Pass/No Pass Grading in the Spring 2020 Semester

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Historically, the Pass/No Pass grading option was used in very rare instances, but as a result of the COVID-19 pandemic in Spring 2020, UC Merced instituted a temporary policy change in which all undergraduate programs agreed to accept Pass/No Pass (P/NP) grades for the Spring 2020 semester. We examined course enrollments of undergraduate students in Spring 2020 to learn about the prevalence of P/NP enrollments, and patterns across course types and schools. We found that there was an increase in the number of course enrollments taken with the P/NP grading option, though most enrollments maintained the letter grade option. Upper division courses and courses delivered by the School of Engineering were more likely than others to be taken as P/NP. At the student level, we found that Seniors and engineering majors were more likely to use the P/NP option.

Background

This report investigates course enrollments during the Spring 2020 semester taken by undergraduate students. To understand P/NP course enrollments, we looked at factors at both the *course enrollment* level, in terms of *what* was taken P/NP, as well as the *student* level, in terms of *who* was taking courses P/NP. At the course enrollment level, we examined level (upper vs lower division) and school, to discover if certain types of courses were more often taken P/NP. We also looked at whether DFW (e.g. D, F, W, and NP) grades had increased during the Spring 2020 semester (and if this was related to P/NP grading), as the semester was unusual in that it had been disrupted by the pandemic, which led to students returning home and completing instruction remotely. At the student level, we looked at class standing and school of first major, to see if there were patterns in terms of which students had opted into P/NP grading.

For detailed information on DFW grades in particular, please see the DFW grade dashboard on the Analytics Hub, which shows information on DFW grades at the course or subject level, with additional filtering options, including student major and grading option.

How common was P/NP grading at the course enrollment level?

Spring 2020 saw a large increase in the share of course enrollments taken as P/NP, as compared to the prior Spring (see Figure 1, to the right), though it was still the case that the vast majority of course enrollments were taken for a letter grade. Out of 30,902 total undergraduate course enrollments in Spring 2020, 91.4% were taken for a letter grade, while 8.6% were taken as P/NP. This is an increase from the prior spring, which only had 1.7% of undergraduate course enrollments taken as P/NP (note that earlier rates were consistent with the 2019 rate).


Figure 1: Percent of course enrollments by grading option

Figure 2: Percent of course enrollments by grading option by Level
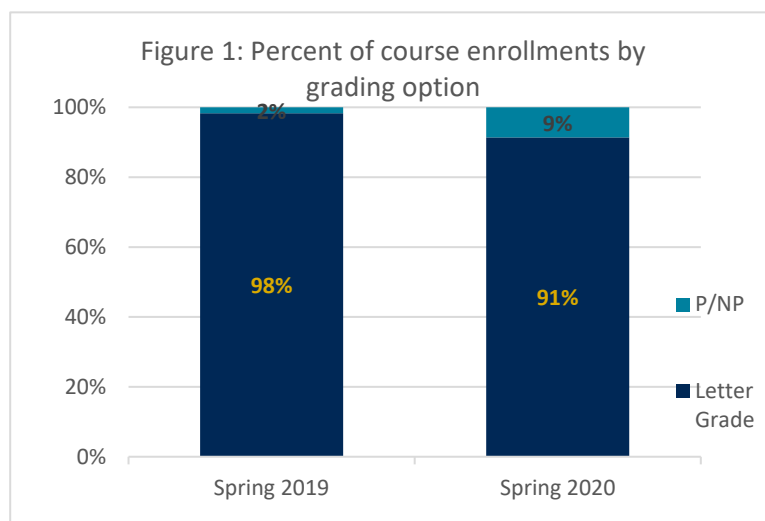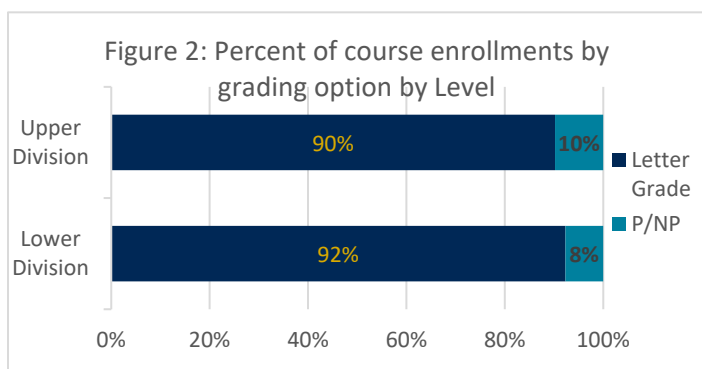
What types of courses were taken P/NP?

