Draft Project Design Matrix (PDM) – Revised-

Project Title: Technical Cooperation Project for the Development of the Engineering Faculty of the Hasanuddin University.

Project Site: Makassar City, UNHAS Project Term: February, 2009-January, 2012 Date: February 18, 2011

Target Groups: Academic staffs of Departments of Mechanical, Civil, Naval, Architecture, Geology and Electrical & Electronic Engineering in the Faculty of Engineering, UNHAS

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The Faculty of Engineering of Hasanuddin University becomes the center of excellence in the eastern part of Indonesia.	1. The number of qualified graduates produced, after receiving engineering education suitable for the demand of the eastern part of Indonesia, is increased. 2. The number of research useful for the sustainable development of eastern Indonesia is increased. 3. The number of joint researches and exchange of academic staff with the universities in the eastern part of Indonesia is increased.	➢ Pathway of graduates from the Faculty ➢ Research useful for the sustainable development of eastern Indonesia	
Project Purpose The education and research basis of the Faculty, for producing graduates contributing for the sustainable development of the northeastern part of Indonesia, is strengthened.	1. The educational activity in the Faculty and each department based on Strategic plan is consistent and appropriate. 2. The grade of accreditation is improved in every department.	➢ Strategic plan of the Faculty ➢ Project record ➢ Result of accreditation from Indonesian government ➢ Report of research activities	
Outputs 1. Education in the Faculty becomes practice/research–oriented.	1.1 The basic principles of the curriculum linked with practice /research -oriented engineering education is established.	➢ Strategic Plan of the Faculty	1. The initial situation of each department does not make a remarkable difference of the progress and the output through project activities. 2. The organization and system is not drastically changed.
2. The education and research capacity of academic staff through research activities is enhanced.	2.1 The guideline for Labo-Based Education (LBE) is introduced. 2.2 More than one research laboratories are established in each department. 2.3 The ratio of experiments and practices in curriculum is increased to more than 20 %. 2.4 Undergraduate student who conduct Labo-Based research activities are increased. 2.5 The workshop to disseminate research activity is implemented in each department. 2.6 Research laboratories which reflect the social needs are increased.	➢ Guideline for LBE ➢ List of laboratories members ➢ Number of course (unit) which includes practicum and experiments among total number of course in each curriculum ➢ Workshop report ➢ Report from research laboratories	
3. Education based on the curriculum and syllabus according to the needs of regional sustainable development in the northeastern part of Indonesia is implemented.	3.1 Curriculum / syllabus of each department is revised so as to contribute to northeastern part of Indonesia.	➢ Time schedule ➢ Curriculum ➢ Syllabus	
4. Quality of lecture in the Faculty is improved.	4.1 Syllabus which clearly shows teaching materials are prepared. 4.2 Effective monitoring system is introduced and implemented in the Faculty.	➢ Syllabus ➢ Result of class evaluation	
5. The planning and management capacity needed for the appropriate management of the Faculty is improved.	5.1 The Faculty's Strategic Plan is established. 5.2 Research Roadmap is set up in each department.	➢ Strategic Plan (2011-2015) ➢ Roadmap	

