A. ACTIONS TAKEN TO IMPROVE STUDENT LEARNING

What actions did you take in 2012-2013, based on previous assessment findings, to improve student learning in your program? (Refer back to plans indicated in “Response to Assessment Findings” in 2011-2012 Assessment Report.)

The Statistics Program Committee continually monitors the functioning of the Program, discussing and acting on those changes that are deemed warranted. For instance, one of the most successful features of the Program is the scheduling of courses in the late afternoon and evening in order to accommodate students who work full-time. The Statistics Program Committee queries graduate students every few years in order to determine the most convenient time slots for their schedules, making changes in course scheduling whenever there is a need.

Two new courses have been offered starting Fall 2013 to support the new biostatistics track within the M.S. degree program, namely courses in advanced biostatistical topics and clinical trials.

The Statistical Consulting Center continues to maintain a scholarship fund through the Campus Scholarship and Innovation Campaign (CSIC) for the purpose of providing financial support to students majoring in statistics.

Responding to the educational needs of the workforce, two new programs have been implemented within the Statistics Program starting Fall 2013:

- biostatistics track within the M.S. degree program
- 5-year B.S.-M.S. program

In support of the biostatistics track, two new Assistant Professors of biostatistics were hired; one started Fall 2012 and the second started Fall 2013. Specific details of these new programs can be found at the departmental website: www.math.wright.edu.

B. STUDENT LEARNING OUTCOMES ASSESSED AND EXAMINED

Which Program Level Student Learning Outcomes did you assess and examine during 2012-2013? List the Program Level Student Learning Outcomes using the format of “Graduates will be able to _________________.”

Graduates will be able to
- communicate effectively
- demonstrate mathematical literacy
- evaluate arguments and evidence critically
C. METHODS FOR COLLECTING DATA
Which students were included in the assessment? (For example, all seniors completing Course X in Spring 2013, all graduating seniors, etc.)

All students in the graduate statistics program who completed the comprehensive exam in 2012-13 were assessed.

D. ASSESSMENT MEASURES

- What key assessments/assignments/student work did you examine to directly assess the Program Level Student Learning Outcomes listed above?
- What, if any, indirect assessments (e.g. exit survey, alumni survey, focus groups, etc.) did you use to indirectly assess the Program Level Student Learning Outcomes listed above?

- Performance on the comprehensive exam was used as assessment criterion.
- Student portfolios, which are collected in the Statistical Consulting Course (STT7910/7920), a core course in the program, were used as indirect indicators of program level Student Learning Outcomes (SLOs). STT 7910/7920 is intended to serve as a bridge from academic courses to real-world applications. The core sequences, statistical theory (STT 6610-6620) and statistical methods (STT 6660-6670), serve as prerequisites for this course, so students tend to take STT 7910/7920 in their last semester in the program. For these reasons, STT 7910/7920 serves as a capstone course for the Program and, hence, the performance in this course serves as an excellent indicator of Program level SLOs.

E. SIGNIFICANT FINDINGS
What did you find from your assessments? What did your data reveal about how well students are achieving the Program Level Student Learning Outcomes that you listed above?

**Performance on the comprehensive exam:**
In Fall 2012, 11 students took the comprehensive exam; 8 students passed it and 3 failed one or more parts of it. The latter 3 students re-took the comprehensive exam in Spring 2013 and all passed.

In Fall 2013, 12 students took the comprehensive exam; 9 students passed it and 3 failed one or more parts of it. The re-take of the comprehensive exam has not occurred yet (it is scheduled to start January 24, 2014).

Generally, the fact that most all of the students pass the comprehensive exam by the second or third try indicates that the Program provides an educational program which is accessible; the fact that not all students pass the exam on the first attempt indicates that the exam is sufficiently rigorous. Since 1982, only two students who had taken the comprehensive exam failed to get their M.S. degree. This indicates that the Program has an excellent completion rate.

**STT 7910/7920 portfolios:**
Students are asked to comment on the effectiveness of STT 7910/7920 to serve as a bridge from coursework to real-world statistical practice and preparation for working outside the university. Comments from the student STT 7910/7920 portfolios included:

- “I enjoyed the work I did this semester for the Statistical Consulting Center. I enjoyed learning from the staff.”

