

**RCEE**

ENGINEERING EDUCATION  
IN DISRUPTIVE ERA

10th REGIONAL  
CONFERENCE IN  
ENGINEERING  
EDUCATION  
2022

# PROGRAM BOOK

10th Regional Conference in Engineering  
Education 2022

Semarang, 8th November 2022

*"Engineering Education in Disruptive Era"*



In Collaboration with  
**Universitas Diponegoro**  
**Universitas Sebelas Maret**  
**Universiti Teknologi Malaysia**



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## ACKNOWLEDGEMENT

The 10th Regional Conference in Engineering Education (RCEE 2022) with the theme of "Engineering Education in Disruptive Era" is now held again as a collaboration between Faculty of Engineering University of Diponegoro, University of Technology Malaysia and State University of Sebelas Maret and also a part of 64<sup>th</sup> Faculty of Engineering Dies Natalis and 65<sup>th</sup> University of Diponegoro Dies Natalis agenda.

The aims of the conference are to obtain and to extend the knowledge of the recent issues, opinions, bright ideas about the development of a comprehensive Engineering Education. It also to be an international forum for academia, researchers and students in communicating their research and development result fundamental and application of engineering education, to share extensively and exchange of ideas, thoughts and discussions on all aspect of engineering education to facilitate the formation of networks among participants of the conference for improving the quality and benefits of the research.

It is a great pleasure to welcome all the participants of this conference. I also would like to welcome all the keynote speakers and workshop speakers for this event. Prof. Khairiyah Mohd Yusof - University of Technology Malaysia, Prof. Ir. M. Agung Wibowo, MM, MSc, PhD - Diponegoro University, Llewellyn Mann BE, BSc, GCEd, PhD - Swinburne University of Technology Australia, Prof. Dr. Ing. Ir. Misri Gozan, M.Tech - OBE Curriculum Policy on IABEE and LAM Teknik, Ir. Bertha Maya Shopa, ST., M.Sc., Ph.D., IPU., ASEAN Eng. - Assessment: PEO, PLO, CLO. Thank you for your full support to this event.

I do hope that this conference to be a valuable forum for engineers and scientists to share their precious researches and this event will give significant contributions to the development of Education on Engineering and it will raise the awareness of scientific community members in bringing better circumstances and progresses in education.

I hope that the conference will be stimulating and memorable for you. So, enjoy your time.

Prof. Ir. M. Agung Wibowo, MM, MSc, PhD  
Dean of Faculty of Engineering  
Diponegoro University, Semarang-Indonesia



## PREFACE

The 10<sup>th</sup> Regional Conference of Engineering Education (RCEE) 2022 is the continuation of the 9<sup>th</sup> RCEE on 2021. The 10<sup>th</sup> RCEE 2022 is organized by Faculty of Engineering Universitas Diponegoro. This conference is held on November 8<sup>th</sup>, 2022 through online meeting. The 10<sup>th</sup> RCEE 2022 with the theme “Engineering Education in Disruptive Era” aims to be an international platform for the students, academia, and researchers in discussing their research results, communicating the ideas, and sharing about all matters related to engineering education. The 10<sup>th</sup> RCEE also provides an opportunity to establish international networks among participants thus enhancing the research quality.

There are 3 distinguished keynote speakers and 28 presented papers in this conference. Presented papers covers 10 topics including STEM Education, Global engineers, Educational technology, software, and tools, Student-centred teaching and learning, Professional skills development, Rigorous research in engineering education, Outcome-based education and accreditation, Assessment and evaluation, University-industry collaboration, Service learning, Faculty & professional development, Hands-on and industrial training, Education for sustainable development, Women in engineering, Diversity in engineering education, Entrepreneurship, Ethics and humanity in engineering, other related areas.

In addition, at this seminar there are also workshops on Outcome Based Education. This workshop discusses the implementation of the OBE curriculum as an assessment indicator for national and international accreditation and how to conduct OBE assessments for PEO, PLO, and CLO.