Activities	Inputs	Preconditions
1-1 The Faculty introduces plan for practice /research–oriented Education which is prepared and authorized by the Faculty. 1-2 The Faculty secure resource to enhance the understanding of practice /research–oriented Education. 2-1The Faculty formulates plan and guideline to transform the assignment of academic staff and research activity into a Labo-based education (LBE) system. 2-2 Each department set up the pilot laboratories for conducting LBE. 2-3 The pilot laboratories prepare action plan (research, seminar, workshop, budget). 2-4 The Faculty implements workshops to share and discuss the pilot laboratories' activities among academic staff. 2-5 Pilot research laboratories submit research activity report. 2-6 Pilot research laboratories share the output of research activity through existing academic network. 3-1 The Faculty set a taskforce in each department for revising curriculum and syllabus with consideration to the principle of practice /research-oriented engineering education. 3-2 Each study program grasps social needs of the field of engineering in the northeastern part of Indonesia. 3-3 Each department/ academic staff reviews the existing curriculum and syllabus. 3-4 Each department/ academic staff revises and introduces the curriculum or syllabus in consideration on the social needs. 4-1 Academic staff share the importance of the educational cycle .which is defined as preparation for class and experiment, implementation, evaluation and improvement. 4-2 The Faculty set up a taskforce for improvement of lecture's quality. 4-3 The taskforce formalizes integrated policy on quality improvement. 4-4 The taskforce and each department monitor the quality of education in each study program according to the policy set up by taskforce. 5-1 The Faculty establishes the Faculty's strategic plan appropriately based on introduction of LBE. 5-2 Each department formulates Research Roadmap for better operation and management.	**JAPAN (JICA)** 1.Dispatch of Experts ・Long-term experts Chief advisor:(Support for university management, build basic framework for education and research) Coordinator: (Support for the Faculty management, manage and control project) ・Short-term experts 16persons dispatched a year Area of expertise : Civil, Architecture, Mechanical, Electrical, Naval, Geology, Overall Management of research and education and Faculty management 2.Necessary Expenses to implement the Project **Indonesia(UNHAS)** 1. Assignment of C/P(Dean and Academic staff) 2. Allocation of office spaces for experts 3. Necessary local expenses of the project implementation 4. Maintenance of equipment	The Yen-Loan project is functioned as planned.

３．評価グリッド（英文）/Evaluation Grid

Evaluation Grid (Achievement)

Items	Sub items	Results
Input from the Japanese side	Dispatch of long-term experts	Three long-term experts in total have been dispatched: Chief Advisor from July 2009 to July 2011, Coordinator (1) from January 2009 to January 2011, Coordinator (2) from January 2011 to present. Delay of dispatch of Chief Advisor.
	Dispatch of short-term experts	13 short-term experts were dispatched. Proposed areas of expertise have been fulfilled. In addition, the advisor for faculty management was dispatched.
	Expenses to implement the Project	<table><tr><td>Fiscal Year 会計年度</td><td>FY 2008</td><td>FY 2009</td><td>FY 2010</td><td>FY 2011 (as of Oct 31, 2011)</td><td>Total 計</td></tr><tr><td>現地業務費 Rp.</td><td>98,288,958</td><td>396,520,456</td><td>337,857,928</td><td>140,040,141</td><td>972,707,483</td></tr></table>
Inputs from the Indonesian side	Counterpart personnel	Project Director, Project Manager, 14 PIU members, 6 heads of departments
	Provision of facilities	The Indonesian side provided office space, electricity, water supply, and a telephone necessary for the project activities.
	Expenses to implement the Project	The Indonesian side covered the expenses of some project activities such as holding workshops and seminars.
Output 1: Education in the Faculty becomes practice/research-oriented.	The basic principles of the curriculum linked with practice/research-oriented engineering education are established.	The Strategic Plan of the Faculty was developed and issued in March 2011.
