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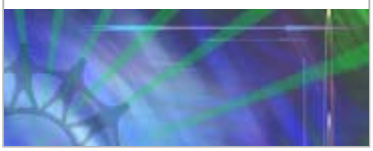

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## Developing an Innovative Randomization-based Introductory Statistics Curriculum

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|---|---|
| **NSF Org:** | DUE<br>Division of Undergraduate Education |
| **Initial Amendment Date:** | January 30, 2012 |
| **Latest Amendment Date:** | January 30, 2012 |
| **Award Number:** | 1140629 |
| **Award Instrument:** | Standard Grant |
| **Program Manager:** | Ron Buckmire<br>DUE Division of Undergraduate Education<br>EHR Directorate for Education & Human Resources |
| **Start Date:** | January 1, 2012 |
| **Expires:** | December 31, 2013 (Estimated) |
| **Awarded Amount to Date:** | $181,478.00 |
| **Investigator(s):** | Nathan Tintle nathan.tintle@dordt.edu (Principal Investigator)<br>Allan Rossman (Co-Principal Investigator)<br>Beth Chance (Co-Principal Investigator)<br>Todd Swanson (Co-Principal Investigator)<br>Soma Roy (Co-Principal Investigator) |
| **Sponsor:** | Dordt College<br>498 4th Avenue NE<br>Sioux Center, IA 51250-1606 (712)722-6000 |
| **NSF Program(s):** | S-STEM:SCHLR SCI TECH ENG&MATH,<br>TUES-Type 1 Project |
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### ABSTRACT

The algebra-based introductory statistics course has seen tremendous growth in enrollments over the last two decades using a consensus curriculum and sequencing of topics. However, research has also shown students typically leave these courses with a shallow understanding of key inferential ideas. Recently, many statistics educators have proposed moving from this traditional curriculum to one centered on computer-intensive, randomization-based inference methods. Two advantages of this approach are: (1) randomization methods enable students to focus on the core logic of inference, and (2) efficiency in presentation allows students to gain experience in computer-intensive and multivariable methods that are being increasingly used by applied researchers. This project is providing instructors with a fully integrated set of curriculum materials with which to teach a substantially different curriculum that introduces statistical inference from the start. The materials are undergoing class-testing at numerous

institutions and being disseminated through publication as a textbook, workshops, and presentations. The accompanying evaluation component is providing information about potential gains in student understanding of core concepts of inference and documentation of how students develop skills of inferential reasoning. These curricular materials and assessment findings have the potential for effecting a substantial change in the content and focus of introductory statistics courses across the country.

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