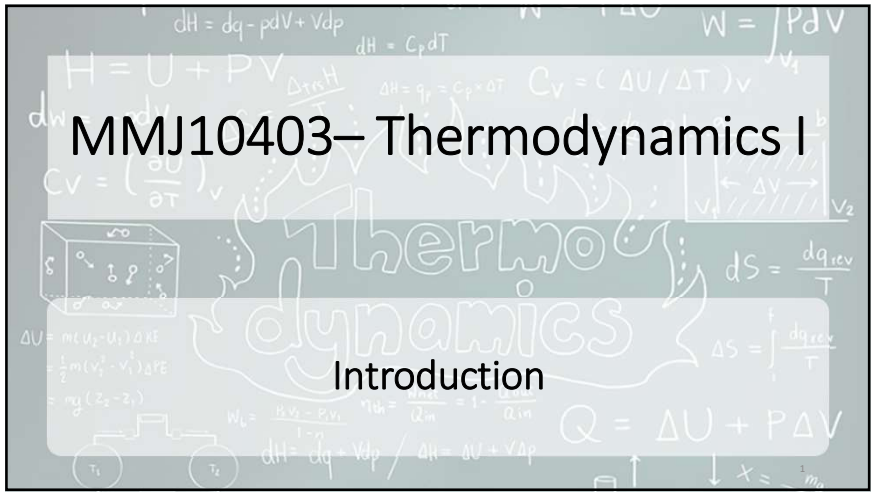


Introduction to MMJ10403 (2022/2023)

Contents

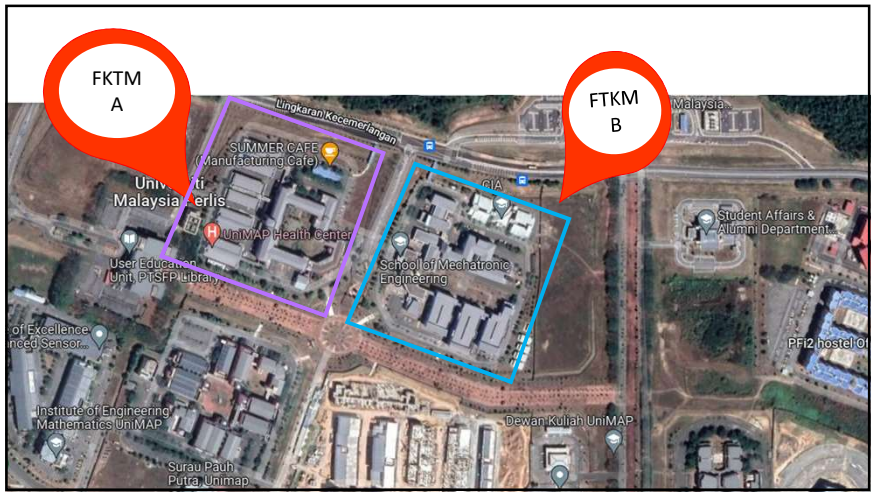
1. **Time table of sem 2 2022/2023**
2. **Outcome based education (OBE)**
3. **Continuous quality improvement (CQI)**
4. **Textbook**
5. **Google classroom**
6. **WhatsApp group**
7. **Post COVID-19**
8. **Attendance**
9. **Assignments/Quizzes/Laboratory report**

Time table of sem 2 2022/2023

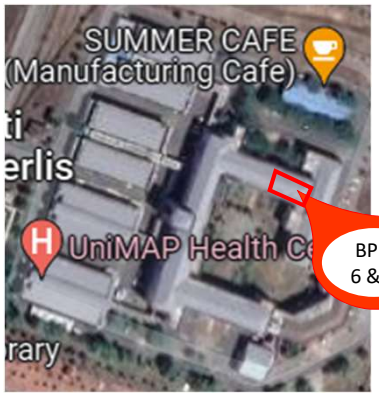
- Lecture sessions
  - Monday 08:00 am – 09:00 am BPU 7
  - Thursday 08:00 am – 10:00 am BPU 6
- Laboratory sessions
  - UR6521001 - Year 1 : Tuesday 03:00 pm – 05:00 pm FTKM – B4(a)
  - UR6521001 - Y2GExDip2 : Monday 12:00 pm – 02:00 pm FTKM – B4(a)
  - UR6521001 - Y2GExDip3 : Thursday 02:00 pm – 04:00 pm FTKM – B4(a)

