

# Student Performance in Synchronous and Asynchronous Online Introductory Economics Classes

**Overview:** I evaluated the performance of students in principles of microeconomics, principles of macroeconomics and statistics for business and economics classes. I looked for differences in students performance based on if they were in a synchronous or asynchronous class. There were 490 students in my data set. These students were in one of three introductory classes during the spring 2020 semester: principles of microeconomics, principles of macroeconomics, and statistics for business and economics.

Summary of student data	Mean or Percentage (standard deviation)
Dependent Variables	
Grades	3.08 (0.80)
Post-test correct	14.58 (2.97)
Difference in pre and post test	6.31 (3.97)
Student Characteristics	
Female	37.55%
Non-white	15.51%
Cumulative GPA	3.00 (0.53)
Total Credits	56.98 (23.71)
Freshman	36.73%
Sophomore	40.00%
Junior	19.39%
Senior	3.88%
Pell grant eligible	22.65%
First Generation	40.20%

Course descriptions	Macro	Micro	Statistics
Total Enrollment	149	187	154
Grade	3.21 (0.64)	3.10 (0.80)	2.93 (0.90)
Post-test scores	15.63 (2.48)	13.58 (3.03)	14.78 (2.98)
Difference in pre and post test	5.79 (3.62)	4.95 (3.66)	8.46 (3.78)

Instructional choices	Students
post-test grading	
extra credit	44.08%
quiz	47.55%
other	8.37%
% multiple choice	68.66% (31.44%)
Material covered	
Less	47.55%
Same	52.45%
Asynchronous	64.08%
Synchronous	35.92%

Women performed better in synchronous classes than in asynchronous classes.

Grades were not different between the synchronous and the asynchronous classes. Women in synchronous classes did significantly better than women in asynchronous classes on post-test scores and difference between post-test and pre-test scores.

Regression for Post-test correct	
Variables	Beta (p-value)
Intercept	15.43 (2.67E-11)
women	-1.82 (0.07)
Synch	-0.36 (0.36)
Macro	1.19 (0.00)
Micro	-0.70 (0.06)
Freshman	-1.02 (0.00)
Junior	-0.08 (0.83)
Senior	-0.83 (0.21)
Cum GPA	0.61 (0.03)
Cum GPA^2	0.61 (0.03)
women*Synch	1.17 (0.03)

Regression for Post-test - Pre-test	
Variables	Beta (p-value)
Intercept	9.16 (1.79E-63)
women	0.10 (0.82)
Synch	-1.34 (0.010)
Macro	-2.63 (2.96E-09)
Micro	-3.82 (1.06E-130)
Freshman	-0.74 (0.06)
Junior	0.01 (0.99)
Senior	-1.46 (0.10)
women*Synch	1.27 (0.08)

## Conclusions

- Grades were not statistically significantly affected by whether a class is delivered asynchronously or synchronously.
- The adjusted R<sup>2</sup> for the post-test correct regression is 0.15. The interaction term for women and synchronous shows women did better on the post-test in synchronous classes than in asynchronous classes.
- The adjusted R<sup>2</sup> for the difference between pre-test and post-test correct regression is 0.16. The interaction term between women and synchronous shows that women did better in difference between post-test and pre-test in synchronous classes than in asynchronous classes.