Finally, we would like to thank all keynote speakers and presenters for their participation, as well as all organizing and scientific committee members for their help and support.

Sincerely,  
Dr. Naniek Utami Handayani, S.Si., MT  
Committee Chairman



## ORGANIZING COMMITTEE

Dr. Naniek Utami Handayani, S.Si., MT	Committee chairman
Prof. Dr. Wahyudi Sutopo, ST, M.Si	Vice-chairman
Dr. Tuswan, ST	Vice-chairman
Dr. Noer Abyor Handayani, S.T., M.T.	Secretary
Fitriana Iftatika, ST, MSc	Secretary
Dr. Abdul Syakur, ST, MT	Treasure
Novita Anugrah Listiyana, S.E., M.Ak.	Treasure
Wenti Arum Widasari, ST	Treasure
Dr. Zaki Yamani	Program Chair
Dr. Siswo Sumardiono, ST, MT	Program Chair
Ahmad Syauqi Hidayatillah, ST, MT	Program Chair
Banu Ardi Hidayat, ST, MT	Program Chair
Dr. Manik Mahachandra, ST, M.Sc	Paper Chair
Dr. Muh. Hisjam, STP, MT	Paper Chair
Dr. Nurzal Effyana	Paper Chair
Dr.Eng. Kusumaningdyah Nurul H., ST, MT	Public Relations & Sponsorship
Mada Sophianingrum, MT	Public Relations & Sponsorship
Mardian, SIP	Public Relations & Sponsorship
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Indra Gunawan, S.Kom	Media Developing
Nauval Aji Satria	Media Developing
Ari Eko Widyantoro, ST, M.Si	Equipment preparation
Tim SIFT	Equipment preparation



## REVIEWER

Dr. Abdul Syakur, ST, MT	Diponegoro University, Indonesia
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Banu Ardi Hidayat, ST, MT	Diponegoro University, Indonesia
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Dr. M. Luqman Hakim, ST	Diponegoro University, Indonesia
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Dr. Ahmad Salahuddin Mohd Harithuddin	University of Technology Malaysia
Dr. Fadzil Daud	University of Technology Malaysia
Dr. Hadijah Jaffri	University of Technology Malaysia
Dr. Mitra Mitra	University of Technology Malaysia
Dr. Narina Abu Samah	University of Technology Malaysia
Dr. Noorzana Khamis	University of Technology Malaysia

