Fall Planning Letter: Lyman Briggs College
E.H. Simmons, LBC Dean 8 December 2014

1. Implications of anticipated curricular, or instructional changes

INQUIRE:
Lyman Briggs continues to invest funds and effort in developing the INQUIRE curriculum for students entering with less than typical mathematics preparation. We add new courses and disciplines to INQUIRE each year, to ensure that students are supported throughout their core Briggs classes. In addition, INQUIRE is partnering with Engineering and Natural Science through the ESSA summer bridge program and through a mix of research and implementation efforts funded by the recent HHMI and Dow grants.

Early assessment indicates that INQUIRE is promoting student success and retention – very welcome news indeed! In coordination with MSU’s Learning Analytics Group, we intend to more thoroughly study the influence of the INQUIRE curriculum on students’ later success. We anticipate that the emerging evidence of success will place more enrollment pressure on upper-level courses in LBC, which will cause LBC to need additional office and classroom space in Holmes Hall. The Dean’s Office is in conversation with Facilities Planning and Space Management (FPSM) about how to address these issues in flexible and space-efficient ways that also support curricular innovation.

REAL classroom:
Lyman Briggs is working with FPSM to design a REAL classroom for Holmes Hall that will enable LBC classes to incorporate more technology-enabled active-learning techniques, while still using teaching demonstrations created in our laboratory prep rooms. Our REAL room will use mobile furniture and technology to provide flexible teaching options in multiple disciplines – and to make it less costly to upgrade the room over time as needed. The tentative plan is to create the REAL room where our physics teaching lab now resides and relocate the physics lab to a space that is not presently used for teaching. This idea is included in LBC’s fall 2014 Space and Alterations & Improvements plan; LBC is committing college resources, as well as seeking university sponsorship.

In addition to letting us offer more creatively designed courses, we anticipate that the REAL room will provide other long-term benefits. First, as the Briggs faculty experiment with how to teach effectively in this space, they will discover how we might facilitate active-learning methods in other Briggs classrooms with minimal alterations. That is, we will discover how to make other Holmes (and MSU) rooms into active-learning spaces in a cost-effective way. Second, the process of creating the REAL room will add another classroom to the college, which should help us cope with the long-term enrollment and space issues mentioned above. Although we fully utilize our current Holmes classrooms by teaching 8am-10pm M-Th and 8am-4pm on Friday, we presently must use two classrooms in Akers as well. Third, the room will facilitate externally-funded, disciplinary-based education research (DBER) projects by Briggs faculty in multiple disciplines.
Physics Studio Laboratory Classroom:
Over the next few years, LBC plans to migrate its calculus-based physics courses that serve predominantly life science majors to a Studio format in which lecture, recitation, and laboratory components merge in an inquiry-based curriculum. This unique course design will make optimal use of the physics teaching lab space that is being created to make way for the REAL room. It will also capitalize on the expertise of our new physics education faculty member, Dr. Vashti Sawtelle. To ensure sufficient staffing for the more labor-intensive Studio format, and to help with enrollment management in both physics and mathematics, LBC is reallocating funds to hire an academic specialist capable of teaching in both the physics and mathematics groups and eager to participate in DBER experiments in either area.

Writing Studio Pilot
LBC is piloting incorporation of a Writing Studio program into the Introduction to History, Philosophy, and Sociology of Science course (LB133), which satisfies the Tier 1 writing requirement. Specifically, LBC has engaged with the Writing Center to train and supervise writing tutors who work intensively with LBC freshmen as part of their LB133 course, in weekly six-student Writing Studios. The Studios are held in specially designated learning lounges on the residential floors, just as are the help rooms for our STEM courses.

We anticipate that the Writing Studio will make our LB133 classes more effective at developing students’ writing skills and will especially be valuable to underprepared freshmen, including members of the INQUIRE cohort. Preliminary evaluation of this pilot suggests that it is a valuable addition to our students’ first-year coursework. As with INQUIRE, we plan to use tools under development by the Learning Analytics Group to help assess the short and long term impacts of this effort. If our assessment of the pilot’s effectiveness is positive, we will institutionalize Writing Studios across all LB133 sections (most LBC faculty joined the pilot, so we will have a large data set available). This pilot effort is also a valuable step toward greater coordination of the themes and skills stressed in the many LB133 course sections offered each year.