- “Overall, I had a very rich and diverse experience working as a statistical consultant due to the different projects and researches I worked on, and the diverse fields of the clients that I helped
support. I also liked the fact that the datasets I worked with were representative of what a professional data analyst or statistician faced on a daily basis, and so the experience gained in merging the data and pre-processing it for analysis was invaluable.”

- “I found this a very valuable experience since I have brought it up in every job interview I have been to.”

- “In all, aside from gaining experience applying my statistical knowledge to real problems, I feel satisfied that I got to witness several potential issues that could arise during the consulting process and how best to approach dealing with them.”

- “Overall, I feel that my statistical consulting experience was very valuable.”

- “I enjoyed both the interpersonal and analysis aspects of the consulting field. … The experience was very good overall!”

- “I feel that my consulting experience was very rewarding and interesting. I enjoyed the work, and feel I learned quite a bit.”

- “Overall I feel that my experience gained during this course was very valuable.”

- “In conclusion, it has been a great experience working in the SCC, and I have learned so many skills from the internship, including skills of using knowledge to analyze actual data and social skills.”

- Overall, I would say this experience provided me with an important experience to see data analysis first hand. I enjoyed the opportunity to work not only with clients, but also with other statisticians. It was important for me to see how projects involved individual work as well as brainstorming, using resources, and collaborating with others in the office.”

The general portfolio comments indicate that students feel that their experiences in STT 7910/7920 are valuable and effective. (NOTE: the portfolio comments are NOT anonymous.)

F. DISCUSSION OF RESULTS
How were results shared? With whom were they discussed?
The Statistics Program Committee meets frequently throughout the year to discuss all aspects of the Program. Results of the assessment measures are routinely reported to this committee and the results discussed in detail. The Statistics Program Committee consists of all professorial rank statistics faculty in the Department of Mathematics & Statistics.

G. ACTIONS PLANNED TO IMPROVE STUDENT LEARNING
Based on what you learned from your assessment of the Program Level Student Learning Outcomes, what actions do the faculty in your program plan to take to improve student learning in your program/area? Describe the steps faculty have taken/will take to use information from the assessments for improvement of student performance and the program. List additional faculty meetings or discussions and planned or actual changes to curriculum, teaching methods, approaches, or services that are in response to the assessment findings.

As mentioned above, the Statistics Program Committee continually monitors the functioning of the Program, discussing and acting on those changes that are deemed warranted. This general monitoring
strategy will continue. Over the past year no significant problem areas have arisen, so no significant changes have been made within the Program aside from those mentioned above (new BS-MS degree program and biostatistics track within the M.S. degree Program).

H. SUPPORTING DOCUMENTS (recommended)
Please attach minutes of program faculty meeting where discussion of results and action planning occurred and any other relevant documents.
Essentially, all Statistics Program Committee meetings deal with aspects of the Program, both undergraduate and graduate.

Minutes of 2013 Statistics Program Committee Meetings:

April17_1013Minutes.txt
Minutes of the Statistics Program Committee Meeting of April 17, 2013 in 120 MM from 11:15-12:30
Attending: Thad, Mak, Munsup, Weizhen, Shuxia, Gengxin, Harry, Kimberly