Dr. Nur Husna Abd Wahid

Dr. Shafiee Bakar

Dr. Siti Hajjar Che Man

Dr. Siti Norafida

Dr. Siti Norafida Jusoh

Dr. Zulhasni Zulhasni

Dr. Zaki Yamani Zakaria

Dr. Nazatul Liana Sukiman

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia

University of Technology Malaysia



# SPEAKERS

## I. KEYNOTE SPEAKERS

**Prof. Khairiyah Mohd Yusof**

*(University of Technology Malaysia)*

**Llewellyn Mann Be, BScm GCEd, PhD**

*(Acting Director LTU at Swinburne University of Technology)*

**Prof. Ir. M. Agung Wibowo, MM, MSc, PhD**

*(Diponegoro University)*

## II. WORKSHOP SPEAKERS

**Prof. Dr. Ing. Ir. Misri Gozan, M. Tech**

*(Indonesia University)*

**Ir. Bertha Maya Shopa, S.T., M.Sc., Ph.D., IPU., ASEAN Eng.**

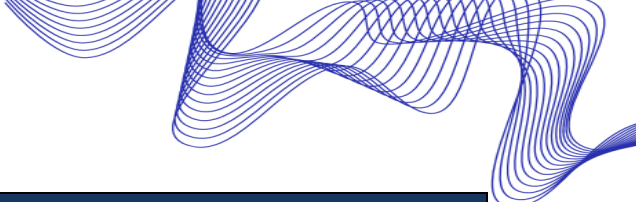
*(Gajah Mada University)*



# CONFERENCE PROGRAM

Tuesday, 8<sup>th</sup> November 2022

Time (Jakarta GMT +7)	PROGRAM
07.00 – 07.30	Pre-opening (preparation)
07.30 – 08.00	Inviting conference organizers, speakers, MC, rector, moderator (zoom meeting room)
08.00 – 08.15	Inviting participants (zoom meeting room) + playing profile videos
08.15 – 08.20	Safety Induction
08.20 – 08.30	Opening remarks
08.30 – 08.40	Performance by Faculty of Engineering Choir
08.40 – 08.50	Welcome speech by Director of Centre for Engineering Education (CEE) <b>Speaker: Ir. Ts. Dr. Zaki Yamani Zakaria</b>
08.50 – 09.00	Welcome speech by Dean of Faculty of Engineering, Sebelas Maret University <b>Speaker: Dr. Techn. Sholihin As'ad</b>
09.00 – 09.10	Welcome speech and opening by Dean of Faculty of Engineering, Diponegoro Univeristy <b>Speaker: Prof. Ir. M. Agung Wibowo, MM, M.Sc, Ph.D</b>
09.10 – 09.15	Break + video
09.15 – 09.50	Plenary Lectures Session 1 <b>Moderator: Mada Sophaningrum, S.T., M.T., M.Sc.</b> <b>Speaker: Prof. Dr. Khairiyah Mohd Yusof</b>
09.50 – 10.25	Plenary Lectures Session 2 <b>Moderator: Mada Sophaningrum, S.T., M.T., M.Sc.</b> <b>Speaker: Llewellyn Mann BE, BSc, GCEd, PhD</b>
10.25 – 11.00	Plenary Lectures Session 3 <b>Moderator: Mada Sophaningrum, S.T., M.T., M.Sc.</b> <b>Speaker: Prof.Ir. M. Agung Wibowo, MM, MSc, PhD</b>
11.00 – 11.15	Break + Briefing presenters for parallel session
11.15 – 12.45	Parallel Session
12.45 – 13.00	Break
13.00 – 14.00	Workshop Session 1 <b>Speaker: Prof. Dr. Ing. Misri Gozan, M.Tech</b>
14.00 – 15.00	Workshop Session 2



Time (Jakarta GMT +7)	PROGRAM
	<b>Speaker: Ir. Bertha Maya Shopa, ST., M.Sc., Ph.D., IPU., ASEAN Eng.</b>
15.00 – 15.30	Discussion
15.30 – 15.50	Best paper and presentation award
15.50 – 16.00	Closing Ceremony

## PARALLEL SESSIONS

Time	PROGRAM	
	Oral Presentation – Parallel Session I Tuesday, 8 <sup>th</sup> November 2022	
	Room 1	Room 2
11.15 - 11.30 AM	RCEE_01	RCEE_08
11.30 - 11.45 AM	RCEE_02	RCEE_09
11.45 AM - 12.00 PM	RCEE_03	RCEE_10
12.00 - 12.15 PM	RCEE_04	RCEE_12
12.15 - 12.30 PM	RCEE_05	RCEE_06
12.30 - 12.45 PM	RCEE_11	
<b>Moderator</b>	<b>Muhammad Mujiya Ulkhag, S.T., M.Sc.</b>	<b>Ahmad Syauqi Hidayatillah, S.T., M.T.</b>
<b>Zoom Link</b>	<p>Topic: RCEE_1's Zoom Meeting Time: Nov 8, 2022</p> <p>Join Zoom Meeting <a href="https://undip-ac-id.zoom.us/j/5624401561?pwd=VFRMeTZsaFIZekhXeUhPdUxDWnlydz09">https://undip-ac-id.zoom.us/j/5624401561?pwd=VFRMeTZsaFIZekhXeUhPdUxDWnlydz09</a></p> <p>Meeting ID: 562 440 1561 Passcode: RCEE</p>	<p>Topic: RCEE_2's Zoom Meeting Time: Nov 8, 2022</p> <p>Join Zoom Meeting <a href="https://us06web.zoom.us/j/83036212568?pwd=MDVkZE16TmlPUkpXc3pkM1ErQVcyUT09">https://us06web.zoom.us/j/83036212568?pwd=MDVkZE16TmlPUkpXc3pkM1ErQVcyUT09</a></p> <p>Meeting ID: 830 3621 2568 Passcode: UNDIP</p>