From next week and beyond …

- Lecture sessions
  - Either face-to-face or online (sync/ async) kindly refer to the tentative for this course. If there is any changes on the tentative, notice will be given in Google classroom and the calendar for this course.
  - Basically, most lecture sessions are face-to-face, except for week 04 and few public holidays will be conducted as online (async).



- Lecture session

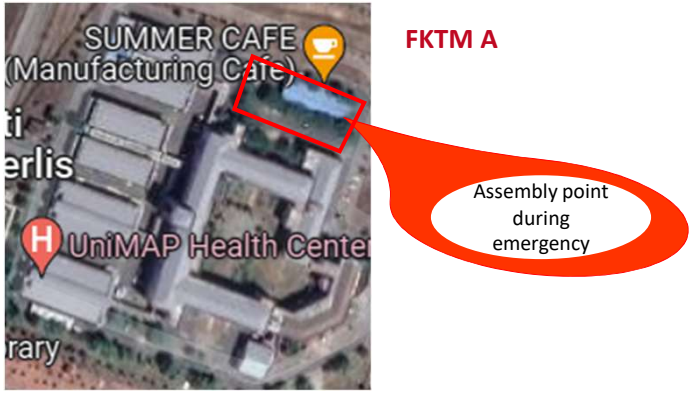


FKTM A

Navigation with Google Maps

6

- Lecture session (Assembly point)



FKTM A

7

- Laboratory sessions
  - FTKM – B4(a) (Thermodynamics Laboratory)

FKTM B

Navigation with Google Maps

8

- Laboratory sessions
  - FTKM – B4(a) (Thermodynamics Laboratory)

FTKM B

FTKM B4(a)

9

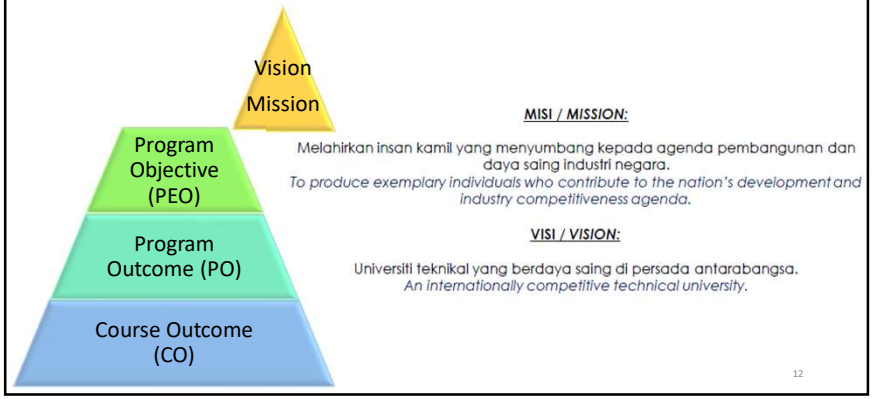
Outcome based education (OBE)

Contents

a. **What is outcome based education (OBE)**
b. **HEA-01 document**
c. **CO-PO mapping in HEA-01**
d. **Course content to achieve COs**
e. **OBE process**

What is outcome based education (OBE)

11



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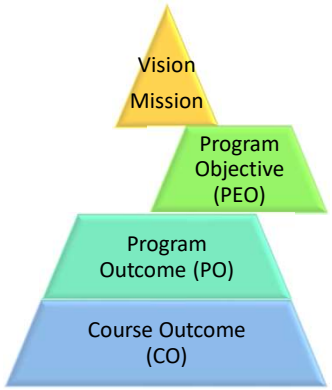


PROGRAMME OBJECTIVES (PEO)

