

# **PROCEEDING**

**ICMSTEA 2016 :**  
**The Role of Mathematics, Sciences, Technology, and Education Towards ASEAN**  
**Economic Community and Global Challenges**

**Makassar, South Sulawesi, Indonesia**  
**3<sup>rd</sup> – 4<sup>th</sup> October 2016**

**Fakultas Matematika dan Ilmu Pengetahuan Alam**  
**Universitas Negeri Makassar**  
**2016**

ICMSTEA 2016: THE ROLE OF MATHEMATICS, SCIENCES, TECHNOLOGY, AND EDUCATION TOWARDS ASEAN ECONOMIC COMMUNITY AND GLOBAL CHALLENGES

- Editor** : Dr. Syafruddin Side  
Dr. Ir. Wiharto Caronge, M.Si.  
Uca, S.Si., M.Si., Ph.D.  
Iwan Dini, S.Si., M.Si.  
Ansari Saleh Ahmar, S.Si, M.Sc.  
Bustang, S.Pd., M.Sc.  
Muh. Husnul Khuluq, S.Pd., M.Sc.  
Said Fachry Assagaf, S.Pd., M.Sc.  
Sahlan Sidjara, S.Si., M.Si.  
Ahmad Ansar, S.Pd., M.Sc.  
Syamsuddin Mas'ud, S.Pd., M.Sc.  
Muhammad Isbar, S.Si., M.Si.  
Surahman, S.Pd., M.Pd.
- Editorial Assistant**  
**Layouter** : Andi Ikhsan Maulana, S.Pd  
Dimas Suharto
- Cover Administrator** : Nurul Kusuma Wardani, S.Pd.
- Reviewer Board** : Prof. Alfred Edward Szmidt, Ph.D.  
Prof. Valerio Sbordonni, Ph.D.  
Prof. Birgit Loch  
Dr. Richard Randriantoamanana  
Prof. Fahrul Zaman bin Huyop, Ph.D.  
Prof. Mohd. Ekhwan Toriman, Ph.D.  
Prof. Eko Hadi Sujiono, M.Si.  
Prof. Oslan Jumadi, S.Si., M.Phil., Ph.D  
Muh. Abdy, S.Si, M.Si., Ph.D  
Prof. Dr. Jasruddin M, M.Si.  
Prof. Dr. Muris, M.Si.  
Prof. Dr. Ir. Yusminah Hala, M.Si.  
Prof. Dr. Usman Mulbar, M.Pd.  
Prof. Dr. Muh. Danial, M.Pd.

Copyright © October 2016  
ISBN 978-602-99837-4-6

Diterbitkan oleh : Fakultas MIPA Universitas Negeri Makassar

## WELCOME SPEECH

### Forewords from the Chairman of Committee

*Assalamu'alaykum wa Rahmatullahi wa Barakatuh*

First of all, I wish to extend a warm welcome to fellow delegates from the various countries and regions. I realize that you are fully dedicated to the sessions that will follow but I do hope you will also take time to enjoy sparkling Makassar with its tropical setting, friendly people, and wonderful cuisine.

This 2<sup>nd</sup> International Conference on Mathematics, Science, Technology, Education, and Their Application 2016 is organized by the Faculty of Mathematics and Natural Sciences, Universitas Negeri Makassar to bring all experts and researches in these field sharing their important thoughts and findings. The conference will be held in two days from 3<sup>rd</sup> – 4<sup>th</sup> of October 2016 with two keynote speakers, seven invited speakers, and more than 80 parallel speakers from different backgrounds.

Let me take this opportunity, on behalf of the committee members, to express my gratitude and sincere thanks to the keynote, invited and all parallel speakers for spending their valuable time with us in this conference. I do hope that your time in Makassar will be valuable and memorable.

Finally, I would like to thank all steering and organizing committee for their hard work and dedication to the success of this conference. I would like also to apologize to all of you should you find any inconvenience during this event.

