ACADEMIC AFFAIRS COUNCIL

AGENDA ITEM: 4.A.1

DATE: December 17, 2008

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SUBJECT: New Program – SDSU Minor in Informatics

SDSU has submitted a proposal for a baccalaureate minor in Informatics. The minor requires 18 credit hours.

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RECOMMENDED ACTION

Provide any comments and concerns to Dr. Gough for the COPS memorandum.
South Dakota Board of Regents  
New Baccalaureate Degree Minor

<table>
<thead>
<tr>
<th>University:</th>
<th>South Dakota State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title of Proposed Minor:</td>
<td>Informatics</td>
</tr>
<tr>
<td>Degree(s) in which minor may be earned:</td>
<td>All baccalaureate degrees</td>
</tr>
<tr>
<td>Existing related majors or minors:</td>
<td>None</td>
</tr>
<tr>
<td>Proposed Implementation (term):</td>
<td>Fall 2009</td>
</tr>
<tr>
<td>Proposed CIP Code:</td>
<td>is it 30.0601?</td>
</tr>
</tbody>
</table>

University Approval  
To the Board 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                                                 Date

After approval by the President, a signed copy of the proposal should be transmitted to the Executive Director. Only after Executive Director review should the proposal be posted on the university web site and the Board staff and the other universities notified of the URL.

1. Do you have a major in this area?   _______ Yes   _______ X   No

2. If you do not have a major in this area, explain how the proposed minor relates to your mission.

Definition of informatics: the application of discipline knowledge, computers, mathematics and statistics to produce useful information and products from raw data.

Recent advances in computer and information science and technology have spawned the development of the field of informatics. Informatics is impacting many of the professional fields and disciplines for which SDSU offers academic programs. Academic programs in informatics, including undergraduate and graduate minors and majors, have become a strategic priority for many large comprehensive universities similar to SDSU. Nearly every current academic program in informatics offers emphases in one or more of the areas of the biological sciences, chemical sciences, health sciences, mathematics and statistics, healthcare and nursing sciences, media and library sciences, and/or social sciences. As the state’s comprehensive Land-Grant university, SDSU has academic programming strength in all of these disciplines and is capable of offering a strong program in informatics with both depth and breadth. Responding to the needs for a Minor in Informatics is a logical step for SDSU and is strongly supported by the comprehensive nature of its Land-Grant mission.
3. **How will the proposed minor benefit students?**

The proposed undergraduate Minor will help SDSU students meet the growing demands of industry for graduates who are both knowledgeable and experienced in informatics. The proposed Minor provides students with a strong background in general informatics combined with advanced application coursework in their specific major. Earning the Minor will provide students with a recognized academic credential that indicates this achievement. Completion of this Minor will better position SDSU’s graduates for employment in this time of growing dependence by nearly every profession on digital information and informatics.

4. **Provide estimated enrollments and completions in the table below and explain how the estimates were developed.**

<table>
<thead>
<tr>
<th>Fiscal Years*</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimates</td>
<td>FY10</td>
<td>FY11</td>
<td>FY12</td>
<td>FY13</td>
</tr>
<tr>
<td>Students in the minor (fall)</td>
<td>10</td>
<td>25</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Completions by graduates</td>
<td>0</td>
<td>8</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

*Do not include current year.

These numbers are estimates based on what the planning committee feels the initial level of student interest will be.

5. **What is the rationale for the curriculum?**

In 2007, SDSU conducted a comprehensive study on informatics that included the most recent initiatives on informatics from the world’s leading organizations in computers and information systems. The study also included academic majors and minors in informatics at both the undergraduate and graduate levels. It was determined that SDSU’s best strategy for preparing graduates in informatics is to offer an undergraduate Minor that includes roughly 50% of core coursework on informatics plus 50% of applied coursework in which students gain both knowledge and experience in informatics that is specific to their discipline. This approach is very similar to the Minor in Informatics program at University of Illinois at Urbana-Champaign. A planning committee of faculty from ten departments benchmarked other undergraduate Minor programs in informatics and developed the proposed curriculum.

6. **Complete the tables below. Explain any exceptions to BOR policy being requested.**

**A. Distribution of Credit Hours**

<table>
<thead>
<tr>
<th>Minor in Informatics</th>
<th>Credit Hours</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements in Minor</td>
<td>9</td>
<td>50%</td>
</tr>
<tr>
<td>Electives in the Minor</td>
<td>9</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>100%</td>
</tr>
</tbody>
</table>
B. Required Courses in the Minor (see descriptions in Appendix C)

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Number</th>
<th>Course Title</th>
<th>New*</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFO</td>
<td>101</td>
<td>Programming for Non-Majors</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>INFO</td>
<td>102</td>
<td>Social/Ethical Aspects of Informatics</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>INFO</td>
<td>201</td>
<td>Applied Informatics</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Subtotal, required</strong></td>
<td></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

* New: Y = yes, N = no.

C. Elective Courses in the Minor: List courses that may be taken as electives in the minor. Indicate any new courses to be added specifically for the minor.

In addition to the three core courses, students must select an additional three approved courses (nine credits) of electives that focus on an application area of informatics. Students choose three courses from the following list that best match their application area for informatics. Each course contains applied elements of informatics including data warehousing and quantitative data interpretation through mathematical/statistical model and algorithm development.

- BIOL 457 Ecological Modeling
- BIOL 458 Mathematical Models in Microbiology
- BIOL 459 Bioinformatics (cross listed with MATH 459)
- CSC 447 Artificial Intelligence
- CSC 484 Data Base Mining
- CSC 492 Data Mining
- GEOG 484 Remote Sensing
- GEOG 487/488 Geographic Information Sciences I/II
- MATH 459 Bioinformatics (cross listed with BIOL 459)
- SOC 462 Population Studies

7. What outcomes will be expected for all students who complete the minor? How will these outcomes be achieved?

Students will:
1. demonstrate a knowledge of basic informatics and programming skills;
2. demonstrate a knowledge of the social and ethical aspects of informatics; and
3. demonstrate a knowledge of applied informatics specific to the student’s major.

All three student outcomes will be achieved by the satisfactory completion of the proposed curriculum. Outcome #1 will be achieved with the completion of the INFO 101 course, an introductory course on informatics that includes basic programming for non-computer science majors. Outcome #2 will be achieved via the completion of the INFO 102 course, which focuses on the social and ethical aspects of informatics. Outcome #3 will be achieved via the completion of both the INFO 201 course on applied informatics, and three additional elective courses chosen for a specific area of emphasis. The INFO 201 course also requires the completion of an applied informatics project related to the student’s major.
8. What instructional technologies will be used to teach courses in the minor? This refers to the instructional technologies used to teach the new courses in the minor and NOT the technology applications students are expected to learn.

Standard contemporary instructional technologies will be used.

9. Is the University is requesting authorization to provide the minor to students at an off-campus location or by distance delivery? If yes, explain. If off-campus or distance delivery authorization is not requested, enter “None.”

None.

10. Costs, Budget & Resources: Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, instructional technology and software, other O&M, facilities, etc needed to implement the minor.

The three new INFO courses will be offered by redirecting existing instructional FTEs. All elective courses are already being offered on a routine basis. No new resources are being sought.

11. Additional Information Additional information is optional. Use this space to provide information not requested above. Limit the number and length of additional appendices. Identify appendices with capital letters. Letters of support are not necessary and are rarely included with Board materials. This item may be deleted if it is not used.