Time	PROGRAM	
	Oral Presentation – Parallel Session I Tuesday, 8 <sup>th</sup> November 2022	
	Room 3	Room 4
11.15 - 11.30 AM	RCEE_15	RCEE_21
11.30 - 11.45 AM	RCEE_16	RCEE_22
11.45 AM - 12.00 PM	RCEE_17	RCEE_23
12.00 - 12.15 PM	RCEE_18	RCEE_24
12.15 - 12.30 PM	RCEE_19	RCEE_25
12.30 - 12.45 PM	RCEE_20	
<b>Moderator</b>	<b>Dr. Tuswan, S.T.</b>	<b>Banu Ardi Hidayat, S.T., M.T.</b>
<b>Zoom Link</b>	<p>Topic: RCEE_3's Zoom Meeting Time: Nov 8, 2022</p> <p>Join Zoom Meeting <a href="https://us06web.zoom.us/j/81294360984?pwd=bxJkZUN4Ykw4MTliSzhfbmdrL29Mdz09">https://us06web.zoom.us/j/81294360984?pwd=bxJkZUN4Ykw4MTliSzhfbmdrL29Mdz09</a></p> <p>Meeting ID: 812 9436 0984 Passcode: UNDIP</p>	<p>Topic: RCEE_4's Zoom Meeting Time: Nov 8, 2022</p> <p>Join Zoom Meeting <a href="https://us02web.zoom.us/j/89842577407?pwd=Smt0eGRrNUNhNzVlSVMemFabDIzZz09">https://us02web.zoom.us/j/89842577407?pwd=Smt0eGRrNUNhNzVlSVMemFabDIzZz09</a></p> <p>Meeting ID: 898 4257 7407 Passcode: UNDIP</p>

Time	PROGRAM
	Oral Presentation – Parallel Session I Tuesday, 8 <sup>th</sup> November 2022
	Room 5
11.15 - 11.30 AM	RCEE_07
11.30 - 11.45 AM	RCEE_14
11.45 AM - 12.00 PM	RCEE_27
12.00 - 12.15 PM	RCEE_26
12.15 - 12.30 PM	RCEE_13
<b>Moderator</b>	<b>Dr. Anak Agung Sagung Manik Mahachandra Jayanthi Mertha, S.T., M.Sc.</b>
<b>Zoom Link</b>	<p>Topic: RCEE_5's Zoom Meeting Time: Nov 8, 2022</p> <p>Join Zoom Meeting  <a href="https://us02web.zoom.us/j/86879994907?pwd=OU1rOE51cDB6WWILT0JwbmgYlphQT09">https://us02web.zoom.us/j/86879994907?pwd=OU1rOE51cDB6WWILT0JwbmgYlphQT09</a></p> <p>Meeting ID: 868 7999 4907 Passcode: UNDIP</p>

