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**COLLABORATIVE LEARNING FOR FLIPPED CLASSROOM ON  
RESEARCH METHODOLOGY SUBJECT**

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Judul : COLLABORATIVE LEARNING FOR FLIPPED CLASSROOM ON RESEARCH METHODOLOGY SUBJECT

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## **EXECUTIVE SUMMARY**

In most universities in Indonesia, there are many compulsory general subjects for all study programs, such as Pancasila (state ideology) subject, citizenship subject, research methodology subject, academic writing, Bahasa Indonesia, and English for academic purpose. Especially in Udayana University which has more than 100 study programs, is experienced several problems in terms of these subjects utilization. First problem is lack number of lecturers to deliver the subjects to all study program. Secondly is no learning quality standard, such as no standard in term of curriculum, syllabus, assessment, and evaluation of the subjects. There is no precise monitor and control for whole learning process in all study programs. Finally, is to elevate the quality to be international recognized by joint learning with international partner institutions. Therefore, to solve those problems, this study proposes collaborative learning for flipped classroom using LMS Moodle. Subject of Research Methodology that is taught both in Electrical Engineering Department and Agriculture Technology Department, is taken as a case study.

In this research, all tools to analyze readiness, effectiveness, and motivation level of students and teachers have been designed and checked their validity and reliability. Then information of elearning implementation in Kumamoto University is described briefly. All learning plans, Formative Evaluation, and Learning Object Evaluation are included to complete the research instruments and to evaluate the course for further research.

Keywords: lecturers, learning, institutions, Research Methodology.

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1. Background**

In this Internet of Things era, e-learning and mobile learning are commonly implemented in most universities, especially in renowned universities, as well as in Indonesia. In addition, most universities in Indonesia is equipped with Internet infrastructure, including in Udayana University. Udayana University has more than 100 study programs, in both undergraduate and post-graduate programs, with around 25,000 students. The university has developed e-learning system using LMS Moodle since 2007. However, e-learning or mobile learning implementation is low, less than 20%.

According to DGHE of Ministry of Research and Higher Education rule, all universities in Indonesia has compulsory subjects for all study programs, namely, Citizenship or State Ideology (Pancasila), English for academic purpose, community service, religion, academic writing, and research methodology. However, the university is experienced several problems in terms of these subjects utilization. First problem is lack number of lecturers to deliver the subjects to all study program. Secondly is no learning quality standard. There is no precise monitor and control for whole learning process in all study programs. Finally, is to elevate the quality to be international recognized by joint learning with international partner institutions.

Technology based learning can significantly help to make collaborative learning easier [Miriam Clifford, 2017]. Collaboration had the same results via technology as in person, increased learning opportunities. Learning Management Systems (LMSs) additionally improve collaborative learning and flipped classroom. Most higher education institutions have implement many type of LMSs to manage their online courses, with Moodle as one of the most favoured LMS [Fajar Purnama, 2016]. The LMS Moodle is highly suitable for collaboration learning and high opportunities to develop [Mark Paynter, 2012]. Often collaboration has been limited to curriculum design, or collaboration of teachers and academics to develop disciplinary texts or other specific materials.

An understanding of the cultural elements of each organisation and the nature and effectiveness of interaction within the collaborative group are key points to make the collaborative learning success. They study that schools and universities have similar educational objectives and pedagogies and share much subject matter it is somewhat surprising that there can be examples of effective collaboration between the two.

Other method that uses technology for learning is flipped classroom. The flipped classroom is focused on pedagogical model (Center for Digital Education, 2012), which learning material is explored outside of class by students. Then teachers or lecturers employ the class time to interact with the students in activities such as discussion and Q&A session. Generally, today class put material on line which is easily accessed by the students. Thus, ICT plays important role in the flipped classroom. Flipped classroom has been successfully implemented for short course [Linawati, 2016]. Finally, the LMS Moodle can facilitate the flipped model in a virtual learning environment [Evangelia Triantafyllou, 2015].

Therefore, we propose collaborative learning for flipped classroom to solve the problems. LMS Moodle is selected to apply for this learning model and subject of Research methodology is the pilot project.

## **1.2. Problems and Prospective Contributions**

All universities in Indonesia are compulsory to have general subjects (MKWU: Mata Kuliah Wajib Umum) in their curriculum [DGHE, 2016] (<http://belmawa.ristekdikti.go.id/2016/12/09/surat-edaran-bahan-ajar-mata-kuliah-wajib-umum/> ). The subjects are religion, Pancasila (state ideology), citizenship education, and Bahasa Indonesia. In Udayana University there are more common and compulsory subjects, i.e. research methodology that is compulsory for both undergraduate and postgraduate study programs, English, academic writing, and community service. Udayana University has faced problems below to manage all these subjects. Moreover we believe that more universities especially private universities with limited number of lecturers face the same problems.

1. Lack number of lecturers with good and relevant competency to deliver the subjects to all study programs.

2. There is lecturer home base rule from DGHE that makes the lecturers has no interest to teach in other study program. Moreover other reason is low reward from the institution.
3. There is no learning quality standard.
4. There is no precise monitor and control for whole learning process in all study programs.
5. There is no measurement of the learning process effectiveness.
6. We need to increase the quality to be international recognised by joint learning with international partner institutions.

Subject of Research Methodology is selected as the pilot project in this study since the subject is required by students starting from undergraduate up to postgraduate (master and doctorate level). There are similarities and differences of the subject contents which depends on study programs. Therefore we will study the subject implementation in both Electrical Engineering Department and Agriculture Technology Department. We will find out how collaborative learning for flipped classroom in both department can be implemented and answer all problems above.

This study is proposed to bring effective solutions for the problems which have mentioned above. Then it will be prospective contributions of the study that are clearly explained below.

1. To provide effective learning process for general and compulsory subjects at the university level.
2. To produce a good model of learning process for general and compulsory subjects for all study programs in Udayana University. Furthermore we expect that the model can be implemented in other universities in Indonesia.
3. To provide international quality standard of learning resources and whole learning process.
4. To promote e-learning or mobile learning especially for basic general and compulsory subjects in Udayana University towards World Class University.

### 1.3. Principal Research's Relevant Track Record

Table1. Output of Research Activity as an Example

Year	Activity	Output
2009 - 2013	Research with title 'Integration of Learning Management System and Video Conference Tool to increase learning process effectiveness', funded by DGHE under Hibah Kompetensi.	<ul style="list-style-type: none"> <li>- Three International Conference Papers (2010): (1) Learning Management Systems' Integration (The International Conference on Soft Computing, Intelligent Systems and Information Technology (ICSIT), Univ. Kristen Petra, 1-2 Juli 2010); (2) Implementation and Integration of Learning Management System and Video Conference in Increase of Learning Effectiveness (JICA PREDICT – ITS); (3) Enhancing LMS to Course Design and Implementation - (International Symposium on Open, Distance, and Elearning, Dec 8 - 10 2009)</li> <li>- One International Journal Paper (year 2012): Synchronization Interfaces for Improving Moodle Utilization - Telkomnika, Vol. 10, No. 1, ISSN: 1693-6930 Vol. 10. No. 1, March 2012</li> </ul>

In addition, track record of the principal can be seen in the following list.

#### A. Relevant Research Grant

- 1) Development of Open content of Queueing Theory Visualization – Principal research – DGHE Grant (SPADA) – 2016.
- 2) Sistem E-Learning dengan Metode Adapif Berbasis Moodle Untuk Mengembangkan Center For Learning Innovation Universitas Udayana – Principal – Scheme of Hibah Unggulan Udayana – 2016.
- 3) Pengembangan Media Ajar Berteknologi Hypertext untuk Perkuliahan Sistem Operasi Berbasis Kearifan Lokal Konsep Subak – Principal of Research Partner – Scheme of Hibah Pekerti (Undiksha and Udayana University) – 2011 – 2012.
- 4) Sikap dan Persepsi Dosen di Universitas Udayana terhadap Penggunaan Teknologi Informasi dan Komunikasi dalam Pembelajaran – Member – Scheme of Hibah Udayana – 2010.



## B. Relevant Papers

- 1) Performing Active Learning Through Project Based Learning in Electrical and Computer Engineering - Proceedings of the International Mobile Learning Festival 2017.
- 2) Survey on LMS Moodle for Adaptive Online Learning Design – Proceeding of SENASTEK 2016
- 3) Adaptive Online Learning Design Using Moodle – International Conf. IEEE ICSGTEIS , 6 – 8 Oktober 2016
- 4) Proposed Model For E-Exam Availability In WLAN Environment - International Conf. IEEE ICSGTEIS , 6 – 8 Oktober 2016
- 5) Blended Learning Approach of the Flipped Model for Partograph Short Course - Journal of Education and Learning. Vol. 10 (3) pp. 255-264, 2016.
- 6) Project Based Learning of Entrepreneurship in Electrical Engineering Curriculum. IEEE International Conf. on Teaching, Assesment, and Learning for Engineering, 26 – 29 Agustus 2013.
- 7) Performance of Mobile Learning On GPRS Network, Majalah Ilmiah Teknologi Elektro, 2013.
- 8) Ramaswati Purnawan and Linawati. Sikap dan Persepsi Dosen di Universitas Udayana Terhadap Penggunaan Teknologi Informasi dan Komunikasi dalam Proses Pembelajaran. The Excellence Research of Universitas Udayana 2011. ISBN. 978-602-9042-58-0, 2011.
- 9) Sharing and Learning Using Technology: Case of Distance Learning in Udayana University, “International Joint Conference APCHI – ERGOFUTURE”, August 2-6, 2010.

## C. Relevant Invited Speaker

- 1) Blended Learning Approach of the Flipped Model for Short Course, IEEE Tensymp – Women in Engineering Session, 2016.
- 2) Partograph Blended Learning Course, Mercy Corps, Forum Diskusi Inovasi Layanan Kesehatan, 18 April 2012.

#### D. Relevant Organization

- 1) Head of Udayana Center for Learning Innovation, 2016 – now.
- 2) Member of Lembaga Pengembangan Pembelajaran dan Penjaminan Mutu or Quality Assurance and Learning Development Institution, Udayana University, 2016 – now.
- 3) Director of Global Development Learning Network, Udayana University, 2006 – 2014.

#### 1.4. Importance of International Partner

Kumamoto University, Japan has a great e-learning system using LMS Moodle which has been formally used by all students including International Students. Kumamoto University has developed many new Moodle plugins, and successfully integrates Moodle with the university's academic information system. Therefore, we need to learn how they manage and develop their system and what kind of supporting tools and resources are provided. Thus, we request the Kumamoto University will provide technical assistant, access to the system, join publications, and other supporting tools.

#### 1.5. Research Outputs

Table 2. Proposed Annual Target

No	Type of Outcome				Indicator		
	Category	Sub Category	Mandatory	Optional	CY <sup>1)</sup>	CY + 1	CY +2
1	Scientific Publication <sup>2)</sup>	International	x		x	x	x
		National – Accredited					
2	Invited speaker in scientific forum <sup>3)</sup>	International		x		x	x
		National					
3	Keynote speaker in scientific forum <sup>4)</sup>	International		x			
		National					
4	Visiting Lecturer <sup>5)</sup>	International		x		x	
5	Intellectual Property Right <sup>6)</sup>	Patent					
		Simple Patent					
		Copy Right					
		Trade Mark					
		Trade Secret					
		Industrial Product Design					
		Geographical Indication					
		Plant Variety					

		Conservation					
		Integrated Circuit Topography Conservation					
6	Intermediate Technology <sup>7)</sup>						
7	Model/ Prototype/ Design/ Art / Social Engineering <sup>8)</sup>	<b>x</b>					<b>x</b>
8	Book (ISBN) <sup>9)</sup>						
9	Technological Readiness Level (TRL) <sup>10)</sup>						

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1. Collaborative Learning and Flipped Classroom**

According to [Marjan Laal, MD., 2012] collaborative learning (CL) is an umbrella term for a variety of educational approaches involving the joint intellectual effort from small group projects to the more specific form of group work known as cooperative learning. CL suggests a way of dealing with people which respects and highlights individual group members' abilities and contributions. There is a sharing of authority and acceptance of responsibility among group members for the groups' actions. The underlying premise of CL is based upon consensus building through cooperation by group members, in contrast to competition in which individuals best other group members. Key elements of CL include: Positive interdependence, Considerable interaction, Individual accountability, Social skills and Group processing. Then an important thing for FC (flipped classroom) is to have more time in classroom and then to increase interactive learning activities due to without teaching or reducing teaching time. Therefore, it is critical how to apply m-Learning in FC to construct a novel learning model [Hung-Hsu Tsai, 2017]. On the other hand according to [Otgontsetseg Sukhbaatar, 2017] that majority of the students think that MOOC is good source of knowledge and had a positive influence in their learning experience, want to enroll and use. Moreover, (43%) students think that MOOCs are not convenient to use and lack of face-to-face. Majority of the students didn't use MOOC due to preference of physical classroom, lack of spare time and no face-to-face interaction. On the other hand, barriers for MOOC completion has been investigated and main reasons were identified as time management difficulty and overload at university study.

Authors [Rosa M. Carro, 2017] studied to obtain useful criteria for both individual adaptation and dynamic group formation in adaptive collaborative learning systems. They considered their personality and intelligence, the way they group themselves and their results when working individually and collaboratively,

in order to find out relationships between their features, the group composition and their achievements. This information can be useful in scenarios of face-to-face learning, blended learning or e-learning. Then a model of the collaborative learning process in the context of a MOOC is described by [Asma Hassani, 2016]. More precisely, they focused on the evaluation process in the context of MOOCs. This modelling has allowed better understanding of the considered processes and detection of different problems that can occur during an online collaborative and massive learning. In [Kazuhiko Sato, 2016] can be found a design of a collaborative e-learning system for stable operation in an unstable environment of developing countries. The proposed system was used for providing a collaborative learning among local schools of rural area in Nepal. The stable operation of the system is realized by the redundant robustness in three different levels: network arrangement, energy management, replicative database.

Investigation on computer engineering students' readiness and motivations for using dialog games for collaborative learning activities is explored by [Ilker Yengin, 2016]. Students' readiness and motivations are measured by applying a questionnaire and “intrinsic motivation inventory”. The intrinsic motivation inventory is used to assess students' subjective motivations related to a using dialog games in collaborative learning activities. Results showed that students are positively ready to use dialog games in collaborative learning. They find dialog games interesting /enjoyable and useful. On the other hand, students have mixed views on preferring dialog games over the face to face communication and they find traditional methods easier to use than the dialog games. In [Leovy Echeverría, 2016] presents the results related to the use of a Learning Analytics Manager for the monitoring processes of the collaborative learning activities and the students' motivation into the Learning Management System Moodle. The proposed manager was developed as a new functionality integrated to a service called Motivation Booster. This service is the result of a previous work that allowed it embedded into the Moodle system.

On the other hand definitions of blended learning and flipped learning model could be found in (Bart Marty, 2014). The study stressed that flipping is more than watching lectures video. A flipped classroom permits teachers to

employ new technique or method in learning process. It shifts from teacher-centered learning to student – centered learning, and from individual to collaborative learning. In addition the utilization of extra activities such as quizzes and tutorial assignment are included in the flipped learning model for both individual and collaborative learning. The fundamental concept is to accomplish the activities in the class. Further studies on implementation of the flipped classroom are provided by Chen L. (2015), Er, E. (2015), Howitt, C. (2015), Kvashnina O.S. (2016), and Li Y. (2015). The flipped classroom is utilizing by providing text-based lecture notes, pre-recorded multimedia micro-lectures (four to five micro-lectures of 15 to 20 minutes), e-learning system as an online resource for students, and an individual assessment test for each class (Chen L., 2015) in order to systematically identify students' perspective of using cooperative learning in a flipped statistics classroom by utilising Q-methodology. The flipped classroom was applied in postgraduate education using case studies that was written as chronological stories from email correspondence between the two lecturers as critical friends, as well as from student feedback in the form of face-to-face discussions, online discussions, emails, mind maps, multimodal discussion boards and end-of-semester university surveys (Howitt, C. 2015).

In addition, the study on behaviour of college students' online help-seeking in a flipped classroom with a web-based help-seeking tool is conducted by Er, E. (2015). The web-based help-seeking tool was developed to enable students to ask questions about the course content and receive the needed help while studying the lecture themselves outside the classroom. Then an integration of MOOC content and flipped classroom practice was applied in undergraduate course named "Internet and Distance Education", and to see its effectiveness through students' experience and perceptions (Li, Y. 2015). Finally Kvashnina, O.S. (2016) describes significant benefits of the flipped classroom in ESL (English as a Second Language) teaching including an increase in students' overall performance on the course, enhancement of students' motivation and improvement of their autonomous learning skills.

As Internet becomes society basic need, then students are already comfortable with Internet, e-books, e-content, and social media as their life style.

Therefore the students have been applied active learning which is recognized as flipped learning technique (Centre for Digital Education, 2012). The students are used to watch online lecture, courseware, language translation, social network, content access, webcast style before entering the classroom. On the other hand, in higher education environment, tough economy is a factor that pushing the education toward blended learning and flipped classroom model. Thus blended learning approach of the flipped classroom is suggested to apply for higher education to fulfil both individual and organization target.

## 2.2. Research Road Map

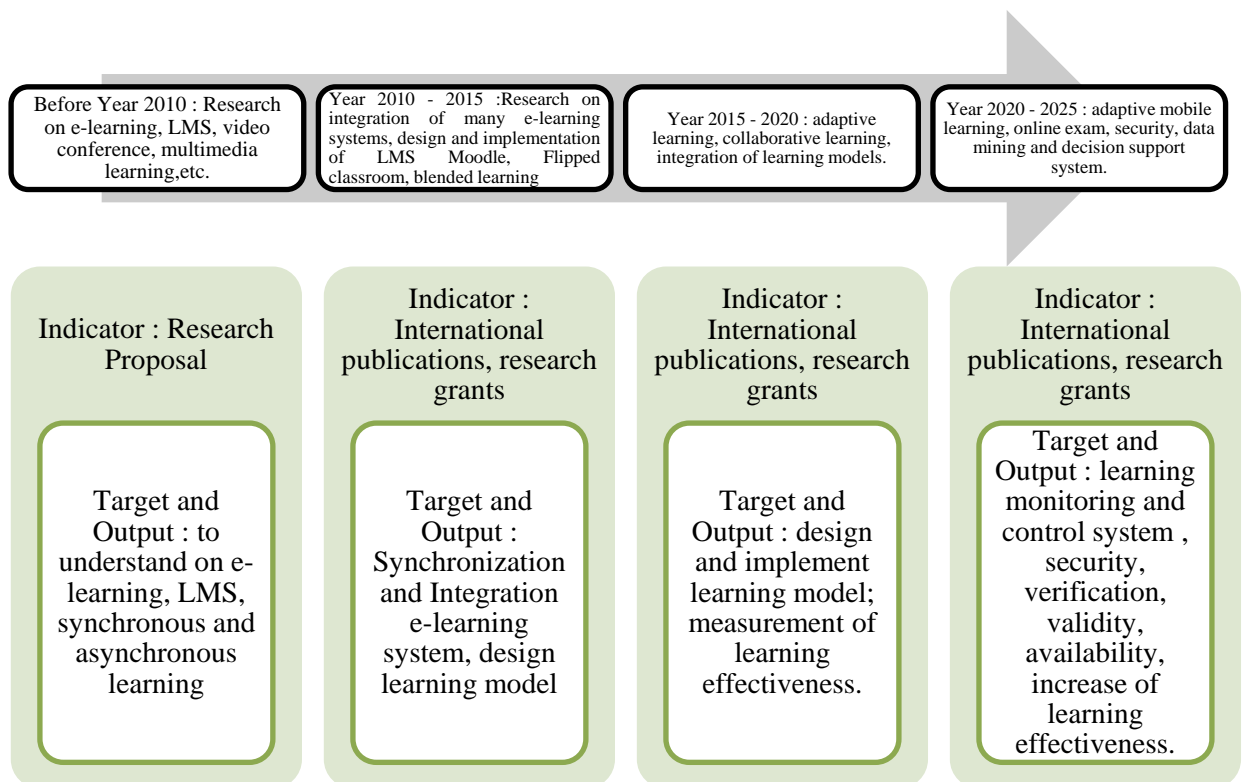


Figure 1. Road Map of the Research

## 2.3. The Importance of the Research

Udayana University has sufficient supporting resources to utilize technology based learning or e-learning or mobile learning. The university has adequate ICT infrastructure, capable human resources, and e-learning centre, i.e.

Udayana Center for Learning Innovation. Accordingly promoting e-learning implementation to provide effective learning process with international standard in Udayana University is highly requirement. Additionally Udayana University has around 10% international students of total students. There are also general subjects for the students, such as Bahasa Indonesia and Culture of Indonesia. This obligates the university to develop high reliable online learning system.

Online learning system, either implements as fully online learning or blended learning, it must to be effective solutions, since the system can provide following benefits:

- Technology makes easier to monitor and control the system and more accurate.
- It is easier to update, distribute, and access.
- It is easier to manage.
- It is easier to modify which depends on uniqueness of study program without eliminating fundamental requirement.

As a result, the importance of the research can be summarized below.

- There will be good e-learning model in Udayana University for any subjects in all study programs for all students including international students.
- There will improve learning effectiveness.



## **CHAPTER 3**

### **RESEARCH METHOD**

#### **3.1. Location and Time**

The research will be in Electrical Engineering Department and Agriculture Technology Department, Udayana University for research methodology courses. This is two years research period. The University partner will give access online to their system and provide relevant data. We will invite the partner to be keynote or invited speaker in the workshop / focus group discussion at least once a year. Then we will do site visit to Kumamoto University.

#### **3.2. Data**

Qualitative and quantitative Data – data will be collected from research methodology courses in both departments, Udayana University, as well as in Kumamoto University, Japan. The data will be students profile, curriculum, syllabus, course contents, learning assessments, learning evaluation, learning process, and ICT capability both in Udayana University and Kumamoto University, Japan. In general, there will be two evaluation system to measure the learning effectiveness, i.e. formative evaluation and summative evaluation. Formative evaluation will be applied in the first year of the research and both formative and summative evaluations will be applied in the second year. Hence the effectiveness can be analysed and compared.

#### **3.3. Research Flow Diagram**

Figure 2 displays the proposed research flow diagram which can be seen as a research design below.

- Year 2018
  - Analysis the effectiveness of existing learning process of research methodology course in both EE (Electrical Engineering) Department and AT (Agriculture Technology) Department. This measurement will be a baseline indicator to recognize the improvement after implementing the collaborative learning model.

- Analysis of Readiness level and Motivation (student, lecturers, institution) in Udayana University and Kumamoto University.
- Readiness level and motivation of students, lecturers, and institution for research methodology course will be measured and analyzed in both Universities, especially in EE Department & AT department (Udayana University) and in Electrical Computer Engineering Department (Kumamoto University). Then comparison analysis will be used as an input for learning model design.

