AToMS/IMS Learning Community Proposal

This proposal provides for an extension of the existing AToMS LLC (Achieving Together in Math and Science) to a second year (sophomore level) learning community, referred to in this proposal as IMS (Innovation in Math and Science). Based on our experience in fall 2012, we also propose several revisions/additions to AToMS, the major ones being the addition of an intensive two-day orientation to "college as a STEM major" held the weekend following the first week of fall semester classes and the creation of a coordinator position to work with both the AToMS LLC and with the new IMS LC. The person in this position will teach the ISL courses for AToMS and IMS and will coordinate all co-curricular activities and service learning activities for both LCs.

Sponsoring Faculty

Name: Carol Seaman
UNCG Department: Mathematics & Statistics
UNCG E-mail: ceseaman@uncg.edu
Contact Phone Number: 336-256-1134
Campus Mailing Address: 139 Petty

Additional Planning Team members:

Name	*Department*	*E-mail*	*Phone*	*Campus Mailing Address*
Lynn Sametz	Center for Youth, Family & Community Partnerships	L_sametz@uncg.edu	336-256-0077	414 Eberhart
Steve Tate	Computer Science	srtate@uncg.edu	336-256-1033	166 Petty
William Gerace	Physics & Astronomy	w_gerace@uncg.edu	336-256-8572	315 Petty
Jerry Walsh	Chemistry & Biochemistry	jlwalsh@uncg.edu	336-334-5672	421 Sullivan
Julia Jackson-Newsom	Office of Research and Economic Development	J_jackso@uncg.edu	336-256-8560	1706 MHRA
Malcolm Schug	Biology	mdschug@uncg.edu	336-256-0086	301 Eberhart
Jeff Patton	Geography	jcpatton@uncg.edu	336-334-5388	237 Graham
Dianne Welsh	Entrepreneurship	dhwelsh@uncg.edu	336-256-8507	328 Bryan

IMS Learning Community Theme: Innovation in Math and Science

The IMS LC is a community of sophomore math and science majors who will be introduced to the broad range of career possibilities within the mathematical, physical, and life sciences by exploring avenues for creativity, innovation, and entrepreneurship within the STEM disciplines. We chose this theme with the specific goal of impacting retention of STEM majors from the first to second years through exposure to service learning, entrepreneurship, and research within the local STEM business/industry/service communities. Students in IMS will gain this exposure through structured activities and assignments in two integrating ISL courses, ISL 102 (Research, Discovery, and Inquiry) and ISL 104 (Service, Reflection, and Inquiry), and through co-curricular activities planned and implemented by the AToMS/IMS coordinator.

Targeted Student Population

IMS will recruit from all rising sophomore STEM (biology, chemistry & biochemistry, computer science, geography, mathematics & statistics, physics & astronomy) majors, with particular efforts to recruit from existing freshman STEM learning communities (AToMS, Grogan, etc.).

Student Learning Outcomes

The LC students will:

- Demonstrate the ability to use design concepts to create strategies for problem-solving processes that advance the development of new ideas and implementation within the context of a scientific and/or mathematical model.
- Comprehend the "language of mathematics and science" to assist in the development and implementation of scientific and/or mathematical concepts and their applications.
- Demonstrate how to solve a problem or settle a problematic situation using science and/or mathematical ideas, concepts, and models through the use of mathematical and/or scientific analysis.
- Strengthen their scientific and/or mathematical knowledge through the use of student-oriented teaching methods.
- Demonstrate the ability to practice the concepts learned in a controlled environment through the successful completion of assignments.
- Improve communication skills to be able to convey concepts in science and mathematics to each other and to those in the outside community.
- Develop an appreciation for the value of student diversity in interests, opinions, and demographics through the (L)LC environment created.
- Display social skills required to work together across diverse demographic and/or disciplinary groups.
- Develop knowledge of a broad range of career opportunities within the mathematical, physical, and life sciences
- Develop a foundation understanding of disciplinary and professional ethics through review of real-world problems and challenges
- Apply examples, facts, or theories gained in major coursework to real-world problems and challenges through research and service
- Participate in a service project related to their discipline
- Identify and perform key steps and strategies of the academic research process within the mathematical, physical, and life sciences
- Use critical inquiry and varied research methodologies within problem-based learning
- Integrate concepts, information, and insights to analyze current real-world problems and challenges within the mathematical, physical, and life sciences
- Gather and critically evaluate information from different sources (i.e., information literacy)

Assessment of Learning Outcomes

The student learning outcomes will be assessed through assignments in the integrating courses (ISL 101 and ISL 103 for AToMS and ISL 102 and ISL 104 for IMS) and through special problem-based projects in which all LC

students will apply their discipline-specific lens to the solution of a common real-world problem/challenge within the mathematical, physical, and life sciences. These solutions will be shared with the entire learning community.