Output 2: The education and research capacity of academic staff through research activities is enhanced.	The guideline for Labo-Based Education (LBE) is introduced.	Guideline of LBE was authorized in April 2011 and issued.
	More than one research laboratories are established in each department.	Many research laboratories are established in the departments and one research laboratory was chosen as a pilot laboratory in each department.
	The ratio of experiments and practices in curriculum is increased to more than 20%.	In the departments' new curricula that were introduced in August 2011, the ratio of experiments and practices in curriculum was increased. The ratio now is more than 20% in nearly all the departments. All undergraduate students conduct research from the 7th semester. LBE Workshop was held in March 2011. Two seminars were held in August and November 2011 to disseminate the concept of LBE and practical examples of education and research
	Undergraduate student who conduct labo-based research activities are increased.	All undergraduate students conduct research from the 7th semester.
	The workshop to disseminate research activity is implemented in each department.	LBE Workshop was held in March 2011. Two seminars were held in August and November 2011 to disseminate the concept of LBE and practical examples of education and research activities.
	Research laboratories which reflect the social needs are increased.	Number of laboratories which reflects the needs of the region and industries has increased. 57 research laboratories have been established during the project period and all of them reflect the social needs including industrial needs. It is judged that number of laboratories which reflect the social needs has increased.
Output 3: Education based on the curriculum and syllabus according to the needs of regional sustainable development in the northeastern part of Indonesia is implemented	Curriculum/syllabus of each department is revised so as to contribute to northeastern part of Indonesia.	Curricula and syllabuses were already revised.
Output 4: Quality of lecture in the Faculty is improved.	Syllabus which clearly shows teaching materials are prepared.	All departments revised syllabuses. The syllabuses show teaching materials.
	Effective monitoring system is introduced and implemented in the Faculty.	The Unit for Planning, Development, Quality Assurance and International Cooperation (UP3K) was established in the Faculty to monitor the quality of each class by following the Academic Policy of the Engineering Faculty. According to the Faculty members, class monitoring is supposed to be conducted by students every week. Results of class monitoring for the present semester will be announced in January or February 2012.
Output 5: The planning and management capacity needed for the appropriate management of the Faculty is improved	The Faculty's Strategic Plan is established.	Strategic plan was authorized and issued.
	Research road map is set up in each department.	The research road map for 2011-2014 was made in November 2010.
Project Purpose: The education and research basis of the Faculty, for producing graduates contributing for the sustainable development of the northeastern part of Indonesia, is strengthened.	The educational activity in the Faculty and each department based on the Strategic Plan is consistent and appropriate.	The Strategic Plan of the Faculty and the LBE Guideline were developed in March 2011, and each department has just introduced a new curriculum from this semester. Thus it is difficult to judge that the educational activities under the Strategic Plan, the guideline and the new curriculum are already consistent and appropriate.
	The grade of accreditation is improved in every department.	Four study programs, Ocean Engineering, Marine System, Regional and City Planning, and Mining have improved their accreditation grades of their undergraduate study. The second indicator is not achieved, as the accreditation grades of all the undergraduate study programs are not improved.