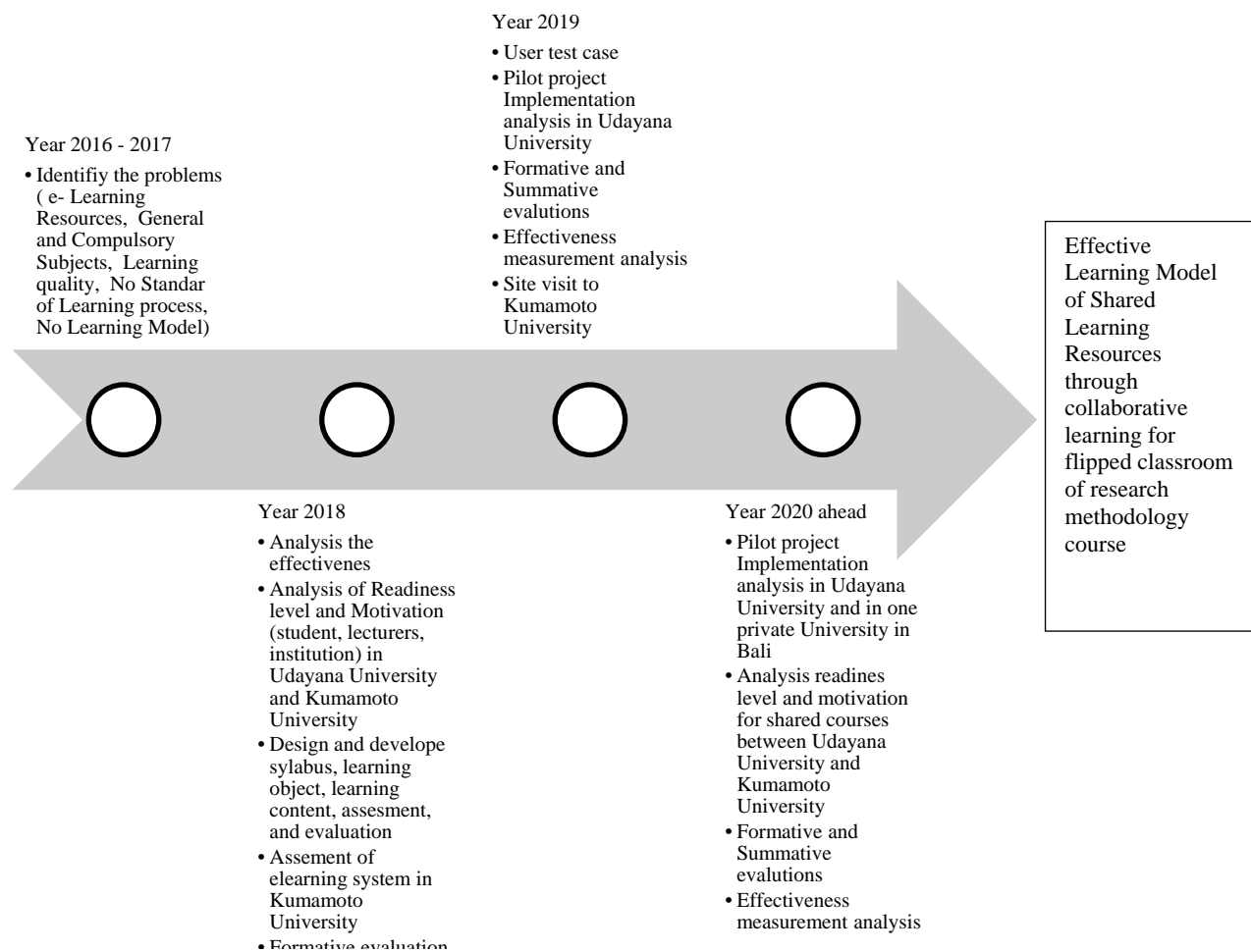


Figure 2. Research Diagram

- Design and develop syllabus, learning object, learning content, assessment, and evaluation. Design will include:

- System architecture
- Use case diagram
- Assessment of e-learning system in Kumamoto University. Research partner will do the assessment and share the information.
- Formative evaluation. Figure 3 below is briefly explained the process.

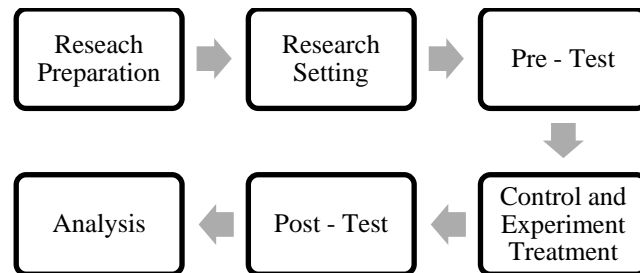


Figure 3. Research Procedure

- Year 2019
  - User test case
  - Pilot project Implementation analysis in Udayana University
  - Formative and Summative evaluations.
  - Effectiveness measurement analysis
  - Site visit to Kumamoto University
- Year 2020 Ahead
  - Pilot project Implementation analysis in Udayana University and in one private University in Bali
  - Analysis readiness level and motivation for shared courses between Udayana University and Kumamoto University
  - Formative and Summative evaluations.
  - Effectiveness measurement analysis

## CHAPTER IV

### RESULTS AND DISCUSSIONS

#### 4.1 Profiles of Study Programs

The collaborative learning for flipped classroom on research methodology subject will be designed in this year (year 2018) and will be implemented in both study programs, i.e. Magister of Electrical Engineering (MEE) Study Program and Agriculture Technology (AT) study program in year 2019. However since the subject will not be offered in the same semester, then the implementation will be applied in AT Department this February 2019 and in Magister of EE Department this September 2019. The profiles of University of Kumamoto has been presented by Prof. Usagawa during his visit on 11 of August 2018 until 15 of August 2018. The programs profile can be seen in Table 3.

Table 3. Profiles of Study Programs

Study Program	Magister of EE	AT Department	University of Kumamoto
Degree	Postgraduate (Master Degree)	Undergraduate (Bachelor Degree)	Undergraduate and Postgraduate
Year of Students who take Research Methodology Subject	First Semester (Year 1)	Year 2 (4 <sup>th</sup> Semester)	After Year 1
Number of Students	30	50	More than 50
Campus	Sudirman	Bukit Jimbaran	Kumamoto, Japan
Existing Method of Learning	F2F in class room	Blended Learning	Fully online learning, blended learning, flipped classroom, MOOC
ICT Support	Good capacity of University IT Infrastructure for e-learning (Bandwidth, Wifi, Server)	Good capacity of University IT Infrastructure for e-learning (Bandwidth, Wifi, Server)	High capacity of University IT Infrastructure for e-learning (Bandwidth, Wifi, Server)

#### 4.2 Design of Implémentation

All tools for the research are prepared below. There are three questionnaires to capture effectiveness level, readiness level, and motivation level of students, teachers, and readiness of institution. Detail of the questionnaires are attached in

the appendix. The questionnaires will be analysed their validity and reliability. The results will be presented below.

The subject syllabus and RPS (Semester Learning Plan or SLP) are then designed and developed. Both EE Department and AT Department already have its own. Therefore discussion on the syllabus and SLP have been intensively conducted to find the similarity, fundamental concept of the course for both departments, and the differences according to the degree level. Figure 4 displays general procedure of the course which was modified from standard operating procedure of [Kementerian Pendidikan dan Kebudayaan, 2014], and table 4 shows the design process of shared course.

Table 4. Course Sharing Design

Item/Content	Magister EE Department	AT Department (Undergraduate)
Syllabus	EE	AT
SLP or RPS	EE	AT
Shared Learning Content	shared	shared
Separate Learning Content	EE	AT
Self Evaluation, Group Evaluation, Course Evaluation	yes	yes
Assignment	Literature Review	Multiple Choice / Essay
Tutorial	Writing Proposal	Writing Proposal
Mid Exam	Proposal or Paper	Multiple Choice / Essay
Final Exam	Paper	Multiple Choice / Essay

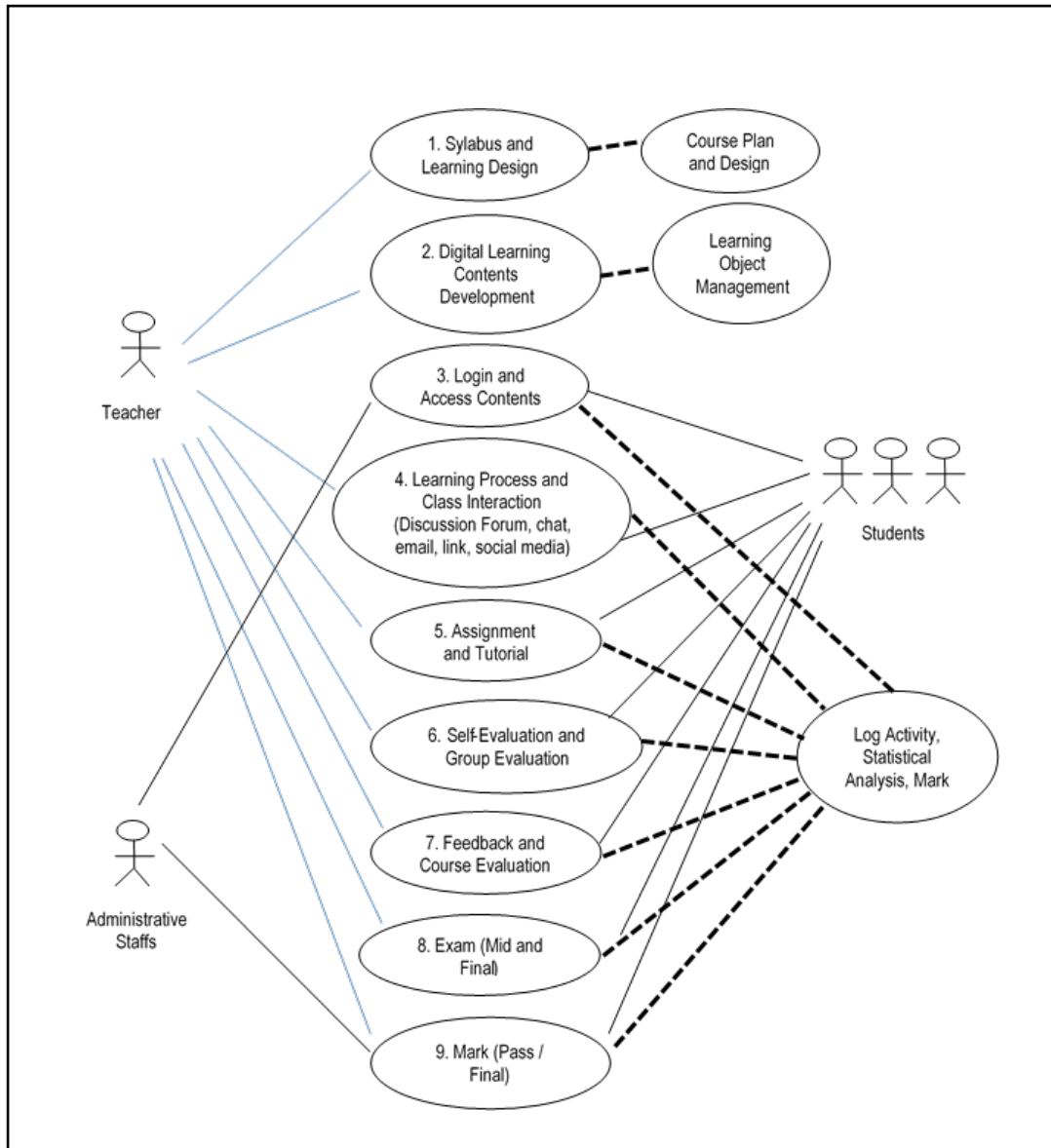


Figure 4. Use Case Diagram for General Flow of the Course

### 4.3. Validity and Reliability of The Questionnaire

All attached questionnaires as tools of research have been tested their validity and reliability before sending to the participants. Table 5 shows reliability indicators, and Table 6 to Table 22 show the results of validity and reliability.

Table 5. Reliability Indicators

Interval	Reliability Indicator
< 0,200	Very Low
0,200 – 0,399	Low
0,400 – 0,599	Average
0,600 – 0,799	High
0,800 – 1,000	Very High

**A. Questionnaire for Students**

n = 18  
 Df = n-2 = 16  
 r Tabel (sig 5%) = 0.4683

Cronbach's Alpha = 0.791 for 18 items

Table 6. Cronbach Alpha Value of Motivation Questionnaire (Students)

Question No	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	59.38	17.125	.392	.780
2	59.38	16.554	.534	.770
3	58.88	18.125	.273	.787
4	59.00	17.143	.447	.777
5	59.50	16.571	.606	.767
6	59.38	17.696	.254	.789
7	59.38	18.268	.121	.798
8	59.00	17.143	.447	.777
9	59.50	17.429	.370	.782
10	59.25	16.500	.526	.770
11	59.50	18.857	.553	.803
12	59.50	16.571	.606	.767
13	59.13	18.125	.154	.796
14	59.25	16.500	.526	.770
15	59.50	15.143	.623	.759
16	59.25	17.929	.089	.811
17	59.00	17.143	.447	.777
18	59.00	17.143	.447	.777

**Effectiveness Questionnaire**

n = 19  
 Df = n-2 = 17  
 r Tabel (sig 5%) = 0.4555

Table 7. Cronbach Alpha Value of Effectiveness Questionnaire (Students)

Question No.	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	60.63	21.696	.376	.802
2	60.50	21.714	.574	.789
3	60.75	21.643	.697	.785
4	60.88	21.839	.875	.783
5	60.38	23.411	.235	.808
6	60.75	21.071	.506	.791
7	61.13	24.125	.175	.809
8	60.75	23.929	.016	.836
9	60.75	21.357	.459	.795
10	60.50	23.714	.165	.812
11	60.75	22.786	.420	.798
12	60.50	22.857	.335	.802
13	60.25	22.786	.420	.798
14	60.63	22.268	.475	.795
15	60.38	23.411	.235	.808
16	60.38	23.411	.235	.808
17	60.88	21.839	.875	.783
18	60.63	22.268	.475	.795
19	60.63	22.268	.475	.795

Readiness Questionnaire

$$\begin{aligned}
 n &= 8 \\
 Df &= n-2 = 6 \\
 r \text{ Tabel (sig 5\%)} &= 0.7067
 \end{aligned}$$

Table 8. Cronbach Alpha Value of Readiness Questionnaire (Students)

Question No.	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	24.63	9.982	.797	.931
2	24.38	9.696	.898	.924
3	24.63	9.982	.797	.931
4	24.38	9.696	.898	.924
5	24.38	9.696	.898	.924
6	24.38	9.696	.898	.924
7	24.38	9.696	.898	.924
8	24.88	10.982	.345	.967



Table 9. Validity of Motivation Questionnaire (Students)

Question No.	r (Calculation)	r (Standard)	Validity
1	0.490	0.463	Valid
2	0.616		Valid
3	0.347		Not Valid
4	0.530		Valid
5	0.671		Valid
6	0.363		Not Valid
7	0.237		Not Valid
8	0.530		Valid
9	0.459		Not Valid
10	0.612		Valid
11	0.106		Not Valid
12	0.671		Valid
13	0.269		Not Valid
14	0.612		Valid
15	0.717		Valid
16	0.260		Not Valid
17	0.530		Valid
18	0.530		Valid

Table 10. Reliability of Motivation Questionnaire (Students)

Question No.	Alpha Cornbach	r	Reliability
1	0.780	0.463	High
2	0.770		High
3	0.787		High
4	0.777		High
5	0.767		High
6	0.789		High
7	0.798		High
8	0.777		High
9	0.782		High
10	0.770		High
11	0.803		Very High
12	0.767		High
13	0.796		High
14	0.770		High
15	0.759		High
16	0.811		Very High
17	0.777		High
18	0.777		High

Table 11. Validity of Effectiveness Questionnaire (Students)

Question No.	r Value	r	Validity
1	0.501	0.4555	Valid
2	0.643		Valid
3	0.743		Valid
4	0.891		Valid
5	0.332		Not Valid
6	0.608		Valid
7	0.243		Not Valid
8	0.194		Not Valid
9	0.567		Valid
10	0.268		Not Valid
11	0.495		Valid
12	0.429		Not Valid
13	0.495		Valid
14	0.554		Valid
15	0.332		Not Valid
16	0.332		Not Valid
17	0.891		Valid
18	0.554		Valid
19	0.554		Valid

Table 12. Reliability of Effectiveness Questionnaire (Students)

Question No.	Alpha Cornbach	r	Reliability
1	0.802	0.4555	Very High
2	0.789		High
3	0.785		High
4	0.783		High
5	0.808		Very High
6	0.791		High
7	0.809		Very High
8	0.836		Very High
9	0.795		High
10	0.812		Very High
11	0.798		High
12	0.802		Very High
13	0.798		High
14	0.795		High
15	0.808		Very High
16	0.808		Very High
17	0.783		High
18	0.795		High
19	0.795		High

Table 13. Validity of Readiness Questionnaire (Students)

Question No.	r	r (Standard)	Validity
1	0.847	0.7067	Valid
2	0.924		Valid
3	0.847		Valid
4	0.924		Valid
5	0.924		Valid
6	0.924		Valid
7	0.924		Valid
8	0.497		Not Valid

Table 14. Reliability of Readiness Questionnaire (Students)

Question No.	Alpha Cornbach	r	Reliability
1	0.931	0.7067	Very High
2	0.924		Very High
3	0.931		Very High
4	0.924		Very High
5	0.924		Very High
6	0.924		Very High
7	0.924		Very High
8	0.967		Very High

## B. Questionnaire for Teachers

Table 15. Cronbach Alpha Value of Motivation Questionnaire (Teachers)

Question No.	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	40.25	22.500	.829	.935
2	40.38	25.696	.198	.952
3	40.38	22.554	.926	.933
4	40.38	22.554	.926	.933
5	40.25	22.500	.829	.935
6	40.13	22.696	.757	.937
7	40.38	22.554	.926	.933
8	40.25	22.786	.766	.937
9	40.00	23.429	.627	.941
10	40.38	22.554	.926	.933
11	40.38	23.411	.428	.952
12	40.13	22.696	.757	.937
13	40.25	22.786	.766	.937

Table 16. Cronbach Alpha Value of Effectiveness Questionnaire (Teachers)

Question No.	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	54.13	45.839	.882	.967
2	54.13	45.839	.882	.967
3	54.00	46.000	.828	.967
4	54.00	46.000	.828	.967
5	54.00	46.857	.703	.969
6	54.13	47.554	.625	.970
7	54.25	46.500	.882	.967
8	54.38	45.696	.713	.970
9	54.25	46.500	.882	.967
10	54.25	46.500	.882	.967
11	54.25	46.500	.882	.967
12	54.00	46.857	.703	.969
13	54.13	45.839	.882	.967
14	54.13	46.696	.752	.968
15	54.00	46.000	.828	.967
16	53.88	46.982	.710	.969
17	54.13	46.696	.752	.968

Table 17. Cronbach Alpha Value of Readiness Questionnaire (Teachers)

Question No.	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	24.38	10.839	.852	.934
2	24.13	11.839	.650	.947
3	24.38	11.125	.761	.940
4	24.50	10.857	.880	.933
5	24.38	10.839	.852	.934
6	24.38	11.125	.761	.940
7	24.50	10.857	.880	.933
8	24.50	9.714	.832	.939

Table 17. Validity of Motivation Questionnaire (Teachers)

Question No.	r	r (Standard)	Validity
1	0.859	0.5529	Valid
2	0.283		Not Valid
3	0.938		Valid
4	0.938		Valid
5	0.859		Valid
6	0.800		Valid
7	0.938		Valid
8	0.806		Valid
9	0.686		Valid
10	0.938		Valid
11	0.536		Not Valid
12	0.800		Valid
13	0.806		Valid

Table 18. Reliability of Motivation Questionnaire (Teachers)

Question No.	Alpha Cornbach	r (Standard)	Reliability
1	0.935	0.5529	Very High
2	0.952		Very High
3	0.933		Very High
4	0.933		Very High
5	0.935		Very High
6	0.937		Very High
7	0.933		Very High
8	0.937		Very High
9	0.941		Very High
10	0.933		Very High
11	0.952		Very High
12	0.937		Very High
13	0.937		Very High

Table 19. Validity of Effectiveness Questionnaire (Teachers)

Question No	r	r (Standard)	Validity
1	0.897	0.4821	Valid
2	0.897		Valid
3	0.850		Valid
4	0.850		Valid
5	0.739		Valid
6	0.668		Valid
7	0.896		Valid
8	0.755		Valid
9	0.896		Valid
10	0.896		Valid
11	0.896		Valid
12	0.739		Valid
13	0.897		Valid
14	0.783		Valid
15	0.850		Valid
16	0.744		Valid
17	0.783		Valid

Table 20. Reliability of Effectiveness Questionnaire (Teachers)

Question No	Alpha Cornbach	r (Standard)	Reliability
1	0.967	0.4821	Very High
2	0.967		Very High
3	0.967		Very High
4	0.967		Very High
5	0.969		Very High
6	0.970		Very High
7	0.967		Very High
8	0.970		Very High
9	0.967		Very High
10	0.967		Very High
11	0.967		Very High
12	0.969		Very High
13	0.967		Very High
14	0.968		Very High
15	0.967		Very High
16	0.969		Very High
17	0.968		Very High

Table 21. Validity of Readiness Questionnaire (Teachers)

Question No.	r	r (Standard)	Validity
1	0.889	0.7067	Valid
2	0.718		Valid
3	0.818		Valid
4	0.909		Valid
5	0.889		Valid
6	0.818		Valid
7	0.909		Valid
8	0.888		Valid

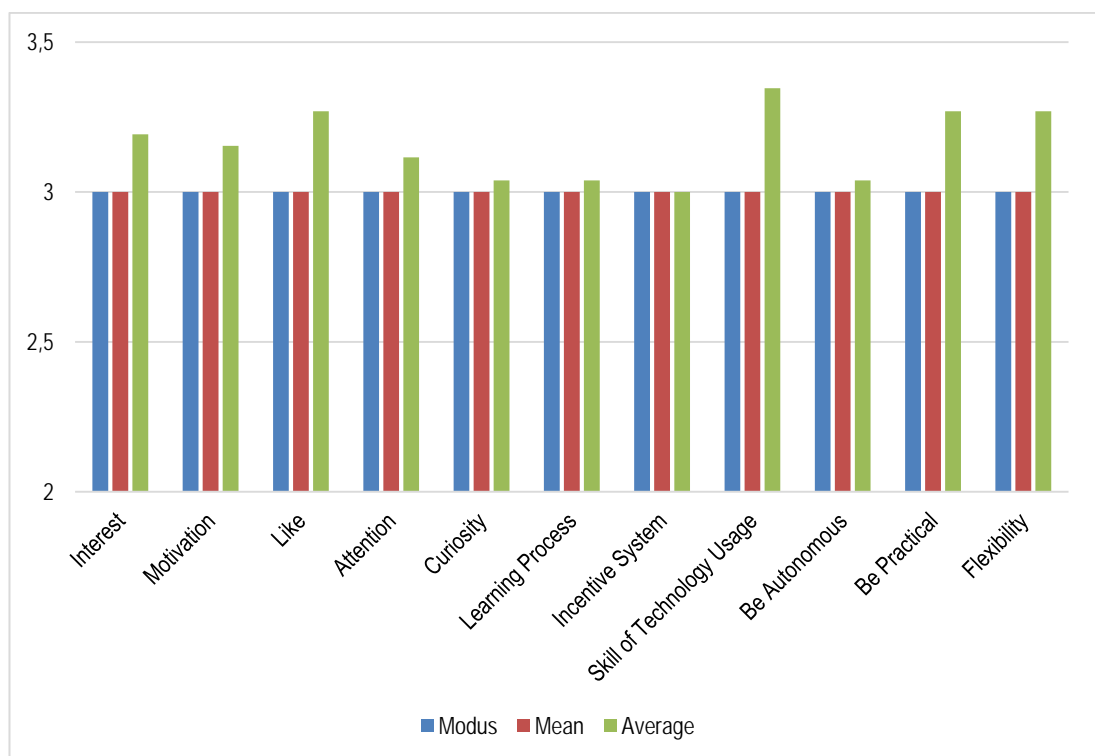
Table 22. Reliability of Readiness Questionnaire (Teachers)