Other Curricular Innovations
Beyond the efforts mentioned above, several additional curricular changes are being planned or piloted. The LBC biology group is running the first iteration of a “BioCore” course, in which the ecological/organismal and cellular/molecular semesters of the introductory class are united in an integrated full-year experience. The long-term inquiry laboratories for BioCore are partially based around two research systems (indoor freshwater ecosystem, outdoor bird feeding system) that will support student projects at multiple scales. The Chemistry group is preparing to revise the second semester of the introductory course to stress conceptual integration through modules on alternative energy or the search for exobiotic life; this effort will build on Dr. Ryan Sweeder’s previous pilot work. We anticipate this will better prepare students for their advanced chemistry and biology classes, while enhancing connections with concepts discussed in the students’ HPS courses. Mathematics group members Dr. Akilul Zeleke and Dr. Robert Bell, under the aegis of the MSU HHMI grant, are working to create an inquiry-based calculus course to
better serve the needs of life science majors; after piloting this in Briggs, the HHMI team will work to offer it in CNS as well. The HPS group is about to re-organize their junior-level courses to create a clearer thematic flow among courses emphasizing different disciplines and to align them with key competencies identified in the 2011 Association of American Medical Colleges report *Behavioral and Social Foundations for Future Physicians*.

All of these curricular transformation efforts are intended to improve students' learning outcomes by focusing on concepts, helping students move from a novice to an expert perspective, building science (or HPS) practice skills, and stressing connections among disciplines. The faculty members leading the work also anticipate that the projects will lead to scholarly publications. Some of the projects are already part of externally funded DBER initiatives while others are spurring applications for new grants.

2. BBD Programmatic accomplishments (Current and Anticipated)

**BBD-1: Enhance the Student Experience**
Lyman Briggs continues to expand the INQUIRE program for at-risk students and to build connections to related efforts in Engineering and Natural Science through the ESSA summer bridge program and the HHMI and Dow STEM Success programs.

Via partnerships with Engineering, Nursing, and the MSU Career Network, Briggs has invested resources to establish a Career Office that helps students plan an integrated pathway during college, through internships, and into their early career stages. The career professionals collaborate with LBC academic advisors to work closely with students starting as early as freshman year.

High-impact experiences such as study abroad/away courses, learning assistantships, and undergraduate research opportunities are at the core of the Briggs Experience. We are undertaking an annual survey of graduating seniors to better understand the prevalence and impact of these experiences. We are also using the Capital Campaign to build endowments that will make them available to all students, regardless of financial means.

Because LBC has a large population of students interested in health professions, we are building collaborations with MSU’s medical colleges. We are partnering with COM to offer a 3+4 BS/DO degree program that reduces time to degree for high-achieving students. We are also in early stages of discussion with CHM’s Public Health program about how to help them create an interdisciplinary major in Global Public Health and Epidemiology.

**BBD-2: Enrich Community, Economic, and Family Life**
The LBC Inclusion Committee is working with faculty governance to establish trainings for faculty and students who evaluate the teaching performance of existing faculty or job candidates – the idea is to minimize the impact of implicit bias on these evaluations. This should make our search processes and merit review procedures more fair and inclusive.

The INQUIRE program mentioned above promotes broader participation in STEM by students from traditionally under-represented groups. The student-run Briggs Multi-Cultural Alliance assists in these efforts by contacting incoming students from under-served communities to answer their questions about college life.
LBC’s regular offerings of numerous courses through Grandparents University and participation in the MSU Science Festival also encourage public understanding of science.

