

# Gauging the Performance of Hotel Management Students (PHM240) and Culinary Art Students (PHM245) Enrolled in an Engineering Course (CES425)

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## Abstract

Most people mindset has been narrowed believing that non-engineering students won't be able to carry or do well in an engineering subject. Universiti Teknologi MARA (UiTM) is trying to change this mind set by allowing the non-engineering course to enroll in engineering course and vice versa. This paper discussed about two different non-engineering courses which come from the Faculty of Hotel and Tourism that took an engineering course. The two main courses were students from the Degree of Hotel Management (PHM240) and Degree of Culinary Arts (PHM245). The students must take Civil Engineering Materials subject as their elective subject. The subject was endorsed by Engineering Accreditation Council (EAC) and has to go through a rigorous checking on question by an expert. The number of students who enrolled in this engineering course were 20 and 53 students from PHM240 and PHM245 respectively. All their achievements and results were then analysed by using i-RAS software. The findings shows that one of the hotel courses performed better especially on calculating part, nonetheless, no students were failed in this subject. The findings also can help future lecturer to equip themselves with necessary tools, explanations to ensure that the certain non-engineering students to do well in engineering course.

**Keywords:** Civil Engineering, Hotel Management Students, Culinary Arts Students, Education

## Introduction

Universiti Teknologi MARA (UiTM) has been established since 1966 and it is the largest institution for the tertiary education in Malaysia. There were closed to 15,000 active students enrolling in UiTM and had almost 1,000,000 alumni from its opening. Hotel and tourism courses were among the oldest courses to UiTM students, and it has produced many worlds' class chef, renowned international hotel managers and others. Compared to Civil engineering

course, it was made available for students' way years later after the offering of hotel and tourism courses.

Both courses were of available from Diploma, bachelor's degree, Master, and Doctor of Philosophy. For bachelor's degree, both courses have the same time of duration of minimum of 3 years of studies and mostly the students age is about 21 years old when they enrolled in the course. In Hotel and Tourism Faculty, there were two bachelor's degree Offered to students that were Hotel Management (PHM240) and Culinary Art (PHM245).

Hotel Management (PHM240) students were taught on how to manage a hotel. The students learn mostly on how to deals with customers, room management, hotel hospitality and many other aspects of hotel management. On the other hand, the students of Culinary Art (PHM245) deals with cooking of food, pastry, and others. In any engineering subject, there are several calculations to be involved and CES425 is not spared. By looking at mathematics between PHM240 and PHM245 courses, PHM245 students are more exposed to mathematics compared to PHM240 students. It is because PHM245 students will have to incorporate number and calculations especially during food preparations. For example, when they want to prepare fried rice, they must calculate how many persons will eat it, the amount of ingredients to be put in and others. Compared to PHM240 students, they are more exposed to soft skills, body language but just only a handful of calculation involved.

The course of Civil Engineering Materials (CES425) touched about all the materials used in construction works. The students will learn about how the structure is erected, how the load applied being transferred to the ground and new sustainable materials for construction. This subject will help them to understand the basic concept of construction methods and equipped them with basic engineering knowledge if the students were planning into building their own hotel or café building later in their career.

This research is conducted to analyse the performance of Hotel and Tourism students who enrolled in Hotel Management (PHM240) and Culinary Arts (PHM245) who took an engineering subject called Civil Engineering Materials (CES425). The engineering subject has also been taught to all civil engineering students and the question set is according to Engineering Accreditation Council (EAC), no exceptions were given.

The outcome of this research will also gave a better view for the lecturers that will teach this subject to a students from the Faculty of Hotel and Tourism. The lecturer will have the opportunity to prepare with suitable aid to address and help those group of students that needed additional help in engineering subject.

### **Literature Review**

To cultivate the creativity of students in order for them to think 'outside the box', Universiti Teknologi MARA (UiTM) has adopted 'Wisdom Wednesday'. This 'Wisdom Wednesday' is when the students must undertake an elective subject that is different from their major course. For example, engineering students taking a theatre subjects, dentist students taking a musical subject and so on and so forth. By venturing into an unknown territory, the students will challenge and prove themselves that they can excel in any problem, challenges thrown to them. It has been proven by Rozli et al (2022) who studied on the performance of non-engineering students taking on engineering subjects. In that study, the students from hotel and tourism took engineering materials subject and they scored relatively well compared to the engineering students. In Portuguese engineering course, they have implemented an

entrepreneurship subject in the course syllabus. Pascoal et al., (2017) stated that the students were motivated to be engaged in a non-engineering subject that they must undertake.

