



**SOUTH EAST ASIAN MATHEMATICAL SOCIETY**

## **FINAL REPORT**

### **SEAMS School on Coding and Graphs**

Hasanuddin University, Makassar - Indonesia

28 September – 06 October 2015

**Organized by**

Mathematics Department, Faculty of Mathematics and Natural  
Sciences, Hasanuddin University

**with the support of**

Centre International de Mathématiques Pures et Appliquées and  
Hasanuddin University

**2015**

**SEAMS School on Coding and Graphs**  
**28 September – 06 October 2015, Makassar - Indonesia**

**I. Summary**

The South East Asian Mathematical Society Schools 2015 (SEAMS School 2015) are part of series of intensive study programs that aim to provide opportunity for advanced learning experience in mathematics, and to introduce research-based learning for advanced undergraduate as well as masterly students of the country in which it is held, and for countries nearby. A SEAMS School can also be considered preparation for students who wish to apply for the CIMPA Research Schools.

SEAMS School on Coding and Graphs was the first of the Seams school conducted by Hasanuddin University. SEAMS School on Coding and Graphs is to introduce the students to the fundamental theories of coding and graph and improve the ability of undergraduate students in coding and graph. The relation between these two fields will be also discussed in this school. This school focus on the following four courses, namely (1) Coding Theory, (2) Graph Labeling, and (3) Ramsey Number. Beside of lecture courses, there are problem solving session in the afternoon. In these sessions, the participants were divided into groups of 5 people to discuss and solve some selected problems from the problem sheet given by the lecturer.

SEAMS School on Coding and Graphs started from 28 September until 6 Oktober 2015. SEAMS School on Coding and Graphs jointly organized by Mathematics Department Faculty of Mathematics and Natural Sciences Hasanuddin University and Indonesian Combinatorial Society (InaCombS). SEAMS School on Coding and Graphs held at Seminar Room in Mathematics Department.

SEAMS School on Coding and Graphs is sponsored by Center International for Mathematics Pure and Applied and Hasanuddin University.

**II. Scientific Objectives and Rationale for the School**

In general, SEAMS school has objective to facilitate contacts with a large number of mathematicians working in these areas and the students coming to the school. A SEAMS School also encourages participants to pursue further studies in mathematics and do mathematical research.

In particular, this SEAMS School introduce students to the fundamental theories in number, coding, graph labeling, and Ramsey number. Besides that, the SEAMS School to provide young researchers with sufficient knowledge and background to start their research in coding and graphs.

### III. Organizers and Lecturers

The organizing committee of SEAMS School on Coding and Graphs consisted of

- Dr. Nurdin, S.Si., M.Si. (Hasanuddin University)
- Dr. Kiki Ariyanti Sugeng (President of InaComBS, Indonesia University)

with assistance from the Mathematics Department composed of Prof. Dr. Hasmawati. M.Si., Dr. Nurtiti Sunusi, S.Si., M.Si., Drs. Khaeruddin, M.Sc., Jusmawati Massalesse, S.Si., M.Si., Anisa, S.Si., M.Si., Edy Saputra, S.Si., and Mulkih.

The lectures were given (in alphabetical order) by the following:

1. Prof. Dr. S. Arumugam  
Professor, Kalasalingam University - India
2. Dr. Djoko Suprijanto  
Lecturer, Institut Teknologi Bandung - Indonesia
3. Prof. Dr. Edy Tri Baskoro  
Professor, Institut Teknologi Bandung - Indonesia
4. Prof. Dr. Hasmawati, M.Si.  
Professor, Universitas Hasanuddin - Indonesia
5. Dr. Kiki Ariyanti Sugeng  
Associate Professor, Universitas Indonesia - Indonesia
6. Dr. Loeky Haryanto, MS., M.Sc., M.A.T.  
Associate Professor, Universitas Hasanuddin - Indonesia
7. Dr. Nurdin, S.Si., M.Si.  
Associate Professor, Universitas Hasanuddin - Indonesia

In the original plan, Professor Mirka Miller from Newcastle University, Professor Joe Ryan from Newcastle University, and Professor Christian Mauduit from Institut de Mathématiques de Luminy agreed to give lectures in this school. However due to some important reasons, they could not manage to come and deliver his lectures in this school. To overcome this situation, Professor Arumugam fulfill Miller and Ryan's lecture slots and more problem-solving sessions were also added. Besides that, Dr. Loeky Haryanto gave more lectures to fulfill Mauduit's lecture slots.