**BBD-3: Expand International Reach**

LBC is strategically developing semester-long international exchange opportunities for STEM students to increase outbound study abroad participation. We are focusing on two areas: (a) the physical sciences, which are less well-represented in exchange due to the need for bench laboratories and English language instruction, and (b) human biology majors as this is the largest major in both LBC and CNS (n>1300) and does not have the benefit of a departmental faculty structure to support international efforts. Partner institutions confirmed or in negotiations include University of Technology Sydney, Deakin University, Monash University, LaTrobe University and Australia National University (all in Australia), Massey University (New Zealand), Lund University (Sweden), and Newcastle University (England).

These exchange programs also bring inbound students from our partner institutions to MSU and most of those in the sciences will be placed in Holmes Hall, where they can participate in Briggs activities. We will continue to use the American Semester Program to support additional inbound students from Science Without Borders (Brazil), fee-paying inbound students, and programmatic summer programs for groups of science students (ANU) in their version of Freshman Seminar Abroad.

We are also pursuing partner-sponsored short-term summer programs to replace those previously offered in faculty-led models. This significantly reduces costs to students related to faculty salaries, travel, lodging, and M&IE expenses. It will also improve program stability, since LBC’s faculty increasingly need to use summer for externally funded scholarship and cannot lead study-abroad programs each year.

Finally, LBC is deliberately focusing its several HPS faculty searches this year on candidates whose scholarship and teaching stresses non-Western perspectives, so as to give students’ experiences in the classroom and in research experiences a more global reach. These hires are partially funded by reallocation of LBC resources.

**BBD-4: Increase Research Opportunities**

Lyman Briggs faculty led the effort to create Science and Society @ State (S3), which is creating collaborations between HPS scholars, scientists, and health care professionals to promote interdisciplinary research and spur successful grant proposals campus-wide. As the first S3 Director, LBC professor Dr. Georgina Montgomery is running an S3 faculty grant program co-sponsored by the OVPRGS and ten colleges, which just finished awarding the first round of grants, totaling over $120k. Several S3 faculty clusters have already won new external grants, and we expect the internal funding program to provide the impetus for increased external grant activity among the broader group of S3 faculty.

Lyman Briggs co-founded the MSU Undergraduate STEM Education Alliance, which is engaging numerous colleges, programs, and research institutes to make MSU the premier public university for undergraduate STEM learning and research. LBC faculty are PI’s or senior participants on the associated initiatives funded by the AAU, HHMI and the Herbert
H. and Grace A. Dow Foundation, and the pending pre-proposal for an NSF Science and Technology Center focused on STEM Education Research.

Lyman Briggs is building a pattern of regularly sponsoring and hosting (inter)national conferences in its core research areas: undergraduate STEM education, and the history, philosophy, and sociology of science. Most recently, Briggs led the MSU team that hosted the annual meeting of the Association of Interdisciplinary Studies in Fall 2014. LBC sociologist Dr. Logan Williams is now organizing a 2015 conference “Knowledge from the Margins” on connections between HPS, social justice, and sustainability and the numerous contributions to the knowledge enterprise by members of under-represented demographic groups. A proposal to host the 2017 meeting of the International Society for History, Philosophy, and Social Studies of Biology is pending. Briggs has joined the Consortium for Socially Relevant Philosophy of/in Science and Engineering (SRPoISE), which will lead to our assisting CAL Philosophy in hosting an upcoming SRPoISE meeting and then taking the lead to host another SRPoISE meeting on campus in a few years’ time.

Briggs continues to promote undergraduate scholarship by incorporating research projects into many courses, offering college-funded student research stipends, and pursuing Creating Inclusive Excellence grants to support research by INQUIRE/ESSA students. We recently invested college funds in renovating the Holmes C12 and W38 teaching lab prep spaces to make common scientific equipment and bench space available for student researchers. For the longer term, the college has made endowed support for student research a Capital Campaign priority.

**BBD-5: Strengthen Stewardship**

LBC is working to improve its teaching infrastructure through several projects described above: creating student research space by renovating the teaching lab prep rooms in Holmes C12 and W38, creating a Studio Physics Laboratory Classroom in Holmes E5/6, and building a REAL classroom in Holmes E26a.

At the same time, our increasing course enrollments, correspondingly larger faculty cohort, and greater faculty research engagement have led to a need for more offices. We are working with Facilities Planning and Space Management to address this, and are experimenting with an open office plan for teaching-intensive faculty.