Anderson et al (2010) studied on graduated engineering students but not working as an engineer. The researcher concluded that it is best for the engineering students to be exposed to a non-engineering skill such as business skills. However, with the knowledge of engineering, the graduate can tackle the problem arises with a more calculated and analytical problem-solving skill that they have learnt. These findings were then backed up by Gavrilova (2010) who studied on the advantage of engineering knowledge for non-engineers. The researched dwelled on the business side methodology where they used 'ontologies'. These 'ontologies' can only be fully utilised by a small knowledge in an engineering subject.

To tackle hard task, there are several software's available in the market such as Computer Aided Design (CAD) that requires the users to have little engineering knowledge. Conrad et al (2021) conducted a study on non-engineering students using CAD software to model a problem thrown. The studies shown that the non-engineering students can use the engineering software with minimal knowledge on engineering. However, the challenge in educating the non-engineering students is there. The lecturer or instructor must be well versed and experienced to ensure that the information given to the non-engineering students is effective. The research by Tigelaar & Sins (2021) proposed that, the instructor has to be motivated as well as experienced in giving a lecture. Short & Hawley (2015) studied on evolution of education especially in biology. The views from science and non-science teacher were taken into consideration and it shows only a little difference in favour of science teacher although the topic discussed were biology.

It is a no secret to others that most of the engineering students have a lack of tendency in talking, presenting, and pitching to others. According to Larson (2008), Franklin W. Olin College of Engineering embarked in a new syllabus by incorporating engineering with business, arts and social sciences. It gave the engineering students some advantages when they were looking for a job compared to other engineering students who did not take any additional subjects apart from engineering subjects. Engineers who learned business subject in their studies have proven to be good business leaders. This strong statement has been backed up by Clayton (2022); Al-Saleh (2014), where they agreed that the students with engineering background at effective at project planning, strong numeracy, and others.

### **Methodology**

In this study, a subject called Civil Engineering Materials (CES425) from School of Civil Engineering were enrolled by the students. This subject was designed for civil engineering students to learn and explore about the materials used in any construction. This subject was offered to Part 2 civil engineering students who enroll in Bachelor of Civil Engineering (CEEC221). The subject comprises both theoretical and calculation part. The percentage proportion of theoretical and calculation part is about 90% and 10% respectively. The only calculation part that the students will learn is to calculate the amount of ingredients to be mixed to make a concrete mix.

Concrete is an admixture that form from three main materials, namely cement, water and aggregate. Each material must be calculated carefully to ensure that the strength of concrete is as per intended. Thus, the students must learn to calculate, read graph(s) and use concrete mix design form. This calculation was used by civil engineer all over the world and it is according to British Standard.

### Assessment

The students will be assessed with 10% quizzes, 30% of test and 60% of final exam. For engineering subject, it is compulsory for each of the subject to be matched with a program outcome (PO) that is stated by the Engineering Accreditation Council. For this course only two attributes were highlighted: The fundamental engineering knowledge (PO1) and the environmental consideration (PO3). Table 1 shows the percentage of assessment and skill attributes covered.

Table 1

*Overall assessment for CES425*

Assessment / Skill Attribute	PO1: Fundamental Engineering Knowledge (%)	PO7: Environmental and Sustainability Issues (%)	Total (%)
Common Test	10	20	30
Assignment	10	0	10
Final Exam	30	30	60
<b>Total</b>	50	50	100

### Sampling

73 students from Hotel and Tourism courses registered and took the Civil Engineering Materials subject. The breakdown of the students was shown in Table 2. The students from the two groups are only one semester apart and their ages are around 22 years old. During March – July 2022 Semester, all the students were staying at home and did Online Distance Learning (ODL). All the teaching activities, assessments and others were done via an online platform.

Table 2

*Table Students Enrolled for CES425 for March – July 2022*

Courses	No of Students	Part
Hotel Management (PHM240)	20	05
Culinary Arts (PHM245)	53	04

### Analysis

All the students' achievements were recorded and analysed by using i-Ras software system. This system has been used and acknowledged by the School of Civil Engineering Universiti Teknologi MARA. This software will extract the results not only to determine grades A, B or C, but also the exact performance of students in each Programme Outcomes. Figure 1 shows the interface for the i-Ras system.

