Learning Assurance Report

For the

Master of Science

in

Applied Computer Science

Department of Computer Science and Information Systems
College of Science and Mathematics
Kennesaw State University

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Overview of the Master of Science in Applied Computer Science for Experienced Professionals

The Master of Science in Applied Computer Science (MSACS) at Kennesaw State University is housed in the Department of Computer Science and Information Systems within the College of Science and Mathematics. The MSACS offered its first set of courses in Fall 2002, with its first graduates in Spring of 2004. We currently have 45 active graduate students in the program.

The MSACS is a non-traditional, premium-priced program ($5500 per semester, $27,500 total for five semesters), targeting experienced professionals. The MSACS prepares students for employment as software architects, embedded systems engineers, software engineers, client-server systems designers and programmers, database administrators, and web-enabled application developers, and any other computing career requiring advanced knowledge of computer science.

The MSACS is designed for the working professional in computing interested in obtaining a graduate degree in computer science, to be pursued concurrently with work commitments. Courses are offered in a resource-efficient cohort/learning-community allowing students to complete the program in 22 months (5 semesters including a summer semester). Distance learning technologies are integrated in instruction delivery as a premium feature for the working professional.

The Fall-Cohort program (the Classic Cohort) is approachable for students with modest technical backgrounds, and does not require an undergraduate degree in computer science. This cohort takes foundation-building courses in their first two semesters. Minimum prerequisite foundations for admission include mathematics, physical science, computer programming, computer hardware, and elementary data structures. Work experience can selectively replace certain prerequisite knowledge foundations at the discretion of the program director with demonstration of student competency in the knowledge area.

The spring and summer admission into the Applied Research Cohort requires a bachelor’s degree in computer science and does not include foundation-building coursework. A formal thesis is an option for students in this cohort. The MSACS graduated its first thesis student in December of 2007.

Web-Based Instruction Delivery

Instruction is delivered both on campus and at a distance, using web-based technologies, allowing students to attend lectures on campus, or remote and live from work or home. All lectures are also recorded allowing students to view the archived lecture at their convenience. Real-time interaction between the students and professor is supported using
Voice-over-IP and online "chat". Lecture recordings are available in multiple formats to support iPods, PDAs, and smartphones.

The MSACS program has evolved significantly from its original design targeting just the working professional without degrees in CS.

Continuous Program Improvement in Response to Assessment

2001  CS faculty develop a conventional MS-CS program leveraging new faculty brought in by the Georgia’s Yamacraw technology initiative. The concept is modified by the VPAA toward a premium-priced degree targeting the working professional who do NOT have a degree in CS. Part-time study only, excluding F-1 visa students.

2002  Fall admission admits 18 graduate students without degrees in computer science.

2003  Admission expanded to allow students WITH degrees in computer science. A spring admission opening was added for students holding degrees in computer science. A full-time option was added to accommodate international students and others required to be full-time.

2004  Additional elective coursework opportunities in a variety of cutting-edge areas were added to the strict cohort structure in order to attract additional students and build enrollment.

2005  Formal separation into two cohorts, the Classic Cohort for students without degrees in computer science, and the Applied-Research Cohort for students with degrees in computer science. Thesis option introduced. Lecture recordings now available for mobile devices (iPod, PDAs, smartphones) as well as laptops and computers.


2007  Additional program growth, summer admission added. Additional strengthening of the Classic Cohort. Stronger admissions criteria being developed. First formal thesis student graduated in December.

2008  (anticipated) Program growth to exceed 30 new students each year (compared to 18 students admitted in 2002).
MSACS/EP Enrollment Overview: Annual program admissions

PROGRAM ASSESSMENT AND CONTINUOUS IMPROVEMENT STRATEGIES:

1. CS faculty who teach in the advanced courses are able to monitor the readiness for specialized knowledge of our students, and provide feedback to the MSACS curriculum committee and the MSACS director. This occurs both formally and informally. Faculty then discuss the evolution of their courses in our curriculum committee meetings, and provide feedback about the development of students from the foundational courses through our formal curriculum committee meetings.

2. The relatively small group of CS faculty members who are teaching in the MSACS communicate extensively informally, and collaborate on numerous projects from service to teaching to research. Through this informal communication process, faculty are able to brainstorm problems, compare notes, and share their evaluation of our level of programmatic goal completion.

3. The MSACS program director takes advantage of the efficient cohort structure to guide discussions and facilitate forward progress. The MSACS matriculates a new cohort on a yearly basis, with most students entering the program in the Fall semester. This periodicity enables a periodic assessment and program improvement cycle:

1. Faculty deliberate and provide feedback and observations during the Fall semester.
2. Proposals are evaluated and acted upon which generates curriculum revisions into the university’s curriculum development approval process.
3. The revised curriculum then alters the program for the next cohort entering in the subsequent Fall semester.
Thus, there is a yearly cycle that allows the observations from the current program cohort to affect the program and curriculum for subsequent cohorts.