Upper division courses were taken P/NP significantly[1] more often (9.8%) than lower division courses (7.7%) (see figure 2, left). In Figure 3, below, we can see that School of Engineering (SOE) courses had the largest proportion of P/NP enrollments (20.9%); this was significantly[1] higher than the proportions in the

Schools of Natural Sciences (SNS; 6.8%) and Social Sciences, Humanities and Arts (SSHA; 6.6%). College One courses had the smallest proportion at 4.4%, which was significantly[1] smaller than the proportions in the other schools. Specific courses with Pass/No Pass enrollment rates over 20% and enrollments over 20 total students are detailed in Table 1, below. Note that our data did not indicate if course enrollments were major requirements, but the Spring 2020 policy stated that programs allowed P/NP in required courses.

Figure 3: Percent of course enrollments by grading option by School of Course
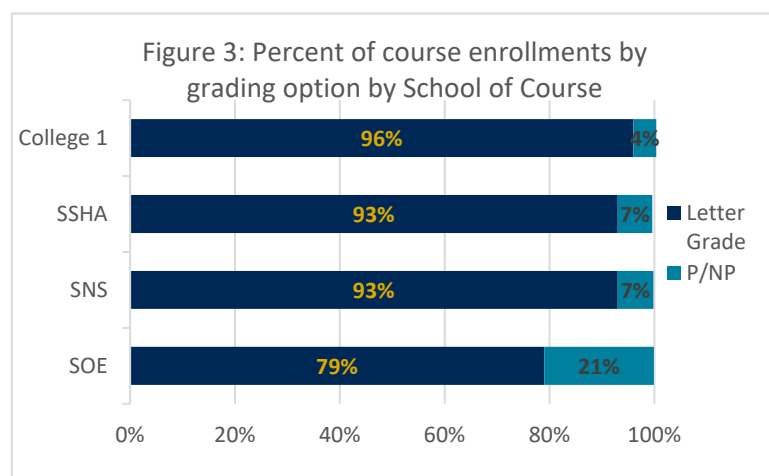
Table 1: Courses with high Pass/No Pass Enrollments

Course Description	# P/NP enrollment	Total Enrollment	P/NP proportion	Historical %DFW
USTU 012 – Undergraduate Studies*	83	83	100%	1%
ENGR 191 – Professional Seminar*	307	307	100%	1%
CHEM 194 – Ethics and Communication*	36	36	100%	1%
CSE 160 – Computer Networks	26	55	47%	47%
ME 120 – Component Design	40	91	44%	18%
ME 142 – Mechatronics	14	40	35%	16%
BIO 151 – Molecular Immunology	21	63	33%	23%
ME 140 – Vibration and Control	20	68	29%	18%
BIOE 135 – Biochemistry for Engineers	11	38	29%	3%
ECON 010 – Statistical Inference	26	90	29%	8%
ME 135 – Finite Element Analysis	15	56	27%	9%
ENGR 057 – Statics and Dynamics	56	210	27%	31%
CSE 100 – Algorithm Design and Analysis	35	138	25%	22%
MATH 023 – Vector Calculus	74	300	25%	28%
CSE 031 – Computer Organization	38	155	25%	18%
ENGR 065 – Circuit Theory	47	192	25%	19%
PHIL 005 – Introduction to Logic	12	53	23%	15%
ENGR 155 – Engineering Economic Analysis	40	178	23%	7%
CSE 140 – Computer Architecture	15	67	22%	12%
ME 021 – Engineering Computing	30	141	21%	15%

note that all three courses with 100% P/NP enrollment are historically graded P/NP rather than for a letter grade.

We also include historical DFW rates in Table 1, for context. While several courses tend to have high rates of DFW grades, many courses did not, so student choices about whether to take a given course as P/NP may have been more complex than the perceived difficulty of the course. For more information on DFW grades, please see the DFW grade dashboard.

Did DFW grades increase in Spring 2020?

We found that for all undergraduate student course enrollments, DFW grades decreased in the Spring 2020 semester; only 6.8% of undergraduate course enrollments earned a DFW grade in Spring 2020, while 11.9% did so in Spring 2019.

Were students more likely or less likely to earn a DFW grade when opting into P/NP?