Question No.	Alpha Cornbach	r	Reliability
1	0.934	0.7067	Very High
2	0.947		Very High
3	0.940		Very High
4	0.933		Very High
5	0.934		Very High
6	0.940		Very High
7	0.933		Very High
8	0.939		Very High

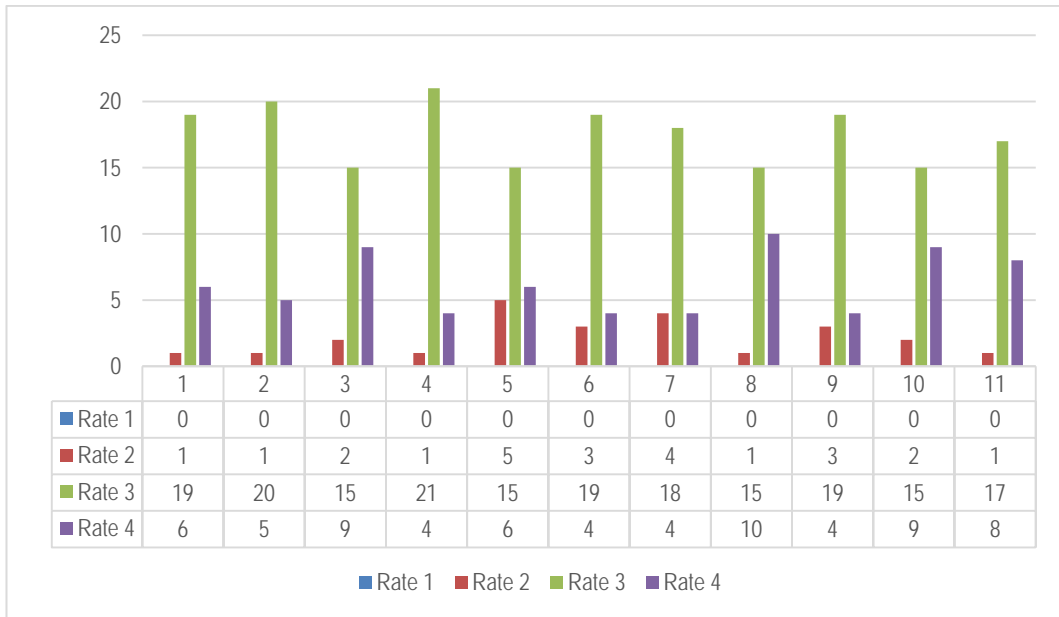
#### 4.4. Analysis of Effectiveness, Readiness, Motivation

##### 4.4.1. Students

Overall figure 5 shows that high level of motivation of students in term of elearning usage. The highest level of motivation is influenced by their understanding that elearning can improve their skill of technology usage. Then other high factors are influenced their motivation level, i.e. favor of technology usage, more practical learning process, and its flexibility. However all factors have rate of two and the lowest is for curiosity and incentive system. These mean that the students don't agree that elearning can increase their curiosity and it won't be any incentive for using the system.

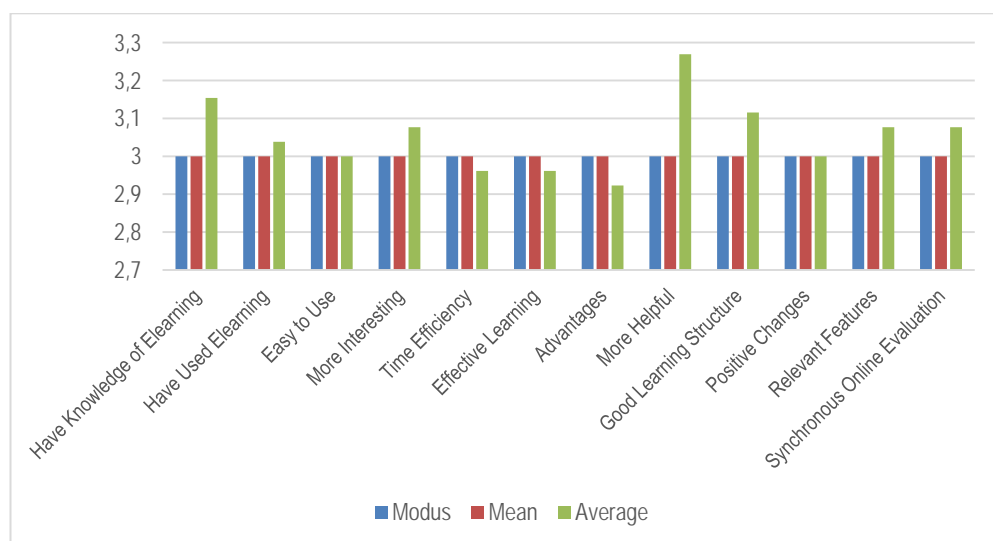


A. Modus, Mean, and Average of Students Motivation Level



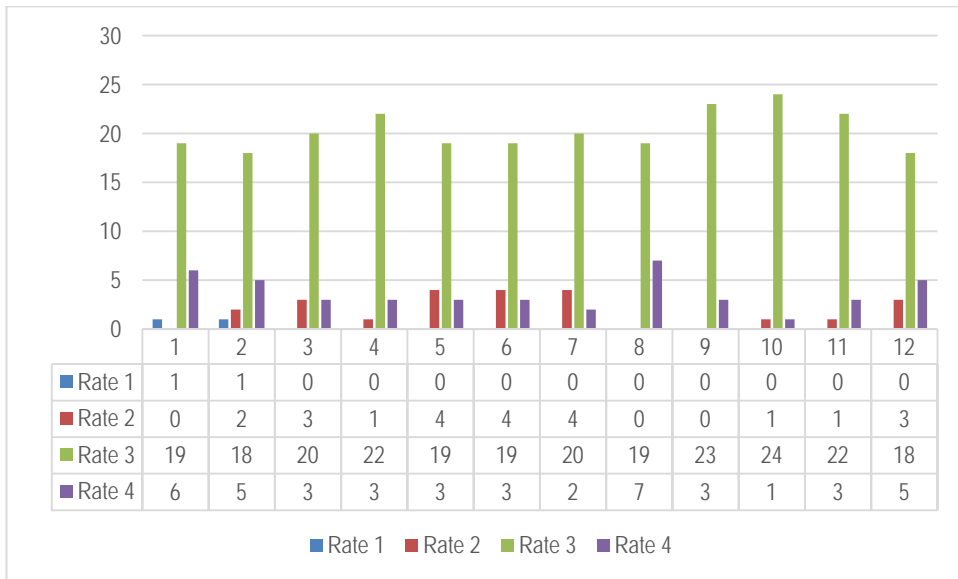
**B. Frequency Rate of Students Motivation Level**  
 Figure 5. Motivation Level of Students

Effectiveness level of students towards elearning system is shown in figure 6. Again overall the students highly agree that elearning usage is more effective than traditional learning system. The highest level is for statement of the system more helpful. Surprisingly there is student who doesn't have any experienced using elearning. Thus the student gives the lowest rate of 1 for the effectiveness of elearning.



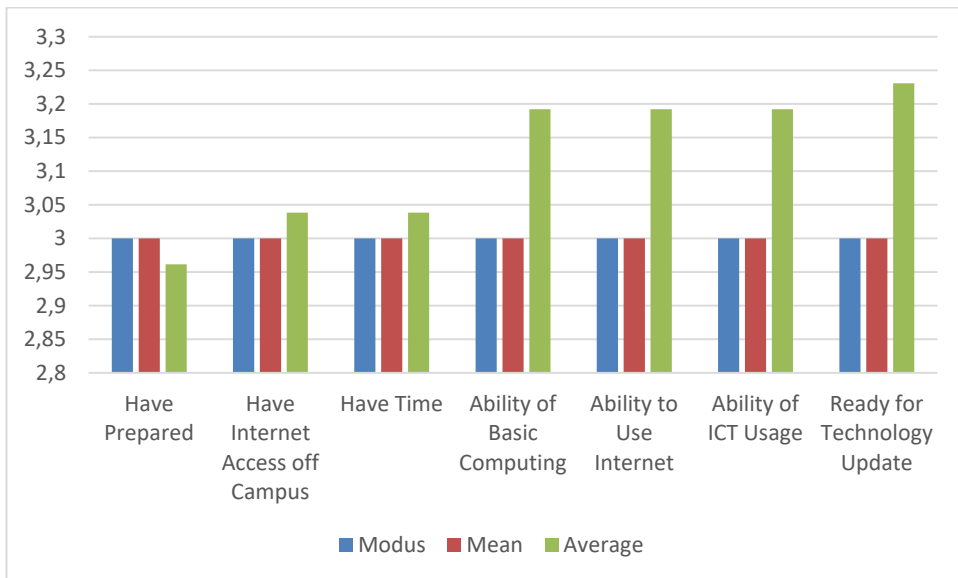
**A. Modus, Mean, and Average of Students Effectiveness Level**



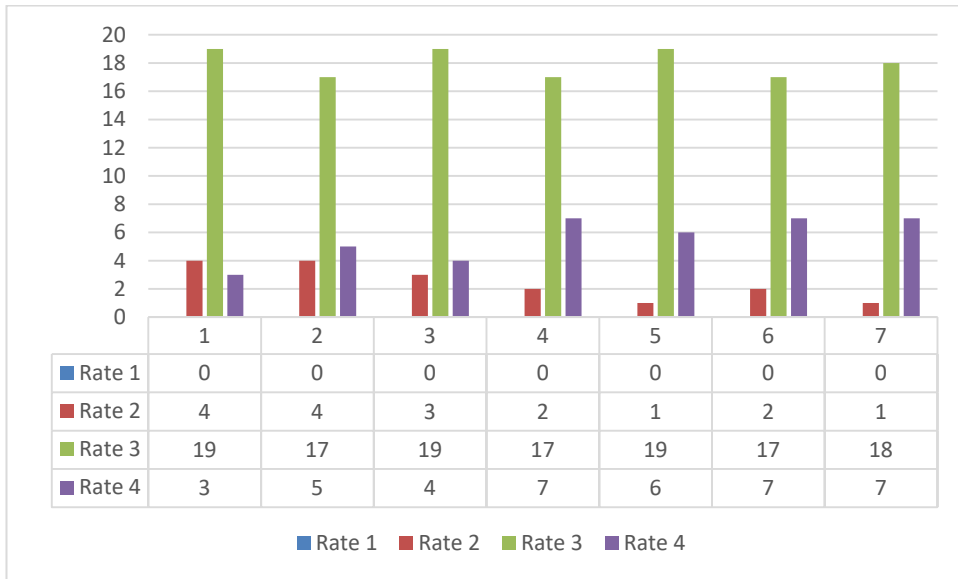


**B. Frequency Rate of Students Effectiveness Level**  
**Figure 6. Students Effectiveness Level**

The readiness level of students is supported by their skills in basic computing, Internet usage, and ICT usage. In addition, they are ready for technology update. This is important as elearning has to be improved inline with development of ICT.



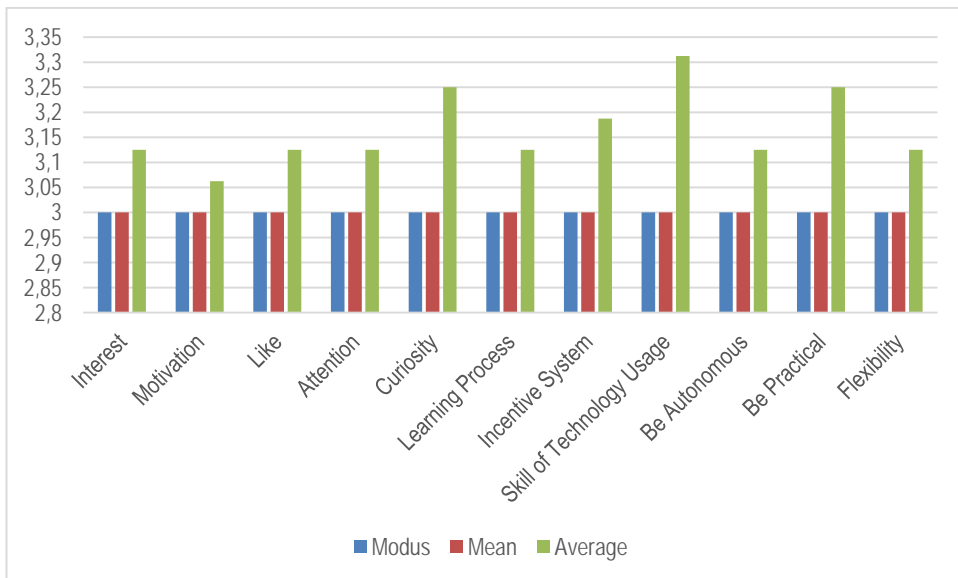
**A. Modus, Mean, and Average of Students Readiness Level**



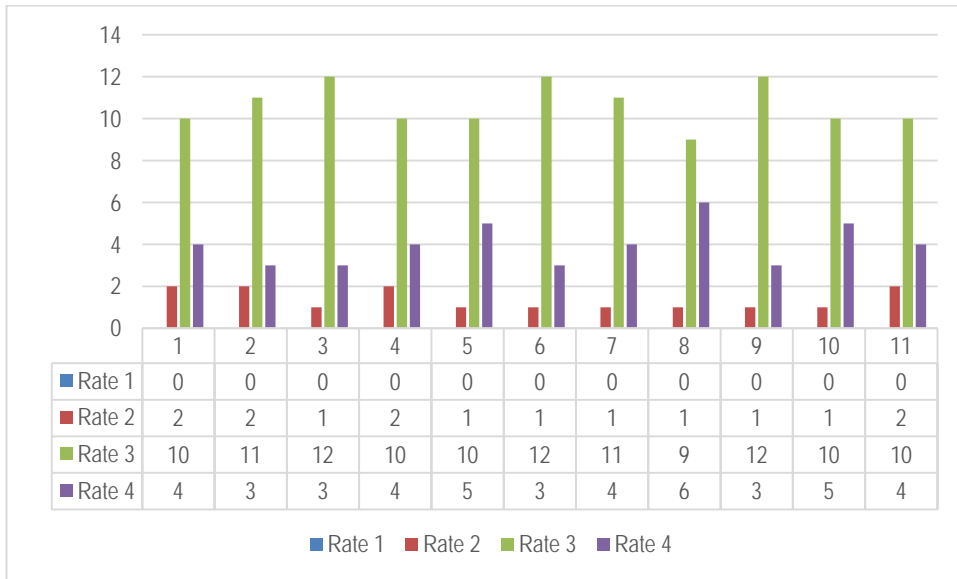
B. Frequency Rate of Students Readiness Level  
Figure 7. Students Readiness Level

#### 4.4.2. Lecturers

When we see the motivation level of lecturers using elearning, their motivation the same as the students. The lecturers put highest level on statement of skill of technology usage. This means that they agree that elearning system can improve their skill on technology application, as seen in figure 8.



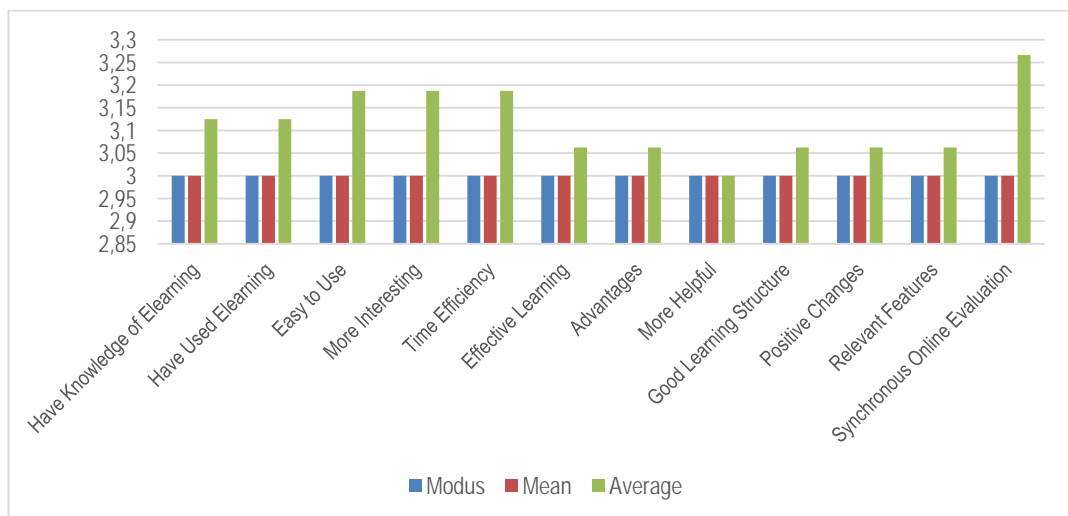
A. Modus, Mean, and Average of Lecturers Motivation Level



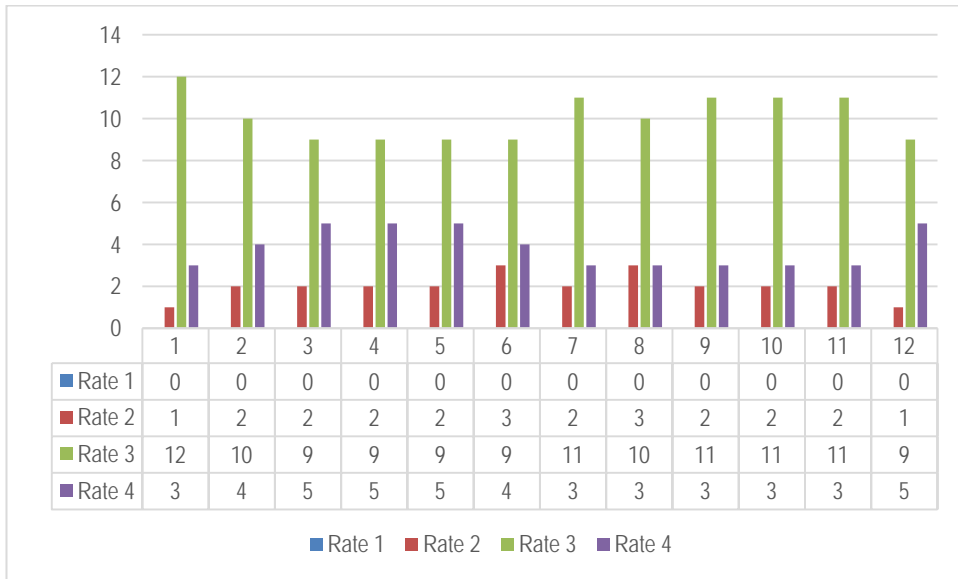
### B. Frequency Rate of Lecturers Motivation Level

Figure 8. Lecturers Motivation Level

On the other hand, figure 9 shows different level of effectiveness of lecturers compared to students' level. In general the level is high and the highest level is on statement of synchronous online evaluation. This means that the lecturers agree that elearning is more effective than traditional learning in term of learning evaluation. The evaluation can be more accurate, transperance, fair, and fast results.



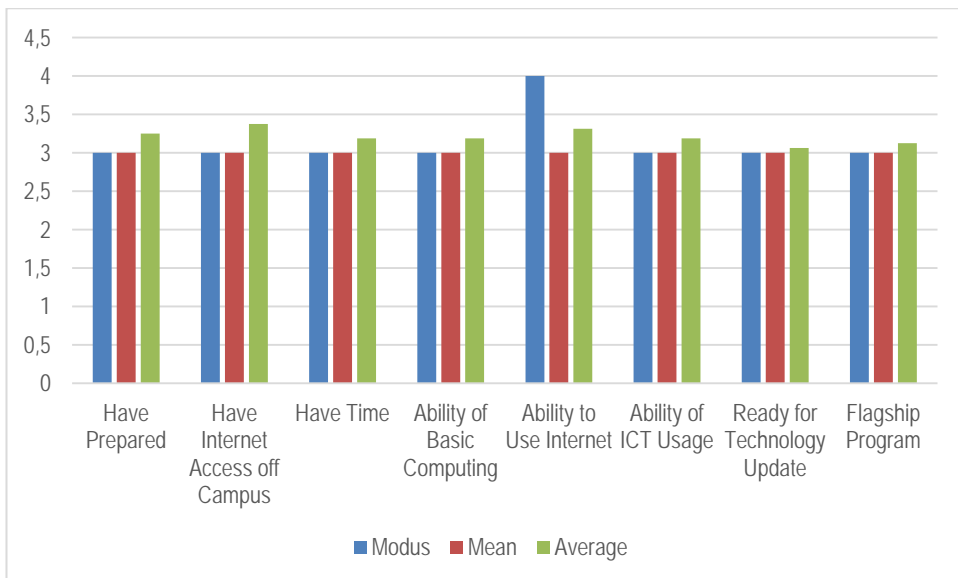
### A. Modus, Mean, Average of Lecturers Effectiveness Level



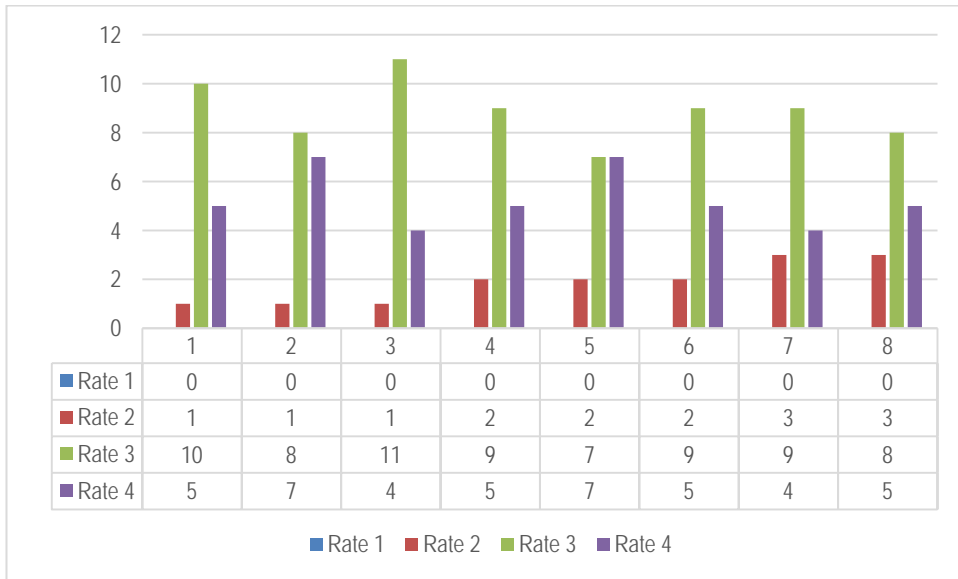
### B. Frequency Rate of Lecturers Effectiveness Level

Figure 9. Lecturers Effectiveness Level

The readiness level of lecturers in using elearning is presented in figure 10. Generally they are well prepared to apply the system as they have capability in using Internet, good Internet access off campus, good skills on basic computing, and ICT. On the other hand, they are not too confident to catch up technology update.



