



Feb. 7 -13, 2010

Course Enters Fourth Year of Providing New Learning Opportunities for Students

Four years ago, LSU Department of Computer Science Professor Thomas Sterling decided to try a new twist on college course offerings – if students could not attend a class, then he would bring the class to them.

Sterling premiered his “High-Performance Computing: Models, Methods and Means” course in the Spring 2007 semester. The course provides students with a basic overview of how high-performance computing and its related tools, technologies and applications can advance research. The unique aspect to this course was that although Sterling taught it at LSU, he took advantage of the advanced computing and high-speed networking connections available on campus to broadcast the class to other college students nationally and even internationally.

With support from the CCT, where he has a joint appointment, Sterling pioneered the teaching method of broadcasting classes in high-definition video across networks to partner sites after working with a team of researchers from the CCT, MCNC in North Carolina and Masaryk University in the Czech Republic to develop high-definition streaming and Access Grid video applications for educational purposes. When this course began, it was the first of its kind in the United States.

Sterling is teaching this course for the fourth time in the Spring 2010 semester, with the Czech Republic participating, as well as universities in Argentina and students from the University of Arkansas, which has participated as a partner site since the course’s inception.

As with any endeavor, experience provides insight, and Sterling and his research team are working on changing the course to better suit the students’ needs.

“When we began this course, we initially wanted to change the education model so students were no longer limited to taking only the classes their universities offer,” Sterling said. “We created this distance learning method to give more students a broader choice in their education. Now that we have used the model for three semesters of this course, we have learned there are changes we have to make to lower the barriers for more students to participate.”

Some of these changes will take place immediately with the Spring 2010 course. Sterling has incorporated more training time on high-performance computing machines into the course lessons, and the University is providing students with a computing cluster exclusively for their use.

Named Arete for the Greek quality of excellence in fulfilling one's potential or purpose, this 72-node cluster with a peak performance of 5.3 Teraflops, high-speed networking connections and 24 Terabytes of shared storage space, is comparable in size and speed to many of the University's other high-performance computing resources. While LSU has other high-performance computing resources on campus available for faculty to conduct research, Arete is the most powerful cluster dedicated exclusively to student educational needs.

"This semester, students will have a chance to use a high-performance cluster, with Arete," Sterling said. "This was something lacking previously, and while the course gives students an overview of how such machines work, the actual experience of operating and conducting basic programming exercises on a high-performance computing cluster will significantly enhance their learning."

Sterling also plans to develop more outreach to community colleges in Louisiana this semester, and is preparing a textbook developed for the course that could be used to replicate it on-site at other colleges or universities.

For future changes to the course, Sterling is working with the National Science Foundation, which provides funding for the course's applications, to modify the course. One change Sterling is proposing is to make more content, including videos and notes from each lecture, available online through the Web site, <http://www.cct.lsu.edu/csc7600>, hosted in-house at LSU. Professors at other universities could use the Web materials and videos to instruct students there, and students could log their work on the Web site for grading. With this system, the course would not have to occur in real time at each location.

"We have discovered live scheduling with other institutions is very challenging because different universities operate on different schedules in terms of class times, semester or quarter systems, holidays that occur during the year, and instructor availability," Sterling said. "Limiting the course to a classroom environment imposes these types of constraints, and we hope that if we can move toward a more online method of distributing the course materials, we can make it easier not only for more schools but also for individual students to participate."

Another challenge is that some universities wish to participate but do not have a computer science faculty member who has expertise in high-performance computing to oversee students' work. Through the Web, LSU as the host institution would have a more centralized role in the course, and students without a faculty member at their colleges or universities could more directly communicate with Sterling and teaching assistants here.

Sterling also plans to begin dubbing the course videos in Spanish for outreach to Hispanic students and universities in Latin American countries.

“I am pleased this course has opened doors for college students, and I hope that as we continue, we’ll discover new ways to help more people and schools participate and get a broader learning experience,” Sterling said.

For more information on the course, please visit <http://www.cct.lsu.edu/csc7600>.

Pats on the Back:

- Jintao Cui (CCT and LSU Department of Mathematics), who is a student of Professor Susanne Brenner, has been awarded a postdoctoral position at the Institute for Mathematics and its Applications (IMA) at the University of Minnesota. Jintao will receive his Ph.D. this summer and will join the IMA in the fall.
- Professors Thomas Sterling and Gabrielle Allen were invited to participate in the DOE Workshop on Cross-cutting Technologies for Exascale Computing in Rockville, Maryland in the first week of February.
- Congratulations to Susanne C. Brenner, LSU and CCT, and Lisa J. Fauci of Tulane University’s Center for Computational Science for a successful Scientific Computing Around Louisiana meeting Feb. 5 and 6. This inaugural meeting attracted students, researchers and faculty from institutions in and around Louisiana to highlight research and promote collaborations.

CCT in the News:

LSU-led Research Team Receives INCITE Award

Source: [HPC Wire](#)

LSU-led Research Team Receives Department of Energy Award for Supercomputing Research

Source: [Supercomputing Online](#)

Lectures This Week:

- Yingda Cheng, a postdoctoral fellow at the University of Texas at Austin, Institute for Computational Engineering and Sciences and Department of Mathematics, will give a [special guest lecture](#) on “Discontinuous Galerkin Finite Element Methods and Applications to Boltzmann-Poisson Models in Semiconductor Device Simulation.” The lecture will take place today, Tuesday, Feb. 9, at 3:30 p.m. in Johnston Hall Room 338. There will be a reception with refreshments at 3 p.m.

Please Note:

- CCT is hosting the 17th annual Mardi Gras Conference on Computational Materials and Methods Feb. 11-14, 2010, at LSU's Lod Cook Alumni Center. This conference brings together researchers working in this broad area to promote the cross-fertilization of ideas, foster information exchange, enable community building and expose graduate students and postdocs to the newest methods and advances. The conference will feature tutorial presentations, posters, in-depth discussions, and demonstrations in addition to several invited speakers. As always, the conference includes a Saturday afternoon trip to New Orleans for one of the city's largest Mardi Gras parades, Endymion. To register or learn more, please visit <http://www.mardigrasconference.org>.
- The University will be closed on Tuesday, Feb. 16 for the Mardi Gras holiday. All normal business operations will resume at 8 a.m. on Wednesday, Feb. 17.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to PR Manager Kristen Sunde at ksunde@cct.lsu.edu.
- Follow CCT with social media to access photos and see news, events or updated information. Both these pages are public; you do not need a Facebook or Twitter account to view the information.

[Facebook group](#): LSU Center for Computation & Technology
[Twitter @ LSUCCT](#)

Upcoming Grant Deadlines:

- RFP--Amendment--Communications and Networking Technology
February 16 2010 10:00 am
- RFP--Amendment--Defense Sciences Research and Technology
February 16 2010 10:00 am
- [Software Development for Cyberinfrastructure \(SDCI\)](#)
February 26 2010 10:15 am
At Most \$ 3,000,000.00 available
- [Proactive Recruitment in Introductory Science and Mathematics \(PRISM\)](#)
March 08 2010 10:15 am
At Most \$ 600,000.00 available
- [2010 NSF MRI](#)
April 21, 2010 5 p.m.

Note: Please see the [CCT deadline Web site](#), as many NSF deadlines are listed here.