Thank you very much,

Wassalamu'alaykum Warahmatullahi Wa barakatuh

Chairman of Committee,

Dr. Drs. A. Mushawwir Tayeb, M.Kes.

**The 2<sup>nd</sup> ICMSTEA Speech**  
**By The Dean of Mathematics and Natural Sciences Faculty**  
**Universitas Negeri Makassar**

Your excellency Rector of Universitas Negeri Makassar  
 Honorable Vice Rectors and Dean of All Faculties  
 Honorable Keynote Speakers  
 Distinguished all invited speakers from outstanding universities  
 Distinguished all speakers and guests  
 All participants,  
 Ladies & Gentlement,

*Assalamu'alaykum Warahmatullahi Wabarakatuh.* My greetings for all of you. May peace and God's blessing be upon us all. *Alhamdulillah*, all praises be to the Almighty God, Allah *subhanahu wata'ala*.

It is my pleasure to welcome you all to the opening of The 2<sup>nd</sup> International Conference on Mathematics, Science, Technology, Education & their Applications (2<sup>nd</sup> ICMSTEA). I am delighted to see that the Mathematics and Natural Science Faculty has again organized the second conference that capitalize on our strength and built on our commitment to promoting Mathematics, Science, Technology and Education.

I do hope that this conference would bring a great opportunity for all of us to strengthen our contribution to the advancement of our nation.

I would like to take this opportunity to thank the conference organizing committee for their diligent work. I would also like to thank participants, especially those of you coming from abroad, for joining us and sharing your valuable experiences. Should you find any inconveniences and shortcomings, please accept our sincere apologies.

Finally, let me wish you fruitful discussion and a very pleasant stay in Makassar.

Thank you,  
 Wassalamu'alaykum Warahmatullahi Wabarakatuh

Dean of Faculty of Mathematics and Natural Sciences  
 Universitas Negeri Makassar

Prof. Dr. Abdul Rahman, M.Pd.

## TABLE OF CONTENTS

<b>Cover</b>	i
<b>Welcome Speech</b>	iii
<b>Table of Contents</b>	v
<b>Invited Speakers</b>	1
Genetic Structure and Evolutionary History of a Diploid Hybrid Pine <i>Pinus densata</i> Inferred from the Nucleotide Variation at Seven Gene Loci <i>Alfred Edward Szmidt</i>	1 – 8
Biodiversity and Big Data In A Changing World: From Museum Specimens to Citizen Sciences <i>Valerio Sbordon</i>	9 – 15
Engaging Students with Tablet Technology in Science, Technology, and Mathematics Education <i>Birgit Loch</i>	16 – 38
Assesment Within Elpsa Lesson Design <i>Sitti Maesuri Patahuddin</i>	39 – 48
Why High Performance Computing (HPC) Matters? <i>Richard Randriantoamanana</i>	49 – 58
In Silico Study of L-specific dehalogenase from Rhizobial Species Strain RC1 <i>Fahrul Zaman bin Huyop</i>	59 – 68
Fostering Water Innovation: Securing the ASEAN Water Future <i>Mohd. Ekhwan Toriman</i>	69 – 78
Basic Research (in Physics) for Development of Nation Innovation <i>Eko Hadi Sujiono</i>	79 – 86
<b>Parallel Speakers</b>	
The Influence Of <i>Problem Based Learning Model</i> Toward Motivation and Physics Learning Outcomes Of Students SMA Negeri 1 Parangloe Gowa Regency <i>Muhajirin, Sidin Ali &amp; Pariabti Palloan</i>	87 – 95
Analysis of Student’s Conceptual Understanding of Mathematics on Set at Class VII SMP Frater Palopo <i>Muhammad Ilyas &amp; Fahrul Basir</i>	96 – 102