We are also developing online courses that simultaneously extend the college’s curriculum into career-preparatory areas of interest to pre-health-professions students, bring in revenue to support further such curriculum development, and provide additional revenue for other teaching innovations and student scholarships.

**BBD-6: Advance a Culture of High Performance**

LBC is increasingly using data analytics as the basis for local planning in its fiscal, human resources, student affairs, and administrative offices. This has already impacted decisions about how we staff courses – e.g. LBC's decision to create the new academic specialist positions was driven by analytics. Data we are now gathering about our students’ curricular choices in light of the pilot alternative track for integrative studies and about our students’ participation in high-impact educational experiences (e.g. study abroad/away or research) will undoubtedly influence future curricular and co-curricular offerings.
At the campus level, Briggs is partnering with other colleges and the Office of the Associate Provost for Undergraduate Education to develop robust assessment tools that will let us better evaluate the impacts of various educational programs. As an offshoot of the CIC Learning Analytics collaboration, the group spent the summer and fall investigating the power of matched-student analyses to discern the educational impact of undergraduate research. Given the impressive results of the pilot analysis, developing a large-scale flexible tool is now a priority.

Briggs has launched a redesigned website that gives swifter access to the essential functions and information that most site visitors seek. The new site also adheres to MSU’s brand platform and accessibility guidelines.

The LBC faculty are testing a new online student evaluation tool, based on the research-validated Student Assessment of their Learning Gains instrument. We need an instrument that will provide high student participation rates, detailed written answers to prompts, swift feedback to instructors, clear formatting, minimal use of staff time, and easy long-term data storage. Since student evaluations inform instructors’ revisions of their course offerings and senior faculty members’ mentoring of junior faculty members, we hope the new tool will prove successful – and early results from the fall 2014 pilot are encouraging.

3. Internal Reallocation of Resources

LBC has recently invested recurring and non-recurring funds in key strategic areas. We have created new cross-disciplinary academic specialist (teaching) positions to support long-term instruction and curricular development and to facilitate research-related teaching releases for tenure-system faculty. We have invested in two shared staff positions to support students’ career preparation (one with Nursing through CSN, the other directly with Engineering). We have allocated college funds to support instructors, learning assistants, and academic advisors for INQUIRE and ESSA. We have also funded the pilot Writing Studio program that the Writing Center is organizing for LBC, to improve first-year writing pedagogy in Briggs; while the initial investment was NR, if the outcome is positive, the investment will become recurring. We also invested College funds in updating two teaching-lab spaces to better support student research and purchasing related equipment.

In addition, we have created long-term economic ecosystems by which the revenue stream from one initiative is re-invested to support related efforts. For instance, income from study-abroad/away programs is re-invested in international program development and scholarships. Similarly, OCCI funds are re-invested in creating further hybrid and online courses and supporting teaching innovations. Invoking the same approach in the realm of research, we are using IDC funds to support new research initiatives, such as the S3 grant program, and to help LBC faculty host (inter)national scholarly conferences on campus.

Other future planned investments of LBC funds include the following: (a) We have set aside one-time funds to help with major renovations of teaching facilities that will support high-impact active-learning practices. Likewise, we anticipate investing in continuing upgrades of equipment that supports student research. (b) Based on patterns in enrollment and staffing data, we will invest in hiring more cross-disciplinary academic specialists.
4. Academic Competitiveness Initiatives
The ACF pre-proposals submitted by LBC on (a) STEM Education Research; (b) Evolution Education; (c) Technology, Science, and Public Policy Engagement; and (d) Humanities and Brain Sciences reflect LBC’s longstanding research emphases in Disciplinary-Based Education Research (DBER) and in the History, Philosophy, and Sociology of Science (HPS). All four are designed to augment existing areas of scholarly strength and to increase high-impact publications and grant applications by building strong cross-unit partnerships. They will also leverage existing partnerships in which LBC plays a significant role, such as Science & Society @ State and the MSU Undergraduate STEM Education Alliance.