Items	Sub items	Results
Overall Goal: The Faculty of Engineering of Hasanuddin University becomes the center of excellence in the eastern part of Indonesia,	The number of qualified graduates produced, after receiving engineering education suitable for the demand of the eastern part of Indonesia, is increased.	It is going to be cleared if the education and research basis is strengthened as specified in the Project Purpose.
	The number of research useful for the sustainable development of eastern Indonesia is increased.	It is going to be cleared if the education and research basis is strengthened as specified in the Project Purpose.
	The number of joint researches and exchange of academic staff with the universities in the eastern part of Indonesia is increased.	The Faculty needs to take necessary action to promote collaboration with other universities in the region.

Evaluation Grid（Implementation process）

Items	Sub-items	Results
Progress of the activities under Output 1	The Faculty introduces plan for practice/research–oriented Education which is prepared and authorized by the faculty.	The Strategic Plan of the faculty was authorized and issued by the faculty in April 2011. Guidelines for academic quality assurance (Policy and Academic Standard) was authorized and issued by the faculty in April 2011.
	The Faculty secures resource to enhance the understanding of practice/research-oriented education.	Fellowship Seminar in Tokyo (Aug 2, 2011) was conducted. Fellowship seminar in Makassar (Nov 2011) was conducted.
Progress of the activities under Output 2	Formulate plan and guideline to transform the assignment of academic staff and research activity into a Labo-based education (LBE) system.	The guideline for LBE was authorized and issued by the faculty in April 2011.
	Each department set up the pilot laboratories for conducting LBE.	Research laboratories are established in March 2011 and 1 pilot lab is selected from each study program.(Attachment5 of Evaluation Grid)
	The pilot laboratories prepare action plan (research, seminar, workshop, budget).	The pilot labs made a presentation on the plan of the activities.
	The Faculty implements workshops to share and discuss the pilot laboratories' activities among academic staff.	The workshop to disseminate research activity was implemented in March 2011.
	Pilot research laboratories submit research activity report.	Progress report of activities will be submitted soon.
	Pilot research laboratories share the output of research activity through existing academic network	□ Dept. of Architecture displayed the banner on research activities at International conference in July 2011. □ Dept. of Geology organized Scientific Meeting to discuss the research progress in Aug 2011. □ Dept. of Naval had the TV conference with ITS (Surabaya) for the future cooperation and UNHAS' challenge on introduction of LBE, and 6 lecturers visited ITS to learn the LBE system and discussed the cooperation with ITS and Universitas Pattimura(UNPATTI).
Progress of the activities under Output 3	The Faculty sets a taskforce in each department for revising curriculum and syllabus with consideration to the principle of practice/research-oriented engineering education.	Taskforce was not established, but Competence Based Curriculum Compiler Team was established.
	Each Study Program grasps social needs of the field of engineering in the northeastern part of Indonesia.	The seminar with the industries was held in order to make a linkage and hear the needs from industries in Nov 2011.
	Each department/ academic staff reviews the existing curriculum and syllabus.	All departments revised their curriculum.
	Each department/ academic staff revises and introduces the curriculum or syllabus in consideration on the social needs.	Research was conducted in Nov 2011 to grasp the needs of the private sector in the region. The resuts of the research was utilized when the curriculum was revised.

Items	Sub-items	Results
Progress of the activities under Output 4	Academic staff share the importance of the educational cycle .which is defined as preparation for class and experiment, implementation, evaluation and improvement.	The Unit for Planning, Development, Quality Assurance and International Cooperation (UP3K) was established in the Faculty to monitor the quality of each class by following the Academic Policy of the Engineering Faculty. Class monitoring is supposed to be conducted by students every week.
	The Faculty sets up a taskforce for improvement of lecture' s quality.	The taskforce (UP3K) was established.
	The taskforce formalizes integrated policy on quality improvement.	The taskforce (UP3K) was developed the new policy and academic standard.
	The taskforce and each department monitor the quality of education in each study program according to the policy set up by taskforce.	The taskforce (UP3K) submitted the result of the monitoring (Monitoring of Lectures in late 2010 -2011 and Evaluation of Lecturers by Students) based on the new policy and academic standard.
Progress of the activities under Output 5	The Faculty establishes the Faculty' s strategic plan appropriately based on introduction of LBE.	The Strategic Plan of the faculty was authorized and issued by the faculty. And it was explained at the fellowship seminar to the participants.
	Each department formulates Research Roadmap for better operation and management.	Research roadmap of the faculty was authorized and issued by the faculty. JICA experts advised on the contents.
Technology transfer		The Project was initially designed not to increase teaching and research skills among the Faculty members, but to strengthen the Faculty as an organization. However, through laboratory work under the LBE Fund (explained in “3-3. Efficiency”), the JICA experts, consisting of the Japanese professors, helped improve the research skills of the Faculty members.
Communication		The Project Implementation Unit for technical cooperation project (TCP) was established to implement and monitor the Project. At the beginning of the Project, it had been planned to hold a meeting between the TCP and the Japanese side every two weeks. However, no meeting was held in a while. During the period, communication between the Indonesian and Japanese sides was not adequate enough for smooth implementation of the Project. The Center of Technology (COT) team was established in November 2011 to realize the Faculty’s vision. Both the Indonesian and Japanese sides participate in the COT team meetings and discuss the Project-related matters. Communication between the two sides has improved significantly since the establishment of the COT team. The results of the questionnaire survey show that 67% of the respondents (38 out of 57) think that communication with the Japanese experts is adequate, while 33% regard it as not adequate.
Ownership and motivation of the Indonesian side		□ The Faculty developed the concept of “LBE+,” and did not just copy the general LBE idea. “LBE+” means “LBE in the Indonesian way,” which is different from the LBE style in Japan. □ The fellowship and stakeholders’ seminar in November 2011 was organized at the initiative of the Indonesian side. □ Active participation in the COT team. The Faculty members organized a site visit at their expense. □ The Faculty’s expenditure for the project activities has drastically increased in 2011.
Monitoring		Few joint project monitoring activities were done between the Indonesian and Japanese sides. The Joint Coordinating Committee, which was to be responsible for comprehensive monitoring of the project progress, was held only once in March 2011. At present, the COT team monitors the project activities.