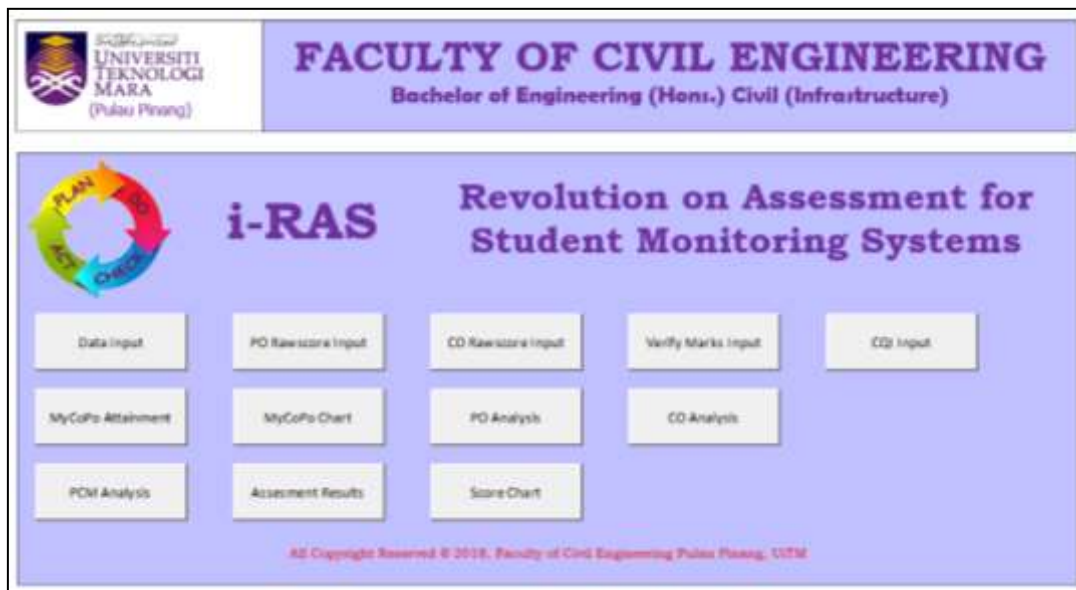


Figure 1: i-Ras Interface

### Result and Discussion

In this section the students’ achievements between the PHM240 and PHM245 were discussed. The performance of students was analysed by keying in their own marks in details according to question numbers and programme outcomes. It is important to highlight that all the questions prepared were on par with the requirements by the Engineering Accreditation Council (EAC) Malaysia, no special exceptions were given. It is safe to say that the students were treated as if they were a full-time civil engineering student.

### Overall Grade

The overall grades can be seen in Table 3. From the table, it can be said that both courses of students understand and able to learn engineering subject as no one failed in the subject. Table 3 shows the percentage of students scoring grades for both courses. 45% of PHM240 students scored an A grade whereas 60% students from PHM245 scored the same grade. It shows a difference of 15% between the two courses students. For the lowest passing grade, that is C, 10% of PHM240 students achieved it whereas only 7% students of PHM245 achieved it. This result showed that the Culinary Arts students performed much better compared to the PHM240 students. Figure 2 shows the graph pattern of the results obtained by the students.

Table 3  
Percentage Difference

SEMESTER	GRADES						
	A+, A, A-	B+, B, B-	C+, C	C-, D	E	F	TOTAL
PHM240	45%	45%	10%	0	0	0	100%
PHM245	60%	33%	7%	0	0	0	100%