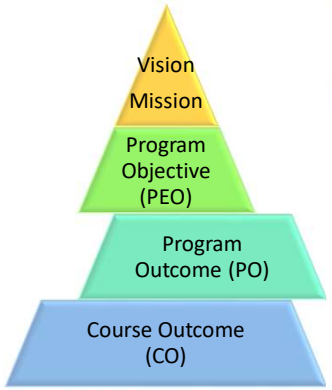
The Programme Objectives for the entire ***Engineering Programme*** at Universiti Malaysia Perlis (UniMAP) is as follows:

PEO 1
Graduates who have demonstrated career advancement in the field of Electrical Engineering or related engineering field.

PEO 2
Graduates who are involved in a professional body or society.

PEO 3
Graduates who pursue life-long learning

13



PROGRAMME OUTCOMES

*At the end of the **Engineering Programme**, the students are expected to attain the following attributes:*

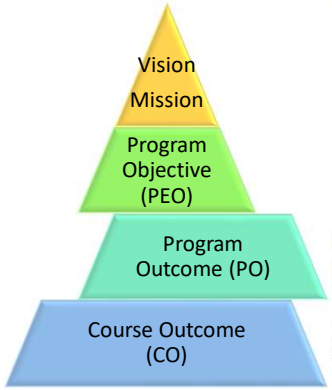
PO 1
Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization respectively to the solution of complex engineering problems.

PO 2
Identify, formulate, conduct research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO 3
Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental consideration.

PO 4
Conduct investigation of complex engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

14



PROGRAMME OUTCOMES

*At the end of the **Engineering Programme**, the students are expected to attain the following attributes:*

PO 5
Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations.

PO 6
Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problem.

PO 7
Understand and evaluate the sustainability and impact of professional engineering work in the solutions of complex engineering problems in societal and environmental contexts including ability to have entrepreneurship skills.

PO 8
Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

15

PROGRAMME OUTCOMES

*At the end of the **Engineering Programme**, the students are expected to attain the following attributes:*

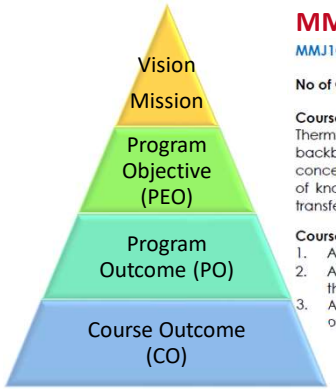
PO 9
Function effectively as an individual, and as a member or leader in diverse teams and multi-disciplinary settings.

PO 10
Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11
Demonstrate knowledge and understand of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

PO12
Recognise the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

16



MMJ10403 – Thermodynamics 1

MMJ10403 TERMODINAMIK I [THERMODYNAMICS I]

No of Credits: 3

Course Synopsis:
Thermodynamics is one of the main foundations in mechanics which is the backbone of the Mechanical Engineering. This field is a combination of the concepts of thermal energy and energy movement in engineering. The extension of knowledge of the field of thermodynamics leads to the application of heat transfer, thermal-fluid and subsequently to dynamics gas.

Course Outcomes:
1. Ability to analyse the properties of pure substance.
2. Ability to formulate energy balance accordingly to the first law of thermodynamics for a system.
3. Ability to evaluate the second law of thermodynamics with entropy changes of substances in a system.

HEA-01 document

HEA (A)-01[c]

