the success of the programs
- The department has limited internal funding in support of its graduate programs.
- Low number of Ph.D. students and declining enrollment in M.S. program.
- Publication of peer-reviewed scholarly manuscripts is one of the doctoral dissertation metrics used by the department, but is not measured in the assessment instrument.

2(B). Briefly summarize the review recommendations

“The committee is impressed with the quality of the SDSU Civil Engineering graduate programs. The programs are strong and sustainable. The programs play a vital role in fulfilling the mission of the land grant university and the State's mandate. The committee understands that there are many factors and priorities that dictate actions on recommendations and that the committee has based the recommendations on limited information and interactions.” The following recommendations are suggested by the committee:

1. Increasing the number of doctoral students would be beneficial for research and scholarship. The department should consider doing direct recruiting of qualified students via professional conferences, sharing the word through contacts, U.G. presentations. Development of programs to recruit high-quality students via coordinated effort by the department leadership would be useful. Strategic investments for recruiting by the department, college, and the University will likely pay off. Gap funding for graduate students, particularly Ph.D. students, would allow faculty to recruit doctoral students and will help in retention. This will also improve the quality of students and enhance the number of students in the program. Fellowships for recruiting quality doctoral students should be considered. Increase Ph.D. production through University/foundation/grant funding and support.
2. Continuing the effort to enhance diversity and increasing doctoral student numbers is strongly recommended. The graduate students interviewed by the committee showed good diversity.
3. Building a critical mass of faculty is important for the long-term success and growth of the program. The program is dependent on only one geotechnical/waters/fluids

faculty member. Consider investing in three areas of strength in the department 1) structures, 2) environmental, and 3) transportation. The faculty indicated insufficient technician support for the laboratories. Shared technician support should be investigated.

4. Enhancing the reward system for graduating doctoral students via the tenure and promotion process and annual evaluations would result in increasing the number of graduating doctoral students.
5. Providing faculty grant writing support to write competitive federal grants would lead to funding success and enhance the graduate programs.”

2(C). 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?

The following represents the actions being taken to address the issues raised by the review committee.

1. The Ph.D. in CE program was initiated in 2014 without allocating any additional resources to the department. The current number of Ph.D. students enrolled in the program is consistent with the number presented in the proposal to offer the Ph.D. degree that was approved in 2014. Additionally, the number of international graduate students has dropped significantly during the COVID-19 pandemic. The department, however, concurs with the recommendation of the review committee for the need for increasing the number of Ph.D. students and is working very closely with the college leadership to achieve that goal. For example, the following measures are being implemented by the Lohr College of Engineering:
 - o The Centralized Application Services (CAS) platform for accepting graduate student applications has been adopted. This will increase the pool for recruiting qualified doctoral students.
 - o Annual support to fund a partial Ph.D. assistantship will be extended to each Ph.D. programs in the college with the expectation of published papers and continued student support through external grants.
 - o A college leadership summit is planned for summer 2021 to discuss strategies and means for increasing research throughput and graduate enrollment.
 - o The SDSU Foundation is actively pursuing the establishment of funded Ph.D. fellowships and assistantships.
2. The department continues to support efforts for diversity in its graduate programs. According to the review report, the graduate students interviewed by the committee showed good diversity. However, the department will continue to actively recruit graduate students from underrepresented groups through providing graduate assistantships to qualified students from these groups.
3. The department concurs with the review committee’s recommendation for the need to create a critical mass of faculty in all civil engineering sub-disciplines. The current department funding level, however, does not allow for added faculty FTEs in the immediate future. Although currently the department has only one faculty in each of Hydraulics engineering and Geotechnical engineering, the research activities in these two sub-disciplines have been successful, generating research grants from federal (e.g. NSF) and state (e.g. SDDOT) sources. Thus, emphasis on graduate research in civil infrastructure will continue in all civil engineering sub-disciplines. Additionally, the college has created cross-disciplinary research groups,

encompassing faculty from all engineering departments, to pursue grand-challenge research topics.

4. The department concurs with the review committee. The college leadership will be discussing during its summer summit (see bullet 1 above) reward systems for graduating doctoral students via the tenure and promotion process and annual evaluations.
 5. The college has provided and continues to provide faculty with grant writing support through the staff at the office of associate dean for research and through funded grant-writing workshops. Tenure-track faculty are also provided travel support to meet with program managers at funding agencies.
- 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.**

This section is not applicable to the graduate programs.