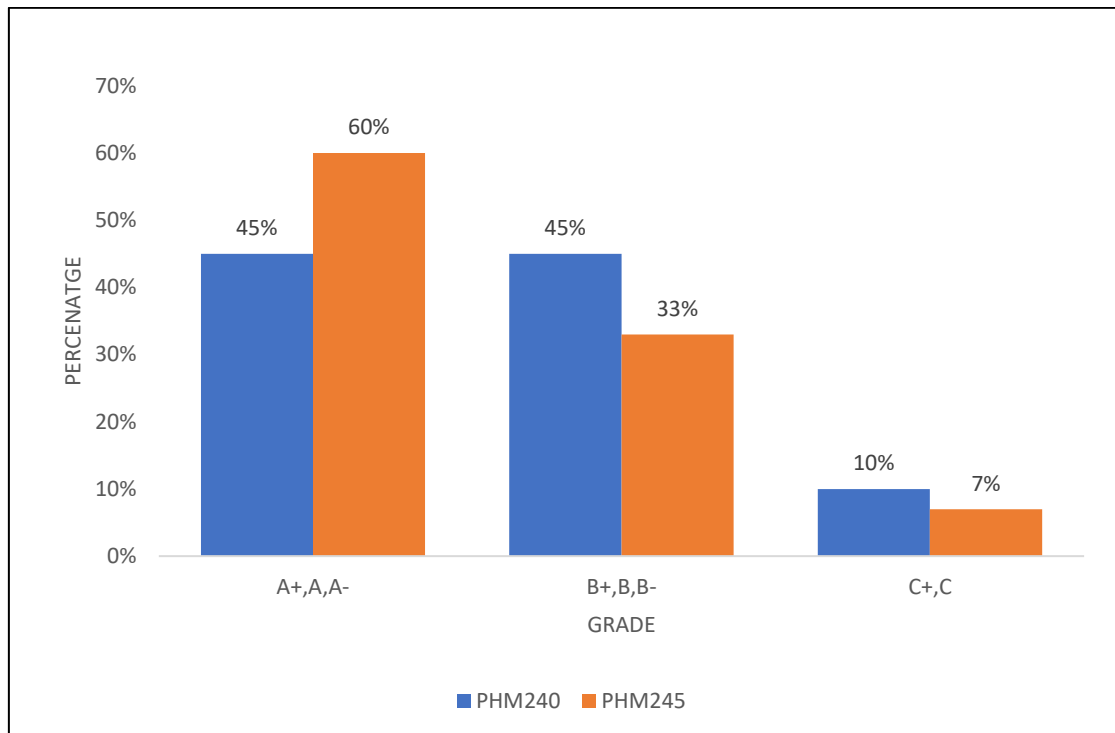


Figure 2: Overall Grade Graph

### Programme Outcomes Attribute

Civil Engineering Programme in UiTM Cawangan Pulau Pinang is under the purview of Engineering Accreditation Council (EAC) Malaysia. It means that the subject must be at par with EAC requirements regardless of the recipients of the subject (for this case, a hotel students). Apart from analysing the performance of students obtaining grades, the students' performance in achieving the Program Outcomes set by the EAC also have to be analysed.

This subject has been paired with two Programme Outcomes that were Fundamental Engineering Knowledge (PO1) and Environmental Consideration (PO3). PO1 usually will asked the students on theoretical parts, whereas PO3 will test the students on calculation. Table 4 shows the average marks obtained by the students for each Programme Outcomes. It can be clearly seen that the difference of percentage between the two class is small, a merely 2% difference. However, it does shows that the PHM245 students have the upper hand compared to PHM240 students. Both classes manage to score a well average marks for each Programme Outcomes.

Table 5 shows a more detailed performance of students. It analysed the number of students obtaining more that 50% marks for each Programme Outcomes. PHM245 scored a 100% for students obtaining more than 50% marks in PO1 and 92% students obtaining more than 50% in PO3. In contrast for PHM240 students, they also scored a 100% achievement for students obtaining PO1 but only 75% of them passed with more than 50% marks for PO3. This analysis further confirms that PHM240 students has to brush up their skills in mathematics compared to their PHM245 friends.

Table 4

*Average Marks Obtained by Students*

SEMESTER	Average Marks Programme Outcomes (PO) %	
	PO1	PO3
PHM240	78	66
PHM245	80	69

Table 5

*Number of Students Obtained More Than 50% for a PO*

SEMESTER	Number of Students Obtained >50% for Programme Outcomes (PO)	
	PO1	PO3
PHM240	20	15
PHM245	53	49

**Conclusion**

The findings from this research are interesting and can help the lecturers to enhance their teaching skills especially to certain groups of students. The lecturer teaching this subject to a non-engineering students can take early measures to prepare and enhance their teaching methods, styles of teaching among others. For this case, the two groups of students coming from the same faculty but from different courses. Students in PHM245 were exposed more to calculation because it is their nature in food preparation that involve calculation. As for PHM240 students, they had little exposure to calculation as they were trained to work in a management team. However, both types of students managed to score well in test and assignment although the standard is set to an engineering practice.

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