Evaluation (Five Criteria)

Criterion	Items	Sub-items	Results
Relevance	Relevance of the project to Indonesia's policy		The Project is relevant to the Mid-term National Development Plan of Indonesia for 2010-2014. The plan specifies that one of the most prioritized agendas is increasing the access to higher education to meet the labor force demand. Ministry of Education and Culture sets 28 key performance indicators, including the percentage of faculty members with doctoral degrees, the number of national and international publications and accreditation scores, aiming to provide internationally competitive education services. Under the development plan, the Sulawesi region is considered a growth center of the eastern part of Indonesia and of the ASEAN sub-region.
	Relevance of the Project to the needs of the target group		The Project has been implemented jointly with the yen loan project whose objectives are to construct a new campus and increase the number of doctorate holders. Both projects aim to achieve human resource development in the field of engineering and contribute to sustainable development of eastern Indonesia. The questionnaire survey showed that the project met the needs of the Faculty members, who are the target group of the project. 91% of the respondents thought that the Project was relevant to their needs.
	Relevance of the Project to Japan's assistance policy and comparative advantage		One of the priority topics of Japan's assistance plan for Indonesia is to provide assistance that will contribute to the training of personnel for industry in higher education. JICA has been implementing the South Sulawesi Province Regional Development Program that addresses problems including social development in the area of education. JICA has been also implementing the Northeastern Indonesia Regional Development Program to duplicate the results of the South Sulawesi Province Regional Development Program in six provinces in Sulawesi and two in the Maluku Islands. The Project is relevant to Japan's comparative advantage. The JICA experts provided advices regarding LBE system and faculty management based on the experiences in Japan.
Effectiveness	Achievement of the Project Purpose		The Project is on the right track to achieve the Project Purpose. The educational activities in the Faculty based on the Strategic Plan just started this semester. Such activities must be evaluated and necessary action is to be taken based on the results of evaluation. It will take more time to improve the accreditation grade in all departments.
	Important assumptions	Any assumptions have happened?	No proposed assumption has prevented the project purpose being achieved.
	Factors that might hinder the achievement of the Project Purpose		・It took more than two years to issue the Strategic Plan of the Faculty and the LBE Guideline. Moreover, the new curriculum and syllabus were just introduced this semester. ・A sizable number of the Faculty members have left to pursue their studies. ・Old facilities and equipment prevented improvement of the accreditation rate. ・The TCP did not sometimes function as it had been supposed to.
Efficiency	Dispatch of the Japanese experts		The dispatch of the Chief Advisor was delayed at the beginning of the Project, but that did not affect the achievement of the Outputs negatively. The questionnaire survey shows that 84% of the respondents felt that the dispatch of the Japanese experts was adequate in terms of their expertise, the number of the experts, the dispatch period and timing.
	Financial support for research activities		The Project provided the LBE Fund to eight research groups in 2009. The eight research groups were selected on a competitive basis. All the research groups managed to submit the required report in 2010 and three research groups disseminated their research results in conferences and seminars outside the campus. In 2011, one pilot laboratory was selected from each study program and given financial assistance to purchase necessary reading materials. These financial assistances were effective in improving the research skills of the laboratory personnel.
	Counterpart personnel allocation		Collaboration between the TCP and the Japanese side had not been effective for a long time. Meanwhile, the COT team was established and now conducts the project activities.
	Achievement of the Outputs and project activities		Development of the Strategic Plan and the LBE Guideline was delayed. Although such delays did not affect the achievement level of the Outputs, they did have a negative effect on the achievement of the Project Purpose.
	Others		The Project utilized the lessons learned from similar technical cooperation projects in Indonesia. For instance, the Project studied examples of LBE from the Institute of Technology Surabaya when developing the LBE Guideline.