UNIVERSITI MALAYSIA PERLIS

BORANG PENAWARAN KURSUS BAHARU /
New Course Form

SEKSYEN A : MAKLUMAT UMUM
SECTION A : GENERAL INFORMATION

Nama Fakulti/Pusat/Institut :	FACULTY OF MECHANICAL ENGINEERING TECHNOLOGY
(A1) Kod Kursus / *Course Code* :	MMJ10403
(A2) Tajuk Kursus / *Course Title* :	Bahasa Melayu : Termodinamik I English : Thermodynamics I
(A3) Nilai Kredit / *Credit Value* :	3
(A4) Jenis Kursus / *Course Type* :	Core
(A5) Rasional Penawaran Kursus/Modul / *Rationale for the Course/Module Offering* :	Thermodynamics is one of the main foundations in mechanics which is the backbone of the Mechanical Engineering. This field is a combination of the concepts of thermal energy and energy movement in engineering. The extension of knowledge of the field of thermodynamics leads to the application of heat transfer, thermal-fluid and subsequently to dynamics gas.
(A6) Kali Pertama Penawaran Kursus / *First Time Course Offered* :	Semester 1 , Academic Session 2021/2022
(A7) Tenaga Pengajar untuk Kali Pertama Penawaran Kursus/ *Teaching Staff During the First Time Course Offered:*	Lecturer 1 (Coordinator): MOHAMAD SHAIFUL ASHRUL BIN ISHAK Lecturer 2 : IRFAN BIN ABD RAHIM Lecturer 3 : SUHAIMI BIN ILLIAS
(A8) Jumlah Pelajar yang Dijangkakan untuk Kali Pertama Penawaran Kursus / *Number of Students Expected During the First Time Course Offered:*	140

Actual document will be discussed during the 1st lecture session.

MMJ10403	Termodinamik I [Thermodynamics I]	Name : MOHAMAD SHAIFUL ASHRUL BIN ISHAK Position : PROFESOR MADYA School : FAKULTI TEKNOLOGI KEJURUTERAAN MEKANIKAL Date Prepared : 25-JUL-2021 Status : **HANTAR**	Name : SYAMSUL SYAHRUN BIN AWANG @ HASHIM Position : PENSYARAH KANAN School : FAKULTI TEKNOLOGI KEJURUTERAAN MEKANIKAL Date Review : 27-JUL-2021 Status : **LENGKAP**	Name : NURHASFALINDABAIZURA BINTI BESERI Position : PEGAWAI TADBIR School : FAKULTI TEKNOLOGI KEJURUTERAAN MEKANIKAL Date Review : 28-JUL-2021 Status : **LENGKAP**	Name : MOHD SHUKRY BIN ABDUL MAJID Position : DEKAN School : FAKULTI TEKNOLOGI KEJURUTERAAN MEKANIKAL Date Review : 04-AUG-2021 Status : **DIPERAKUI**	Date Approved : 12-OCT-2021 Status : **DISAHKAN**	

CO-PO mapping in HEA-01 document

(B5) Matriks Hasil Pembelajaran */Learning Outcomes Matrix*

Course Outcome (CO)	Domain and Taxonomy Levels (Maximum Level)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Possible Assessment
CO1 : Ability to **analyse** the properties of pure substance	C4	/												- Quizzes - Test - Laboratory Report - Assignment - Final Examination
CO2 : Ability to **formulate** energy balance accordingly to the first law of thermodynamics for a system	C5	/												- Quizzes - Laboratory Report - Test - Final Examination - Assignment
CO3 : Ability to **evaluate** the second law of thermodynamics with entropy changes of substances in a system	C5		/											- Quizzes - Test - Assignment - Final Examination

Note : (/) Certain CO is relevant to that PO

Actual document will be discussed during the 1st lecture session.

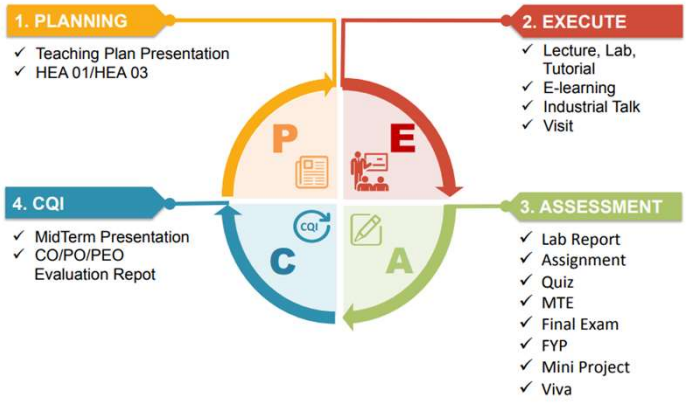
Course content to achieve COs

(B6) Kandungan Kursus */ Course Content :*

1. Basic Concepts of Thermodynamics
2. Properties of Pure Substance
3. Energy Transfer
4. First Law of Thermodynamics
5. Second Law of Thermodynamics
6. Entropy

Actual document will be discussed during the 1st lecture session.