#### IV. The Participants

The school was announced at the website <http://unhas.ac.id/math/semas>. The deadline for application was September 01, 2015. There were 58 applicants. Among them there were 9 applicants from students outside Indonesia, 8 applicants from students outside Makassar, and the others applicants from Hasanuddin University students. Hasanuddin University students are undergraduate and master programs. After the examination of applications, 50 students were selected. There are 9 students from outside Indonesia (amount them 7 from Philippines and 2 from Nepal) and 41 Indonesian students (amount them 5 from outside Makassar, i.e. 1 form Ambon, 1 from Bali, 1 from Bogor, 2 from Palu, and 3 from Bandung).

Two participants from Nepal cancelled their participations just a week before the school started, because as government official, they did not get permission from their government to leave the country. Besides that, there are 3 participants from Philippines, 1 from Bandung, and 2 from Palu did not came at the school.

Finally, there were 4 participants from abroad, they are from Philippines and the others from Indonesia. The Indonesian participants also came from various regions: 1 from Bali, 1 from Bogor, 1 from Ambon, and 2 from Bandung.

The complete list is as follows:

<b>NO</b>	<b>NAME</b>	<b>M/F</b>	<b>UNIVERSITY</b>	<b>COUNTRY</b>
1.	A. BAHARUDDIN	M	UNIVERSITAS HASANUDDIN	INDONESIA
2.	AYUNDA TRISTIANTI	F	INSTITUT TEKNOLOGI BANDUNG	INDONESIA
3.	CHRISTYAN TAMARO NADEAK	M	INSTITUT TEKNOLOGI BANDUNG	INDONESIA
4.	EDI BASTIAN	M	UNIVERSITAS HASANUDDIN	INDONESIA
5.	EDY SAPUTRA	M	UNIVERSITAS HASANUDDIN	INDONESIA
6.	ERWIN SANJAYA YUSUF	M	UNIVERSITAS HASANUDDIN	INDONESIA
7.	EUGENIO CEDRIC T. CORRO	M	UNIVERSITY OF THE PHILIPPINES LOS BAÑOS	PHILIPPINES
8.	I KETUT ARIWIGUNA	M	UNIVERSITAS HASANUDDIN	INDONESIA

9.	GILY V. MAGALONA	F	UNIVERSITY OF THE PHILIPPINES LOS BAÑOS	PHILIPPINES
10.	KRISTINA PASERU	F	UNIVERSITAS HASANUDDIN	INDONESIA
11.	KURNIA RATNA YULIANI	F	UNIVERSITAS HASANUDDIN	INDONESIA
12.	KUSNAENI	F	UNIVERSITAS HASANUDDIN	INDONESIA
13.	M. IMRAN	M	UNIVERSITAS HASANUDDIN	INDONESIA
14.	MARJO-ANNE B. ACOB	F	UNIVERSITY OF THE PHILIPPINES LOS BAÑOS	PHILIPPINES
15.	MUH. IHSAN FATWA	M	UNIVERSITAS HASANUDDIN	INDONESIA
16.	MEILIN IMELDA TILUKAY	F	UNIVERSITAS PATTIMURA AMBON	INDONESIA
17.	MUFLIH MUBARAK DARMADI	M	UNIVERSITAS HASANUDDIN	INDONESIA
18.	MUHAMMAD TAMRIN YUSUF	M	UNIVERSITAS HASANUDDIN	INDONESIA
19.	MULKIAH	F	UNIVERSITAS HASANUDDIN	INDONESIA
20.	NEIL JEROME A. EGARGUIN	M	UNIVERSITY OF THE PHILIPPINES LOS BAÑOS	PHILIPPINES
21.	NI LUH DEWI SINTIARI	F	UNIVERSITAS GANESA BALI	INDONESIA
22.	NUR FADHILAH	F	UNIVERSITAS HASANUDDIN	INDONESIA
23.	NUR ROHMAH OKTAVIANI PUTRI	F	UNIVERSITAS HASANUDDIN	INDONESIA
24.	OCTAVIAN	M	UNIVERSITAS HASANUDDIN	INDONESIA
25.	OKTAVIANI PANGLOLI	F	UNIVERSITAS HASANUDDIN	INDONESIA
26.	PRADIKA MUSTAFA	M	UNIVERSITAS HASANUDDIN	INDONESIA
27.	RISKAWATI	F	UNIVERSITAS HASANUDDIN	INDONESIA