### A. Modus, Mean, Average of Lecturers Readiness Level



B. Frequency Rate of Lecturers Readiness Level  
 Figure 10. Lecturers Readiness Level

#### 4.4.3. Institution

The readiness of institution, especially in Udayana University shows contrast results with the readiness of students and lecturers. The University provides good network infrastructure, Internet connection, and data center. However specifically they don't provide for elearning. There are no specific regulation and strong commitment of the University in elearning implementation, as can be seen in figure 11.

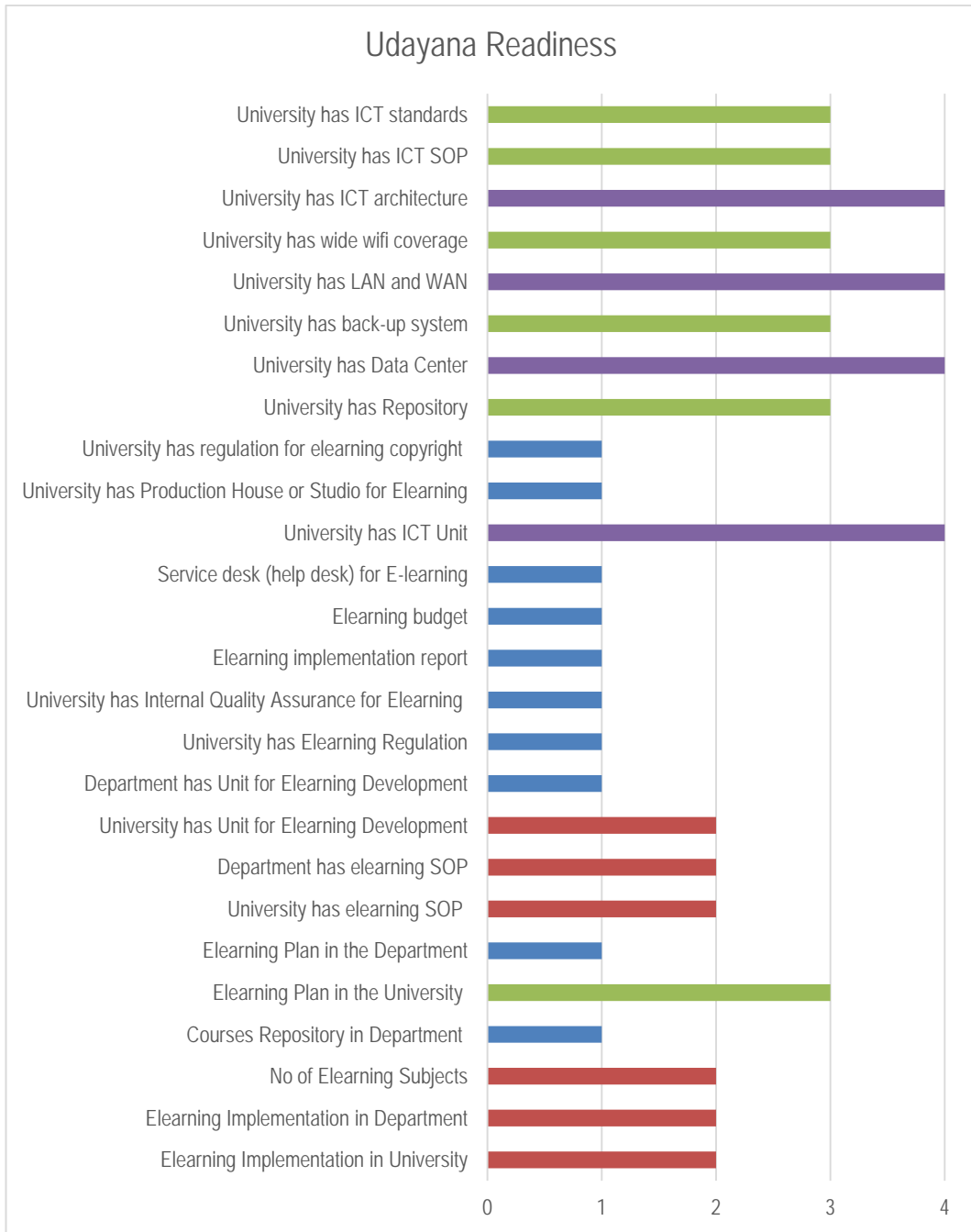


Figure 11. Institution's Readiness Level (Udayana University)

#### 4.5. Comparison Assessment of Insitution Readiness Level

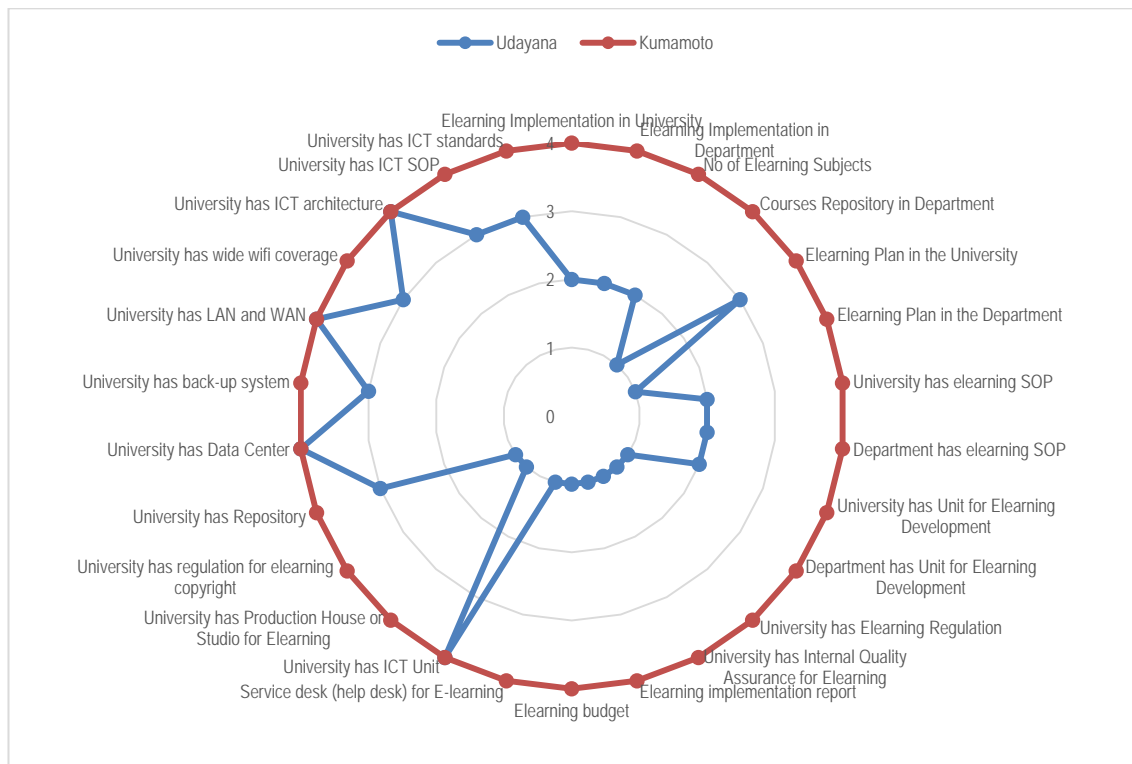


Figure 12. Readiness Level of Institutions (Udayana University and Kumamoto University)

Figure 12 presents the readiness level of Udayana University and Kumamoto University. Since Kumamoto University have been implemented elearning for all its courses, Udayana University should learn from Kumamoto University. Only four components of Udayana University are the same as Kumamoto University, i.e. ICT Unit, Data Center, LAN & WAN, and ICT architecture. However the remainder are below of the Kumamoto level. Based on Prof. Usagawa talk in Udayana University, then components which the Udayana can learn from the Kumamoto are below.

- a) Kumamoto has applied elearning system over 2 decades in 7 faculties & graduate schools, for 9,000 students including graduate ones, 1,000 teaching staffs, and with 3,000 administrative, technical and medical staffs.
- b) Kumamoto University has been established more than 100 years ago.

- c) Interestingly, Faculty of Engineering has 4 Departments with 12 Education Programs.
- d) IT Literacy is an important course for all students and lecturers before elearning usage. Topics to be lectured were interdisciplinary; from technical issue to legal and moral issue, and treatment of emergency as user,
- e) Kumamoto established CMIT (Center for Multimedia and Info. Tech.), The Center has 1 Director, 3 Professors, 3 Assoc. Prof, 3 Assist. Prof., 3 technical staffs, 3 admin. staffs, and 5 special staffs for e-Learning.
- f) IT Literacy concept is selected based on the **Analogy** with Driver's license, as seen in figure 13.
- g) Target of IT literacy is to allow all of 1800 fresh students to use Internet (information high-way) on campus. The students have permission to access Internet on campus when they have passed the course.

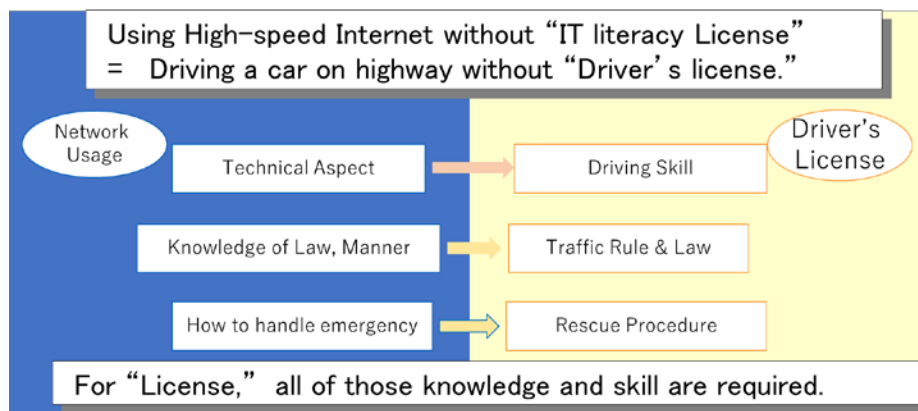


Figure 13. Concept of IT Literacy

- h) Concept of Chain of "Learn and Check" as presented in figure 14, is applied in Kumamoto. The concept lets the students to do quiz and they can decide whether they retry it, or they end it because they have satisfied with their score.



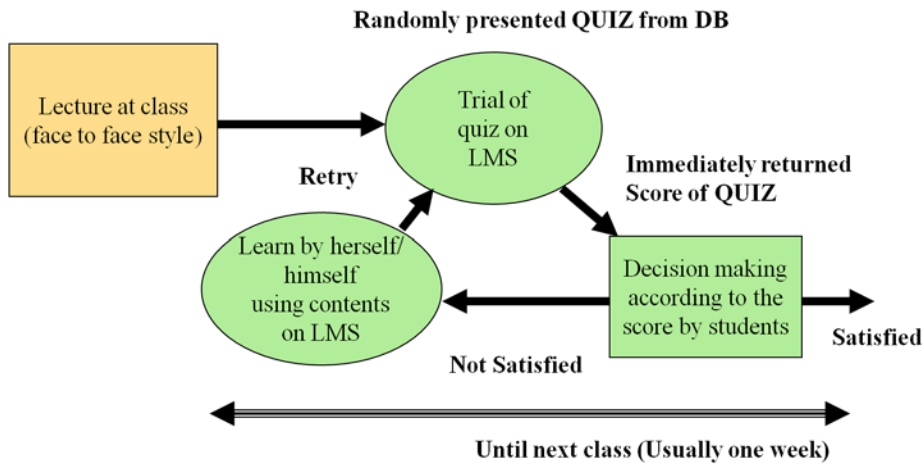


Figure 14. Chain of “Learn and Check” Concept

- i) Lecturers can easily mark all 1800 students results for the IT literacy course using elearning. For example nine lecturers give marks 9000 submissions per week. Those will be impossible without elearning system. Figure 15 proves it.

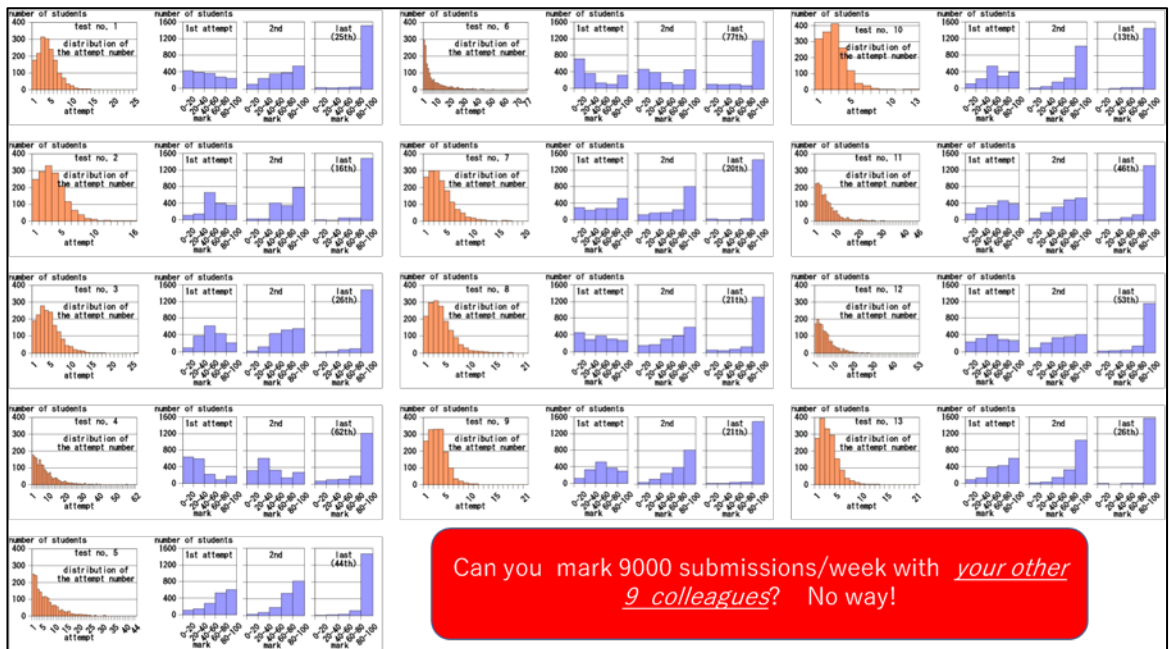


Figure 15. Example of Advantages of Elearning for Marking Huge Assignments in Kumamoto

- j) A professional in the field of “Instructional Design,” is important to make elearning success. Kumamoto has developed it by establishment of Graduate School in 2006 for master degree and in 2008 for doctoral degree.

## **CHAPTER V. CONCLUSIONS**

In order to make elearning system successfully implemented in Udayana University, Udayana should adopt Kumamoto University strategy. This is supported by high level of motivation, readiness, and effectiveness from both students and lecturers in Udayana University. However readiness of Udayana University as an institution is quite low compared to Kumamoto University. Thus institution support is a significant factor compared to students and lecturers motivations.

Collaboration learning between two departments in Udayana University, i.e. Electrical Engineering Department and Agriculture Technology Department, in term of Research Methodology subject is likely possible and promising. The syllabus, video contents, quiz, evaluation tools, and semester learning plan have been developed (see attachments). Some video contents have been uploaded in Youtube, more will be uploaded. Therefore next semester collaborative learning for flipped classroom can be implemented and evaluated. The efficiency, effectiveness, motivation, and performance of the learning process for both departments can be analysed. The results can be best practice for all common or general compulsory subjects in Udayana University in two or more departments.

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## APPENDICES

### APPENDIX 1. PRESENTER IN IMLF 2018





**13:30 STEM as an Education Movement**

**Dr Glenn Shive**, An Advisor to Koding Kingdom  
and Administrator of the Fulbright Exchange Program, Hong Kong

**14:00 Paper Presentations 2**

**14:00 Student's Perception and Learning Outcome Achievement  
on Blended-Flipped Learning**

I Made Supartha Utama, Linawati, NMAD Wirastuti &  
Tsuyoshi Usagawa, Udayana University, Denpasar, Bali, Indonesia

**14:20 Virtual Instructor Kit for De La Salle University – Dasmariñas**

Azenith Mojica, Eugene Allen Alvizo, Mary Anne Ramos and  
Regine Danielle Uy, De La Salle University – Dasmariñas, Philippines

**14:40 A Case Study on How Children Developed Computational Thinking  
in the Classroom with Robotics Toys**

Dr Khoo, Kay Yong, Mels, Hong Kong SAR China

**15:00 A Conceptual Model of Integrating Mobile Technologies  
into Task-based Language Teaching Grounded  
in Conversational Framework**

Sijia Xue, The University of Hong Kong, Hong Kong SAR China

**15:20 Strategic Blended Learning Case Studies in STEM Courses**

Bob Fox and Mark King, The University of New South Wales, Australia

**15:40 Research and Development on Instructional Design for Massive Open  
Online Course (MOOC) Model on Subjects under Faculty of Education**

Nammon Ruangrit, Silpakorn University, Thailand

**16:00 The Effects of E-Examinations on Student Satisfaction Regarding  
Appropriateness of Assessment and Course Quality in Science  
and Medical Science**

Ananthan Ambikairajah and Chris Tisdell, The University of  
New South Wales, Australia

**16:20 Bridging in- and out-of-class Activities via 5-D Pedagogical Framework  
in Mathematics Learning in the Flipped Classroom**

Yanjie Song, Education University of Hong Kong, Hong Kong SAR China

**16:40 Moonlight: A 3D Zombie-Shooting PC Game Using A\* Algorithm**

Azenith Mojica, Edgar Michael Colmo, Lielle Jasmin Bawar and  
Allen Vince Del Rosario, De La Salle University – Dasmariñas, Philippines



Paper Presentations 2 – 9<sup>th</sup> of June, 2018, 13:30 to 16:50

14:00 – 14:20

**Student's Perception and Learning Outcome Achievement on Blended-Flipped Learning**

*I Made Supartha Utama, Linawati, NMAD Wirastuti & Tsuyoshi Usagawa, Udayana University, Denpasar, Bali, Indonesia*

**Abstract:**

Blended learning has developed in Udayana University, and Moodle is used as the learning platform for the online activities. Class activities are still compulsory and a minimum of sixteen times face to face have to be performed for each course. Postharvest Engineering is one of the courses for a bachelor degree at the faculty of agricultural technology was designed as a model of blended and flipped learning to gain more effective strategy in achieving student learning outcomes of the course. The targeted students were nine students from Udayana University (Unud) and 19 students from Sam Ratulangi University (Unsrat). Lesson plans for sixteen weekly bases of learning were developed for online and face to face (class and practical) activities. The loading time of learning was three credit semester unit or equal to 510 min (3 x 170 min) per week. The 150 min (3 x 50 min) was used for class activities, and 170 min was provided for practical-laboratory work or field study of which was depended on the unit learning outcomes. The rest of time for about 290 – 360 min was allocated for online activities. The online learning resources were provided which consisted of learning modules, narrated power point presentations, web-linked of relevant references and YouTube movies. Students were flexible to choose other references relevant to the unit learning outcomes. Student regular online activities were self-learning and assessment; others were depending on the unit learning outcomes, such as short-long essay assignment, uploading reports of problem-based learning and laboratory practical works. Feedback was given to the assignments and reports using analytic or holistic rubrics. The class activities are mostly student discussion and presentation as well as Q/A to allow them showing up their knowledge construction. The perception of students toward the learning was very positive. The grade achievement of the course outcomes for students at Unud were 45% "A" grade and 45% "B" grade, and no student gained "C" and "E" grade. Only one student received "D" grade. Students at Unsrat were 63% achieved "A" grade, 31% "B" grade, no student received "C" and "D" grade, and only one student got "E" grade. The students who received "D" and "E" grades were due to their lack of online and class activities.

14:20 – 14:40

**Virtual Instructor Kit for De La Salle University – Dasmariñas**

*Azenith Mojica, Eugene Allen Alvizo, Mary Anne Ramos and Regine Danielle Uy, De La Salle University – Dasmariñas, Philippines*

**Abstract:**

Virtual Instructor Kit is an Android application designed for the Faculty members of De La Salle University – Dasmariñas. It is an all-in-one application available in Google Play that serves as a Faculty Organizer and Scheduler. The application is composed of all the data a faculty needs: faculty schedule for the week, subjects taught and classes handled, list of students, seat plan, lessons, calendar for the University activities and events, journal and computation of grades which can be calculated in the application.