OBJECTIVE ASSESSMENT INSTRUMENTS AND TOOLS THAT ARE CURRENTLY IN USE IN THE MSACS:
1. First semester new-student survey of program feature importance in attracting students into the program.
2. GRE score year-to-year comparison of admitted MSACS students
3. Tests and examinations assess completion of learning objectives in each course.
4. Student questionnaire on average work required per credit hour which assesses the level of challenge the program offers its students. The level of challenge that our courses represent for our students is a way to measure one aspect of quality graduate computer science courses and teaching.
5. The number of student papers accepted for publication or presentation in a peer-reviewed process at conferences or in journals.
6. Exit Exam – to be used for the first time Spring 2006. Assesses student learning in the core areas of the program that are common to all MSACS graduates.
6 Questions

1. Following up on last year’s AOL report and the feedback your program received from the AOL Council, what AOL-related activities have faculty in your program conducted in the interim?

Faculty have elected to work on the following issues:

   a. Refined program admissions formula. This is intended to better predict those who will do well while allowing promising students to “Give it a go”. The revised formula incorporates GPA, GRE-Verbal, and GRE-Quantitative scores.

   b. Strengthened Classic Cohort - based on feedback from assessment process. This is being achieved through adding additional foundation-building coursework required of all students, particularly targeting data structures and programming.

2. As a result of these activities, what did your program’s faculty discover about the quality of teaching and learning within the program and/or its AOL processes?

Assessment indicates that teaching is made more difficult due to the built-in structural problem of allowing two groups of students with different levels of preparation into the program. The students entering the Classic Cohort without the preparation of an undergraduate degree in computer science continue to struggle in programming. Programming is not simply knowledge to be acquired, but is also a skill that needs development, mentoring and maturation that needs multiple semesters of programming. Our efforts to improve quality have focused on strengthening and improving the developmental experience for the Classic Cohort students, without adding additional exclusionary admissions barriers.

3. As a result of these discoveries, what changes did your program’s faculty implement to enhance the quality of teaching and learning in the program and/or its AOL processes? (Include discussion of changes that are scheduled to be implemented in the future or are currently being considered.)

Faculty have focused on strengthening the preparation of the classic cohort, with addition required course-work in programming, data structures, and data communications and networking.
4. As a follow-up to the discoveries from the AOL process and the changes that were implemented, what AOL-related activities are your program’s faculty planning to conduct in the upcoming year?

   a. Revise the MSACS exit exam which is one of the program’s assessment tools.

   b. Considering converting a foundation course in Object-Oriented Programming to a P/F course that can be retaken up to two times.

   c. Under discussion is creating a pre-cohort set of foundation courses (one semester of courses) to prepare students to enter the MSACS Classic Cohort program. Already created is a new admissions category called MSACS-Interest, that allows students to be admitted while taking foundation courses. Students will then take one semester (instead of two semesters) of foundation-building courses after full admissions, prior to beginning their electives and research. The program then becomes a six-semester program for Classic Cohort students, one semester at conventional tuition, and five semesters at premium tuition. The pre-cohort foundations courses will be at regular tuition price.

5. AOL Council is collecting information on the current status and future development of student learning outcomes related to KSU’s Quality Enhancement Plan, “Global Learning for Engaged Citizenship.” Refer to the attached working definitions of KSU’s Global Learning Outcomes and the grid of learning outcomes and assessment methods related to global learning from each degree program’s AOL plan.

   a. Does the grid include all of the learning outcomes and assessment methods most related to global learning in your current AOL plan? If there are errors or omissions, update the grid as appropriate.

   b. Describe faculty discussions and any resulting goals or plans for strengthening the connections between KSU’s Global Learning Outcomes and your degree program’s student learning outcomes and assessment methods.

   5.1 The current grid includes the two 1-hour seminar courses: CS 6810 Strategic Computing and CS 6820 Global Computing that investigate the role of computing and computing technologies in the global economy, and how the industry has been shaped by the out-sourcing and global-sourcing movements.

   5.2 Program faculty are also developing a policy and procedure to allow faculty to develop study-abroad opportunities that support the students research project, which can then be funded with premium tuition collected by the program.
6. The AOL Council would like to support faculty in pursuing the scholarship of teaching and learning (e.g., developing peer-reviewed presentations and publications) through their work in AOL initiatives. Describe faculty discussions, any issues or concerns, and any ongoing or completed projects related to using the AOL process for research in the scholarship of teaching and learning.

None known at present. Dr. Hoganson is active in research and scholarship in distance learning technologies, pedagogy, and curriculum which affects the MSACS program quality of instructional delivery, but is not clearly AOL-related work.