Courses taken as P/NP were significantly[1] more likely than letter grade course enrollments to earn a DFW grade (23.8% vs 5.2%; see Figure 4, right). Though this relationship is significant, we cannot determine causality in terms of whether students chose P/NP because they expected lower performance, or if they performed less well because they chose P/NP—students may have chosen the P/NP option when they felt less likely to earn a high grade, or, after choosing P/NP for a given course, they may have prioritized other courses taken for a letter-grade.

Figure 4: Percent of DFWs by grading option
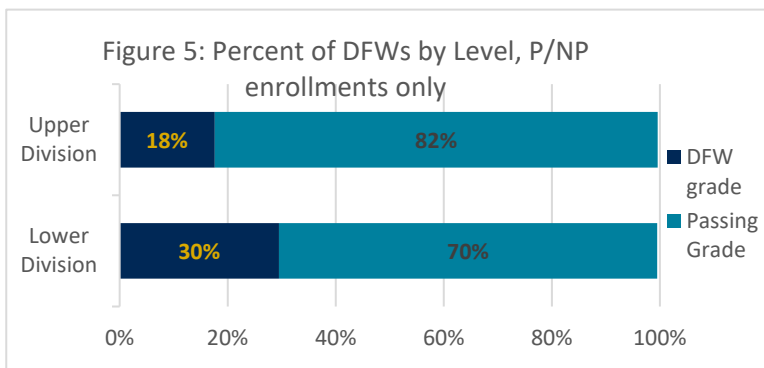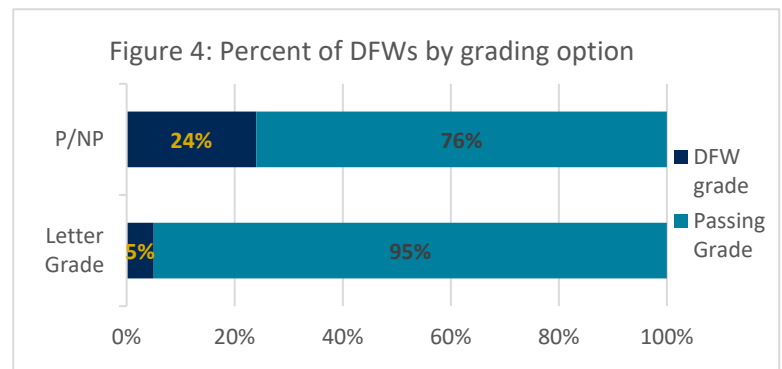
As shown in Figure 5, to the left, when we examined the P/NP enrollments in further detail, we found that the lower division P/NP enrollments were significantly[1] more likely than upper division P/NP enrollments to earn a DFW grade (29.5% vs 17.6%). This is consistent with historical patterns; for example, in Spring 2019, lower division coursework had a 13% rate, while upper division had an 8% rate (for all grade types).

Figure 5: Percent of DFWs by Level, P/NP enrollments only

How common was P/NP grading at the student level?

As shown in Figure 6 (right), the majority of undergraduate students (78.5%) did not opt to enroll in any courses as P/NP; only 1,624 distinct students (21.5%) opted to enroll in one or more courses as P/NP, and the majority of those students (1,002, or 13.2% of all students) elected to do so in a single course.

Figure 6: Percent of students who opted into P/NP, by number of courses
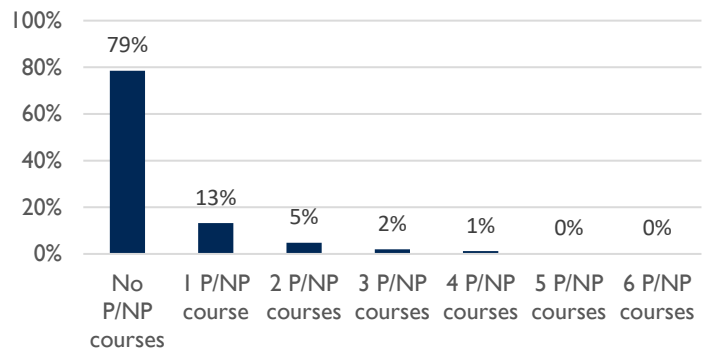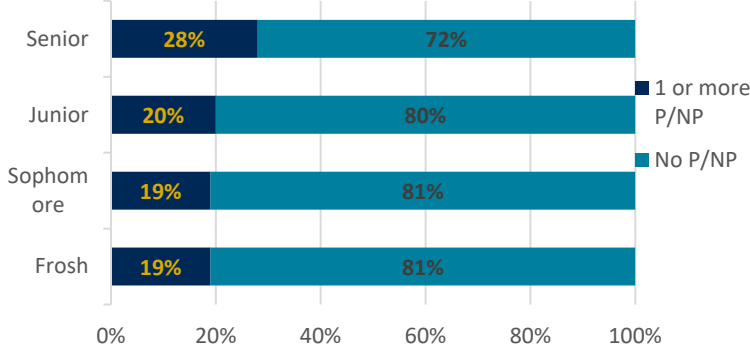