28.	ROSMINI PAILANG	F	UNIVERSITAS HASANUDDIN	INDONESIA
29.	RUSNI SAMSIR	F	UNIVERSITAS HASANUDDIN	INDONESIA
30.	SARTIKA	F	UNIVERSITAS HASANUDDIN	INDONESIA
31.	SITTI ARDIANTY BADAWI	F	UNIVERSITAS HASANUDDIN	INDONESIA
32.	SITI NURWAHYUNI	F	UNIVERSITAS HASANUDDIN	INDONESIA
33.	SITI FATIMAH	F	UNIVERSITAS HASANUDDIN	INDONESIA
34.	SRI ROSDIANA	F	LEMBAGA SANDI NEGARA	INDONESIA
35.	WILLIEM PRASETIA WIDIATNO	M	UNIVERSITAS HASANUDDIN	INDONESIA

## V. School Programs

### Mini-Courses:

1. Block Linear Codes (BLC), **Loeky Haryanto**
2. Introduction to Cycle Codes (ICC), **Djoko Suprijanto**
3. Ramsey Number in Graphs (RNG), **Hasmawati**
4. Irregular Labeling (IRL), **Nurdin**
5. Magic and Antimagic Labelings (MAL), **Arumugam**
6. Harmonious Labeling (HL), **Kiki A. Sugeng**
7. Size Ramsey Number (SRN), **Edy Tri Baskoro**

**TIME TABLE OF SEAMS SCHOOL CODING AND GRAPHS, 28 SEPTEMBER - 6 OCTOBER 2015**

**WEEK I**

HOUR	SUN, 27	MON, 28	TUE, 29	WED, 30	THU, 01	FRI, 02	SAT, 03
08.00 - 08.30	<b>ARRIVAL</b>	<b>Opening Program</b>				<b>CONFERENCE</b>	
08.30 - 10.00		BLC 1	RNG 2	IRL 1	IRL 2		
10.00 - 10.15		<b>Break</b>					
10.15 - 11.45		BLC 2	HL 1	MAL 1	Problem Solving		
11.45 - 13.00		<b>Lunch</b>					
13.00 - 14.30		BLC 3	HL 2	MAL 2	SRN 1		
14.30 - 14.45		<b>Break</b>					
14.45 - 16.15		RNG 1	Problem Solving	Problem Solving	SRN 2		

**WEEK II**

HOUR	SUN, 04	MON, 05	TUE, 06	WED, 07
08.30 - 10.00	<b>EXCURSION</b>	RNG 3	BLC 4	<b>DEPARTURE</b>
10.00 - 10.15		<b>Break</b>		
10.15 - 11.45		ICC 1	BLC 5	
11.45 - 13.00		<b>Lunch</b>		
13.00 - 14.30		ICC 2	Problem Solving	
14.30 - 14.45		<b>Break</b>		
14.45 - 16.15		Problem Solving	Closing	

On Friday and Saturday, 2 – 3 October 2015 all of the SEAMS School participants attended in International Conference on Mathematics, Statistics, Computer Sciences, and Mathematic Educations which held by Mathematics Department Faculty of Mathematics and Natural Sciences Hasanuddin University. This conference held in campus with the chair of this conference is Dr. Nurdin, S.Si., M.Si.