OBE process



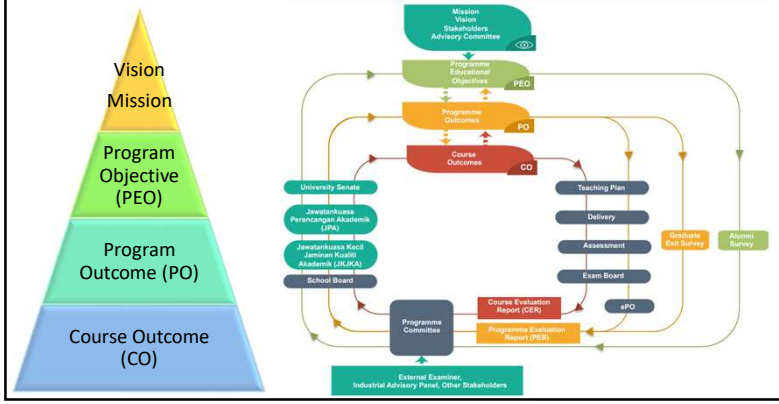
21

Continuous quality improvement (CQI)

Contents

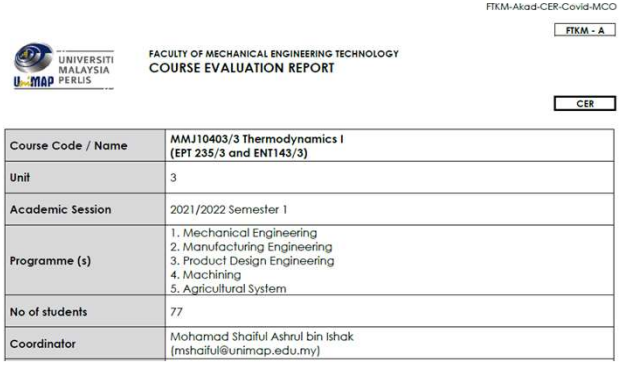
a. **What is continuous quality improvement (CQI)**
b. **Course evaluation report sem 1 2022/2023**
c. **Teaching plan sem 2 2022/2023**
d. **Student learning time (SLT) sem 2 2022/2023**
e. **Details schedule in sem 2 2022/2023**

What is continuous quality improvement (CQI)



23

Course evaluation report sem 1 2022/2023



FTKM-Akad-CER-Covid-MCO

FTKM - A

UNIVERSITI MALAYSIA PERLIS

FACULTY OF MECHANICAL ENGINEERING TECHNOLOGY
COURSE EVALUATION REPORT

CER

Course Code / Name	MMJ10403/3 Thermodynamics I (EPT 235/3 and ENT143/3)
Unit	3
Academic Session	2021/2022 Semester 1
Programme (s)	1. Mechanical Engineering 2. Manufacturing Engineering 3. Product Design Engineering 4. Machining 5. Agricultural System
No of students	77
Coordinator	Mohamad Shaiful Ashrul bin Ishak (mshaiful@unimap.edu.my)

Actual document will be discussed during the 1st lecture session.