1. Minutes from the March 27, 2013 meeting approved.
2. Motion made and seconded to reduce the requirements for the BS Statistics Major by no longer requiring MTH 2800 and STT 6620 and increase by 6 hours the number of department electives to make up for no longer requiring these courses. There was discussion of combining STT 3600 and 3610 into a single course to add even more flexibility into the major. After some discussion, a motion was made to combine these two courses but there was no second. A suggestion was made to make up for no longer requiring the proofs course (MTH 2800) that students should be required in the first semester of theory (STT 6610) to prove results in the homework assignments. There was a consensus in favor of this suggestion with no objections noted.
* This motion passed with one abstention.
3. A motion was made and seconded for approving the Acturial Science Concentration. The committee discussed whether or not we should reduce the required courses in this concentration, but there was no support for that. A concern was voiced that none of the statistics faculty have experience in the actuarial profession and a suggestion was made that one of us take the actuarial exams, but it was noted that previous exams are available on the society of actuary website. A questions was asked about whether there is an actuarial science statistics course that would cover material on life tables - there isn't currently such a course but a course like that may be developed.
* The motion passed with one abstention.
4. Kimberly made a motion to discuss requirements for the minor in statistics. It was noted that this committee approved changes to these requirements a couple years earlier but apparently those changes were never approved at higher levels. The language for these changes will be codified and brought to the undergraduate committee for approval. One of the main issues is that math majors can minor in statistics by taking STT 3600 and STT 3610 and two 4000-level courses but these courses cannot count also towards the degree in mathematics. It was noted that the requirements for the minor are not clear on the department web site or the advising sheet.
The meeting adjourned around 12:30.
January23_2013Minutes.txt
Minutes of the Statistics Program Committee meeting
January 23, 2013 in 120 MM conference room from 11:10-12:10
Attending: Thad, Harry, Munsup, Weizhen, Kimberly, Gengxin

1. Minutes from Nov. 13, 2012 meeting approved
2. The results of the Comprehensive Exam Part I re-take were discussed. Of the three students that took the exam,
   one student passed and the other two failed the theory portion of the exam. It was decided that another opportunity
to take only the theory part of the exam later in the spring quarter would be offered. However, the students could opt
to re-take the entire part I in the fall when the exam is offered at its regular time if they choose.
3. Kimberly gave a brief report on undergraduate statistics majors, saying there are about 10 majors and one of them
   is doing the 5-year BS/MS program.
   Harry gave a brief report on our graduate students, saying there are about 30 students currently in the program.
4. Thad briefly reported on the biostatistics search saying that the search committee will begin screening applicants
   at the beginning of February with the hope of having interviews later in February.
5. A brief discussion on the conversion to semesters. Harry noted that the new biostatistics courses are not yet listed on
   the department's website. Munsup said that he prepared a website for the new excel STT 2640 labs.
6. A brief discussion was started about whether or not to reduce the number of required courses for our statistics major and
   a comparison of our program with other schools was distributed (information that Weifu collected). Munsup indicated that
   combining STT 3600 and STT 3610 would help in this regard.
The meeting adjourned at 12:10.

Detailed comments:
Comps - The committee also discussed whether or not to require the students to re-work the exams from their first two attempts.
Thad was against this idea, indicating that the students need to take the initiative to meet with Thad and work problems on their own.

March18_2013Minutes.txt
Minutes from the March 18, 2013 Statistics Program Committee Meeting
120 MM from 2:30-3:30 p.m.
Attending: Thad, Munsup, Harry, Weizhen, Kimberly, Gengxin and guest Weifu

1. Minutes from the January 23, 2013 meeting approved.
2. Results of the theory comprehensive exam re-take discussed. It was agreed that Jeff Swartzel passed but that
   Doug McKinley did not pass. The committee decided to allow Doug one final attempt when the exams are offered again
   in the fall and he must take the theory and the linear models material (he still has to take the methods part of the
   comprehensive exams). It was also decided that this would be his last attempt to pass.
3. Weifu mentioned that a formal offer will go out to Long Qu for the biostatistics faculty position the next day.
4. Weifu was invited to initiate discussion on agenda items 4 and 6 about modifying the requirements for the proposed actuary program as well as for the undergraduate BS degree in general. The idea of having concentrations (e.g. actuary) in the statistics major was suggested. It was noted that reducing the requirements would make the program more flexible.

There was a question about whether or not concentrations would show up on the student's degree. It was noted that our current requirements are quite difficult for our majors due to the large number of required classes.

* The item related to modifying the department bylaws for promotion requirements for biostatistics faculty was brought up at the end of the meeting but there was not enough time to discuss this item.

* Thad asked that the committee think about ways of modifying our requirements for the BS Statistics degree to make it more flexible and that at least one additional meeting will be called soon to discuss this issue and the P&T issue.

