

Enrichment Sessions in Calculus I

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- 80-minute lecture with instructor on MWF
- 80-minute enrichment session (ES) on TR
- ES is part of student schedule and meets at the same time and room as the lectures.

What happens in an Enrichment Session:



- Small groups (4 or 5) of students engage to solve worksheet problems collaboratively. Discussion/deliberation among group members is expected & encouraged.
- Undergraduate students serve as ES leaders. They are trained to pose questions that stimulate the discussion/dialogue as opposed to just telling students what they need to do.
- Worksheets are developed by a faculty member based on input from instructors and ES Leaders.
 - Problems are intended to deepen students' understanding of Calculus concepts and reinforce computational skills.
 - Problems cover current course material as well as previous concepts/skills students have struggled with.

What happens in an Enrichment Session:



- At the end of the enrichment session, each student submits individual work to be graded by an ES leader.
- Students are assigned to a different group each week.
- Attendance at enrichment sessions is required. Worksheet grades count as part of the course requirements.

What happens behind the scenes:



- At least once a week, ES Leaders attend a Calculus I lecture.
- Every Wednesday, instructors inform the faculty developing the worksheets what they expect to cover the following week.
- Every Thursday, worksheets for the following week are made available to instructors and ES Leaders.
- Every Friday, ES Leaders meet with the faculty ES coordinator to provide feedback on the week's sessions and preview/prepare for the following week's worksheets.
- Every Sunday, ES Leaders submit their collective solutions to the coming week's worksheets to the faculty writing the worksheets and faculty provides feedback.
- ES Leaders grade worksheets and enter grades on Blackboard.

Results:



- Data: Declared engineering majors for five consecutive fall semesters
- 2 out of 5 sections are ES
- Non-ES means computer lab or recitation session once a week - staffed by graduate TAs

	Proportion of Students with Grade of C or better	Sample Size
ES	0.6764	479
Non-ES	0.5000	510
Test Statistic	5.73	
p -value	< 0.001	

Table: Comparison of 989 Engineering Majors