The application aims to provide Faculty members of DLSU-D with all necessary files they need in an Android platform. It provides a user-friendly interface for the users by creating visually creative and eye-catching graphics. Accurate information was provided by gathering the data from professors and administrators. The application also provides accurate



## APPENDIX 2. FORMATIVE EVALUATION

Indicators of Multimedia based Academic Environment affects students learning process [MI Jawid Nazir, 2012]

1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree

No	Indicator	Definition
1	Association	Connecting mind with a particular memory, idea, or feeling during learning process
2	Recognition	An act of remembering more when taught using MBL
3	Orientation	Alignment of oneself or one's ideas to surroundings
4	Retention	Multimedia gives long lasting memory
5	Stimulation	MBL accelerates learning process
6	Efficiency	The quality of being able to learn a content/topic/task successfully and conveniently without wasting time or energy
7	Acceptance	Easy to study from MBL
8	Comprehension	Easy to understand in MBL class room teaching
9	Inspiration	Creative ideas are developed when content taught using audio, picture, and video
10	Interaction	Teacher gets enough time to interact with students
11	Enthusiasm	Students attend classes with enthusiasm
12	Impressive	Multimedia based classes are so refreshing and exciting
13	Time Saving	Learning takes less time
14	Inventiveness	MBL increases imagination
15	Involvement	MBL enables participation so it is more interesting
16	Performance	Students perform well in examinations
17	Interpretation	Understanding level of the topic is more
18	Alertness	Students are more attentive and perform better
19	Concentration	Students don't talk each other in class and learn more
20	Enhancement	MBL enriches knowledge, thinking, and innovations
21	Demonstration	Teacher explains more content
22	Expertise	New skills are developed in a MB classroom environment
23	Alternatives	Students take fewer notes since they have digital copy

### APPENDIX 3. LEARNING OBJECT EVALUATION

Learning Object Evaluation [DirJen Pembelajaran dan Kemahasiswaan, 2016]

No	Rambu – Rambu	1	2	3	4
<b>1</b>	<b>Kualitas Konten</b>				
	Konten akurat, tidak bias, dan bebas dari kesalahan				
	Struktur materi jelas, pokok bahasan dan sub-pokok bahasannya jelas, masing-masing ada pengantar, penjelasan, dan ringkasannya				
	Keluasan dan kedalaman materi sesuai dengan capaian pembelajaran				
	Tersedia pemicu atau pemantik diskusi terkait topik yang dapat memunculkan diskusi untuk menumbuhkan gagasan baru				
	Penyajian konten menggunakan bahasa yang komunikatif				
	Ragam objek pembelajaran (teks, gambar, audio, video, animasi, simulasi) yang dipilih tepat sesuai dengan kebutuhan dan karakter capaian pembelajaran				
	Tersedia contoh, non-contoh, dan latihan dengan umpan balik				
	Tercantum semua referensi yang digunakan, khusus untuk referensi daring disediakan tautan untuk memudahkan pembelajar				
	Tersedia tautan istilah dan maknanya, daftar notasi, dan daftar topik, terutama apabila sering disebut dalam teks				
	Tersedia daftar notasi dan simbol terutama apabila sering disebut dalam narasi				
<b>2</b>	<b>Umpan Balik dan Adaptasi</b>				
	Tersedianya umpan balik bersifat membandingkan kinerja pembelajar dengan kriteria yang telah ditetapkan				
<b>3</b>	<b>Motivasi</b>				
	Konten relevan dengan kebutuhan dan menarik bagi pembelajar yang dituju				
<b>4</b>	<b>Desain Presentasi</b>				
	Tampilan visual jelas, teks mudah dibaca, grafik dan chart diberi label memadai dan bebas gangguan visual				
	Warna, dan fitur dekoratif secara estetik menyenangkan				
<b>5</b>	<b>Usabilitas Interaksi</b>				
	Desain antarmuka (interface) secara implisit menginformasikan cara berinteraksi atau ada instruksi jelas untuk memandu penggunaannya				
	Perilaku antarmuka konsisten dan dapat diprediksi				
<b>6</b>	<b>Aksesabilitas</b>				
	Dapat diakses menggunakan perangkat dengan alat bantu ataupun perangkat portable dan mobil				
<b>7</b>	<b>Reusabilitas</b>				
	Dapat menjadi sumber belajar yang mandiri, siap ditransfer ke dalam topik dan konteks pembelajaran lain tanpa banyak modifikasi				

## APPENDIX 4. INSTRUMENT OF READINESS, MOTIVATION, EFFECTIVENESS LEVEL OF LECTURER

### Questionnaire of Effectiveness

No.	Pernyataan	Pilihan Jawaban				
		1	2	3	4	5
1	Anda pernah menggunakan media pengajaran <i>e-learning</i> di kelas					
2	Anda mudah menggunakan <i>e-learning</i> sebagai media pengajaran					
3	Kegiatan mengajar anda menjadi lebih menarik dengan menggunakan <i>e-learning</i>					
4	Kegiatan mengajar anda menjadi lebih fleksibel dengan menggunakan <i>e-learning</i>					
5	Anda dapat mencapai target pangajaran yang optimal dengan menggunakan media <i>e-learning</i>					
6	Anda merasa lebih puas mengajar dengan menggunakan <i>e-learning</i>					
7	Penggunaan <i>e-learning</i> dapat membantu anda untuk mengajar dengan efektif					
8	Penggunaan media <i>e-learning</i> dapat meningkatkan kualitas proses mengajar					
9	Konten-konten pendukung (gambar, audio, video, dan animasi) di media <i>e-learning</i> membantu anda dalam proses mengajar					
10	Anda dapat memberikan umpan balik dalam proses pembelajaran menggunakan media <i>e-learning</i>					
11	Adanya perubahan positif pada proses mengajar melalui media <i>e-learning</i>					
12	Adanya evaluasi <i>online</i> secara sinkron pada tugas-tugas maupun ujian pada media <i>e-learning</i>					

### Questionnaire of Motivation

No	Pernyataan	Pilihan Jawaban				
		1	2	3	4	5
1	Anda tertarik menggunakan media pembelajaran <i>e-learning</i>					
2	Anda termotivasi untuk mengajar dengan menggunakan <i>e-learning</i>					
3	Penggunaan <i>e-learning</i> membantu proses belajar lebih efektif					
4	Anda tertarik untuk menggunakan fitur-fitur pada aplikasi elearning					
5	Anda tertarik mengajar dengan memanfaatkan konten-konten pendukung (gambar, audio, video, dan animasi) yang telah tersedia					
6	<i>E-learning</i> memberikan kemudahan dalam proses belajar mengajar					
7	Elearning mendorong untuk membuat model soal yang variatif					
8	Fitur-fitur yang terdapat dalam media pengajaran <i>e-learning</i> meningkatkan rasa ingin tahu Anda					
9	<i>E-learning</i> dapat meningkatkan rasa percaya diri dosen					
10	Anda merasa puas dengan memberikan tugas-tugas dan ujian <i>online</i>					
11	<i>E-learning</i> dapat meningkatkan kemampuan dosen dalam pemanfaatan teknologi					
12	Memudahkan dosen dalam melakukan diskusi dengan mahasiswa secara <i>online</i>					

### Questionnaire of Readiness

No	Pertanyaan	Pilihan Jawaban				
		1	2	3	4	5
1	Anda siap melakukan pembelajaran dengan <i>e-learning</i>					
2	Anda dapat mengakses internet di luar kampus					
3	Anda siap meluangkan waktu (15,30, atau 60 menit) untuk belajar fitur – fitur <i>e-learning</i>					
4	Untuk mengoperasikan <i>e-learning</i> anda memiliki kemampuan komputer dasar, seperti mengetik, membuat, menyimpan, menyunting file, dsb.					
5	Untuk mengoperasikan elearning anda memiliki kemampuan internet dasar, seperti e-mail, searching, download, dsb					
6	Siap menggunakan teknologi informasi untuk mengevaluasi tugas-tugas setiap hari					
7	Anda siap menerima pembaharuan teknologi seperti menggunakan dokumen digital dibandingkan hard copy pada sistem <i>e-learning</i>					
8	<i>e-learning</i> dijadikan sebagai program unggulan dalam proses pembelajaran					

**APPENDIX 5. INSTRUMENT FOR READINESS, MOTIVATION, EFFECTIVENESS LEVEL OF STUDENT**

Questionnaire of Effectiveness

No	Pertanyaan	Bobot Jawaban				
		1	2	3	4	5
1	Anda tahu mengenai media pembelajaran <i>e-learning</i>					
2	Anda pernah menggunakan media pembelajaran <i>e-learning</i>					
3	Anda mudah menggunakan <i>e-learning</i> sebagai media pembelajaran					
4	Anda tertarik belajar dengan menggunakan <i>e-learning</i>					
5	Kegiatan belajar anda menjadi lebih fleksibel dengan menggunakan <i>e-learning</i>					
6	Dengan <i>e-learning</i> , anda memiliki waktu belajar lebih banyak					
7	Anda dapat mencapai hasil belajar yang optimal dengan menggunakan media pembelajaran <i>e-learning</i>					
8	Anda puas dengan pembelajaran menggunakan <i>e-learning</i>					
9	<i>E-learning</i> membantu anda untuk belajar lebih efektif					
10	Penggunaan media <i>e-learning</i> dapat meningkatkan kualitas pembelajaran					
11	Ragam konten (gambar, audio, video, dan animasi) di media <i>e-learning</i> membantu anda dalam proses belajar					
12	Adanya perubahan positif pada proses pembelajaran dengan menggunakan <i>e-learning</i>					

Questionnaire of Motivation

No	Pertanyaan	Pilihan Jawaban				
		1	2	3	4	5
1	Anda tertarik menggunakan media pembelajaran <i>e-learning</i>					
2	Anda termotivasi untuk belajar dengan menggunakan <i>e-learning</i>					
3	Anda tertarik untuk belajar dengan banyaknya fitur-fitur yang disediakan pada elearning					
4	Anda senang belajar menggunakan <i>e-learning</i> dengan tersedianya ragam konten (gambar, audio, video, dan animasi)					
5	Elearning mendorong anda untuk mencari referensi materi di internet					
6	<i>E-learning</i> meningkatkan minat anda untuk belajar dengan lebih efektif					
7	Fitur-fitur pada media pembelajaran <i>e-learning</i> meningkatkan rasa ingin tahu anda					
8	Pembelajaran menggunakan <i>e-learning</i> meningkatkan rasa percaya diri anda					
9	Anda puas belajar karena kemampuan elearning dalam menyediakan variasi tugas-tugas online					
10	Anda diberikan banyak sumber referensi di internet					
11	<i>E-learning</i> meningkatkan kemampuan anda dalam pemanfaatan teknologi					
12	Elearning meningkatkan kemandirian anda dalam proses pembelajaran					
13	Elearning memudahkan anda melakukan diskusi online dengan dosen dan atau sesama mahasiswa					
14	<i>E-learning</i> membuat proses pembelajaran lebih praktis					
15	<i>E-learning</i> membuat proses pembelajaran lebih fleksibel					

Questionnaire of Readiness

No	Pertanyaan	Pilihan Jawaban				
		1	2	3	4	5
1	Anda siap mengikuti pembelajaran dengan elearning					
2	Anda dapat mengakses internet di luar kampus					
3	Anda memiliki kemampuan komputer dasar, seperti membuat, menyimpan, menyunting file, dsb.					
4	Anda memiliki kemampuan internet dasar, seperti e-mail, searching, download, dsb.					
5	Anda siap menggunakan teknologi informasi dalam proses belajar					
6	Anda siap menggunakan pembaharuan teknologi pada sistem <i>e-learning</i>					
7	<i>E-learning</i> sebagai program unggulan dalam proses pembelajaran					

## APPENDIX 6. INSTRUMENT FOR MEASURE READINESS LEVEL OF INSTITUTION

### Questionnaire of Readiness

No	Pertanyaan	Pilihan Jawaban				
		1	2	3	4	5
1	Perguruan Tinggi anda sudah menerapkan <i>e-learning</i> dalam proses belajar mengajar					
2	Program studi anda sudah menerapkan <i>e-learning</i> dalam proses belajar mengajar					
3	Jumlah mata kuliah yang menggunakan <i>e-learning</i> sudah banyak					
4	Program studi memiliki repository mata kuliah					
5	PT memiliki rencana pengembangan <i>e-learning</i>					
6	Rencana pengembangan pendidikan mencantumkan pelaksanaan <i>e-learning</i> di program studi					
7	Adanya SOP pelaksanaan <i>e-learning</i> di level perguruan tinggi					
8	Adanya SOP pelaksanaan <i>e-learning</i> di level program studi					
9	Adanya unit organisasi di level perguruan tinggi yang bertanggung jawab terhadap perencanaan, pembangunan, penerapan, pengendalian dan pengembangan <i>e-learning</i>					
10	Adanya unit organisasi di level program studi yang bertanggung jawab terhadap perencanaan, pembangunan, penerapan, pengendalian dan pengembangan <i>e-learning</i>					
11	Adanya kebijakan akademik pelaksanaan proses belajar mengajar menggunakan <i>e-learning</i>					
12	Adanya kebijakan dan prosedur monitoring di unit Quality Assurance atau SPMI terhadap pelaksanaan <i>e-learning</i>					
13	Adanya pelaporan berkala semesteran pelaksanaan <i>e-learning</i>					
14	Adanya penganggaran (anggaran) untuk pelaksanaan <i>e-learning</i>					
15	Adanya service desk (help desk) untuk pelaksanaan <i>e-learning</i>					
16	Adanya unit teknologi informasi di perguruan tinggi					
17	Perguruan tinggi memiliki <i>production house</i> untuk pembuatan konten <i>e-learning</i>					
18	Perguruan tinggi memiliki aturan kepemilikan hak intelektual konten <i>e-learning</i>					
19	Perguruan tinggi memiliki repositori digital untuk menyimpan semua aset dan arsip berkas digital yang dimiliki					
20	Terdapat ruang khusus untuk pusat komputer dan pusat data (Server Room dan Data Center)					
21	Perguruan tinggi memiliki sistem backup					
22	Perguruan Tinggi telah menyediakan jaringan internal (LAN) dan eksternal (WAN, internet)					
23	Ruang cakupan (coverage) infrastruktur berbasis nirkabel (hotspot, wireless) dalam lingkungan kampus sudah memadai					
24	Perguruan tinggi memiliki dokumen arsitektur teknologi informasi sebagai panduan teknis pembangunan TIK					
25	Perguruan tinggi memiliki dokumen yang jelas dan rinci (seperti Standar Operating Procedure /SOP) proses pengelolaan TIK					
26	Perguruan tinggi anda memiliki standar TIK (Misal: standar dalam tipe aplikasi, fitur/spesifikasi piranti keras, pengkodean data/informasi dll)					





## APPENDIX 7. SEMESTER LEARNING PLAN

	<b>RENCANA PEMBELAJARAN SEMESTER (FLIPCHART &amp; BLENDED LEARNING)</b>
	<b>Program Studi Magister Teknik Elektro Fakultas Teknik Universitas Udayana</b>

1	Mata Kuliah	Nama	Kode	Bobot	Semester	Mata Kuliah Syarat
		Metodologi Penelitian	ETI - 4209	2 sks	I	Tidak ada
2	<b>Dosen Pengampu</b>	1. Ir. Linawati, MEngSc. PhD. (Koordinator) 2. Dr. IB Gede Manuaba, ST. MT. (Anggota)				
		Kantor : Sekretariat PSMTE, Gedung Pascasarjana, Kampus Sudirman Telp.: +6287862130599	Ruang Kelas: Gedung Pascasarjana, Universitas Udayana, Kampus Sudirman.			
3	<b>CPL yang Dibebankan</b>	S9	Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri			

	<b>pada Mata Kuliah</b>	<p>P8 Menguasai konsep metode ilmiah dan mengaplikasikannya dalam bentuk penelitian di bidang teknik elektro khususnya energi, teknik telekomunikasi, teknik komputer.</p> <p>K U1 Mampu mengembangkan pemikiran logis, kritis, sistematis, dan kreatif melalui penelitian ilmiah yang memperhatikan dan menerapkan nilai humaniora di bidang teknik elektro khususnya energi, teknik telekomunikasi, teknik komputer, menyusun hasil kajian berdasarkan kaidah, tata cara, dan etika ilmiah dalam bentuk tesis yang dipublikasikan tulisan dalam jurnal ilmiah yang terakreditasi;</p> <p>K U3 Mampu menyusun ide, hasil pemikiran dan argumen saintifik secara bertanggung jawab dan berdasarkan etika akademik</p> <p>K U7 Mampu meningkatkan kapasitas pembelajaran secara mandiri;</p> <p>K U8 mampu mendokumentasikan, menyimpan, mengamankan, dan menemukan kembali data hasil penelitian dalam rangka menjamin kesahihan dan mencegah plagiasi;</p> <p>K K3 Mampu mengidentifikasi, merumuskan, dan memecahkan masalah-masalah di bidang Teknik Elektro dan Komputer (Energi/Telekomunikasi/Sistem Informasi dan Komputer).</p> <p>K K4 Mampu mengembangkan dan memutakhirkan konsep-konsep baru dalam bidang Teknik Elektro dan Komputer.</p>
4	<b>Capaian Pembelajaran Mata Kuliah</b>	<p>Mahasiswa Setelah mengikuti mata kuliah Metodologi Penelitian (ETI-4209) akan:</p> <ul style="list-style-type: none"> <li>– Mampu menerapkan teori dan konsep tentang metode Ilmiah dan etika akademik,</li> <li>– Mampu menerapkan dengan baik prosedur pelaksanaan dan penulisan laporan penelitian dalam bentuk proposal sampai dengan tesis,</li> <li>– Mampu menyusun proposal penelitian dengan baik, atau</li> <li>– Mampu mendiseminasikan karya ilmiah dalam bentuk karya tulis untuk jurnal dan</li> </ul>

		prosiding.
5	<b>Bahan Kajian</b>	<ol style="list-style-type: none"> <li>1. Pendahuluan: Rencana Pembelajaran Semester</li> <li>2. Penelitian (Tujuan, Manfaat, Tipe, Indikator Penelitian yang baik)</li> <li>3. Teori dan Konsep Metode Ilmiah</li> <li>4. Etika Ilmiah dan Plagiarism</li> <li>5. Desain Penelitian</li> <li>6. Penyusunan Proposal Penelitian</li> <li>7. Analisa data penelitian</li> <li>8. Penyusunan Laporan Hasil Penelitian</li> <li>9. Publikasi dan Presentasi</li> </ol>
6	<b>Rencana Pembelajaran: Minggu ke 1 – Minggu ke 16</b>	

<b>Minggu I</b>					
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu menjelaskan CP mata kuliah dan cara pencapaiannya selama satu semester</i>				
Kriteria /Indikator Capaian	<i>Kedalaman pemahaman/ketepatan penjelasan</i>				
Bahan Kajian: Introduksi Mata Kuliah	<b><i>Teks</i></b>	<b><i>Slide (ppt)</i></b>	<b><i>Audio</i></b>	<b><i>Video</i></b>	<b><i>URL</i></b>
	<i>RPS, kontrak perkuliahan dan Instrumen assessment</i>	<i>RPS, kontrak perkuliahan dan Instrumen assessment</i>			

Metode Pembelajaran	<b>On-line</b>		<b>Face to Face</b>		
	<i>Belajar mandiri ( self- learning )Tugas terstruktur</i>		<i>Tanya jawab di kelas dan diskusi kelompok.</i>		
Beban Waktu Pembelajaran	<i>2 x 170 menit: 2 x 50 menit tatap muka; 2 x 50 menit belajar mandiri; 2 x 50 menit tugas terstruktur</i>				
Assesment Pembelajaran	Metode		Instrumen		Bobot Nilai
	On-line	F2F	On-line	F2F	
		<ul style="list-style-type: none"> <li>• <i>Observation (Q/A)</i></li> <li>• <i>Test Tulis</i></li> </ul>	<i>Rubrik holistik</i>	<i>Minute paper – end session</i>	5%
Pengalaman Belajar / Aktivitas Mahasiswa	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>Belajar berkelompok dan berdiskusi (interpersonal skills)</i></li> <li>• <i>Berdiskusi tentang RPS dan kontrak perkuliahan, dan rubric penilaian</i></li> </ul>				
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, LCD projector, dan alat tulis</i>				

<b>Minggu II dan III</b>					
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu menjelaskan konsep penelitian ilmiah serta penggunaannya. Mampu bekerja dalam tim (kelompok) dalam menyelesaikan tugas-tugas terstruktur maupun tugas dalam kelas.</i>				
Kriteria/Indikator Capaian	<i>Kemampuan Analisis/ketepatan membandingkan dan membedakan kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok</i>				
Bahan Kajian :	<b>Teks</b>	<b>Slide (ppt)</b>	<b>Audio</b>	<b>Video</b>	<b>URL</b>

<i>Konsep Penelitian Ilmiah</i>		<i>Research, Objectives of Research, Motives doing research, type of research, research approach, research method, research methodology, good research</i>		<i>Pengertian penelitian ilmiah, tipe penelitian, metode penelitian, dan metodologi penelitian</i>	<a href="https://www.thoughtco.com/introduction-to-the-scientific-method-2699437">https://www.thoughtco.com/introduction-to-the-scientific-method-2699437</a>  <a href="https://en.wikipedia.org/wiki/Scientific_method">https://en.wikipedia.org/wiki/Scientific_method</a>
Metode Pembelajaran	<b>On-line</b>			<b>Face to Face</b>	
	<ul style="list-style-type: none"> <li>• Belajar mandiri (<i>self-learning</i>) dari video</li> <li>• Tugas terstruktur: <i>Literature review</i></li> </ul>			<ul style="list-style-type: none"> <li>• Tanya Jawab materi, diskusi kelompok, dan presentasi mahasiswa</li> </ul>	
Beban Waktu Pembelajaran	2 x 2 x 170 menit : 2 x 2 x 50 menit (aktivitas dalam kelas); 2 x 2 x 60 menit belajar mandiri; 2 x 2 x 60 menit tugas terstruktur ( <i>literature review</i> )				
Asesmen Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<i>Literature Review (group work) Forum</i>	<i>Observasi (Q/A) Presentasi (group work)</i>	<i>Rubrik penilaian teman sejawat Rubrik analitik</i>	<i>Rubrik holistic</i>	5%
Pengalaman Belajar	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok dan berdiskusi (<i>interpersonal skills</i>) dalam kelas</li> </ul>				

Mahasiswa	<ul style="list-style-type: none"> <li>• Berlatih berpresentasi dalam kelas</li> <li>• Berlatih mengkaji literatur dan melaporkan hasilnya secara berkelompok</li> </ul>
Media Pembelajaran	<p>Pembelajaran di kelas: Komputer, LCD projector, dan alat tulis</p> <p>E-learning: perangkat komputer/gadget dan akses internet</p>

Minggu IV dan V			
Kemampuan Akhir Mahasiswa	Mahasiswa menguasai dan menerapkan etika ilmiah dan mampu mendeteksi unsur plagiarisme dalam suatu artikel serta menulis artikel tanpa unsur plagiarisme		
Kriteria / Indikator Capaian	Kemampuan analisis/ketepatan membandingkan dan membedakan kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok Tanggap kerja / tingkat ketepatan menggunakan aplikasi deteksi plagiarisme		
Bahan Kajian	<b>Kajian Literatur, Etika Ilmiah dan Plagiarisme:</b> teknik mengutip, mensitasi, paraphrase, standar kategori plagiat, cara mendeteksi plagiarisme, dan penggunaan aplikasi deteksi plagiarisme.		
Metode Pembelajaran	<ul style="list-style-type: none"> <li>• Tanya jawab dan diskusi kelompok</li> <li>• Belajar mandiri</li> <li>• Contoh mendeteksi plagiarisme dari artikel ilmiah</li> <li>• Praktik penggunaan Turnitin untuk pengecekan plagiarisme</li> </ul>		
Beban Waktu Pembelajaran	640 menit; 2 x 100 menit kerja kelas; 2 x 60 menit belajar mandiri; 2 x 60 menit tugas penulisan kajian literature (individu atau berkelompok); 200 menit demonstrasi dan praktik penggunaan turnitin atau aplikasi sejenis		
Asesmen	Metode	Instrumen	Bobot Nilai

Pembelajaran	<i>Observasi</i> <i>Unjuk kerja :</i> <i>Kerja kelompok,</i> <i>Riview plagiarism</i> <i>Praktik Penggunaan Aplikasi</i> <i>Praktik penulisan kajian literatur</i>	-	<i>Rubrik penilaian</i> <i>teman sejawat</i> <i>Rubrik analitik</i> <i>Rubrik holistic</i> <i>Kajian literature</i> <i>dan kajian</i> <i>kemutakhiran</i>	15%
Pengalaman Belajar Mahasiswa	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok dan berdiskusi (<i>interpersonal skills</i>) dalam kelas</li> <li>• Berlatih mereview adanya unsur plagiat pada suatu artikel ilmiah</li> <li>• Melakukan praktik penggunaan aplikasi untuk mendeteksi plagiat</li> <li>• Berlatih menulis kajian literature bebas dari plagiat</li> </ul>			
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, LCD projector dan alat tulis</i> <i>E-learning: perangkat computer/gadget dan akses internet</i>			