## LIST OF PAPER

Code	Title of Manuscript	Authors	Affiliation
<b>RCEE_01</b>	The Spirituality and Burnout Components Relationship in Industrial Engineering Students Facing Hybrid Learning	Twin Yoshua R. Destyanto, Adhi Anindyajati, Indah S. Putri and Twin Hosea W. Kristyanto	Universitas Atma Jaya Yogyakarta
<b>RCEE_02</b>	Does Accreditation Improve Engineering Education Program Performance?: A study case of IABEE in Indonesia	Misri Gozan, Muhammad Arif Darmawan, Danny Pranayudha, Berlian Kushari, Renanto Handogo and Muhammad Romli	Universitas Indonesia
<b>RCEE_03</b>	Exploratory Study of Online Practicum Activities for Environmental Engineering Students at Diponegoro University During the COVID-19 Pandemic	Anik Sarminingsih, Nurandani Hardyanti, Sudarno Sudarno, Alinda Astriani and Rahmalia Putri Nurjayanti	Universitas Diponegoro
<b>RCEE_04</b>	Face-to-face lecture trials during the Covid-19 Pandemic	Nurandani Hardyanti, Anik Sarminingsih, Sudarno Sudarno, Alinda Astriani and Rahmalia Putri Nurjayanti	Universitas Diponegoro
<b>RCEE_05</b>	Pedagogical Framework to Fulfill and Improve the Understanding in Capstone Design Engineering Among STEM Graduates – A Mini Review	Aziah Pauzi, Farizul Hafiz Kasim and Zaki Yamani Zakaria	Universitas Malaysia Perlis
<b>RCEE_06</b>	Learning and Enhancement Development (LED): Integrating Qualitative Assessments and Peer-	Chin Khai Ong, Sue Jiun Phang, Rayson Pang, Denny K. S. Ng,	Heroit-Watt University Malaysia

	Assisted Learning Engagement for First Year Engineering Students	Chia Ping Lee and Voon-Loong Wong	
<b>RCEE_07</b>	Outcome Based Education Information System Design (Case Study at the Industrial Engineering Undergraduate Study Program Diponegoro University)	Yusuf Widharto, Singgih Saptadi, Ratna Purwaningsih, Novie Susanto, Wiwik Budiawan, Arfan Bakhtiar and Purnawan Adi Wicaksono	Universitas Diponegoro
<b>RCEE_08</b>	Flexible Curriculum for Promoting Success of Chemical Engineering Students at Higher Colleges of Technologies- UAE	Adelrahim Minalla, Zaki Yamani Zakaria, Khairiyah Mohd Yusof and Fatin Aliah Phang	Engineering Technology & Science Higher Colleges of Technology
<b>RCEE_09</b>	Conceptual Framework for Drone Edu Challenge IR 4.0 (DEC4IR)	Nurzal Effiyana Ghazali, Zaki Yamani Zakaria, Aishah Rosli, Wan Akmal Izzati Wan Mohd Zawawi, Noorzana Khamis, Tengku Nur Zulaikha Tengku Malim Busu, Jaysuman Puspanathan, Ruzimi Mohamed and Adam Wong Yoon Khang	Universitas Teknologi Malaysia
<b>RCEE_10</b>	The combination of Game Based learning and Project Based Learning to Enhance Engineering Students performance (Case Study: Project Management)	Devi Pratami and Ika Puspita	Telkom University
<b>RCEE_11</b>	Does ICT influence the Mathematics Performance of Students in South-East Asian Countries? An Analysis	M. Mujiya Ulkhaq and Naniek Utami Handayani	University of Brescia