March27_2013Minutes.txt

Minutes of the Statistics Program Committee Meeting
March 27, 2013 from 11:15-12:15 in 120 MM
Attending: Thad, Mak, Munsup, Harry, Weizhen, Gengxin and Kimberly (by phone)

Thad announced a statistics seminar on April 1 by visitor Dr. Das and the upcoming biostatistics symposium on April 23, 2013.

1. Minutes from 3-18-2013 meeting approved
2. Discussion of modifying requirements for the BS in statistics. No objections were voiced about no longer requiring the introduction to proofs course and the second semester of theory. It was suggested that the theory material related to maximum likelihood estimation be added to the STT 3600/3610 curriculum; however there were concerns voiced about students' ability to grasp that material, particularly non-stat majors in that course. If a required core course at the 4000-level is to be dropped, it was suggested that it be the second semester of theory and not the second semester of methods. Thad mentioned that under semesters, the theory of linear models material is now in the second semester of theory but it was not part of the undergraduate curriculum under quarters. Munsup mentioned that we should consult with the undergraduate committee regarding these decisions. A final decision on these changes will wait till a later meeting.

3. Revising the bylaws to address P&T for biostatisticians was discussed and some noted that specific and concrete guidelines will need to be developed for biostatisticians. In particular, the meaning of "appropriate journals" needs to be more clearly described for promotion to Associate Professor.

4. The conversion to semesters was discussed. The problem with material overlap between STT 7670 and STT 7140 was
brought in and Weizhen suggested that students should not be allowed to take both of these courses in our MS program due to the large degree of overlap. Another suggestion was to simply eliminate STT 7140 but it was noted that we need to be sure to offer enough 7000-level courses so that our students can satisfy that requirement towards earning their MS degree. Mak suggested forming a subcommittee to evaluate how combining theory and linear models together and combining methods and design is working out. Concern was voiced about whether or not all the material can be adequately covered in the combined courses. Mak also suggested dropping the linear models material from the theory sequence and offering that as a separate course (and do the same for design of experiments) and then allowing students to choose one or the other of these topics for the comps (in addition to the usual theory and methods material).

The meeting adjourned about 12:25

minutes2013-10-03.txt

Agenda for Stat program committee meeting on 10/03/2013

1. Discuss the 2013 (Fall) comprehensive exam result

2. A brief announcement about the initiative to create a “bigdata” degree. Thad

3. Item III Departmental Electives for the concentration: two are needed. Weizhen
   STT 4110 Applied Time Series (3 credits)
   STT 4210 Sampling Design (3 credits)
   STT 4310 Clinical Trials (3 credits)
   STT 4240 Statistical Quality Control (3 credits)
   STT 4260 Survival Analysis and Reliability (3 credits)
   STT 4640 Computational Statistics (3 credits)

4. Teaching assignment in Summer 2014 and renewing the software S+. Munsup

5. Report on graduate students and discuss academic integrity. Harry


Minutes for Stat program committee meeting on 10/03/2013 from 1:00-2:10pm in 120 MM
Attending: Thad, Mak, Munsup, Harry, Shuxia, Weizhen, Gengxin and Long

1. Thad explains the results of the Part I of the comprehensive exam, in particular, the weakness of three students whose grades are less than 70. The committee members at the meeting all agreed not to pass the three students for Part I. For Parts II and III, all student's grades are well above 70 and all get passed.

2. Thad makes an announcement that three parties: Computer Science, Business School and Statistics are preparing a joint Master program for big data. Some statistical courses are expected to offer. Harry mentioned that a three-day short course on big data will be offered later this year.
3. Stat committee recommends STT 4110 (Applied time series) and STT 4260 (Survival analysis and reliability) if two courses are needed for the Actuary concentration.

4. Munsup talks about renewing S+ for teaching STT 4640. Stat committee recommends to renew S+ if Munsup is assigned to teach this course in summer 2013.

5. Harry describes the academic integrity issue in Engineering School and discusses how to prevent this in our program.

6. Long raises a question for the interdiscipline ph.d. program, and proposes that the student should be allowed to have two advisors.