<b>Minggu VI, VII, VIII</b>	
Kemampuan Akhir Mahasiswa	<i>Menguasai <b>konsep</b> dan <b>mampu</b> menyusun proposal penelitian dengan baik</i>
Kriteria/indikator Capaian	<i>Kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok</i> <i>Kemampuan mengevaluasi/tingkat ketepatan argumentasi dalam critical review</i> <i>Kemampuan mengkreasi/tingkat kemampuan menyusun proposal</i>
Bahan Kajian	<i><b>Penyusunan Proposal Penelitian:</b> technique to define a research problem, concept of research design, tahapan susunan proposal penelitian dan tesis (writing thesis structure), writing approach of proposal / thesis, dan praktik penyusunan proposal.</i>
Metode	<ul style="list-style-type: none"> <li>• Pemaparan di kelas, diskusi kelompok dan presentasi</li> </ul>

Pembelajaran	<ul style="list-style-type: none"> <li>• Belajar mandiri (<i>self learning</i>)</li> <li>• <i>Critical Review</i> contoh proposal</li> <li>• <i>Kerja Kelompok</i> pembuatan proposal dan feedback</li> </ul>		
Beban Waktu Pembelajaran	3 x 2 x 170 menit; 3 x 2 x 50 menit ( <i>aktivitas kelas</i> ); 3 x 1 x 60 menit ( <i>belajar mandiri</i> ); 3 x 3 x 60 menit ( <i>tugas terstruktur critical review dan praktik pembuatan proposal</i> ).		
Assesment Pembelajaran	<b>Metode</b>	<b>Instrumen</b>	<b>Bobot Nilai</b>
	<i>Observasi</i> <i>Unjuk kerja :</i> <i>Kerja kelompok,</i> <i>Critical review</i> <i>Tugas pembuatan proposal dalam bentuk Table of Content</i> <i>Approach / Presentation</i> <i>Approach / Methodical</i> <i>Approach / Q&amp;A Approach</i> <i>Forum secara on-line</i>	<i>Rubrik penilaian teman sejawat</i> <i>Rubrik holistik</i> <i>Rubrik analitik</i> <i>Proposal Penelitian</i> <i>Online forum</i>	25%
Pengalaman Belajar Mahasiswa	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok, berdiskusi dan presentasi (<i>interpersonal skills</i>) dalam kelas</li> <li>• Berlatih mengkritisi contoh proposal secara berkelompok dan mempresentasikannya</li> <li>• Membuat proposal penelitian secara individu atau berkelompok melalui proses feedback dari fasilitator</li> </ul>		
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, LCD projector dan alat tulis</i> <i>E-learning: perangkat komputer/gadget dan akses internet</i>		

**Minggu IX, X, XI, XII, XIII**



Kemampuan Akhir Mahasiswa	<p>Menguasai <b>konsep</b> dan <b>mampu</b> menyusun laporan hasil penelitian dengan baik (seminar hasil / tesis)</p> <p>Menguasai konsep publikasi dan presentasi, dan mampu menulis karya ilmiah untuk jurnal atau prosiding konferensi.</p>		
Kriteria/indikator Capaian	<p>Kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok</p> <p>Kemampuan mengevaluasi/tingkat ketepatan argumentasi dalam critical review</p> <p>Kemampuan mengkreasi/tingkat kemampuan menulis karya ilmiah jurnal atau prosiding konferensi</p>		
Bahan Kajian	<p><b>Penulisan paper jurnal atau prosiding:</b> standar penulisan berdasarkan template editor / publisher / organisasi ilmiah seperti IEEE, indexing dan lembaga sitasi (Schimago Ranking, SCOPUS, Thomson Reuters, dll), impact factor, how to write references / bibliography, proses publikasi jurnal / konferensi (peer review / blind review/dll),</p> <p><b>Presentasi Oral dan Poster:</b> pembuatan poster, kriteria poster yang baik, kriteria slide presentasi yang baik, pembuatan slide presentasi, dan do &amp; don't teknik presentasi.</p>		
Metode Pembelajaran	<ul style="list-style-type: none"> <li>• Pemaparan dengan video, Tanya jawab di kelas, diskusi kelompok dan presentasi</li> <li>• Belajar mandiri (self learning)</li> <li>• Critical Review dengan contoh paper review topik</li> <li>• Kerja Kelompok penulisan artikel ilmiah jurnal dan feedback</li> </ul>		
Beban Waktu Pembelajaran	<p>3 x 2 x 170 menit; 3 x 2 x 50 menit (aktivitas kelas); 3 x 1 x 60 menit (belajar mandiri); 3 x 3 x 60 menit (tugas terstruktur critical review dan praktik penulisan artikel ilmiah).</p>		
Assesment Pembelajaran	<b>Metode</b>	<b>Instrumen</b>	<b>Bobot Nilai</b>
	<p>Observasi</p> <p>Unjuk kerja :</p> <p style="padding-left: 20px;">Kerja kelompok,</p> <p style="padding-left: 20px;">Critical review</p> <p style="padding-left: 20px;">Tugas pembuatan artikel</p>	<p>Rubrik penilaian teman sejawat</p> <p>Rubrik holistik</p> <p>Rubrik analitik</p>	25%

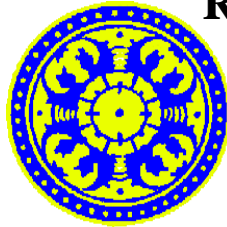
	<i>ilmiah Forum secara on-line</i>	<i>Draft Final Artikel Ilmiah jurnal Online forum</i>	
Pengalaman Belajar Mahasiswa	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok, berdiskusi dan presentasi (<i>interpersonal skills</i>) dalam kelas</li> <li>• Berlatih mengkritisi contoh artikel ilmiah secara berkelompok dan mempresentasikannya</li> <li>• Membuat artikel ilmiah secara individu atau berkelompok melalui proses feedback dari fasilitator</li> <li>• Final artikel ilmiah sudah disubmit pada jurnal paling lambat minggu XV (ada bukti submit dan artikel ilmiah atau acceptance letter dari jurnal)</li> </ul>		
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, LCD projector dan alat tulis E-learning: perangkat komputer/gadget dan akses internet</i>		

<b>Minggu XIV dan XV</b>	
Kemampuan Akhir Mahasiswa	<i>Mahasiswa <b>mampu</b> menerapkan metode pengumpulan data, teknik simulasi, dan statistik untuk menganalisa data penelitian.</i>
Kriteria/Indikator	<i>Kerjasama dalam tim /tingkat partisipasi dan kontribusi dalam kelompok Kemampuan mengevaluasi/tingkat ketepatan argumentasi dalam menganalisa data</i>
Bahan Kajian	<i><b>Metode Pengumpulan dan Analisa Data:</b> eksperimen, simulasi, statistic dasar, regresi, hipotesis, dan teknik sampling.</i>
Metode Pembelajaran	<ul style="list-style-type: none"> <li>• Pemaparan via video, diskusi kelompok dan Tanya-jawab (Q/A)</li> <li>• Belajar mandiri (<i>self learning</i>)</li> <li>• Kerja kelompok review contoh analisa data pada artikel ilmiah</li> </ul>
Beban Waktu	<i>2 x 2 x 170 menit: 2 x 2 x 50 menit (aktivitas kelas); 2 x 2 x 60 menit (belajar mandiri); 2 x 2</i>

Pembelajaran	<i>x 60 menit (tugas terstruktur berkelompok dan individu)</i>		
Assesment Pembelajaran	<b>Metode</b>	<b>Instrumen</b>	<b>Bobot Nilai</b>
	<i>Observasi Unjuk kerja : Kerja kelompok Tugas kelompok review artikel ilmiah (metode pengumpulan data, analisa data)</i>	<i>Daftar pertanyaan (Q/A) Rubrik penilaian teman sejawat, dan rubric holistik Hasil review (on- line)</i>	10%
Pengalaman Belajar Mahasiswa	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok, berdiskusi (<i>interpersonal skills</i>) dalam kelas</li> <li>• Berlatih mereview artikel ilmiah secara berkelompok dan mempresentasikannya.</li> <li>• Mengerjakan tes essay online</li> </ul>		
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, LCD projector dan alat tulis E-learning: perangkat komputer/gadget dan akses internet</i>		

<b>Minggu XVI Summative Test</b>	
Kemampuan Akhir Mahasiswa	<i>Mampu menulis artikel ilmiah, slide presentasi, dan poster ilmiah.</i>
Kriteria/Indikator	<i>Kemampuan menerapkan metode penelitian ilmiah dan mempublikasikan serta mempresentasikan dengan baik sesuai dengan etika ilmiah.</i>
Bahan Kajian	<i>Seluruh bahan kajian yang diberikan sebelumnya</i>
Metode	<i>Belajar mandiri dan Evaluasi pembelajaran</i>

Pembelajaran			
Beban Waktu Pembelajaran	<i>2 x 170 menit; 1 x 60 menit on-line submission (e-learning dengan Moodle Management learning system); 2 x 50 menit + 2 x 60 menit + 1 x 60 menit (belajar mandiri)</i>		
Assesment Pembelajaran	<b>Metode</b>	<b>Instrumen</b>	<b>Bobot Nilai</b>
	Test on-line	Essay (on-line)	15%
Pengalaman Belajar Mahasiswa	<i>Belajar mandiri Mengikuti ujian summative secara online</i>		
Media Pembelajaran	<i>E-learning: perangkat computer/gadget dan akses internet</i>		



## RENCANA PEMBELAJARAN SEMESTER (RPS)

### *Blended Learning*

**Program Studi Teknik Pertanian  
Fakultas Teknologi Pertanian  
Universitas Udayana**

1	Mata Kuliah	Nama	Kode	Bobot	Semester	Mata Kuliah Syarat
		Metode Ilmiah	FTP414	2 sks	IV	Tidak ada
2	Dosen Pengampu	3. Prof Ir. I Made Supartha Utama, MS., Ph.D. (Koordinator) 4. Prof. Dr. Ir. I Nyoman Sucipta, MP. (Anggota)				
		Kantor : UCDP Kampus Sudirman Kontak Telp : 08123604370			Ruang Kelas: Gedung JA, Kampus Bukit Jimbaran	
3	CPL yang Dibebankan pada Mata Kuliah Capaian Pembelajaran mata kuliah	Aj	Menguasai pengetahuan tentang sikap dan tata nilai			
Ba		Mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang keahliannya				
Bc		Mampu mengkaji implikasi pengembangan atau implementasi ilmu pengetahuan teknologi yang memperhatikan dan menerapkan nilai humaniora sesuai dengan keahliannya berdasarkan kaidah, tata cara dan etika ilmiah dalam rangka menghasilkan solusi, gagasan, desain atau				

			kritik seni, menyusun deskripsi saintifik hasil kajiannya dalam bentuk skripsi atau laporan tugas akhir, dan mengunggahnya dalam laman perguruan tinggi
		Cf	Mampu melakukan penelitian, mengeksplorasi, mengembangkan dan mengaplikasikan ipteks dalam bidang teknik pertanian dan biosistem
		Cg	Mampu mendesiminasikan karya ilmiah dibidangnya
		De	Menghargai keanekaragaman budaya, pandangan, agama, dan kepercayaan, serta pendapat atau temuan orisinal orang lain
		Dh	Menginternalisasi nilai, norma, dan etika akademik
		Di	Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri
		Keterangan: A=Penguasaan Pengetahuan; B=Keterampilan Kerja Umum; C=Keterampilan Kerja Khusus; D=Sikap.	
4		CPMK 1	Mampu menjelaskan tentang teori dan konsep metode ilmiah, serta etika akademik (Aj, Ba, Bc, Cf, Cg, De, Dh)
		CPMK 2	Mampu menjelaskan praktik baik penerapan metode ilmiah dan etika akademik dalam penulisan proposal dan pelaksanaan penelitian, serta menyusun karya tulis ilmiah (Aj, Ba, Bc, Cf, Cg, De, Dh)
		CPMK 3	Mampu menyusun karya tulis ilmiah untuk maksud diseminasi dalam forum ilmiah dan jurnal ilmiah (Ba, Cg, De, Dh, Di)
		CPMK 4	Mampu menyusun proposal penelitian dan mempresentasikan secara oral dengan baik (Ba, De, Dh, Di).
5	<b>Bahan Kajian</b>	10.Pendahuluan: Capaian Pembelajaran Lulusan (CPL), Capaian Pembelajaran Mata Kuliah (CPMK) dan Rencana Pembelajaran Semester (RPS). 11.Teori dan Konsep Metode Ilmiah 12.Etika Ilmiah dan Plagiarism 13.Penyusunan Proposal Penelitian	

	14. Penyusunan Laporan Hasil Penelitian 15. Pengendalian eksperimen 16. Penyusunan Artikel Ilmiah untuk Publikasi 17. Presentasi Oral: Penyusunan bahan presentasi ilmiah dan teknik penyajiannya
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<b>6</b>	<b>Rencana Pembelajaran</b>				
<b>Minggu I</b>					
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu menjelaskan CP Lulusan dan mata kuliah, dan cara pencapaiannya selama satu semester</i>				
Kriteria /Indikator Capaian	<i>Kedalaman pemahaman/ketepatan penjelasan</i>				
Bahan Kajian:	<i>Pendahuluan: Capaian Pembelajaran Lulusan (CPL), Capaian Pembelajaran Mata Kuliah (CPMK) dan Rencana Pembelajaran Semester (RPS).</i>				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>
	<i>RPS, kontrak perkuliahan dan Instrumen assessment</i>	<i>RPS Metode Ilmiah</i>		<i>RPS Metode Ilmiah</i>	
Bentuk dan Metode Pembelajaran	<i>On-line</i>			<i>F2F (aktivitas kelas)</i>	
	<i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya Tugas terstruktur: Penulisan essay</i>			<i>Tatap muka: Presentasi singkat dan diskusi mahasiswa</i>	
Beban Waktu Pembelajaran	<i>On-line</i>			<i>F2F (aktivitas kelas)</i>	
	<i>Belajar mandiri: 2 x 60 menit</i>			<i>Tatap Muka: 2 x 50 menit</i>	

	<i>Tugas terstruktur: 2 x 60 menit</i>				
Assesment Pembelajaran	<i>Metode</i>		<i>Instrumen</i>		<i>Bobot Nilai</i>
	<i>On-line</i>	<i>F2F</i>	<i>On-line</i>	<i>F2F</i>	
	<i>Tugas Essay</i>	<i>Test Tulis</i>	<i>Rubrik holistik</i>	<i>Minute paper – end session</i>	
Pengalaman Belajar / Aktivitas Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Berlatih menulis essay melalui assignment yang dikerjakan</li> </ul>		<ul style="list-style-type: none"> <li>• Belajar berkelompok dan berdiskusi</li> </ul>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>On-line: perangkat computer/gadget dan akses internet</i>		<i>Pembelajaran di kelas: Kompueter, head projector (in focus) dan alat tulis</i>		

<b>Minggu ke : II dan III</b>					
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu dengan baik menjelaskan teori, <b>konsep dan prosedur</b> Metode Ilmiah</i>				
Kriteria/Indikator Capaian	<i>Kemampuan Analisis/ketepatan membandingkan dan membedakan Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok</i>				
Bahan Kajian :	<i>Teori dan Konsep Metode Ilmiah</i>				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>



	<i>Science dan Scientific Methods</i>	<i>Metode Ilmiah 1</i> <i>Metode Ilmiah 2</i>		Metode ilmiah	<a href="https://www.thoughtco.com/introduction-to-the-scientific-method-2699437">https://www.thoughtco.com/introduction-to-the-scientific-method-2699437</a> <a href="https://en.wikipedia.org/wiki/Scientific_method">https://en.wikipedia.org/wiki/Scientific_method</a>
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li><i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya, dan self assessment</i></li> <li><i>Tugas terstruktur: Literature review</i></li> </ul>		<ul style="list-style-type: none"> <li><i>Pemaparan singkat, diskusi kelompok dan presentasi mahasiswa (pengembangan inter-personal skills)</i></li> </ul>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	Belajar mandiri: 2 x 2 x 60 menit Tugas terstruktur: 2 x 2 x 60 menit		Tatap muka: 2 x 2 x 50 menit		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<i>Literature Review (group work)</i> <i>Tes Quiz</i> <i>Forum</i>	<i>Observasi (Q/A)</i> <i>Presentasi (group work)</i>	<i>Rubrik penilaian teman sejawat</i> <i>Rubrik analitik</i> <i>Pilihan berganda</i>	<i>Rubrik holistic</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li><i>Belajar mandiri</i></li> <li><i>Berlatih mengkaji literature dan melaporkan hasilnya secara berkelompok</i></li> </ul>		<ul style="list-style-type: none"> <li><i>Berlatih berpresentasi dalam kelas</i></li> <li><i>Belajar berkelompok dan berdiskusi (interpersonal skills) dalam kelas</i></li> </ul>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		

	<i>On-line: perangkat computer/gadget dan akses internet</i>	<i>Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis</i>
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<b>Minggu ke: IV dan V</b>					
Kemampuan Akhir Mahasiswa	<i>Mampu menjelaskan konsep plagiarism dan mampu mendeteksi unsur plagiarism dalam suatu artikel serta menulis artikel tanpa unsur plagiarismme</i>				
Kriteria / Indikator Capaian	<b><i>Kemampuan analisis</i></b> /ketepatan membandingkan dan membedakan <b><i>Kerjasama dalam tim (Valuing)</i></b> /tingkat partisipasi dan kontribusi dalam kelompok <b><i>Tanggap kerja</i></b> / tingkat ketepatan menggunakan Turnitin untuk dteksi plagiarisme				
Bahan Kajian	<b><i>Plagiarism: Konsep dan cara mendeteksi plagiarism, paraphrase dan cara sitasi literature.</i></b>				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>
	<ul style="list-style-type: none"> <li>• <i>Undang-undang tentang plagiarism</i></li> <li>• <i>Plagiarism: what it is and how to avoid it</i></li> <li>• <i>Panduan penggunaan Turnitin.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pagiarisme dan bagaimana cara mencegahn ya</i></li> </ul>		<ul style="list-style-type: none"> <li><i>Pagiarisme dan bagaimana cara mencegahnya</i></li> </ul>	<ul style="list-style-type: none"> <li><a href="https://en.wikipedia.org/wiki/Plagiari sm">https://en.wikipedi a.org/wiki/Plagiari sm</a></li> <li><a href="https://www.youtube.com/watch?v=EF5eFeJMplA">https://www.youtub e.com/watch?v=EF5eFeJMplA</a></li> </ul>
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia</i></li> </ul>		<ul style="list-style-type: none"> <li>• <i>Aktivitas Kelas: Pemaparan singkat dan Diskusi kelompok</i></li> </ul>		

	<i>dan lainnya dan self assessment</i> • <i>Tugas terstruktur: Mereview plagiarisme suatu artikel ilmiah</i>	• <i>Praktik: Penggunaan Turnitin atau software lainnya untuk pengecekan plagiarisme</i>			
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	Belajar mandiri: 2 x 2 x 60 menit Tugas terstruktur: 2 x 2 x 60 menit		Aktivitas kelas dan demonstrasi: 2 x 2 x 50 menit		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<i>Kerja kelompok review plagiarism Tes Quiz dan Foru</i>	<i>Observasi Praktik Turnitin</i>	<i>Rubrik penilaian teman sejawat Rubrik analitik Pilihan berganda Online forum</i>	<i>Q/A dan minute paper – end session</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>Berlatih mereview adanya unsur plagiarism pada suatu artikel ilmiah</i></li> </ul>		<ul style="list-style-type: none"> <li>• <i>Belajar berkelompok dan berdiskusi (interpersonal skills) dalam kelas</i></li> <li>• <i>Melakukan praktik cara deteksi plagiarism menggunakan turnitin</i></li> </ul>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>On-line: perangkat computer/gadget dan akses internet</i>		<i>Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis</i>		

<b>Minggu ke: VI, VII dan VIII</b>					
Kemampuan Akhir Mahasiswa	<i>Menguasai <b>konsep</b> dan <b>mampu</b> menyusun proposal penelitian dengan baik</i>				
Kriteria/indikator Capaian	<i>Kemampuan mengkreasi/tingkat kemampuan menyusun proposal Kemampuan mengevaluasi/tingkat ketepatan argumentasi dalam critical review Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok</i>				
Bahan Kajian	<b>Penyusunan Proposal Penelitian:</b> Konsep dan tahapan logic susunan proposal penelitian serta praktik penyusunan proposal.				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>
	<i>Concept of Scientific Research</i>	<i>Penulisan laporan penelitian How to write a research proposal</i>		<i>Penyusunan Proposal Penelitian</i>	<i><a href="https://www.adelaide.edu.au/graduatecentre/forms/admission/docs/admission-research-proposal-template-guide.pdf">https://www.adelaide.edu.au/graduatecentre/forms/admission/docs/admission-research-proposal-template-guide.pdf</a></i>
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya dan self assessment</li> <li>• Tugas terstruktur: Kerja Kelompok pembuatan proposal dan feedback</li> </ul>		<ul style="list-style-type: none"> <li>• Aktivitas kelas: Pemaparan singkat; diskusi kelompok dan presentasi</li> </ul>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Belajar Mandiri : 3 x 2 x 60 menit (belajar mandiri)</i>		<i>Aktivitas kelas: 3 x 2 x 50 menit</i>		

	<i>Tugas terstruktur: 3 x 2 x 60 menit</i>				
Assesment Pembelajaran	Metode		Instrumen		Bobot Nilai
	On-line	F2F	On-line	F2F	
	<ul style="list-style-type: none"> <li>• <i>Self assessment dengan Tes Quiz</i></li> <li>• <i>Forum</i></li> <li>• <i>Tugas pembuatan proposal (group work)</i></li> </ul>	<i>Observasi Diskusi dan presentasikelompok</i>	<i>Pilihan berganda Online forum Rubrik penilaian teman sejawat Rubrik analitik</i>	<i>Q/A dan minute paper – end session</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>Berlatih mengkritisi contoh proposal secara berkelompok</i></li> <li>• <i>Membuat proposal penelitian secara berkelompok melalui proses feedback dari fasilitator</i></li> </ul>		<ul style="list-style-type: none"> <li>• <i>Belajar berkelompok dan berdiskusi (interpersonal skills)</i></li> <li>• <i>Presentasi oral secara berkelompok</i></li> </ul>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>On-line: perangkat computer/gadget dan akses internet</i>		<i>Pembelajaran di kelas: Kompuetr, head projector (in focus) dan alat tulis</i>		

