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Engineering Education



## Early Scholars Research Program at UIC

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# ERSP Goals

- The program was designed to support retention of under-represented students in the field of computing, especially during the second year of their major.
- Under-represented is broadly defined to include gender, race, socio-economic status, and family background.
- The program was developed at the University of California San Diego.

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# ERSP Central Components

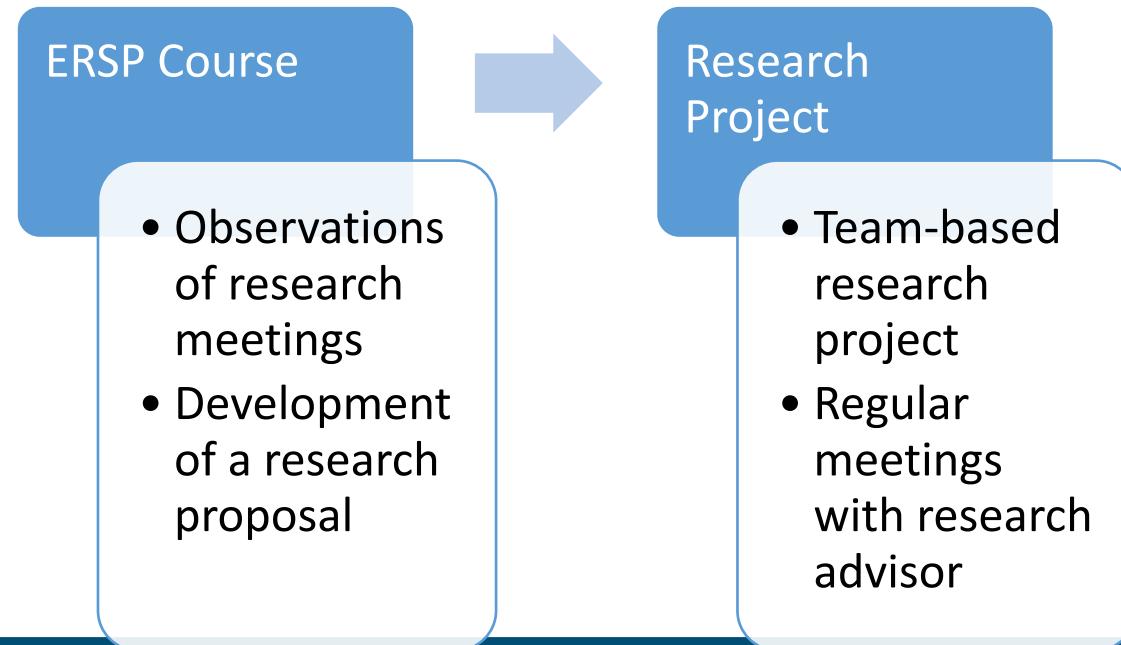
1. A course-supported apprentice model in which students work on real research problems within an active research group as they learn the fundamentals of CS research in a structured class setting.
2. A dual mentoring framework in which students are co-advised by a central team of ERSP mentors and a faculty or graduate student research mentor.
3. A team-based structure that builds community and student-to-student support

Source: M. Barrow, S. Thomas, and C. Alvarado, "Ersp: A structured cs research program for early-college students," in Proceedings of the 2016 ACM Conference on Innovation and Technology in Computer Science Education, 2016, pp. 148–153.

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# ERSP Structure



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# Context for Adoption at UIC

- U. of Illinois, Chicago is a mid-tier R1 research institution
- Diverse student population
- Hispanic Serving Institution
- 40% of student body is Pell-grant eligible
- Commuter School
- Many are first-in-family to attend university
- Nearly 50% are transfer students into college of engineering

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# Why is UIC a good fit for ERSP?

- Large population of under-represented students
- Commuter school with lower sense of belonging and higher rate of attrition
- Limited research opportunities for second-year engineering students
- Potentially high barrier of entry for undergraduate research

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# Adoption at UIC and differences from original ERSP

- Broaden to include ECE majors
- Group students such that one student is more advanced / stronger background
- Two faculty members running the program (CS & ECE)
- 10 week curriculum (quarters) → 15 week curriculum (semesters)
- 4-credit hour ERSP course → 1-credit hour ERSP course + research credit

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# Changes made for successful adoption

- Grading was primarily based on the final report
- In-class sessions were reduced to once-a-week for 50 minutes
- Some topics and in-class exercises were removed
- Critical components were maintained including logging
- Group students such that one student is more advanced / stronger background

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# ERSP first cohort

- 28 students in 8 teams successfully completed the first year of ERSP at UIC
  - 5 teams in CS and 3 teams in ECE
- 21 self-identified as female, 6 as male, and 1 as non-binary
- 3 students self-identified as Hispanic or Latinx and 2 as Black or African American

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Thank you!

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