LBC believes that research and undergraduate education can not only coexist, but also support one another. So even though the ACF proposals are primarily intended to augment the research profile of the college, the ACF faculty will also improve the student experience. The ACF DBER faculty will create high-impact teaching practices that will benefit MSU students and be disseminated nationally. All ACF faculty will create new courses reflecting their research expertise; these can lead to joint academic initiatives with partner colleges.

LBC is already investing resources in the areas targeted by the ACF pre-proposals proposals. Our tenure-stream searches in 2013-14 and 2014-15 (partly supported by reallocation of LBC funds) align with the topics of ACF pre-proposals (a), (c) and (d). Long-term plans for a tenure-stream hire following an anticipated retirement five years hence will support topic (b).

LBC’s current and planned future re-allocations to fund the hiring of academic teaching specialists in targeted fields will also support the research and teaching missions of the ACF faculty. By partnering with the ACF faculty on curricular matters, the specialists will enhance the impact of their DBER initiatives. Moreover, as long-term members of academic staff, the specialists will help to ensure continuity of educational quality when the ACF faculty win prestigious awards that pull them out of the classroom from time to time.

5. Capital Campaign Objectives
LBC’s Campaign objectives are focused on scholarships for educational expenses, study abroad, and learning assistantships; student research fellowships; support for high-impact educational practices by renewing lab equipment, building high-tech classrooms, and fostering teaching innovations; and funds to let LBC pursue emerging opportunities. These engage the BBD imperatives by improving how students learn (BBD-1), making the Briggs experience accessible to a more diverse student cohort (BBD-2), increasing student research opportunities (BBD-4), and stewarding educational facilities (BBD-5). They are also congruent with the LBC mission statement:

Lyman Briggs College Mission Statement
At Lyman Briggs College, students and faculty bridge the sciences and humanities through interdisciplinary teaching and research, while focusing on three main goals:
• To maintain an inclusive residential college environment within a major research university
• To foster collaboration between students, faculty, and staff to advance
scholarship, teaching, innovation, and community engagement

- To inspire students to become lifelong learners, engaged citizens, and effective leaders

An unwritten objective is to continue re-engaging our alumni and donors in the wake of our third transition to a new advancement officer in the last five years. LBC Advancement Director Danielle Parish has recruited an alumni volunteer team that is eager to provide practical assistance and active networking during the campaign.

6. Implications of University Changes or Priorities
LBC’s practices are congruent with these priorities. For example, early admission to majors is already standard in the residential colleges, including LBC. Similarly, our INQUIRE program is already focused on decreasing time to degree and increasing graduation rates in STEM for students who enter college underprepared (especially in mathematics). Our performance on these measures is already high for typically prepared students, but we need to improve outcomes for the at-risk cohort, which includes many first-generation students, students of color, and students from rural or urban backgrounds.

7. Projects Requiring Completion in 2014-15
Three of the projects described above need to be completed this year:
- Piloting and adopting a SALG-based online student evaluation system that can be completed during class time. This will ensure that faculty receive the complete and detailed feedback needed to support teaching innovation and comprehensive mentoring of junior colleagues.
- Hiring academic specialists in HPS and math/physics to support curricular initiatives in these curricular areas.
- Completing requested renovations to provide more offices and teaching spaces that will accommodate the growing faculty within the living-learning environment and spur adoption of additional active-learning practices.

8. Key Assistance from the Provost’s Office
Lyman Briggs will benefit from continuing to hear your perspective on our strengths and challenges. We would appreciate advice on areas where you see potential for us to form new partnerships or step up to play a leadership role on campus. And we would appreciate your help in finding ways to raise awareness in the broader campus community that our college’s mission includes research and that our faculty are deeply engaged in scholarly pursuits and grant activities.

9. Not applicable to Lyman Briggs College at this time:
- Changes to the College’s strategic plan
- Structural changes within the College

10. Already submitted to OPB:
- ACF pre-proposals (also sent to OVPRGS 2014-11-10)
- Updates on faculty recruitment and retirements (also sent to OVPRGS 2014-8-26)