2013-2014 Annual Student Success Committee Report

Presented to Chancellor Schrader

June 11, 2014

Missouri University of Science and Technology

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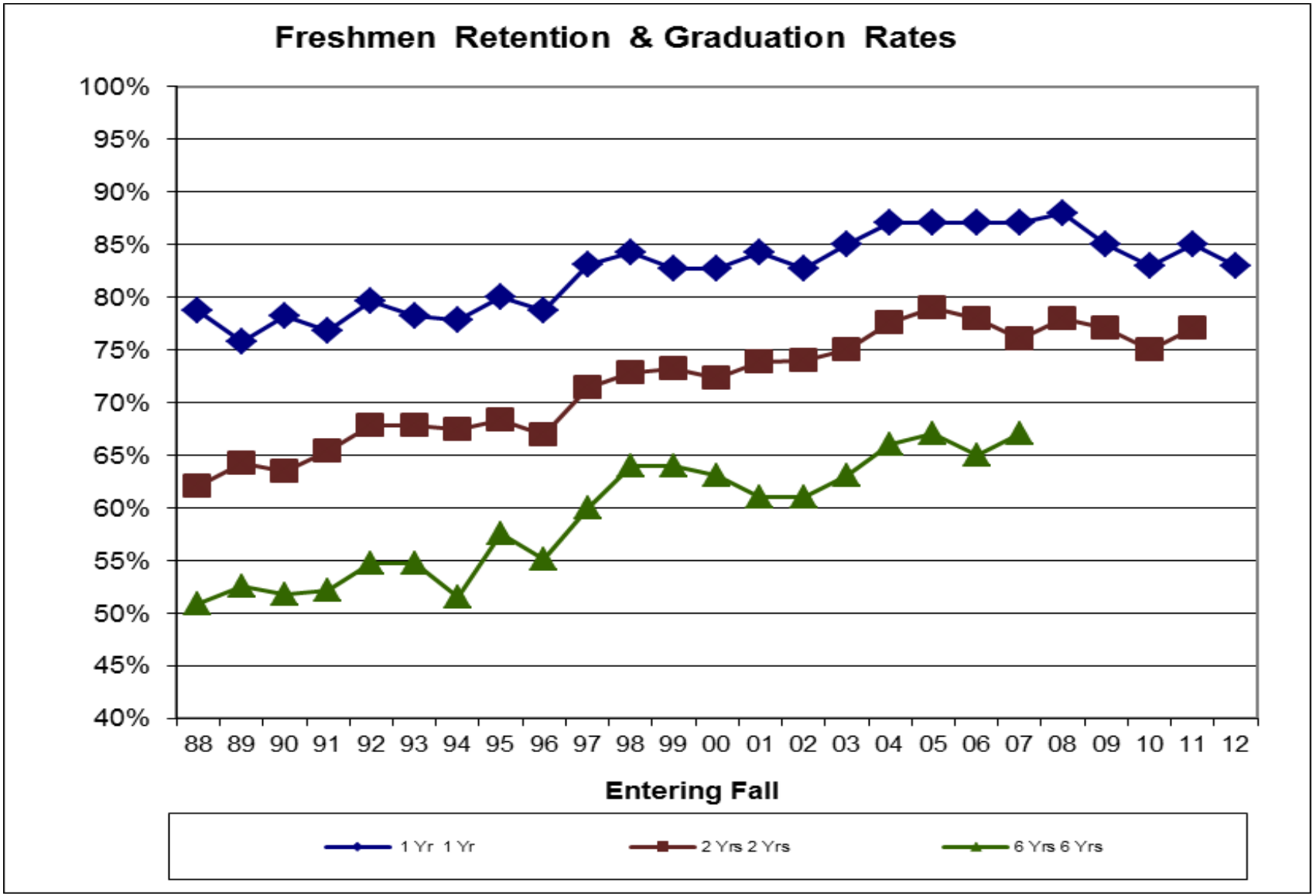
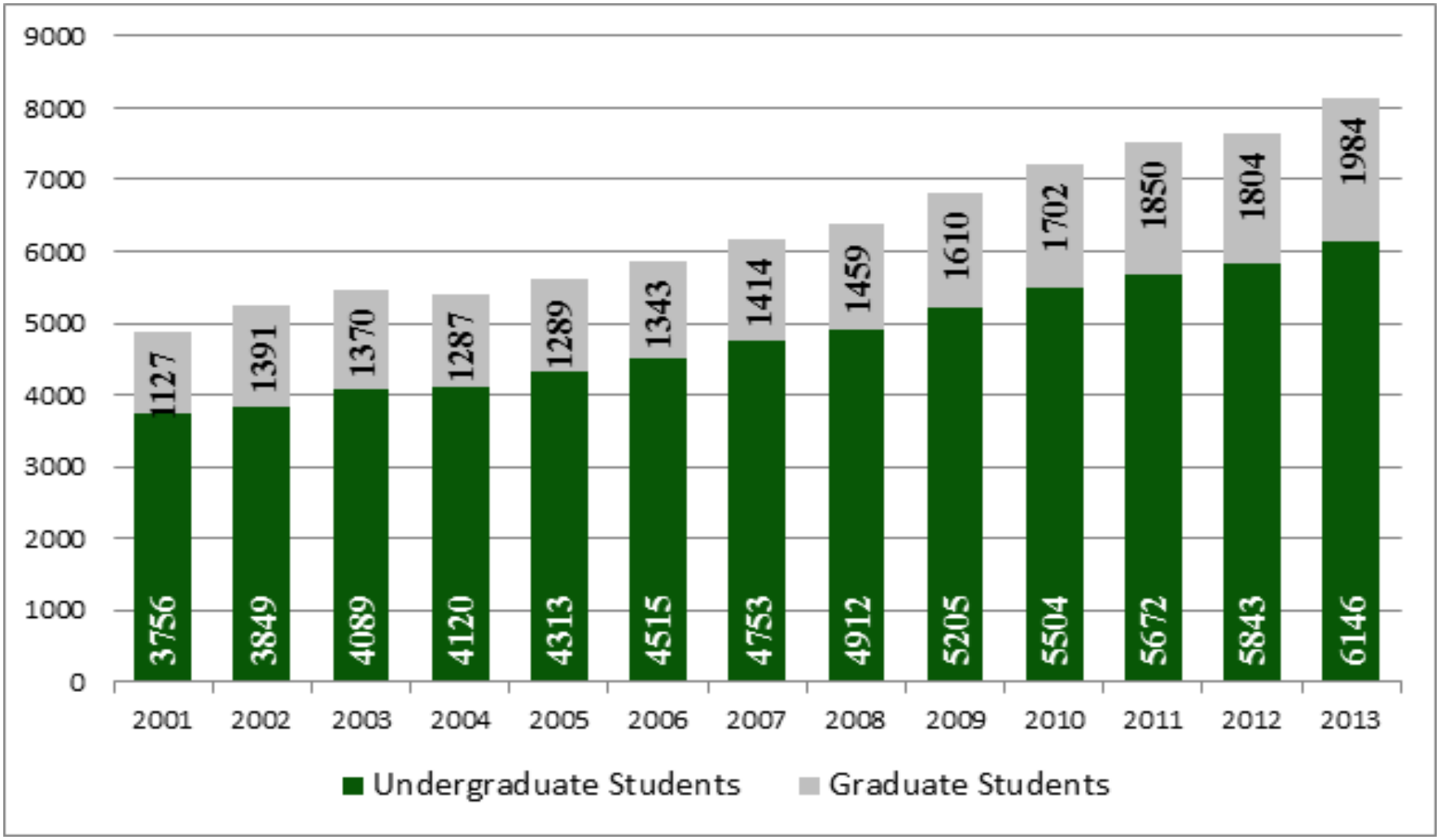
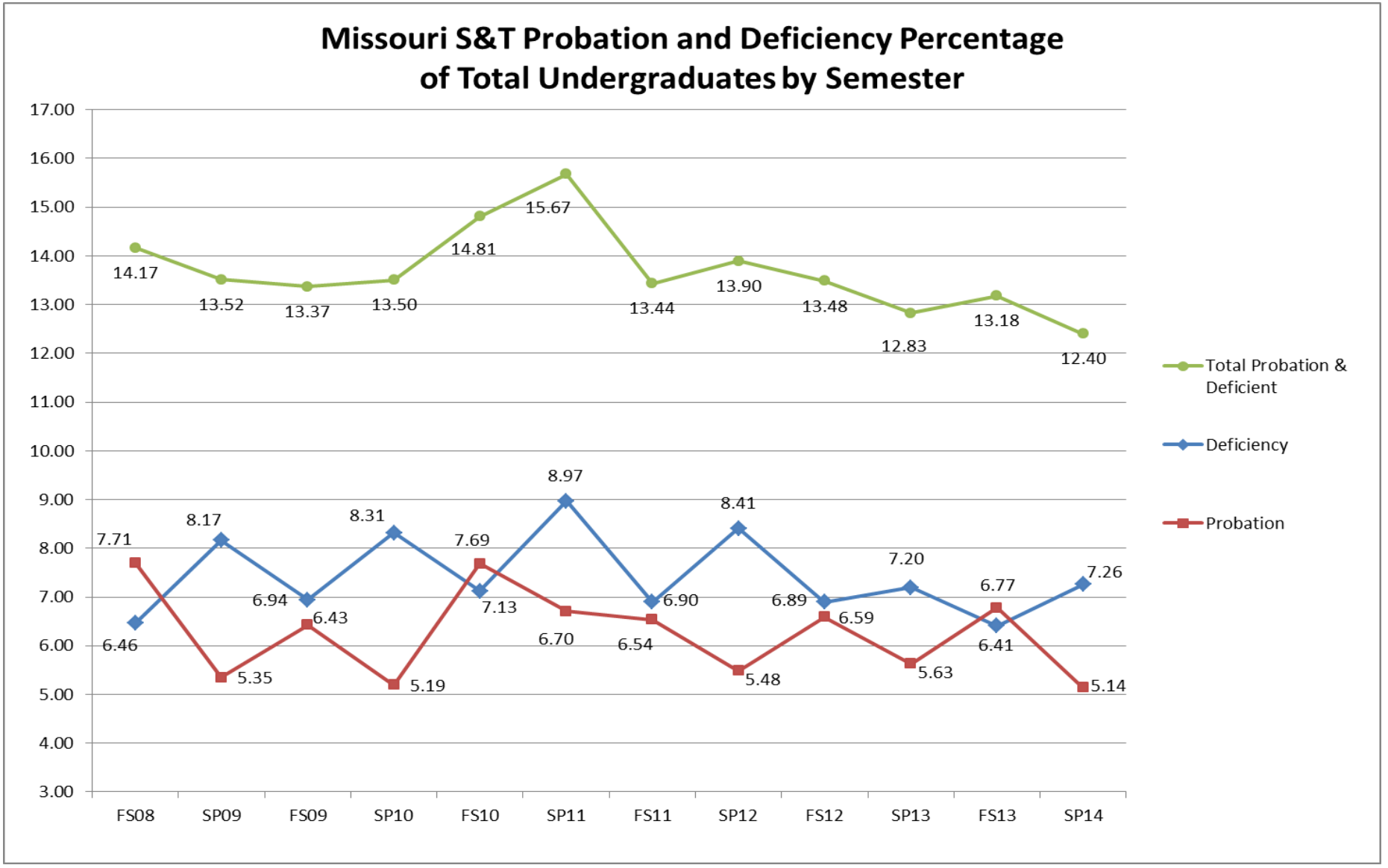

