University of Mississippi Student Support Programs

a. Financial support: A large number of UM students receive some type of merit based scholarship and we have a highly ranked Honors College and Provost Scholar’s Program. These financial support mechanisms are typical of a public research university. In addition, UM has two financial support programs that are particularly relevant to this proposal. One is the Ole Miss Opportunity (OMO) Scholarship Program and the other is the STEM Non-Resident (STEM NR) Scholarship Program.

The OMO Scholarship program is a commitment that the University of Mississippi has made to providing access to higher education to those students who come from families with incomes below $30,000. Such students are eligible for Pell grants, but whether or not a student is able to receive a Pell grant, UM has made the commitment to “top off” all federal loans received by students who meet the following criteria: are from families with annual income below $30,000, are fully admitted to the University, and have a high school GPA of 2.5 or above. For these students, UM provides an Ole Miss Opportunity (OMO) Scholarship that supplements Pell and other federal loans to meet the complete cost of attendance, including tuition, housing, a meal plan, and fees. Because the University is making this commitment of financial support to students with financial need, UM also has the responsibility to provide the appropriate academic programming to enable the success of these OMO Scholars, especially in STEM majors, since financially disadvantaged students often come from low performance high schools where the preparation for study in STEM majors is most lacking. Mississippi consistently lags in such measures as the average ACT scores of its high school students [#9] and offers very few courses in subjects like Physics at the high school level. Students from such backgrounds tend to be weakly prepared, but often have latent talent. Positive steps to support such students during the first two years are critical for their success.
The STEM NR Scholarships, which essentially are partial waivers of non-resident tuition, are designed to recruit students into the state to major in a STEM field; continued eligibility is dependent on academic progress in the STEM major. Students must have high school GPA >3.0 and an ACT above 26 to be eligible. As with the OMO Scholarships, this program is a commitment of the institution to recruit and support students in STEM and the institution has the responsibility to provide academic programming, which helps retain these students in these majors.

b. Academic Support/Retention Efforts:

Over the past several years, UM has developed a portfolio of academic support programs to address student retention (e.g., orientations, freshmen seminar course, common reading assignments, freshmen absence tracking and intervention, free tutoring, enhanced advising, living learning communities, enhanced writing center and freshmen writing courses, math labs, learning skills workshops, etc.). First year retention, across all programs, has increased from 78.3% in 2008 to 86.0% in 2013. The FASTrack learning community program, described above, has been one of the important and successful initiatives for improving first year retention of students who enter with underprepared backgrounds.

Our STEM departments and schools have also developed a number of retention efforts, which will be briefly summarized. The proposed STEM-Track project will work in concert with these efforts. For example, supplemental instruction will be a component of the academic support offered to the STEM-Track cohort and entering STEM-Track freshmen will also be encouraged to participate in programs offered by our departments of Biology (Biology Bootcamp), Chemistry (Parachute Program), and Engineering (SUCCESS Program) and minority students will be encouraged to participate in our IMAGE program.

Biology Bootcamp: Entering freshmen who register for General Biology are invited to participate in this one week program right before the beginning of the fall term. Biology instructors give these students a
very intense four day program that includes review lectures, two lab experiments, and three graded exams, with the students being on task approximately eight hours a day. The concept, modeled after a similar boot camp at Louisiana State University, is to expose the student to the level of performance expected, including an experience with tests, without the test scores counting once the Fall semester begins. Now in its second year, this program is voluntary, with a little over 10% of the eligible students participating and with a cost of approximately $350 per students, which includes the text they will use during the fall term. Among these participants, 13% have been minority and 67% female.

**Chemistry Parachute Program:** As with our Biology Department, Chemistry had established a set of prerequisites in an attempt to limit the course to those who are adequately prepared, but some students still struggle with the material. As a further step to facilitate students’ success, the Chemistry Department has created, over the past three years, a strategy of advising freshmen General Chemistry students, who fail the first exam (generally given in early September for all sections), to “parachute” down to a lower level course, Chemical Concepts. Such students may then re-enter the two-semester General Chemistry sequence in the Spring or Summer and be ready to take the sophomore level Chemistry courses (Organic Chemistry) in their sophomore year. Approximately 40 students per year have taken this “parachute and re-entry” route over the past three years.

**Engineering SUCCESS Program:** The Engineering School at UM has developed its own learning community program for entering Engineering major who have an at-risk profile. This learning community, called SUCCESS, also involves a cohort of students who take special sections of the Freshmen Seminar, Freshmen Writing, Pre-Calculus, and Introduction to Engineering. STEM-Track will operate out of our College of Liberal Arts (with the departments of Biology, Chemistry, and Mathematics being in this College) and will coordinate efforts with the Engineering SUCCESS Program. We note that all Engineering majors must take courses in Mathematics and Chemistry, and some majors (e.g., Biomedical Engineering) require courses in Biology, so a partnership between Liberal Arts and
Engineering retention initiatives is necessary. Also, entering students often switch majors between Engineering, Chemistry, Biology, Physics, and Mathematics, so these retention programs must be flexible in enabling the students to find their best fit.

**STEM Living Learning Community:** Now in its second full year, UM has built dormitories in which different floors are living learning communities for various disciplines or themes. The STEM floor houses 71 students who are majoring in science, mathematics, or engineering. There are two faculty advisors who arrange STEM programming for these students, including tutoring sessions, field trips, workshops/demonstrations. A number of faculty voluntarily hold tutoring sessions each week in this STEM dorm.

**Supplemental Instruction:** UM has established a SI program over the past several years, modeling its program after the SI program developed by Dr. Deana Martin at the University of Missouri-Kansas City [7] (http://www.umkc.edu/asm/). SI peer mentors are junior or senior students who have done well in a particular course and who are then hired by the University to participate in peer-led discussion groups for lower division courses. The SI peer mentors are required to attend lectures in the targeted class and then hold after class sessions to review the lecture content with attendees. Students enrolled in a course are asked to voluntarily attend the SI review sessions. We offer SI sessions in association with General Biology (Bisc 160, Bisc 162) and General Chemistry (Chem 105, Chem 106), each of which is a two-semester gatekeeping STEM course with a high DFW rate. Data show that students who attend at least seven SI sessions during a semester for any of the above four courses have an average course GPA that is 0.25 units higher than those students not attending SI sessions. The SI program will be a component of the learning community support for STEM-Track participants. In fact, we have plans to expand the SI program to include sophomore level STEM courses, such as Anatomy, Physiology, Microbiology, Organic Chemistry I and II, Physics I and II, and Computer Science (Csci 251, Programming for Engineering and Science). This is a very cost effective retention program, since the supplemental
instruction/coaching is done by undergraduates; a small portion of the proposed budget is to provide student wages to expand SI to these sophomore level STEM courses.

**IMAGE Program:** This program has been active at UM for nearly twenty years as part of the NSF Louis Stokes Alliance for Minority Participation program. The Mississippi AMP program is considered one of the “Grand AMPs”, as it was one of the first funded by NSF. This program identifies entering minority students who are STEM aspirants and has, over the years, developed its own Summer Bridge program and year round academic support activities (peer tutoring, advising, mentoring, with a computer/study lab for participants). Approximately 125 AMP students are supported each year through this program. When there have been gaps in funding, the AMP program has been coordinated on this campus with the other programs mentioned above. STEM-Track will operate in partnership with the IMAGE Program in supporting minority STEM majors.