**Minggu ke: IX: Summative Test**

Kemampuan Akhir	<i>Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator</i>
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Mahasiswa					
Kriteria/Indikator	<i>Kemampuan mengevaluasi/Ketepatan memilih dan membandingkan</i>				
Bahan Kajian	<i>Seluruh bahan kajian yang diberikan minggu sebelumnya</i>				
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<i>Belajar mandiri: Mempelajari / mereview bahan yang telah diberikan dari minggu 2-8</i> <i>Ujian online: Menjawab soal summative</i>		<i>Aktivitas kelas: diskusi kelompok dan Q/A</i>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Belajar mandiri: 3 x 60 menit</i> <i>Ujian online: 1 x 60 menit</i>		<i>Aktivitas kelas: 2 x 50 menit</i>		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<i>Test online</i>	<i>Observasi kelas dan Q/A</i>	<i>Soal pilihan bergand dan B/S,</i>		
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>ujian summative secara online</i></li> </ul>		<i>Diskusi kelompok</i>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Perangkat computer/gadget dan akses internet</i>		<i>Komputer/laptop, in focus</i>		

<b>Minggu ke: X</b>	
Kemampuan Akhir	<i>Mahasiswa mampu mensitasi literature dengan baik, menyusun struktur serta</i>

Mahasiswa	<i>mendeskripsikan isi suatu laporan penelitian yang baik</i>				
Kriteria/Indikator	<i>Kedalaman pemahaman/ketepatan menjelaskan atau mendeskripsikan, dan paraphrase</i>				
Bahan Kajian	<b>Penyusunan Laporan Hasil Penelitian: Struktur Penulisan dan Penggunaan Pustaka (cara sitasi dalam body text dan pembuatan Daftar Pustaka)</b>				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>
		<i>Cara mensitasi literatur</i>		<i>Rasionalisasi Struktur Penulisan Laporan Hasil Penelitian</i>	
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya dan self assessment</i></li> <li>• <i>Tugas terstruktur: Kerja Kelompok pembuatan kerangka dan deskripsi laporan penelitian</i></li> </ul>		<ul style="list-style-type: none"> <li>• <i>Aktivitas kelas: Diskusi kelompok</i></li> </ul>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<i>Belajar mandiri: 2 x 60 menit</i> <i>Tugas terstruktur: 2 x 60 menit</i>		<i>Aktivitas kelas: 2 x 50 menit</i>		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	• <i>Self assessment dengan Tes</i>		<i>Observasi kelas Dan Q/A</i>	<i>Pilihan berganda Online forum</i>	<i>Lembar pertanya</i>

	<i>Quiz</i> <ul style="list-style-type: none"> <li>• <i>Tugas pembuatan struktur dan deskripsi laporan penelitian (group work)</i></li> </ul>		<i>Rubrik penilaian teman sejawat dan Rubrik analitik</i>	<i>an</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>Melaksanakan tugas terstruktur</i></li> </ul>		<i>Diskusi kelompok</i>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Perangkat computer/gadget dan akses internet</i>		<i>Komputer/laptop, in focus</i>		

<b>Minggu ke: XI</b>					
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu menjelaskan dengan baik pengendalian suatu eksperimen dalam pengujian hipotesis</i>				
Kriteria/Indikator	<i>Kedalaman pemahaman/ketepatan penjelasan</i>				
Bahan Kajian	<b><i>Pengendalian Eksperimen</i></b>				
	<i>Sumber Pembelajaran on-line</i>				
	<i>Teks</i>	<i>Slide (ppt)</i>	<i>Audio</i>	<i>Video</i>	<i>URL</i>
	<i>Pengendalian eksperimen untuk</i>	<i>Pengendalian eksperimen dalam</i>		<i>Pengendalian Experiment</i>	



	<i>mengurangi variabilitas luar</i>	<i>pengujian hipotesis</i>			
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<ul style="list-style-type: none"> <li><i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya dan self assessment</i></li> <li><i>Tugas terstruktur: Kerja Kelompok membuat ringkasan tentang pengendalian eksperimen</i></li> </ul>		<ul style="list-style-type: none"> <li><i>Aktivitas kelas: Diskusi kelompok dan Presentasi singkat</i></li> </ul>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<i>Belajar mandiri: 2 x 60 menit</i> <i>Tugas terstruktur: 2 x 60 menit</i>		<i>Aktivitas kelas: 2 x 50 menit</i>		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<ul style="list-style-type: none"> <li><i>Self assessment dengan Tes Quiz</i></li> <li><i>Tugas pembuatan ringkasan pengendalian eksperimen (group work)</i></li> </ul>	<i>Observasi kelas Dan Q/A</i>	<i>Pilihan berganda Online Rubrik holistik</i>	<i>Lembar pertanyaan</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li><i>Belajar mandiri</i></li> </ul>		<i>Diskusi kelompok</i>		

	<ul style="list-style-type: none"> <li>• <i>Melaksanakan tugas terstruktur</i></li> </ul>	
Media Pembelajaran	<i>On-line</i>	<i>F2F (aktivitas kelas)</i>
	<i>Perangkat computer/gadget dan akses internet</i>	<i>Komputer/laptop, in focus</i>

<b>Minggu ke: XII dan XIII</b>				
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu melakukan assessment (critical review) dengan baik tulisan suatu artikel ilmiah.</i>			
Kriteria/Indikator	<i>Kemampuan mengevaluasi/tingkat ketepatan argumentasi dalam mereview artikel Kerjasama dalam tim (Valuing)/tingkat partisipasi dan kontribusi dalam kelompok</i>			
Bahan Kajian	<b><i>Penyusunan artikel ilmiah dan publikasi</i></b>			
	<b><i>Teks</i></b>	<b><i>Slide ppt</i></b>	<b><i>Video</i></b>	<b><i>URL</i></b>
	<i>Bagaimana Mempublikasikan artikel ilmiah</i>	<i>How to write a scientific article</i>	<i>Writing a scientific article</i>	
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F</i>	
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya dan self assessment</i></li> <li>• <i>Tugas terstruktur: Mereview secara kritis mutu suatu artikel ilmiah</i></li> </ul>		<ul style="list-style-type: none"> <li>• <i>Aktivitas kelas: Diskusi kelompok</i></li> </ul>	
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F</i>	
	<i>Belajar mandiri: 2 x 2 x 60 menit</i> <i>Tugas terstruktur: 2 x 2 x 60 menit</i>		<i>Aktivitas kelas: 2 x 2 x 50 menit</i>	

	Metode		Instrumen		Bobot Nilai
	On-line	F2F	On-line	F2F	
Assesment Pembelajaran	<ul style="list-style-type: none"> <li>• <i>Self assessment dengan Tes Quiz</i></li> <li>• <i>Tugas review suatu artikel ilmiah</i></li> </ul>	<i>Observasi kelas Dan Q/A</i>	<i>Pilihan berganda</i> <i>Online forum</i> <i>Rubrik penilaian teman sejawat dan</i> <i>Rubrik analitik</i>	<i>Lembar pertanyaan</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>Melaksanakan tugas terstruktur</i></li> </ul>		<i>Diskusi kelompok</i>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Perangkat computer/gadget dan akses internet</i>		<i>Komputer/laptop, in focus</i>		

Minggu ke: XIV dan XV	
Kemampuan Akhir Mahasiswa	<i>Mahasiswa mampu menjelaskan teknis penyusunan bahan presentasi ilmiah serta melaksanakan presentasi ilmiah secara oral dengan baik</i>
Kriteria/Indikator	<i>Kemampuan kreasi / rancangan bahan presentasi terstruktur (relevan, logic dan rasional) dengan baik</i>

	<i>Kemampuan menyajikan / mampu berkomunikasi dalam menyajikan bahan presentasi dengan baik</i>				
Bahan Kajian	<b>Presentasi Oral: Penyusunan bahan presentasi ilmiah dan teknik penyajiannya</b>				
	<b>Teks</b>	<b>Slide ppt</b>	<b>Video</b>	<b>URL</b>	
	<i>Designing Science Presentations: A Visual Guide to Figures, Papers, Slides, Posters, and More.</i>	<i>Presentasi ilmiah secara efektif</i>	<i>Menyusun Bahan Presentasi ppt</i>		
Bentuk dan Metode Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<ul style="list-style-type: none"> <li><i>Belajar mandiri: Mempelajari bahan pembelajaran tersedia dan lainnya dan self assessment</i></li> <li><i>Tugas terstruktur: Menyusun bahan presentasi ilmiah ppt</i></li> </ul>		<ul style="list-style-type: none"> <li><i>Aktivitas kelas: Presentasi singkat, Diskusi dan presentasi kelompok</i></li> </ul>		
Beban Waktu Pembelajaran	<i>On-line</i>		<i>F2F</i>		
	<i>Belajar mandiri: 2 x 2 x 60 menit</i> <i>Tugas terstruktur: 2 x 2 x 60 menit</i>		<i>Aktivitas kelas: 2 x 2 x 50 menit</i>		
Assesment Pembelajaran	<b>Metode</b>		<b>Instrumen</b>		<b>Bobot Nilai</b>
	<b>On-line</b>	<b>F2F</b>	<b>On-line</b>	<b>F2F</b>	
	<ul style="list-style-type: none"> <li><i>Self assessment dengan Tes Quiz</i></li> <li><i>Tugas pembuatan</i></li> </ul>	<i>Observasi kelas Dan Q/A</i>	<i>Pilihan berganda Rubrik penilaian teman sejawat dan</i>	<i>Lembar pertanyaan</i>	

	<i>bahan presentasi ilmiah (ppt)</i>		<i>Rubrik analitik</i>		
Pengalaman Belajar Mahasiswa	<ul style="list-style-type: none"> <li>• Belajar mandiri</li> <li>• Belajar berkelompok, berdiskusi (<i>interpersonal skills</i>) dalam kelas</li> <li>• Berlatih membuat poster ilmiah secara berkelompok dan mempresentasikannya.</li> <li>• Mengerjakan tes quiz online</li> </ul>				
Media Pembelajaran	<i>Pembelajaran di kelas: Komputer, head projector (in focus) dan alat tulis</i> <i>E-learning: perangkat computer/gadget dan akses internet</i>				

<b>Minggu XVI: Summative Test</b>			
Kemampuan Akhir Mahasiswa	<i>Mampu menjawab/menjelaskan pertanyaan tertulis dari fasilitator</i>		
Kriteria/Indikator	<i>Kemampuan mengevaluasi/Ketepatan memilih dan membandingkan</i>		
Bahan Kajian	<i>Seluruh bahan kajian yang diberikan minggu sebelumnya</i>		
Bentuk dan Metode Pembelajaran	<i>On-line</i>	<i>F2F</i>	
	<i>Belajar mandiri: Mempelajari / mereview bahan yang telah diberikan dari minggu ke 10-15</i> <i>Ujian online: Menjawab soal summative</i>	<i>Aktivitas kelas: diskusi kelompok dan Q/A</i>	
Beban Waktu Pembelajaran	<i>On-line</i>	<i>F2F (aktivitas kelas)</i>	
	<i>Belajar mandiri: 3 x 60 menit</i> <i>Ujian online: 1 x 60 menit</i>	<i>Aktivitas kelas: 2 x 50 menit</i>	
<b>Assesment</b>	<b>Metode</b>	<b>Instrumen</b>	<b>Bobot Nilai</b>

Pembelajaran	On-line	F2F	On-line	F2F	
		<i>Test online</i>	<i>Observasi kelas dan Q/A</i>	<i>Soal pilihan bergand dan B/S,</i>	
Pengalaman Belajar Mahasiswa	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<ul style="list-style-type: none"> <li>• <i>Belajar mandiri</i></li> <li>• <i>ujian summative secara online</i></li> </ul>		<i>Diskusi kelompok</i>		
Media Pembelajaran	<i>On-line</i>		<i>F2F (aktivitas kelas)</i>		
	<i>Perangkat computer/gadget dan akses internet</i>		<i>Komputer/laptop, in focus</i>		

## APPENDIX 8. ELEARNING IN KUMAMOTO UNIVERSITY

Slide 1

# Campus-wide e-Learning at Kumamoto University - Challenges over 2 decades -

Tsuyoshi Usagawa, Dr. Eng.

Prof. Computer Science and Electrical Engineering,

Dean of Faculty of Engineering,

Dean of Graduate School of Advanced Science and Technology,

Kumamoto University, JAPAN

14<sup>th</sup> August, 2018 @ Udayana University, Denpasar, Indonesia

Slide 2

## Overview

- Overview of Kumamoto University's IT environment
- Campus Wide e-Learning
- Graduate School for *Instructional Systems*
  
- Concluding remarks

Slide 3

## Overview of Kumamoto University (KU)

- One of major national universities in Japan with 7 faculties & graduate schools, 9,000 students including graduate ones, 1,000 teaching staffs, 3,000 administrative, technical and medical staffs.
- Origins of each Faculties were more than 100 years ago. Faculty of Engineering celebrated the 120<sup>th</sup> anniversary in 2017.



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Slide 4

## Faculties and Schools

- Undergraduate Programs: Letters, Law Education Science, Engineering Medicine, Pharmacy
- Graduate Programs: Social & Cultural Sciences Education Science & Technology Life Science
- Faculty of Engineering
  - 4 Departments & 12 Education Programs
  - 1) Civil and Environmental Eng. and Architecture
  - 2) Mechanical and Mathematical Eng.
  - 3) Computer Science and Electrical Eng.
  - 4) Materials Science and Applied Chemistry

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## Slide 5

### Difficulties to deliver the IT lecture

- Topics to be lectured were interdisciplinary; from technical issue to legal and moral issue.
- Available lecturers were very limited because of newer topics.
- Facilities for education were not so well organized.



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## Slide 6

### Background for IT literacy education

- KU published “Standard Text Book” in IT literacy in 1997 to standardize the lecture including those topics;
  - Re
  - Tr
- Series revised one published with CD-ROM including Web-base Quiz.

**Topics lectured were not standardized because the common conscious for IT literacy of lecturers were not established.**



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## Slide 7

### Current state of campus wide IT literacy education

- CMIT (Center for Multimedia and Info. Tech.) was established for campus-wide
  - Network operation
  - **IT literacy education**
- Faculties and Staffs
  - **10 faculties:** 1 Director, 3 Professors, 3 Assoc. Prof, 3 Assist. Prof.
  - 3 technical staffs, 3 admin. staffs, and 5 special staffs for e-Learning

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## Slide 8

### Topics of IT literacy

#### Target:

to allow **all of 1800 fresh students** to use Internet (information high-way) on campus

#### Topics:

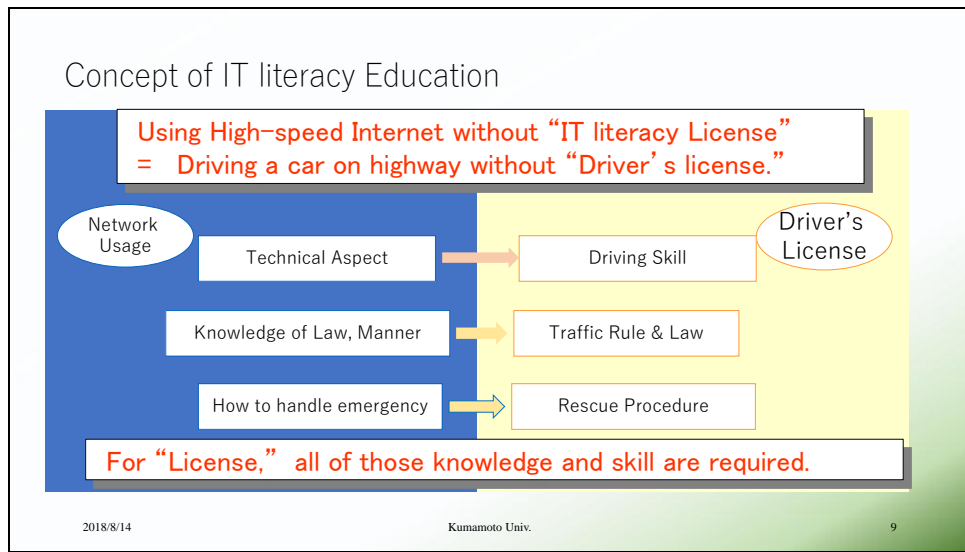
selected based on the **Analogy** with Driver's license.

2018/8/14

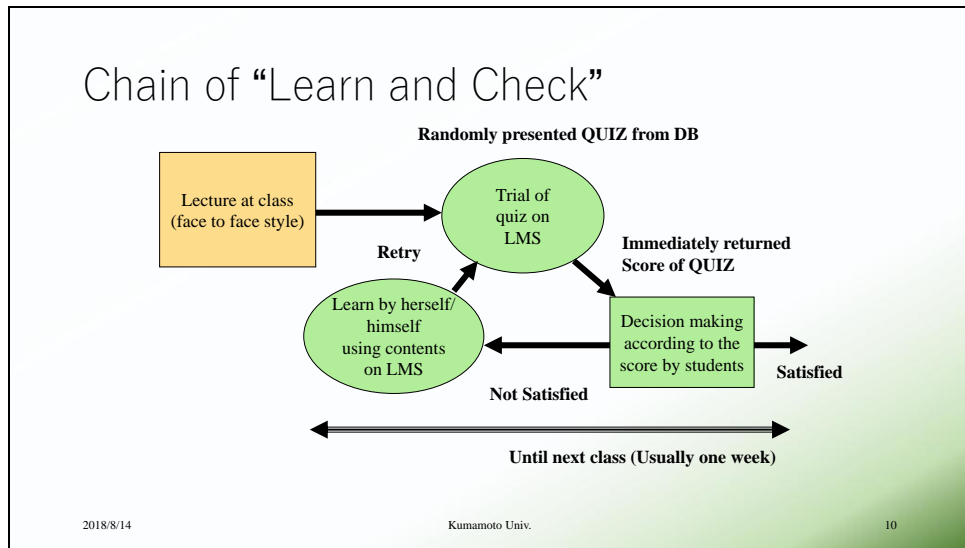
Kumamoto Univ.

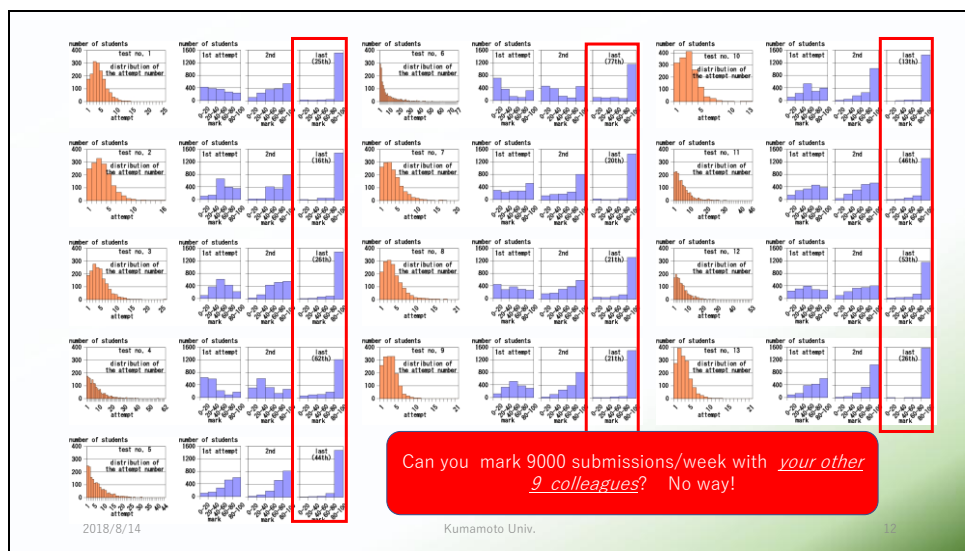
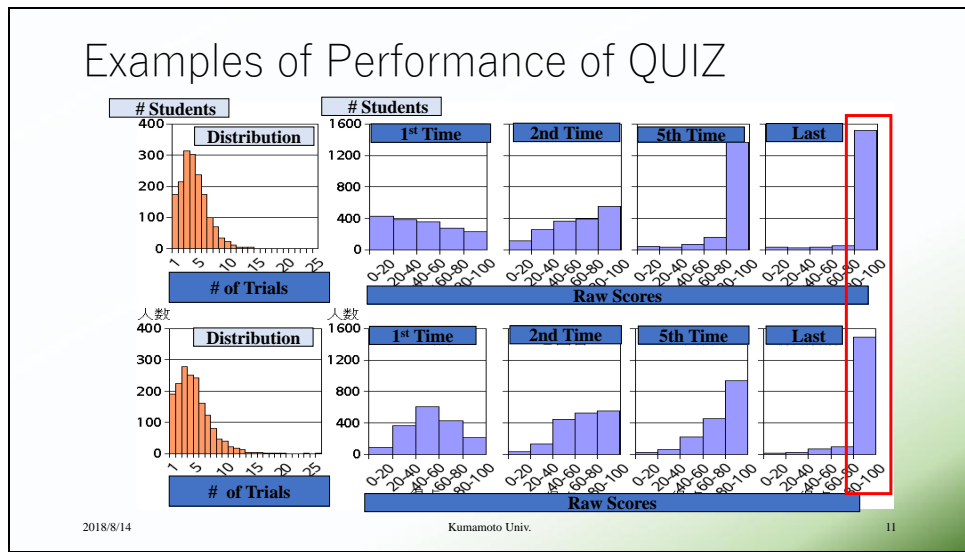
8

Slide 9



Slide 10





## Slide 13

### Review of IT literacy course on e-Learning

- “Blended Learning”  
Preparation and Review (Home work) on e-Learning while the course is delivered by weekly face-to-face class.  
We can monitor how long students study at home.
- Online QUIZ was the key to give a proper feedback to students.  
Not only quality of Quiz, but good feedback to students who failed.
- We need a professional in the field of “Instructional Design,” there are very few and there are no graduate programs in Japan as on 2004.  
Why not Kumamoto University?  
Graduate School established in 2006 (S2) and 2008(S3).

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## Slide 14

### Collaboration of LMS with SIS & others

- LMS (**Learning Management System**)  
collaborates with  
SIS (**school information system**)  
since beginning in term of students' registration.
- Since 2004, KU integrates various systems such as  
syllabus system  
&  
e-portfolio.

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Slide 15

Current Syllabus System: <http://syllabus.kumamoto-u.ac.jp/>

Kumamoto University Syllabus System

Kumamoto University Syllabus provides syllabus information to those who are interested in enrolling and to the general public. Narrow-down search from keyword search are available.

Using the Kumamoto University Syllabus information for another use without permission is prohibited.

Academic Year: 2017 Faculty Offering Course: Faculty of Engineering

Semester Course Available: autumn Course Title: Digital Signal Processing

Course Registration Code: Instructor(s):

Keywords: Maximum number of lines: 100

Search

\*If there is no syllabus in English when you click some course title, the syllabus in Japanese will be displayed.

Show 25 entries

Showing 1 to 3 of 3 entries

No.	Academic Year	Faculty Offering Course	Course-registration code	Semester Course Available	Course Title	Instructor(s)
1	2017	Faculty of Engineering	66410	autumn	Digital Signal Processing I	Ogata Kouichi
2	2017	Faculty of Engineering	66411	autumn	Digital Signal Processing I	USAGAWA Tsuyoshi
3	2017	Faculty of Engineering	69120	autumn	Digital Signal Processing I	Ogata Kouichi

Showing 1 to 3 of 3 entries

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- Put query
- Push HERE
- Get results
- Two lectures deviere the same course.

Slide 16

Kumamoto Univ. Details for Individual Classes

Course Title: デジタル信号処理第一 (jpn.) / Digital Signal Processing I  
As to the blanks, please refer to the Japanese version.