Freshmen Retention & Graduation Rates
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
45%
40%
88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12
Entering Fall
1 Yr 1 Yr
2 Yrs 2 Yrs
6 Yrs 6 Yrs

2001-2013 Missouri S&T Enrollment Trends




Missouri S&T Probation and Deficiency Percentage of Total Undergraduates by Semester
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
FS08
SP09
FS09
SP10
FS10
SP11
FS11
SP12
FS12
SP13
FS13
SP14
14.17
13.52
13.37
13.50
14.81
15.67
13.44
13.90
13.48
12.83
13.18
12.40
7.71
8.17
6.94
8.31
7.69
8.97
6.90
8.41
6.89
7.20
6.41
7.26
6.46
5.35
6.43
5.19
7.13
6.70
6.54
5.48
6.59
5.63
6.77
5.14
Total Probation & Deficient
Deficiency
Probation

Subcommittee #1
Freshman Online Courses

Committee members: Carl Burns, Larry Gragg, Deanne Jackson, Katie Jackson, Dan Reardon (chair), Lynn Stichnote, Laura Stoll, Klaus Woelk

Subcommittee Research Questions

- Which online courses—either synchronous, asynchronous, or blended—are offered online and eligible for freshman enrollment?
- What does current research say about online course effectiveness?
- What assessments are currently ongoing with S&T's online foundational courses?
- Do online instructional delivery methods enhance learning?

Foundational Courses Offered Online

- Bio Science 110—General Biology
- Chemistry I—contains voluntary online component
- English 20—offered in blended format, fall 2013
- Geo Engineering 50—Intro to Geological Engineering
- Math 22—Calculus with Analytical Geometry III
- Philosophy 5—Intro to Philosophy
- Philosophy 75—Comparative Religious Philosophies
- Physics 23—will be offered online fall 2014
- Psychology 50—will be offered in blended format, fall 2014

Review of Research Literature

- 42 Studies of Online Courses Reviewed
- Studies that examined online grade outcomes versus face-to-face (F2F) outcomes:
  - Online approach resulted in much lower grades with lower-division students
  - One study in which this comparison was done with upper-division students resulted in similar grades but much lower satisfaction for the online section
- Studies examining retention of students throughout the semester found much poorer results for online methods
- Studies looking at engagement or participation also found much poorer outcomes for the online method

Review of Research Literature

- Nationwide, institutional support for online instruction is often completely inadequate
  - Usually underestimates actual costs
  - fails to provide sufficient resources
- Cost of online instruction often exceeds F2F delivery methods
- Instructor time invested in courses generally runs one and a half to two times higher in online instruction
- Little or no efficiency gains through use of online methods
- Research demonstrates that online delivery methods offer *at best* a comparable experience to F2F
- No data to date exists that demonstrates online delivery enhances learning

Current S&T Assessments— Freshman Online Course Effectiveness

- Two departments have conducted formal assessments: Chemistry and English/Tech Com
- Two other departments responded to query regarding assessments of online courses: Physics and Psychology
  - Both departments will offer foundational online courses fall 2014
  - Will conduct formal assessments

Current S&T Assessments— Freshman Online Course Effectiveness

- Chemistry I
  - Lecture, Recitation each offered as optional online delivery method
  - No significant change in As and Bs
  - More Cs and Fewer Ds and Fs
  - Student satisfaction generally high
  - Each semester's outcomes have produced similar results to initial study

Woelk, K., Satterfield, E. (2013). General chemistry I: major course redesign. *Powerpoint Presentation.* Used by permission.

Current S&T Assessments— Freshman Online Course Effectiveness

- English 20
  - Offered 3 blended sections fall 2013
  - Compared to control group of 15 F2F sections, taught by the same instructors who taught the blended courses:
  - Fewer As, Bs (27%)
  - Fewer Cs
  - More Ds and Fs
  - CET scores in online courses were below instructors' averages
  - 51% of students reported in exit survey that they would not recommend the blended English 20 course to other students
  - Low instructor satisfaction with the format

- Blended English 20 courses will be discontinued

Dr. Reardon-English 20 coordinator

Recommendations

- Online instruction best used:
  - In brief instructional periods
  - Specific, purposeful objectives
  - Older and/or targeted audience
- Online methods are not recommended:
  - for students in entry-level courses
  - for students who lack strong self-motivation
  - if access is uncertain
- Online methods may be damaging to community engagement

Subcommittee #2
Math 2

Committee members: Carl Burns (chair), Steven Clark, Rachel Morris, Laura Stoll, Nangai Yang