	through OECD PISA 2018 Data		
<b>RCEE_12</b>	Effective Integrated Assessment for Introduction to Engineering, Industrial Seminar and Profession and Introduction to Computer Programing Courses	Aziatul Niza Sadikin, Mimi Haryani Hassim, Zaki Yamani Zakaria, Nor Alafiza Yunos, Aishah Rosli, Siti Hajjar Che Man, Khairiyah Mohd Yusof and Hasrinah Hasbullah	Universitas Teknologi Malaysia
<b>RCEE_13</b>	Team-Based Project Approaches Evaluation to Develop Student Performance in Foundation Engineering Course	Siti Nurlita Fitri and Erik Wahyu Pradana	Universitas Sebelas Maret
<b>RCEE_14</b>	DEVELOPMENT OF FASHION MODEL SIMULATOR (FMS) APPLICATION BASED ON AUGMENTED REALITY AS A TOOL IN BATIK SME EXHIBITION	Denny Nurkertamanda, Yusuf Widharto and Muhammad Alfin Fathur Rizqi	Universitas Diponegoro
<b>RCEE_15</b>	The Task-Technology Fit, Technology Induced Engagement, and Technology Induced Motivation on Higher Education Students Learning Performance during COVID – 19 in Indonesia	Retno Wulan Damayanti, Arissa Dwi Pangestu, Ayu Setiawati, Hani Aninda Intan Permatasari, Muhammad Raihan Syaifudin and Nisa Aqilla Ellenahaya Entifar	Universitas Sebelas Maret
<b>RCEE_16</b>	Assessing the Implementation of Outcome-Based Education from the Perception of Lecturers and Students: A Case in the Faculty of Engineering at Diponegoro University, Indonesia	Naniek Utami Handayani, M. Mujiya Ulkhaq, Mochamad Agung Wibowo and Skolastika D. K. Christiani	Universitas Diponegoro
<b>RCEE_17</b>	The Good Experience using	Bambang	Universitas



	Google Slides for Collaborative Learning During the COVID-19 Pandemic on Student Learning Outcomes	Kusharjanta, Eko Surojo, Wijang Wisnu Raharjo, Dody Ariawan and Aditya Rio Prabowo	Sebelas Maret
<b>RCEE_18</b>	Project-Based Learning Approach in Autonomous Vehicle Course During Pandemic Outbreak: A study case	Joko Slamet Saputro, Feri Adriyanto and Hari Maghfiroh	Universitas Sebelas Maret
<b>RCEE_19</b>	Identity of an Engineer as a Developmental Process: A Mini Review	Zaki Yamani Zakaria, Nurzal Effiyana Ghazali, Ahmad Izwan Abdul Lahtif and Shams Shazid Kader	Univeritas Teknologi Malaysia
<b>RCEE_20</b>	Strategies in Increasing Online Learning Satisfaction and Performance of Undergraduate Student of Engineering Faculty, Diponegoro University	Manik Mahachandra, Naniek Utami Handayani and Evita Gallantry	Universitas Diponegoro
<b>RCEE_21</b>	Analytical Hierarchy Process (AHP) for Achieving Course Learning Outcome in Bachelor Program of Urban and Regional Planning	Yudi Basuki	Universitas Diponegoro
<b>RCEE_22</b>	A Conceptual Model of Agent-Based Simulation for Classroom Strategies against the Spread of the Covid-19 Virus	Singgih Saptadi, Axell Selkus Ibrena Tarigan, Ary Arvianto, Wiwik Budiawan, Bimantoro Suryo Wibowo and Dhimas Wachid Nur Saputra	Universitas Diponegoro
<b>RCEE_23</b>	Real-World Design Procedure and Active Learning Method for RF Filter Design	Teguh Prakoso	Universitas Diponegoro
<b>RCEE_24</b>	Implementation of OBE to Support Student	Undayani Cita Sari, Bagus Hario	Universitas Diponegoro

	Understanding and Performance in Internet of Things (IoT) Course	Setiadji, Amelia Kusuma Indriastuti and Banu Ardi Hidayat	
<b>RCEE_25</b>	Investigation of Group Collaboration Performance using Computer Vision Technology	Joko Hariyono	Universitas Sebelas Maret
<b>RCEE_26</b>	Evaluation Of Hybrid Fluid Mechanics Practice, Bachelor Degree Of Civil Engineering Study Program, Department Of Civil Engineering Faculty Of Engineering UNDIP	Dyah Ari Wulandari, Sri Sangkawati, Suripin Suripin, Dwi Kurniani and Priyo Nugroho Parmantoro	Universitas Diponegoro
<b>RCEE_27</b>	The influence of 3D animation as learning tools in improving level of comprehension on Ship Construction Subject	Ocid Mursid, Tuswan Tuswan, Ahmad Firdhaus and Muhammad Luqman Hakim	Universitas Diponegoro