24

Teaching plan sem 2 2022/2023

UNIVERSITI MALAYSIA PERLIS
TEACHING PLAN

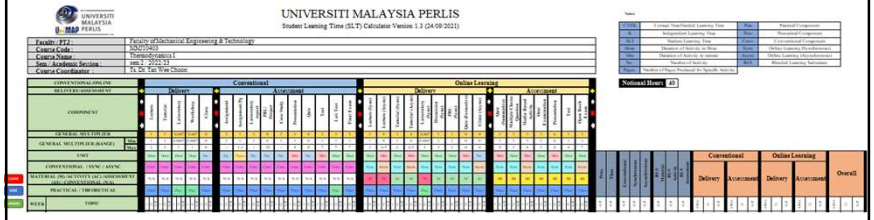
Faculty	Faculty of Mechanical Engineering and Technology	**Course Coordinator**	Ts. Dr. Tan Wee Choon	L	
Course Code	MMJ10403	**Teaching Team** Lecturer – (L) Teaching Engineer – (TE) Assistant Engineer – (AE)	Assoc. Prof. Ir. Ts. Dr. Nasrul Amri Mohd Amin	L	
Course Name	Thermodynamics I		Ts. Mohd Asrul Bin Md Saad	TE	
No. of Credit	3				
Academic Session	2022/2023				
Semester	2				
Programme	1. Bachelor of Mechanical Engineering 2. Bachelor of Manufacturing Engineering				
Prerequisite	-	**Groups**	Group 1: Bachelor of Mechanical Engineering (72 students) Group 2: Bachelor of Manufacturing Engineering (1 student)		

A. CONTINUOUS QUALITY IMPROVEMENT (*Please skip this section for first time offering*)

Suggestion from the previous CER	Action plan for this semester
	Syllabus Contents

Actual document will be discussed during the 1st lecture session.

Student learning time (SLT) sem 2 2022/2023



Actual document will be discussed during the 1st lecture session.

- Every single hour face-to-face lecture requires 1 hour self-learning time.
- Every single hour laboratory require 2/3 hour self-learning time.
- Every single page of assignment require 1 hour self-learning time.
- Every single laboratory report require 3 hours self-learning time.
- No self-learning time is allocated for the quizzes as pop quizzes will be conducted.
- Every single hour of test require 3 hours of self-learning time.
- Every single hour of final examination requires 5 hours of self-learning time.
- You need to contribute 121.3 hours for this course in this sem 2 2022/2023.

Details schedule in sem 2 2022/2023

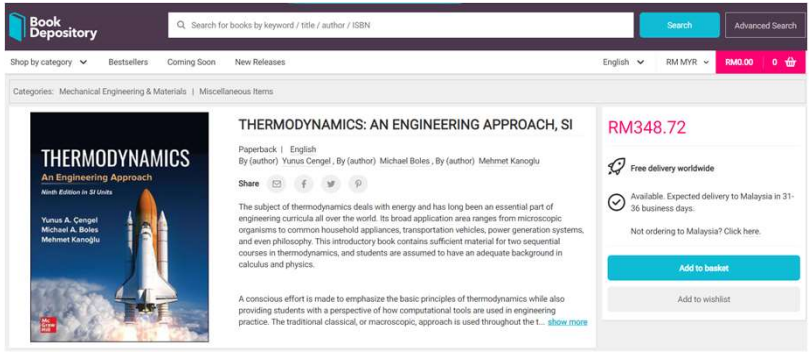
WEEK	DURATION				TYPE	HOUR(S)	HOLIDAY(S)	CHAPTERS	REMARK(S)
1	27	March	2023	Mon	Lec (F2F)	1 hr		Basic Concepts of Thermodynamics	
	28	March	2023	Tue					
	29	March	2023	Wed					
	30	March	2023	Thu	Lec (F2F)	2 hrs			
	31	March	2023	Fri					
	1	April	2023	Sat					
	2	April	2023	Sun					
2	3	April	2023	Mon	Lec (F2F)	1 hr		Properties of Pure Substance	
	4	April	2023	Tue					
	5	April	2023	Wed					
	6	April	2023	Thu	Lec (F2F)	2 hrs			
	7	April	2023	Fri					
	8	April	2023	Sat			Nuzul Al-Quran		
	9	April	2023	Sun					
3	10	April	2023	Mon	Lec (F2F)	1 hr		Properties of Pure Substance	** Quiz 1
	11	April	2023	Tue					
	12	April	2023	Wed					
	13	April	2023	Thu	Lec (F2F)	2 hrs			
	14	April	2023	Fri					
	15	April	2023	Sat					

Actual document will be discussed during the 1st lecture session.