Challenges

- For the four fall semesters 2008-2011, DFW rates for students enrolled in Math 2 averaged 49%
- Average ACT composite score for this group of students was 25.5 vs average of 28.3
- The DFW rates for other math courses was much lower than for Math 2
- Online homework program in FS11 intended to lessen DFW rate in Math 2 had little effect
- Math Help program was moved to 105 Centennial, program changed—minimal effect

Actions Taken

Data requests for Math 2 analysis and for students in general:

- Start in Math 2 initially in the fall semester
- Drop back to Math 2 from Math 4 after 9 weeks
- In Math 2 at the start of the second semester (consisting of at least three subgroups)
- Focus groups and surveys to assess student reactions

Students in general:

- First-to-second-year continuation rates, DFW rates, and graduation rates, by math course placement, from FS03-FS12 (continuation/DFW) and FS03-FS07 (graduation), engineering/non-engineering degree

Assistance Program Development

- Begin developing an out-of-class math assistance program (M*A*S*H) to augment existing efforts modeled on a similar program, JAM (Joint Academic Management), in place from FS04 through FS07, which had boosted GPAs of participating students considerably

Outcomes

- Requests for the above-mentioned data have been submitted to IR&A for processing
- Preliminary data compiled by Rachel Morris in the UGS office
- Focus groups and a survey were conducted with Math 2 students in FS13, with another survey administered this spring. Results from the FS13 efforts- most students seeming to have accepted their placement after a short time; Spring 2014 results were inconclusive
- The M*A*S*H program was developed collaboratively among UGS, Student Affairs, and the Mathematics and Statistics department
  - Much lower levels of participation than with JAM several years ago, in spite of more effective planning, marketing, and collaboration between instructors and student mentors
  - Awaiting Math 2 grade results to correlate with attendance

Recommendations

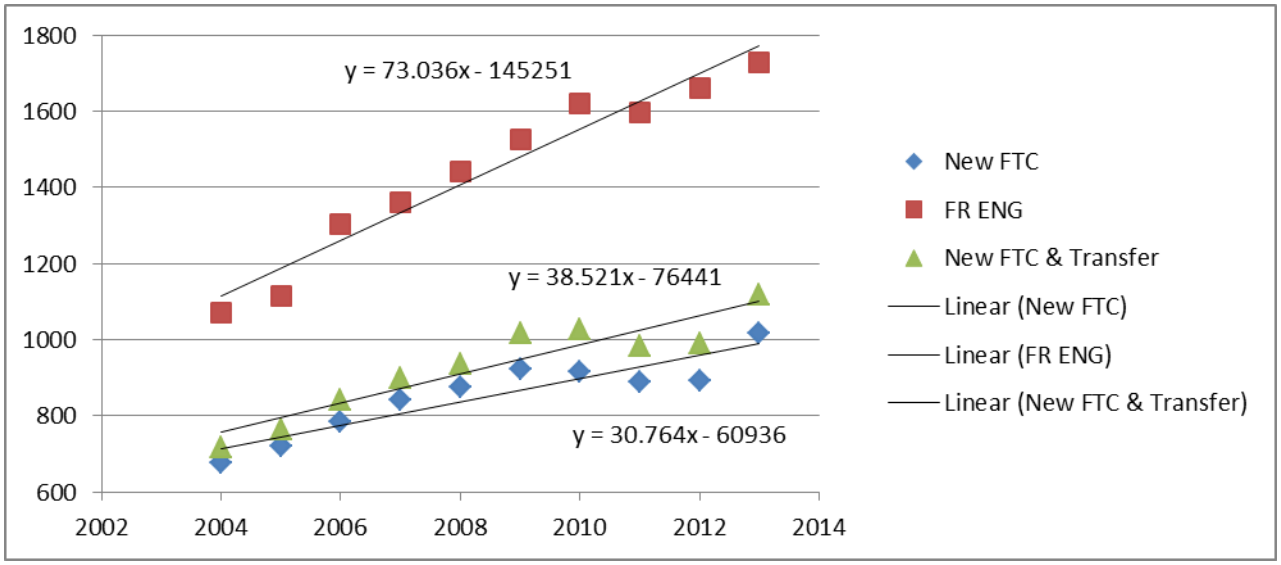
- The data tables assembled as a result of requests this semester should be updated annually
- It is recommended that the decision not to offer credit to students for participating be re-considered if the program is to continue next fall
- Consider other incentives for inclusion and factors for consideration
- Although not part of this subcommittee's efforts, the more interactive approach to instruction being tried in some sections of Math 2 should be continued

