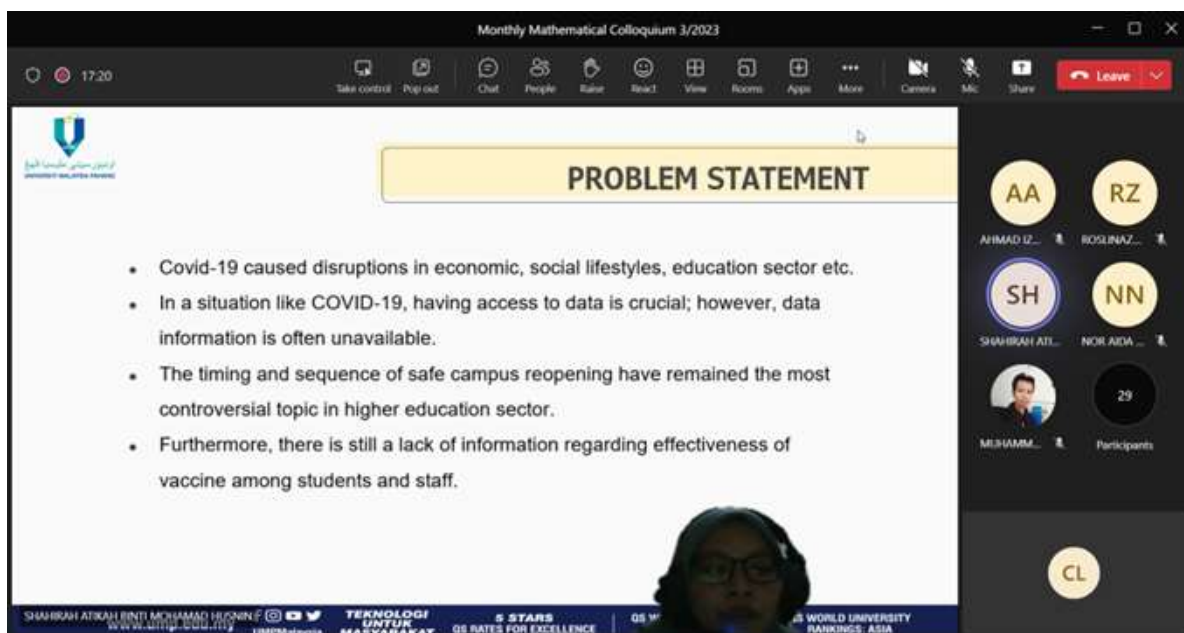
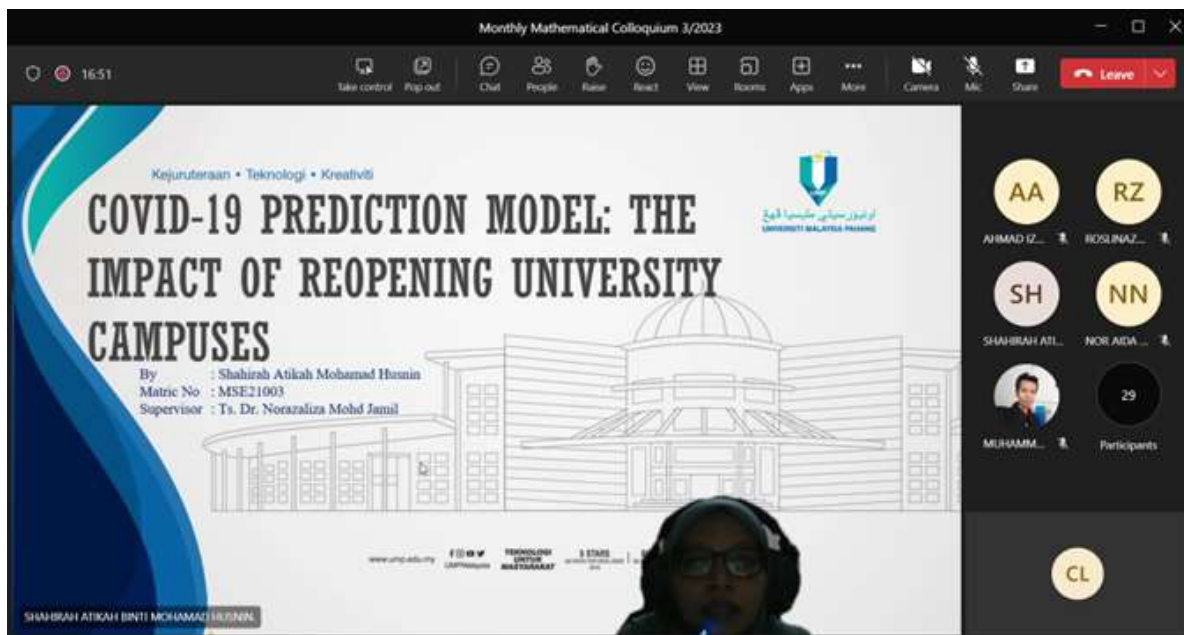


Monthly Mathematical Colloquium (MMC) 3, 2023

Last Updated: 25 May 2023 Hits: 428

On 19 May 2023, Centre for Mathematical Sciences has been successfully organised the third Monthly Mathematical Colloquium in 2023. In this session, the audiences have been entertained by the knowledge sharing respectively from a Master of Science (MSc) and a Doctor of Philosophy (PhD) student, who are mainly supervised by Ts. Dr. Norazaliza Binti Mohd Jamil. Specifically, the colloquium started with knowledge sharing from the MSc student named Shahirah Atikah Binti Mohamad Husnin with her research project entitled "*COVID-19 Prediction Model: The Impact of Reopening University Campuses*". During the Questions and Answers (Q&A) session, a couple of constructive suggestions and comments have been inquired from the audience, which these suggestions and comments can be beneficial to her in preparing the pre-viva that will be held soon.