Figure 7: Percent of Students opting into P/NP by Class Level

Which students opted into P/NP?

At the Class level, we found that Seniors were significantly[1] more likely than their peers (all other class levels) to take one or more courses as P/NP—27.8% of Seniors elected to do so (see Figure 7, left). There was no significant[1] difference among all other class levels, which had about 19% of students taking one or more courses as P/NP.

At the School level, we found that Engineering majors were significantly[1] more likely than majors in the other schools to take one or more courses as P/NP, with 37.8% opting to do so. Natural Sciences and Undeclared majors opted into P/NP less often (17.4% and 21.3%), and SSHA students took P/NP courses at significantly[1] lower rates than majors in the other schools, at 13.8% of students; see Figure 8 , to the right, for details.

Specific (first) majors with students enrolling in one or more courses as P/NP at rates over 20% are detailed in Table 2, on the following page. We also include rates that exclude the three courses with P/NP grading by default, in the column titled "P/NP election".

Figure 8: Percent of Students opting into P/NP, by School of First Major
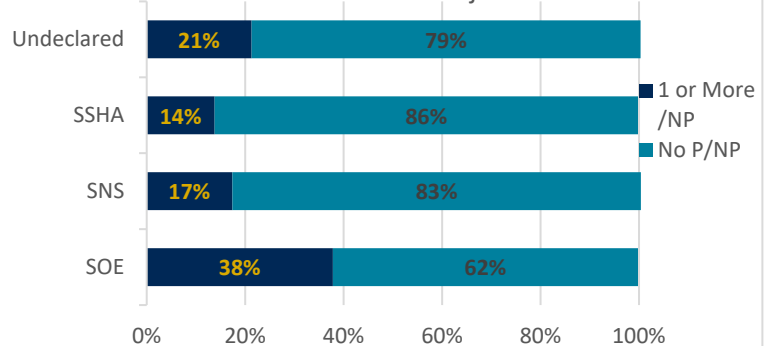
Table 2: Majors with high Pass/No Pass enrollment rates

Major	Students with 1 or more P/NP	Total Enrollment	P/NP proportion	P/NP election
Computer Science & Engineering	396	941	42%	31%
Environmental Engineering	37	103	36%	18%
Mechanical Engineering	264	727	36%	28%
Chemical Sciences	64	197	32%	16%
Bioengineering	61	195	31%	19%
Materials Science & Engineering	11	39	28%	13%
Mathematical Sciences	31	138	22%	22%
Undeclared SSHA	12	54	22%	22%
Critical Race and Ethnic Studies	9	42	21%	21%
Undeclared	56	263	21%	21%
Global Arts Studies	8	38	21%	21%
Undeclared Engineering	13	62	21%	18%

Conclusion

In this report, we found that while pass/no pass enrollments greatly increased during the Spring 2020 semester—from 1.7 to 8.6 percent—the overwhelming majority of course enrollments maintained the letter grade option. Courses more likely to be taken P/NP were upper division courses, as well as courses from the School of Engineering. P/NP course enrollments more often resulted in a DFW grade than those taken for a letter grade, particularly for lower division courses, but when looking at all undergraduate student course enrollments the rate of DFW grades decreased for the Spring 2020 semester compared to historical rates.

A large majority of students (78.5%) did not elect to use the pass/no pass option in any of their courses. The 21.5% of students who elected to use the pass/no pass grading option were more often seniors, were most likely to have a major in the School of Engineering, and tended to take only a single course as P/NP. We were not able to analyze the data by whether courses were major requirements, however, the Spring 2020 grading policy specifically noted that degree programs waived their requirement to utilize letter grading for required courses.

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ENDNOTES

1. Based on Chi-Square analysis, pairwise comparisons of column proportions with Bonferroni correction. $p<.05$ was our threshold for statistical significance.