Pah Characteristics In Sediment Around Makassar Coast Using GC-FID <i>Muhammad Syahrir, Nurul Hidayat Aprilita, Nuryono, &amp; Netti Herawati</i>	103 – 114
Perception of 21st Century Learners to The E-Books as A Learning Resources <i>Muhammad Takwin Machmud</i>	115 – 122
The Group Of Understory Herbaceous Vegetation Stand At Tropical Lower Mountain Forest Of Mount Salak, West Java <i>Muhammad Wiharto, Cecep Kusmana, Lilik Budi Prasetyo, Tukirin Partomiharjo, Hamka L, &amp; Abd. Muis</i>	123 – 129
Antibacterial Compounds Characterization in Chloroform Extract Leaves of Tahiyam Plant ( <i>Lantana Camara</i> Liin.) <i>Muharram, St. Nurzulaiha, Nurrahmania, Iwan Dini, Pince Salempa, &amp; Maryono</i>	130 – 135
Effect of Mixture Inoculum of Lactic Acid Bacteria (LAB) and Mold Amylolytic In Various Concentration And Fermentation Time of Changing Protein And HCN Content Of Bitter Cassava Roots ( <i>Manihot aipi</i> Phol.) <i>Nurhayani H. Muhiddin, Nur Arfa Yanti, &amp; Hasanah</i>	136 – 143
The Analysis of Total Cholesterol Levels in Mice ( <i>Mus musculus</i> ) MALES who were Given Extracts of Methanol Leaf <i>Cemba</i> ( <i>Acacia pennata</i> ) <i>Nurul Muhliah, Irma Suryani Idris, Andi Mu'nisa, &amp; Ernawati</i>	144 – 150
Plants in a Square: Explore Plants Description With QR Code Feature <i>Khalisha Azis, Sitti Saenab &amp; Syamsiah</i>	151 – 155
Exploring the Correlation between Metacognitive Skills and Retention of Students in Different Learning Strategies in Biology Classroom <i>Arsad Bahri</i>	156 – 161
Physical Fitness For Futsal Referee Of Football Association In Thailand <i>Acting Sub Lt. Thaweesub Koeipakvaen</i>	162 – 170
Histological study of the respiratory system of Sulawesi Medaka fish ( <i>Oryzias celebensis</i> ): as a candidate of animal model <i>Dwi Kesuma Sari, Irma Andriani, &amp; Khusnul Yakin</i>	171 – 176
Technological Innovation of Learning Mobile-Based Learning <i>Herlinah &amp; Baso Habibi</i>	177 – 184
Evaluation of Antimicrobial Activity and Phytochemical Screening of Chloroform Extract of <i>Usnea</i> sp. <i>Iwan Dini, Maryono, Nurul Utami, Sitti Hajar, &amp; Ahmad Hadani</i>	185 – 188
The effectiveness of Scientific-Inquiry Learning Model to Improve Scientific Thinking Skills of Grade X student of High School in Gowa Regency <i>Jusniar &amp; Sumiati Side</i>	189 – 194