Basic Information

Course Coding: 2017 autumn

Year and Semester: 2017 autumn

Instructor(s): USAGAWA Tsuyoshi

Elective/Computory

Faculty Offering Course: Faculty of Engineering (25)

Goals with their ratio

1. Broad and Deep General Education with Autonomous Learning
2. Excellent Academic/Professional Knowledge and Skills
3. Creative Intelligence
4. Willingness to Contribute to Society
5. Global Perspectives Equipped with Foreign Language Competen
6. Efficient Use of Information and Communications Technology
7. Solid Basic Knowledge and Skills for Research and Work

Detailed Information

Detailed Course Title: Japanese

Language Used In Instruction: Japanese

Textbook/Material Language: Japanese

Type of Class: Lecture

Teaching Method: Face to face lecturing with self learning based or Although all of "signals" such as sound, speech accuracy and high robustness against noise if the understand the fundamental theorems of digital : definitions and characteristics of various issues s; Transform, and so on. Also based on those fund

Course Goals: In "Digital Signal Processing 1," you will study the processing system, Z transformation, transfer function, and so on. Objectives of the course:

Keywords: Digital signal processing, Sampling theorem, Z transformation, FFT, Windowing function, Spectrum

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Scheduled Class

Scheduled Class	Theme of Course	Brief Outline of Course
1	1. What is "digital signal processing" and what is the multimedia signal processing.	Abstract images of Analogue to Digital conversion, the mathematical expression of digital signal, and the multimedia signal expression and processing are provided.
2	Signal processing system 1	We will discuss about Mathematical expression of signal processing system and usage of complex values.
3	Signal processing system 2; LTI system, convolution	Linear Time Invariant (LTI) system and the convolution in time domain will be introduced. Fundamentals of invarity and time-invariant characteristics will be understood first, then meaning and method of convolution will be discussed.
4	Signal processing system 3	Terms such as "System Structure", "Recursive System," "Non-recursive System," "Finite Impulse Response (FIR) System" and "Infinite Impulse Response (IIR) System" will be introduced with their definitions. After you learn the differential system, you will learn the Stability and Causality of the system.
5	Z transformation and transfer function of system 1	One of the most fundamental mathematical tool to discuss the digital signal processing is "Z Transformation." You will learn the definition and basic Characteristics of Z Transformation.
6	Z transformation and transfer function of system 2; Poles and zeros of transfer function, inverse Z transformation	Transfer function expressed by Z Transformation, and poles and zeros of transfer function will be discussed. You will also learn the stability analysis of Transfer function. Also we will discuss the inverse Z Transformation.
7	Z transformation and transfer function of system 3; Frequency characteristics	Fundamentals of Frequency Characteristics will be lectured for various type of systems based on the transfer function. Also the relationship between Frequency Characteristics and Transfer function will be discussed.
8	Frequency analysis of signal 1: analysis of periodic signal, Fourier series	Fourier series used for the analysis of periodic time domain signal will be detailed. You will learn the method of calculation of Fourier series as well as characteristics of obtained Spectrum.
9	Frequency analysis of signal 2: analysis of non periodic signal, Fourier transformation	Non periodic time domain signal can be analyzed by means of Fourier Transformation. You will learn the method of calculation of Fourier transformation as well as characteristics of obtained Spectrum.
10	Frequency analysis of signal and the sampling theorem	Characteristics of Discrete Time Fourier Transformation (DTFT) as well as Sampling Theorem will be discussed. You will understand the necessary condition of the sampling frequency setting.
11	Fast Fourier transformation and windowing function 1; FFT	Fast Fourier transformation (FFT) is the most suitable Fourier transformation for digital computer. You will learn the definition and details of FFT.
12	Fast Fourier transformation and windowing function 2; Windowing	In actual situation the windowing function is necessary to extract the target sample series for frequency analysis. You will learn the type of windowing functions and characteristics of them. You would be ask to work on quiz to confirm your understanding until class #12, and you would ask you review by yourself.
13	Interim review of previous classes including interim evaluation	Periodicity of signal can be analyzed by means of correlation function, and we will discuss the relationship between correlation functions and spectra.
14	Spectrum Analysis; Correlation function, power spectrum and cross spectrum	As the conclusion of this course, digital signal processing in the field of Multimedia information processing will be reviewed as well as the concrete understanding of Z transformation will be discussed again.
15	Review of digital signal processing in the field of Multimedia information processing.	

Books/Materials: Kiyu, "Digital Signal Processing," Shoukou-dou (In Japanese)  
Steven W. Smith, "Digital Signal Processing - A practical guide for Engineers and Scientists," Newnes An imprint of Elsevier, 2003

Slide 17

## Example of e-Learning lecturing

- “Digital Signal Processing I “
  - Fall semester (-2017) , Term 4 (2018-)  
Compulsory for Sophomore students of  
Department of Computer Science and Electrical Engineering
  - Two separate classes, each class has about 100 students,  
are delivered by **Two professors**.
- Two classes use  
the same Syllabus, Contents, Textbooks and  
the same criteria of evaluation,  
in order to **keep “equivalence of credits”** of this course.

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Slide 18

## Example of Contents: Sampling Theorem



Can you see the change  
of rotation direction;  
Counter-Clock wise  
Clock-wise  
then  
Counter-Clock wise

This video is used to  
post the query at the  
beginning of class.

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Slide 19

### Example of every-week QUIZ

Determine the output signal of the LTI (linear-time invariant) system whose impulse response is given as  $h(n) = 2\delta(n) + 5\delta(n-1) + 5\delta(n-2) + 2\delta(n-3)$  when the input sequence  $x(n) = 4\delta(n) + 1\delta(n-1) + 3\delta(n-2) + 5\delta(n-3)$  is fed into the system.

Give the value of the output signal at  $n=3$  to one decimal place.

Answer:

There are 20 sets of numbers marked as so that students need to calculate every try.

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Slide 20

### Status of actual trials

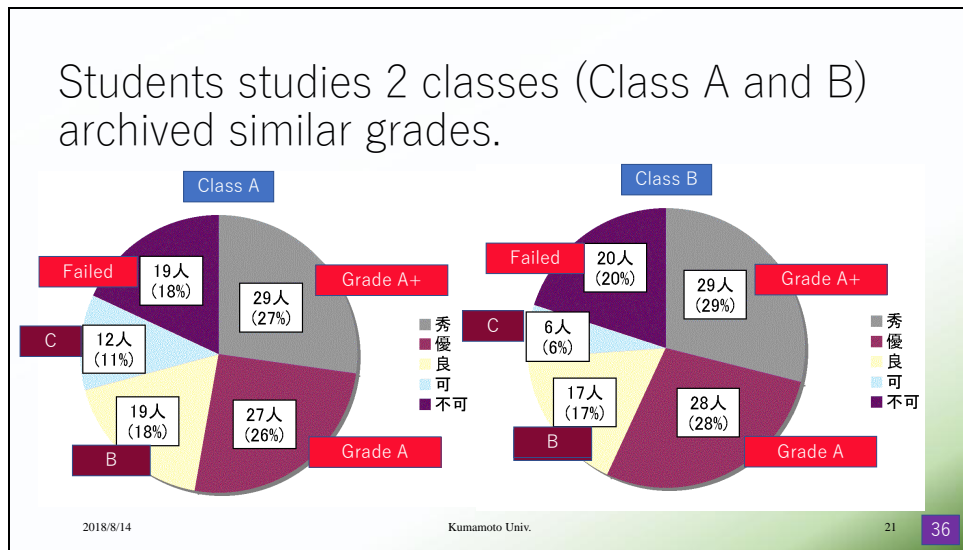
100	1. 2009年11月16 探点済み 12.495 00:07:52 日 15:42
	2. 2009年11月16 探点済み 96.43 00:49:47 日 18:59
	3. 2009年11月16 探点済み 100 00:03:09 日 19:10
	探点済み 8.34 00:32:58
	探点済み 100 00:03:22
	探点済み 45.835 00:29:36
	探点済み 100 00:05:01
100	1. 2009年11月18 探点済み 53.57 00:34:32 日 17:21
	2. 2009年11月18 探点済み 96.43 00:02:04 日 17:28
	3. 2009年11月18 探点済み 100 00:01:58 日 17:35
100	1. 2009年11月24 探点済み 82.14 01:35:01

First : Point is 12  
Second: 96  
Last: 100  
Total duration is 1 hours.

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Slide 21



Slide 22

System integration helps us at Earth Quake in April 14-16, 2016

- 21:26 on April 14, 2016 : M 6.5  
We checked students' condition mainly by phone and SNS.
- 01:25 on April 16, 2016: M 7.3  
Offices are closed by damage.  
We build "Safety Confirmation System" using single-sign-on subsystem.

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Slide 23

安全確認状況 / your posted safety information

自分の入力した安全確認情報の履歴です。表示されない場合はこのページを再読み込みしてください。大学等から返事がある場合は、併せて表示されます。また、安全情報の登録は、[こちら](#)からお願いします。  
The following table shows history of your posts of safety confirmation. Please use reload button for updating the information. If University replied, the answers will be shown. For sending your safety confirmation, please use [this page](#).

Show  entries

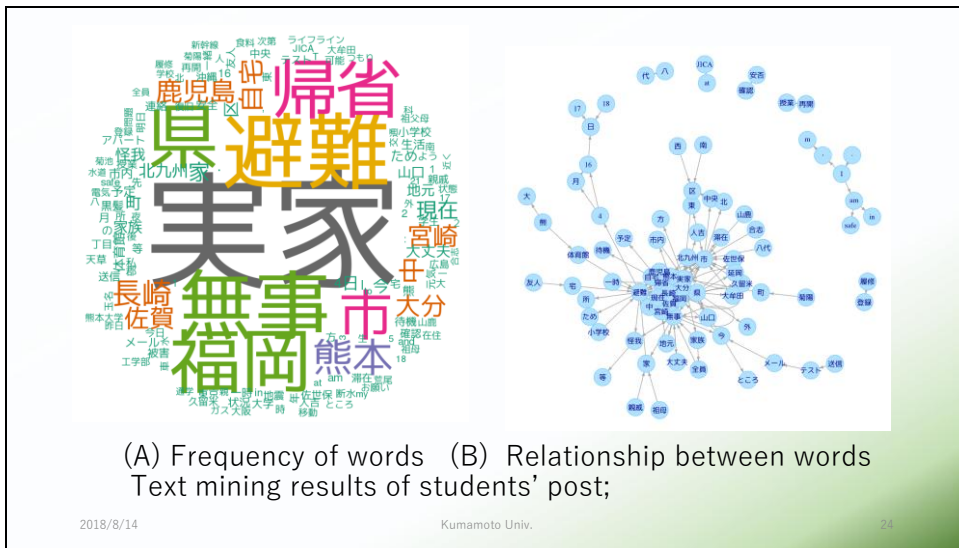
学生番号 ID	姓 surname	名 name	所属 affil.	アクセス時刻 posted	コメント comment	返事(あれば) reply (if exist)	返事時刻 date of reply
[Redacted]	[Redacted]	[Redacted]	工学部	2016/04/16	から大学に迎っていました。家が壊れてしまい、生活の目処が立っておりませ v。	まずは家族の安全の確保をしてください。大学からの連絡は熊大のHPを。水などの情報は <a href="https://docs.google.com/document/d/[Redacted]">https://docs.google.com/document/d/[Redacted]</a> が有用です。	2016/04/19 11:37:15

Showing 1 of 1 entries

Provide by Prof. Nakano@CMIT, KU

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Slide 24



## Slide 25

### LMS : big data for Learning Analytics

- Digital Signal Process I
  - more than 80k access log on Moodle per year.
- Current trials of our lab
  - “Mining educational data to predict academic dropouts: a case study in blended learning course” will be presented TENCON2018.
  - <Still trial level but I will wish to have a system to assist me to provide the caution to at-risk students.>

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## Slide 26

### Small PR of S2-S3 program of KU

- Criteria of MEXT scholarship
  - GPA  $\geq 2.3 / 3.0$  (Conversion table is given on web.)
  - English Official Score issued within 2 years at application
    - TOEFL  $\geq 550$ , IELTS  $\geq 6.0$ , TOEICE  $\geq 730$
- Application Procedure
  - 1) Seek prospect professor
  - 2) Send the application documents (GPA, English and research plan/interests)
  - 3) Interview can be done without coming to Kumamoto.  
You can take an interview by e-mail, video conference, video chatting and face-to-face meeting on campus.

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Slide 27

The screenshot shows the Kumamoto University website's Admissions page. A blue callout box highlights the 'International Joint Education Program for Science and Technology (IJEP) (teaching language is English)' section. The page content includes:

- Regular Program (teaching language is mainly Japanese)**
  - Time of enrollment:** April 1 (Master and Doctor), October 1 (Doctor)
  - Entrance exam:** Applicants have to take the entrance exam in August for both April and October enrollment. Exam for international students can be given in February for April enrollment need special considerations.
- International Joint Education Program for Science and Technology (IJEP) (teaching language is English)**
  - Time of enrollment:** April 1 (Master and Doctor), October 1 (Master and Doctor)
  - Application information and forms:** \*APPLICANTS ARE REQUESTED TO FIND A PROSPECTIVE SUPERVISOR BEFORE APPLICATION.

Below the callout box, the URL <https://www.fast.kumamoto-u.ac.jp/gsst-en/admissions/> is displayed. The footer contains the date 2018/8/14, the text 'Kumamoto Univ.', and the page number 27.

Slide 28

Thank you for your kind attention.

Terima kasih untuk perhatian anda.

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Slide 29

Contents of IT literacy textbook published in 1997.

1	Information Society and Law
2	Introduction of Computer Science
3	Basic Operations: Windows/Macintosh/Unix
4	Input of Japanese Characters
5	Network System
6	Usage of World Wide Web
7	Usage of e-Mail
8	Usage of Net News
9	Usage of Database
10	Information Society and Security

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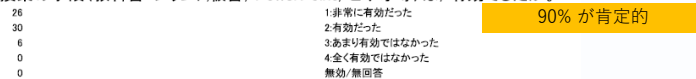
Kumamoto Univ.

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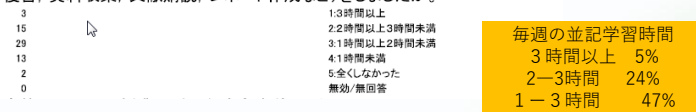
Slide 30

講義後の学生アンケートの結果

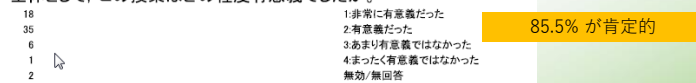
3. 授業の手段(教科書・プリント・板書, PowerPoint, ビデオ等)は、有効でしたか。



7. 大学の授業単位は、授業時間の2倍の時間外学習を前提として、取得できること。あなたは、この授業について1週間あたり平均して、どの程度、授業時間外復習、資料収集、文献購読、レポート作成などをしましたか。



8. 全体として、この授業はどの程度有意義でしたか。



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## APPENDIX 9. KEYNOTE SPEAKER

### Invitation Letter



Ref.: IEEE WIECON-ECE 2018/Confirmation  
15 November 2018

Dear Sir or Madam:


On behalf of the committee of Institute of Electrical and Electronics Engineers (IEEE) International Women in Engineering (WIE) Conference on Electrical and Computer Engineering 2018 (IEEE WIECON-ECE 2018), it is my pleasure to inform you that Assoc. Prof. Dr. Ir.Linawati is invited to give a keynote speech on “**How Digital Learning Change Education**”

The IEEE WIECON-ECE 2018 will be held on 14-16 Dec. 2018 at Dusit Thani Pattaya Hotel, Chonburi, Thailand. We know that our attendees and delegates will gain much from her knowledge and expertise sharing on topic “How Digital Learning Change Education”.

The IEEE WIECON-ECE 2018 features world-class keynote talks, oral sessions, and special sessions. Our goal is to bring together leading researchers and professionals working in academia, industry and research organizations to exchange and share their experiences and research results on all aspects of Electrical Engineering and Computer Science.

As a keynote, the conference will provide her accommodation and registration. If you need further information, please feel free to contact me by sending email to [sying.thai@gmail.com](mailto:sying.thai@gmail.com)

We would appreciate if you could kindly grant her permission and funds for her to make the trip. Thank you for your kind considerations.

Sincerely Yours,  
  
Somying Thainimit, Assc. Prof., Ph.D.  
General Chair, IEEE WIECON-ECE 2018,  
Phone: +66869943971  
Email: [sying.thai@gmail.com](mailto:sying.thai@gmail.com)

## Abstract of Talks

### **How Digital Learning Changes Education**

Linawati  
Department of Electrical Engineering  
Udayana University  
Bali, INDONESIA


#### **Abstract**

The era of Internet of Things and 4<sup>th</sup> Industrial Revolution generate digital generation who has different life style. No doubt that the digital technologies become an important and centre of the generation life. The technologies change the way they play, communicate, work, and study. As a result the technologies force educational institutions, from primary school up to university, to change their learning system. Therefore many institutions have introduced and implemented variety of technology based learning, such as open learning, social learning, flipped learning, Massive Open Online Courses, etc. Accordingly, the institutions have to provide those technologies for all students, teachers, staffs, and their stakeholders for professional purposes, i.e. teaching and learning, and personal purposes, i.e. communicating, creating and socialising. Thus it is challenging the traditional concept of learning.

The institutions fully understand numerous benefits of using digital technology for both professional and personal purposes. The technology creates the learning environment that everyone can teach anyone, more personal learning, and create more creativity and innovation beyond the limits of our imagination. On the other hand the institutions should conscious disadvantages of using the technology without knowing digital literacies. Digital literacies are key skill to develop to actively managing users' online presence. Teachers, students, and all staffs must aware to safe use of digital technologies. The institutions have a responsibility to educate cyber safety to people responsible behaviour when using digital technologies to prevent or to minimize cyberbullying, cybercrime, and plagiarism.

# Website of the Conference

12/2/2018
Keynotes | WIECON-ECE 2018



[Home](#) [Authors](#) [Technical Programs](#) [Scope](#) [Important Dates](#) [Registration](#) [Committees](#) [Travel](#) [Awards](#) [Previous WIECON](#) [Contact](#)

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## Keynotes

### KEYNOTE TALKS AT THE 4th IEEE WIECON-ECE 2018 PATTAYA THAILAND


#### Sansanee Auephanwiryakul

Associate Professor, Faculty of Engineering,  
Biomedical Engineering Institute,  
Chiang Mai University, Thailand

[For Short Bio Click Here](#)

#### String Grammar Fuzzy Clustering in Data Analysis


Data Analysis is a process to analyze data in terms of representing, describing, evaluating, interpreting data using statistical methods. What if the data do not come in the form of statistical representation or a vector of numbers but are in the form of syntactic data, how do we analyze those data? One of the pattern recognition research branches is the syntactic pattern recognition that is able to deal with this type of data set. Each sample in syntactic data set is normally represented as a string. The strings in the same data set can have different lengths. Also, the string does not have any mathematical meaning that we can calculate as if they are vectors of numbers. There are several syntactic pattern recognition methods. However, one of the syntactic pattern recognition methods that is used in many applications is a string grammar clustering method since it is easy to implement and is understandable to humans. In this talk, we will introduce a set of string grammar clustering algorithms developed at Computational Intelligence Research Laboratory, Chiang Mai University. We also show applications of these algorithms in several real-world problems, e.g., sign language translation system, face recognition, and health applications.



Associate Professor, Faculty of Engineering,  
Chiang Mai University, Thailand


#### Meet Our Keynote Speakers

#### Dr. Sansanee Auephanwiryakul



Associate Professor, Faculty of Engineering,  
Chiang Mai University, Thailand

#### Dr. Zuhaina Zakaria



Associate Professor, Faculty of Electrical

<http://wieconece.org/scope/keynotes/> 1/4


12/2/2018
Keynotes | WIECON-ECE 2018

Associate Professor, Faculty of Electrical Engineering,  
Universiti Teknologi MARA, Malaysia

[For Short Bio Click Here](#)


#### Women and Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a universal call to protect the planet and ensure that all people enjoy peace and prosperity. At its heart, are the 17 interconnected goals which established measurable, universally-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, expanding primary education to all children, climate change, economic inequality, innovation, sustainable consumption, peace and justice among other development priorities. The agenda also has a stand-alone goal on gender equality and the empowerment of women and girls. This presentation will discuss on the 17 goals and the impact of each of these goals on women as well as how women can be the key to achieving each of these goals.



#### Engineering, Universiti Teknologi MARA, Malaysia

#### Dr. Supavadee Aramvith



Associate Professor, Dept. of Electrical  
Engineering, Chulalongkorn University, Thailand


#### Supavadee Aramvith

Associate Professor, Department of Electrical Engineering  
Chulalongkorn University, Thailand


[For Short Bio Click Here](#)

#### Engineering Research with a Global Impact using ICT for Sustainable Development

The United Nations, together with governments and businesses worldwide have begun their joint endeavors in areas of critical importance for humanity and the planet. Information and communication technologies (ICTs) will continue to play a crucial role in achieving Sustainable Development Goals (SDGs) such as affordable and clean energy, good health and well-being, and sustainable cities and communities. Dr. Aramvith is currently an ITU-D Expert on ICT for a Sustainable Development Goals (ICT4SDGs) and contributes to the Impact study on using ICTs as key catalysts for sustainable development. In this talk, she will share her experiences as a university professor, an active researcher, a mentor, and a professional volunteer who can bring impacts to the developing world.




#### Dr. Ir. LINAWATI



Associate Professor,  
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#### Prof. Dr. Shalkh Fattah



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technologies change the way they play, communicate, work, and study. As a result the technologies force educational institutions, from primary school up to university, to change their learning system. Therefore many institutions have introduced and implemented variety of technology based learning, such as open learning, social learning, flipped learning, Massive Open Online Courses, etc. Accordingly, the institutions have to provide those technologies for all students, teachers, staffs, and their stakeholders for professional purposes, i.e. teaching and learning, and personal purposes, i.e. communicating, creating and socialising. Thus it is challenging the traditional concept of learning.

The institutions fully understand numerous benefits of using digital technology for both professional and personal purposes. The technology creates the learning environment that everyone can teach anyone, more personal learning, and create more creativity and innovation beyond the limits of our imagination. On the other hand the institutions should conscious disadvantages of using the technology without knowing digital literacies. Digital literacies are key skill to develop to actively managing users' online presence. Teachers, students, and all staffs must aware to safe use of digital technologies. The institutions have a responsibility to educate cyber safety to people responsible behaviour when using digital technologies to prevent or to minimize cyberbullying, cybercrime, and plagiarism.



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**APPENDIX 10. VIDEO CONTENTS OF RESEARCH METHODOLOGY  
SUBJECT**

All video will be uploaded to Youtube. Some of them have been in Youtube. Here is the link.

A. Agriculture Department

<https://www.youtube.com/watch?v=g7HfCL5PAiA>

B. Electrical Engineering Department

[https://www.youtube.com/watch?v=K2EhiyH4\\_oE](https://www.youtube.com/watch?v=K2EhiyH4_oE)