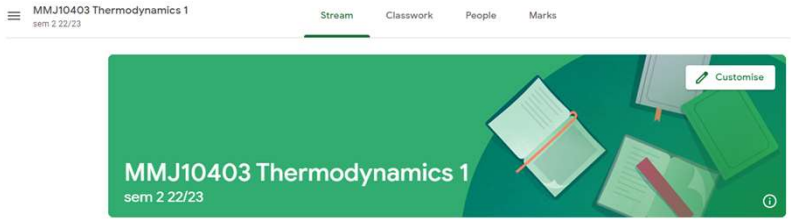
Import calendar

- The calendar of MMJ10403 – Thermodynamics 1 (.ics file) is provided in the Google classroom.
- Kindly refer to https://support.google.com/calendar/answer/37118?hl=en&co=GENIE.Platform%3DDesktop for how to import .ics file to your Google calendar.

Textbook



Google classroom



- 0 students (update 12:00 am 24 March 2023)
- Kindly join Google classroom using UniMAP student account.
- Link : https://classroom.google.com/c/NTE3Njc4NzkzOTM1?cjc=5ias2y5
- All materials and announcements will be given here.
- Please avoid last minute culture for the given tasks.

WhatsApp group

MMJ10403 Thermo 1 sem 2 2223

- 0 students (update 12:00 am 24 March 2023)
- Kindly utilize this WhatsApp group. I'll not response to any message from Telegram or other platform.
- Avoid any private message unless there is something about personal information.
- Link : https://chat.whatsapp.com/GebKWgCa3GlAdjqA2B892g

Post COVID-19

- ✓Kindly follow the latest SOP as given by Malaysia government as well as UniMAP.
- ✓You are encourage to wear your face mask during lecture/tutorial/laboratory sessions.
- ✓You are compulsory to wear your face mask during your visit to my office.
- ✓Kindly replace with a new face mask whenever it is needed.
- ✓Sanitize your hand frequently especially after you touch something that is not belong to yours.

- ✓If you are detected positive for COVID-19 or close contact with positive COVID-19 patient, kindly report to
  - MySejahtera Apps (generate digital home surveillance order (HSO) from MySejahtera)
  - SHE system (https://she.unimap.edu.my)
  - Your RPS (Kindly know who is your RPS, if no idea ask your program chairperson)
  - Your course coordinator / lecturer
- ✓If you are not feeling well, please take a good rest without attend the session to bring risk to others. Kindly obtain medical advice from the UniMAP Health Centre.
- ✓Only those who provide official digital HSO from MySejahtera within 2 weeks are allowed to conduct replacement of continual assessment.

Attendance

- ✓If on-line session, Google form will be distributed by lecturer. Kindly complete the Google form within the given duration.
- ✓Response after the given duration will not be considered as a valid attendance.
- ✓Percentage of absent more than 10 % will be given first warning letter.
- ✓Percentage of absent more than 20 % will be given second warning letter.
- ✓If no further improvement, a barring letter from final examination will be issued.

Assignments/Quizzes/Laboratory report

- ✓Information that is related to the assignment/quiz/laboratory report will be announced in Google classroom.
- ✓Kindly aware of the due date given in the Google classroom. Please do not practicing last minute culture as you will never expected that you also have other task to be completed in other course within the same due date.
- ✓Any lateness will cause penalty of -10% per working day.
- ✓Please take note that those assignment or laboratory report with provided rubrics, the perfect answer scheme will not be given. Kindly refer to the given rubrics to plan your strategy to obtain an excellent marks of that assessment.

- ✓You are requested to submit your complete student statement which is available in Google classroom within the first two weeks of the semester.
- ✓All the assessments for this course are personal work. Therefore, no discussion is allowed. If it is detected with the similar answer, 0 marks will be awards to all involved parties.
- ✓Although laboratory will be conducted in group but the laboratory report is still considered as individual work.
- ✓Remember that if you would like to repeat this course for additional semester (when you fail the course), you need to score at least 40 % of the allocated 40 marks for the coursework.