After a fruitful knowledge sharing from the MSc student, the colloquium is continually entertained with knowledge sharing from a PhD student named Ahmad Izul Fakhruddin B. Azimi with his research project entitled “*Mathematical Model and Simulation for Enzymatic Hydrolysis of Cellulose in a Stirred Tank*”. A couple of constructive suggestions and comments also have been inquired by the audience after the end of his presentation.

Monthly Mathematical Colloquium 3/2023

01:11:48

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Unmute (Ctrl+Shift+M)

NORAZALIZAH... NR

NORAZALIZAH... NORAZALIZAH...

ROSLINAZ... RZ AHMAD IZUL F...

AHMAD IZUL F... AA

MUHAMMAD... 38

Participants

CL

Monthly Mathematical Colloquium 3/2023

01:22:18

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Laboratory Scale Fermentation

- Two types of fermentation in laboratory size:
 - Shake-free fermentation.
 - Shake fermentation.
- Shake-free fermentation model:

$$\frac{\partial M(x,t)}{\partial t} = D \frac{\partial^2 M}{\partial x^2} + \frac{\mu_{max} SM}{K_m + S + S^2/K_i} \left(1 - \frac{P}{P_c}\right) - K_d M \quad (7)$$

$$\frac{\partial P(x,t)}{\partial t} = D \frac{\partial^2 P}{\partial x^2} + \frac{v_{max} SM}{K_m + S + S^2/K_i} \left(1 - \frac{P}{P_c}\right) \quad (8)$$

$$\frac{\partial S(x,t)}{\partial t} = D \frac{\partial^2 S}{\partial x^2} - \frac{1}{Y_{MS}} \left[\frac{\mu_{max} SM}{K_m + S + S^2/K_i} \left(1 - \frac{P}{P_c}\right) - K_d M \right] - \frac{1}{Y_{MP}} \left[\frac{v_{max} SM}{K_m + S + S^2/K_i} \left(1 - \frac{P}{P_c}\right) \right] - m M \quad (9)$$

NORAZALIZAH... NR

NORAZALIZAH... NORAZALIZAH...

NORAZALIZAH... NZ AHMAD IZUL F...

AHMAD IZUL F... AA

MUHAMMAD... 31

Participants

CL

Monthly Mathematical Colloquium 3/2023

01:23:32

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Laboratory Scale Fermentation

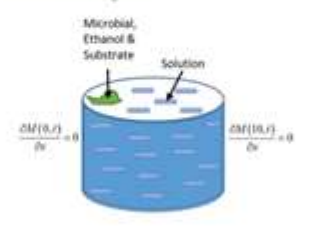
Universiti Malaysia Perlis

- Initial conditions from experimental data in Norhazimah (2016) and distributed using Gamma distribution:

$$M(x, 0) = 3.8757 \times \frac{x^{w-1} e^{-x/\psi}}{\psi^w \Gamma(w)} \text{ gL}^{-1}$$

$$P(x, 0) = 0.0 \text{ gL}^{-1}$$

$$S(x, 0) = 87 \times \frac{x^{w-1} e^{-x/\psi}}{\psi^w \Gamma(w)} \text{ gL}^{-1}$$



- Boundary conditions:

$$\begin{cases} \frac{\partial M(0,t)}{\partial x} = 0, & \frac{\partial P(0,t)}{\partial x} = 0, & \frac{\partial S(0,t)}{\partial x} = 0 \\ \frac{\partial M(10,t)}{\partial x} = 0, & \frac{\partial P(10,t)}{\partial x} = 0, & \frac{\partial S(10,t)}{\partial x} = 0 \end{cases}$$

AHMAD IZUL FAKHRUDDIN B. AZMI

Fundamentally, both aforementioned postgraduates from PSM have shared their research project principally in the fluid flow modelling areas. At the end of this colloquium session, a photo shot has been taken of the audience composed of academicians and postgraduate students who attended MMC 3/2023.

Hereby, PSM would like to take an opportunity to appreciate the knowledge sharing from Shahirah Atikah Binti Mohamad Husnin, and Ahmad Izul Fakhrudin B. Azimi. Furthermore, PSM wishes all audiences able to gain fruitful knowledge in fluid flow modelling via this colloquium.

Reported by: Dr. Chuan Zun Liang

Monthly Mathematical Colloquium 3/2023

01:42:19

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ROSLINAZARIMAH BINTI ZAKARIA

RUSMAH BINTI ZUCHEAWANG

NORHANI BINTI MUHAMMAD

MUHAMMAD AZIN BIN AHMAD

NORHANI BINTI ROSLI

SHAHIRAH ATIKAH BINTI MOHAMAD HUSNIN

NORHAZAH BINTI MO'SAMBI

NORAZAH BINTI AGHMAL

NOORALEENA BINTI MOHD BUL

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Participants

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