Required IMS LC Courses

Each IMS student will take ISL 104 (Fall 2013) and ISL 102 (Spring 2014) and the next appropriate course(s) in their major, these courses to be determined in advisement with the major department. The chart shows a typical "next" course in each discipline.

Fall 2013	**Spring 2014**
*ISL 104 (Service, Reflection, and Inquiry) BIO 301,302 (Principles of Ecology & Ecology Lab) CHE 351,354 (Organic Chemistry I & Organic Lab) CSC 230 (Elementary Data Structures & Algorithms) GEO 121 (Intro to Geographic Information Science) MAT 292 (Calculus II) PHY 292/292L (General Physics II with Calculus) *ISL 104 will carry the SLV marker	**ISL 102 (Research, Discovery, and Inquiry) BIO 355,356 (Cell Biology & Cell Biology Lab) CHE 352,355 (Organic Chemistry II & Organic Lab) CSC 330 (Advanced Data Structures) GEO 301 (Urban Geography: Global Patterns) MAT 293 (Calculus III) PHY 321 (Modern Physics) **ISL 102 is intended to carry the WI marker

Revision/Addition to AToMS:

We are proposing to add a two day jump start/orientation for all AToMS students to be held the weekend following the first week of fall semester 2013. These two days will provide the opportunity for the AToMS students to engage in a teambuilding activity (Team Quest), interact with faculty, learn appropriate study skills, and become oriented to life as a STEM university student. The Jump Start experience will be planned and implemented by the AToMS/IMS coordinator, with assistance from the AToMS faculty team.

AToMS and IMS coordinator:

AToMS and IMS focus on increasing UNCG's retention of students in STEM majors. Both of these LCs require coordination with all STEM disciplines as well as with the Bryan School (Entrepreneurship). We are adding a coordinator who will work with the Office of Learning Communities and the STEM departments to recruit students to both LCs; work with the AToMS faculty to plan and implement the Jump Start weekend; coordinate the co-curricular activities and service projects (with the Office of Leadership and Service Learning); and teach two sections each semester of the integrating courses for both AToMS and IMs. As with AToMS, we plan to bring in members of the business and industry community to meet with IMS LC students to increase students' awareness of multiple career opportunities upon completion of a STEM degree.

Facilities Needed

While AToMS will remain a living learning community, IMS will be a learning community of sophomores, some of whom may live on campus and others who will commute. We request housing for the AToMS students in the quad, so that those IMS students who do live on campus may be housed in the same residence and serve as informal mentors for the incoming freshmen AToMS students. We will also need classrooms for the ISL courses for AToMS and for IMS. We will need office space (preferably in the same residence where AToMS and IMS students are housed) for the coordinator.

Budget Justification

The attached budget modifies the current budget for AToMS and adds the budget for the IMS learning community. Each budget is presented separately in the attachment. Some highlights:

- The biggest change to the AToMS budget is the request for a coordinator who will work with all students in both learning communities, AToMS and IMS. We need to hire someone with a background in a STEM area who is also able to teach the ISL classes. This will be a twelve month position beginning in May 2013. The total amount requested for the coordinator (salary and benefits) is $60,720 and this is shown as split between both learning communities.

- We have learned that many AToMS students do not enter UNCG prepared to be University students. Research from Louisiana State University has demonstrated that a "jump start" program helps both retention and academic success. LSU's program is one week in duration with a focus on biology. We are proposing a two day jump start that will, among other things, acquaint students with the rigors of University life, enable them to take a "test" in a safe environment, increase their study skills, and start to build community.

- All other requests for AToMS remain unchanged.

IMS:

- The IMS budget parallels the AToMS budget request

Revised AToMS and IMS budget
2013-14

	AToMS	IMS	Total
Faculty Director-release time- one course/semester			
2 @ $5000	10000	10000	
Learning Community Graduate Assistant			
grad student	12000	12000	
in-state tuition	7500	7500	
Coordinator --12 month	23000	23000	46000
teaches 2 sections ISL AToMS-fall semester			
teaches 2 sections ISL IMS each semester			
recruits students and works with SOAR			
Organizes and implements Jump Start			
coordinates co-curricular activities			
benefits @32%	7360	7360	14720
Total Salary and Benefits for coordinator			60720
Two day jump start for AToMS			
Honorarium, supplies, travel etc.	3000		
Team quest	1000		
Supplies for tutors	2000	2000	
Student meals for events	3000	3000	
Student field trips: transportation, fees	2000	2000	
Discretionary funds: faculty meals with students			
honoraria	3000	3000	
Upper class mentors (PALS)			
3 each @ 2400	7200	7200	
Total Budget	81060	77060	158120

48 students in AToMS each semester
48 students in IMS each semester