Criterion	Items	Sub-items	Results
Impact	Probability of achieving the Overall Goal		The first and second indicators are going to be cleared if the education and research basis is strengthened as specified in the Project Purpose. To fulfill the third indicator, the Faculty needs to take necessary action to promote collaboration with other universities in the region.
	Other impacts other than the Overall Goal	Technical	If collaboration with universities and the enterprises in other regions is promoted, positive impact for other regions will be realized.
Sustainability	Policy aspect		The Project is aligned to the policies of Indonesian Government.
	Organizational aspect		The Faculty suffers now from the shortage of members because a number of them are away for studies under the yen loan project. However, the Faculty's human resource capacity will significantly increase once they return. There will be no turnover problem after they complete their studies. The staff members who study abroad with the financial assistance are obliged to stay in the Faculty for a certain period.
	Financial aspect		The Faculty obtains research grants from UNHAS, the Ministry of Education and Culture, the private companies and the public institutions in the region. To cover the expenses borne by the Japanese side after the project period, the Faculty needs to secure more of such grants. In an interview, the Faculty members expressed a willingness to obtain financial resources from the enterprises by promoting a joint research. The Faculty also needs to secure more financial resources for operation and maintenance, once new facilities and equipment are provided by the yen loan project. In 2010, IDR 1,508.5 billion, which is 11% of the Faculty's budget, was allocated to the maintenance work.
	Technical aspect		Approximately 100 Faculty members are now studying for their degrees. The Faculty's technical capacity will be enhanced after their return. The Faculty needs to improve its operation and maintenance skills, as the Faculty starts receiving new facilities and equipment from the next year. The providers of the new facilities and equipment will conduct on-site trainings for the Faculty members. The Dean of the Faculty organized a task team to deal with the operation and maintenance issues.