## **VI. Conclusion**

It is a great pleasure to report that the SEAMS school on Coding and Graphs held in Makassar – Indonesia went very well with a great success. Students had opportunity to learn an introduction to a very advanced subject in Coding and Graphs as well as learn about some modern trends in this area. Students also had opportunity to meet some distinguish professors who taught at the school.

Students in the region also had opportunity to meet each other that could lead to a collaboration between them in the future. On this occasion, the organizers would like to thank SEAMS and CIMPA for supporting the idea to organize this international school for students, and especial thank to CIMPA for generous financial support, without it we cannot invite foreign students to come.

According to the students, the courses in this school were informative and useful since the courses provided a lot of knowledge and gave the participants a chance to have interesting discussion among them. The participants found the lectures were inspiring, updating and going into detail.

After the school, some students make Facebook Group, namely SEAMS SCHOOL MAKASSAR 2015, to discuss anything. The members of this group are all of students from Philippines, some students from Indonesia, and some organizing committee.

## **VII. Financial Report**



NO.	ITEMS	CIMPA				UNHAS	
		IDR	MYR	PHP	Amount in EUR	IDR	Amount in EUR
I	<b>Accommodation expenses</b>						
	4 Philippines participants and 5 Indonesian participants from outside Makassar: Anugrah Hotel (27 September)					1,250,000	83.00
	4 Philippines participants and 5 Indonesian participants from outside Makassar: Same Hotel ( 28 September– 6 October )	15,750,000			1,045.28		
	3 Indonesian speakers form outside Makassar: Hotel Ibis (27 September – 6 October)	5,200,000			344.86		
	1 non-Indonesian speaker: Hotel Ibis (27 September – 3 October)	3,900,000			258.74		
II	<b>Airfares and others travel expenses</b>						
	Return travel fares of 4 Philippines participants		2,582.08	35,611.20	1,242.73		
	Return local travel fares of two speakers					4,690,700	311.42
	Car rental for 11 days	7,150,000			474.48		
III	<b>Living allowance of 4 Philippines participants</b>	2,600,000			172.62		
IV	<b>Food expenses</b>						
	Lunch for 50 participants during school (7 days @IDR 50.000)	9,440,000			626.75	8,060,000	535.15
	Snacks for 50 participants during school (7 days @IDR 30.000)	5,250,000			348.55	5,250,000	348.55
	Coffee and tea for 50 participants during school (7 days @IDR 10.000)					3,500,000	232.37

	Dinners for 4 Philippines participants and 5 participants from outside Makassar during school	6,541,700			434.26	4,050,000	268.88
<b>V</b>	<b>Organizational expenses</b>						
	Supplies, communication, banners, miscellaneous expenses					3,500,000	232.34
	Room and facilities rental (9 days)					7,650,000	507.8
	Photocopying, printing					3,400,000	225.69
	School kit (50 participants @IDR 150.000)					7,500,000	498.21
	Field trip expenses	2,500,000			166.07		
	Web design					2,500,000	166.07
<b>VI</b>	<b>Lecturer and staff gratuity</b>						
	Lecturer (28 sessions @IDR 900.000)					25,200,000	1,673.29
	Secretariat support (20 persons @IDR 300.000)					6,000,000	398.32
	<b>TOTAL EXPENSES</b>	<b>58,331,700</b>	<b>2,582</b>	<b>35,611</b>	<b>5,114.34</b>	<b>82,550,700</b>	<b>5,481.09</b>
	<b>COST SHARING</b>				<b>48.27%</b>		<b>51.73%</b>