PROGRAM IN COMPUTING FOR THE ARTS AND SCIENCES

Helping LSA scientists, artists, and humanities scholars build foundational computing skills

The digital world impacts the lives of everyone on earth. Undergraduates need to be able to enter the workforce today with solid digital literacy and a background in the role of computing in society, including familiarity with manipulating large data sets and coding literacy. The Program in Computing for the Arts and Sciences (PCAS) is developing an innovative program in computing education specifically to meet the diverse needs of LSA students.

Dozens of faculty and students were interviewed, and over 100 faculty completed a survey to determine what computing skills are needed by liberal arts and sciences students. PCAS is in the early phase of developing a program to expand the teaching of computational methods to touch all areas of LSA, integrating into courses in natural and social sciences and the humanities to enable every LSA student to use computing to advance knowledge to express themselves with computing. The advance of AI creates a greater demand for LSA students to have understanding and agency over the computation in their lives. Every LSA student should have the ability to talk about computing, to explore ideas with the power of visualization and big data, to communicate their intent to software developers, and to critically consider the impact of technology on diversity, equity, inclusion, and justice.

Whereas computer science and engineering courses focus on students developing the ability to understand and develop computing devices, software, and infrastructure, PCAS will offer courses and minors that prepare students to integrate computation into their problem-solving, creative practices, and analytical toolkit. Students with PCAS minors will understand the task of software development, know the processes and specialty terms of programmers, and can facilitate communication between software developers and other parts of an organization. These students will know how to analyze, critique, design, and invent with technology. They will be well-prepared to be technical managers, entrepreneurs, and designers, or to work between design and development groups within an organization. And they will be able to take on the challenge of creating technology that furthers social goals.

While we know of peer institutions that have programs in computational media, or computational science, or digital scholars, no other university in our peer set is aiming to meet all of their computing education needs in liberal arts and sciences. We are developing a unique, first of its kind program.

PCAS THEME AREAS

Computing for Discovery: Working with large amounts of data, student scientists learn to use computing to advance discoveries by creating models that make theories concrete or using simulations to test models.

Computing for Expression: Computing for Expression: From social media to Pixar, computing has changed how human beings express themselves. Computational forms of expression provide humanities and social science scholars with objects of study and reflection, while providing creative learners with a medium for invention and a deeper engagement with computing.

Computing for Society: Critical computing scholars study how computers provide those who know how to utilize them with power over cultural, social and political thought, national conversation and ultimately influence decision making at all levels of society. PCAS provides students with the knowledge and tools to create alternative models of, and infrastructures for, computing technologies in order to further welfare, justice, and equity.

PCAS STRATEGIC FUNDS

Over time, we expect PCAS will have solid budget support from tuition revenue, as student enrollment ramps up in the next few years. Right now, we are seeking funding to ensure a robust program launch that will both attract and support students with instruction, staffing, program resources, technology, and infrastructure.

"Learning about programming helps to democratize this powerful technology. PCAS prepares students to be better informed citizens and scholars who harness computing technologies for the common good of society and for advancing the sciences."
—Mark Guzdial, director

PCAS PEOPLE FUND

This fund will support the people needed to develop and begin delivering a core PCAS curriculum including 8–12 courses. It will ensure strong student support from both graduate student instructors and undergraduate learning assistants, and provide the resources needed for these teams to engage in iterative course design during this early period. It can also support visiting scholars who bring important perspectives and additional student engagement. Support of PCAS through short term, expendable funding of $750,000 per year for three years, totaling $2.25 million will support our efforts to recruit, hire, and support faculty, graduate student instructors, research assistants, administrative staff, visiting scholars and lecturers, undergraduate learning assistants and peer coaches.

PCAS INFRASTRUCTURE FUND

Gifts to this fund will help defray one-time costs for novel classrooms and technology upgrades. PCAS courses are typically taught in team-based learning classrooms to create a studio atmosphere, which creates demand for these resources as PCAS grows. Expendable support of $250,000 per year for three years, totaling $750,000 is needed. Ongoing upgrades will be funded by LSA.

PCAS PROGRAM FUND

Gifts to this fund would provide financial resources to fund curriculum development, success metrics and analytics, ongoing development of web and social media presence to drive student engagement, partnerships with existing undergraduate student programs (e.g., the LSA Opportunity Hub, Comprehensive Studies Program, Transfer Student Center), support ongoing faculty and staff training and participation in professional conferences. To maximize our launch of programming, expendable funding of $100,000 per year for three years, totaling $300,000 is needed.

PCAS VISITING PROFESSORSHIP FUND

Gifts to this fund would support bringing to Ann Arbor world-class scholars who connect computing to LSA disciplines. Distinguished researchers in Computing for Expression, Discovery, and Social Justice will come to campus and spend a week as Distinguished Lecturer, or a term or a full academic year as a Visiting Professor giving lectures and interacting with students and faculty. An annual gift of $50,000 would provide the support needed and an endowed gift of $1M would also give a donor the opportunity to name the fellowship.

WAYS TO FUND YOUR GIFT

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for **what's next** ▶
Look to Michigan

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