Pedagogical Content Knowledge: Teacher's Knowledge Of Students In Learning Mathematics On Limit Of Function Material <i>Ma'rufi, I Ketut Budayasa, &amp; Dwi Juniati</i>	195 – 199
Simulation Infiltration Rate of Water on Sand Media by Finite Difference Method <i>Masitah Osman, Nasrul Ihsan, &amp; Muhammad Arsyad</i>	200 – 210
The Influence Of Problem Based Learning Model Toward Motivation and Physics Learning Outcomes Of Students SMA Negeri 1 Parangloe Gowa Regency <i>Muhajirin, Sidin Ali &amp; Pariabti Palloan</i>	211 – 218
The Influence of Experiment Methods on Science Process Skill and Cognitive Learning Outcomes of the X Grade Students of MIA SMAN 1 Soppeng Riaja 2015/2016 <i>A. Sri Sofializa, Muhammad Arsyad, &amp; Muris</i>	219 – 226
The Influence Of Problem Based Learning Model Toward Motivation and Physics Learning Outcomes Of Students SMA Negeri 1 Parangloe Gowa Regency <i>Muhajirin, Sidin Ali &amp; Pariabti Palloan</i>	227 – 233
The Development of Critical Thinking Inventory Instrument for Biology Department Students <i>Abd Muis, Adnan Gassing, Ismail Laumma &amp; Nurjannah</i>	234 – 239
Unleash Students' Motivation with Blended Knowledge Transfer Instructional Model <i>Adnan, Sitti Saenab, &amp; Andi Rahmat Saleh</i>	240 – 243
The Development of Student's Worksheet of Physics Based on Virtual Simulation and Its Influence on Physics Learning Outcomes of Students <i>Ahmad Swandi &amp; Bunga Dara Amin</i>	244 – 251
Teaching Material Development with Challenge Based Learning (CBL) Basis to Improve Critical Thinking Ability on Human Reproduction System Material of Class XI IPA 4 Students at MAN Pinrang <i>Andi Asmawati Azis, Jasruddin, &amp; Reni</i>	252 – 258
Implementation of Accreditation Policy and Quality of Public Primary School Education Service in South-Sulawesi <i>Andi Cudai Nur &amp; Sumarlin Mus</i>	259 – 262
Plants in A Square: Explore Plants Description with QR Code Feature <i>Khalisha Azis, Wiharto, Siti Saenab, &amp; Syamsiah</i>	263 – 272
Fostering Science Learning Quality in Frame of Ecosystem Topic through Lesson Study <i>Besse Aisyah, Nurfatima, Rina Kurnia, Andi Asmawati Aziz, &amp; Andi Nurul Virninda Yusuf</i>	273 – 275
Fractionation Ethyl Acetate Extract of Stem Bark Soursop( <i>a. Muricata</i> . Linn) Potential Anticancer <i>Pince Salempa, Muharram, &amp; Iwan Dini</i>	276 – 279

Entrepreneurship Education Development In Dealing Asean Economic Community <i>Mohammad Rakib</i>	280 – 285
The Development of Basic Chemistry Courses Program Based Problem Solving to Improve Student’s Critical Thinking Skills <i>Ramlawati &amp; Ratnawaty Mamin</i>	286 – 291
Increase The Production and Quality of Biogas from Waste of Cattle Rumen Content Through The Addition of Molasses and Zeolite <i>Ramli, Satria Aly, &amp; Hartono</i>	292 – 296
Marica Goat’s Response To The Provision of Superior Feed <i>Rosdiana Ngitung</i>	297 – 301
Students’ Mathematics Achievement and Its Relationship with Parents’ Education Level, and Socio-Economic Status In Turkey <i>Rusli</i>	302 – 308
The Abstraction Ability in Constructing Relation Within Triangles By The Seventh Grade Students of Junior High School <i>Sitti Mutmainna Hasma, Suwardi Annas, &amp; Djadir</i>	309 – 313
Water Content Influence to Electrical Properties From Soil Volcanic <i>Sulistiawaty</i>	314 – 320
The Influence Of Using Destination Card Through Team Games Tournament (TGT) Type Of Cooperative Learning Toward Student’s XII Grade Achievement at SMA Negeri 01 Unggulan Kamanre, Luwu Regency <i>Ulva Nilawaty Sudarmadi</i>	321 – 324
Applying SARAC Approach and The Effect in Learning Mathematics For Students Grade VIII <i>Usman Mulbar &amp; Nasrullah</i>	325 – 331
Analysis Von Bertalanffy Equation With Variation Coefficient <i>Usman Pagalay, Budiawan, &amp; Anisyah</i>	332 – 338
Results Increasing Student Learning Through The Use of Biology Learning Model Cooperative Think Pair Share (TPS) The Student Class XI IPA SMA Negeri 5 Makassar <i>Wiwik Wiji Astuti, Ismail &amp; Musyafar</i>	339 – 346
Characterization of crude chitinase produced by <i>Trichoderma virens</i> in solid state fermentation <i>Rachmawaty &amp; Madihah</i>	347 – 354