Subcommittee #3
Freshmen Engineering Program (FEP)

Committee Members: Jeff Cawlfield, Tyrone Davidson, Cecilia Elmore, Patty Frisbee, Douglas Ludlow (chair), Adrienne Neckermann, Steve Raper, Lynn Stichnote, Kristi Schulte

Key Research Results

- The rate of increase of the total students in FEP is twice that of students admitted into the program (More students are taking longer than two semesters to complete courses in FEP)
  - Entrance GPA requirements increasing in many departments
  - Students less prepared to move through calculus & physics?



Key Research Results

- Advising of FEP Students by "volunteer" faculty is not working well
  - Push back from departments
  - TT faculty see little merit in providing this service
  - Faculty are not trained to help students make decisions about career choice or to guide them to degree programs where they can be successful
  - Faculty "volunteers" are neither trained nor take the time to counsel "at risk" students

Recommendations

- **Hire three or four staff advisors** to deal with the logistics and mechanics of advising the large number of students in FEP
  - Advisors with broad knowledge of disciplines and ability to coordinate testing on career aptitude instruments to help guide students into majors were they can be successful
  - Work with students who have GPA problems

- Using two or three faculty "volunteers" from each of the Engineering departments to serve in recruiting events, to serve as resource for engineering careers and to serve as the core of the PRO Advisor pool

Subcommittee #4
Barriers to Choice of Major

Committee Members: Tim Albers, Bridgette Betz, Jeff Cawlfield, Tyrone Davidson, Cecilia Elmore, Larry Gragg (chair), Doug Ludlow, and Dan Reardon

Key Research Results

- ACT scores are not a good predictor of success at S&T.
- Requirements for admission to engineering programs at S&T are about average for comparator institutions.
- Among the “gateway courses” at S&T, the biggest challenges are in Physics 23 and Math 14.

Recommendations

- S&T engineering departments should make data-based decisions about their admissions policies and be transparent
- Continued support for the Math 14 and 15 initiatives
- Testing for all incoming students in reading comprehension

Subcommittee #5
Academic Policies and Barriers to Graduation Committee

Committee members: Tim Albers, Bridgette Betz, Deanne Jackson (chair), Katie Jackson, Adrienne Neckermann, Steve Raper, Kristi Schulte, Ramya Thiagarajan

Our focus - review current policies for effectiveness and develop new policies that enable students to persist and complete their degree.

Barriers to graduation

-graduate student perspective

1. Dissertation writing fellowship

-undergraduate student perspective

1. More financial aid
2. More opportunities for jobs on campus
3. New Advisors
4. Courses taught only once per year
5. Prerequisites need to be enforced consistently across campus or eliminated

What helps progress students toward graduation from the student perspective:

1. Involvement
2. Advisors
3. Degree Audits
4. Planner within the Catalog
5. FE10 (prior to redesign)

Initiatives implemented:

1. $80,000 work study grant awarded
   - CRI funded initiative through UM System
   - Awarded 32 grants to first-time college low income and/or underrepresented minority students
   - Beginning Fall 2014

2. Hired Graduation Advisor position within the Registrar's Office
   - Hired to help break barriers to graduation and assist students and departments with policy interpretation and implementation to ensure student success

Goals moving forward:

1. More funding to continue the work study grants
2. Automate or eliminate the prerequisites
3. Math placement automation or adaptation
4. Purchase the Academic Mapping Planner tool (AMP)

Highlight Summary

- Hire 3-4 staff advisors to help with the large numbers of FEP students
- Restrict online enrollment options for first-year students
- Address math 2 challenges
- Purchase Academic Mapping Planner (AMP).
- Departments becoming more transparent concerning their admission policy for students

Possible Topics for 2014-2015

- Professional Staff Advisors
- Transfer student success and review of course equivalencies
- Starfish advising with Connect and Early Alert tool - S&Tconnect
- Analysis of Institutional Work Study