４．専門家派遣実績

List of Japanese Experts

	Name	Assignment/Field of Speciality	Belongings	Period of Dispatch	
				Arrive in Makassar	Departure from Makassar
Long term expert	NAOTSUKA Taro	Project Coordinator	JICE	26 January 2009	25 January 2011
Short term expert	YAMASHITA Takao	Academic Advisor	Hiroshima University	10 March 2009	18 March 2009
				22 August 2010	26 August 2010
				22-Jun-09	26-Jun-09
				16 August 2009	21 August 2009
				09 March 2010	12 March 2010
				23 August 2010	25 August 2010
				20 March 2011	23 March 2011
		Ocean Engineering		18 July 2011	22 July 2011
				06 December 2011	10 December 2011
Short term expert	IIJIMA Satoshi	Faculty Management	Kyushu University	05 March 2009	12 March 2009
				16 August 2009	22 August 2009
Short term expert	ESAKI Tetsuro	Civil Engineering	Kyushu University	08 March 2009	14 March 2009
				17 August 2009	22 August 2009
				07 March 2010	12 March 2010
				29 March 2011	01 April 2011
				06 December 2011	13 December 2011
Short term expert	KOMATSU Toshimitsu	Civil Engineering	Kyushu University	08 March 2009	14 March 2009
				17 August 2009	20 August 2009
				07 March 2010	11 March 2010
				09 August 2010	12 August 2010
				18 July 2011	20 July 2011
Short term expert	SAKAI Takeru	Architecture	Kyushu University	29 March 2009	02 April 2009
				10 March 2009	17 March 2009
				08 March 2010	12 March 2010
				29 March 2011	01 April 2011
				13 July 2011	18 July 2011
Short term expert	NAGAO Masayuki	Electrical Engineering	Toyohashi University of Technology	07 March 2009	16 March 2009
				17 August 2009	22 August 2009
				07 March 2010	12 March 2010
				09 August 2010	12 August 2010
				21 March 2011	23 March 2011
				09 August 2011	12 August 2011
Short term expert	YANADA Hideki	Mechanical Engineering	Toyohashi University of Technology	06 March 2009	14 March 2009
				17 August 2009	22 August 2009
				08 March 2010	12 March 2010
				09 August 2010	13 August 2010
				21 March 2011	23 March 2011
				09 August 2011	12 August 2011
Short term expert	HIGO Yasushi	Naval Architectre	Hiroshima University	07 March 2009	14 March 2009
				17 August 2009	21 August 2009
Short term expert	HIBINO Tadashi	Ocean Environmet	Hiroshima University	07 March 2009	14 March 2009
Short term expert	IMAI Akira	Geology	Akita University	09 March 2009	14 March 2009
				17 August 2009	21 August 2009
				31 August 2009	04 September 2009
				6,7,8 Sept 2009	15 September 2009
				23 March 2010	26 March 2010
				17 August 2010	21 August 2010
				20 March 2011	23 March 2011
				18 August 2011	24 August 2011
Long term expert	MIZUOCHI Shunichi	Chief Advisor	None	27 July 2009	26 July 2011
Long term expert	ITO Yuko	Project Coordinator	None	31 January 2011	31 January 2012
Short term expert	TSUNODA Manabu	Chief Advisor	JICA	13 July 2011	20 July 2011
				15 August 2011	24 August 2011
				13 October 2011	20 December 2011
Short term expert	FUJIMOTO	Architecture	Kyushu University	16 August 2009	22 August 2009
				30 July 2010	7 August 2010
Short term expert	MIYAUCHI Hajime	Electrical	Kumamoto Univ.	24 August 2009	29 August 2009
JICA consultant	Satryo Soemantri	JICA Consultant/ Faculty Management	ITB/Toyohashi University of Technology	10 March 2010	17 March 2010
				22 June 2009	26 June 2009
				17 August 2009	22 August 2009
				7 Dec 2009	11 Dec 2009
				13 December 2010	17 December 2010
				21 March 2010	26 March 2010
				28 September 2010	1 October 2010
				28 June 2010	2 July 2010
				23 March 2011	24 March 2011
				17 July 2011	20 July 2011
				8 November 2011	11 November 2011
				12 December 2011	15 December 2011

５．インドネシア側カウンターパート・リスト

List of Indonesian Counterpart Personnel

Project Director: Rector of UNHAS
Project Manager: Dean of Engineering Faculty

No	Position	Name	Department
PIU TCP 2009			
1	Head of PIU TCP	Dr. Ir. Zahir Zainuddin	Electrical
2	Member	Dr. Daeng Paroka, ST., MT	Naval
3	Member	Isfa Sastrawati, ST., MT	Architecture
4	Member	Dr. Tri Harianto, ST., MT	Civil
5	Member	Sultan, ST., MT	Geology
6	Member	Indrabayu, ST., MT	Electrical
7	Member	Dr. Hadi Effendy, ST., MT	Electrical
PIU TCP 2010 (start 10 Feb. 2010)			
1	Head of PIU TCP	Dr. Ir. Zahir Zainuddin	Electrical
2	Secretary	Mukhsan Putra Hatta, ST.,MT.,PhD	Civil
3	Facility and Equipment Management	Prof. Dr.rer.nat Ir. A. M. Imran, PhD.,	Geology
4		Novy R. A. Mokobombang, ST., MT	Electrical
5	Activity Management	Dr. Elyas Palentei, ST., M.Eng	Electrical
6		Isfa Sastrawati, ST., MT	Architecture
7	Education / Research Capacity	Dr. Daeng Paroka, ST., MT	Naval
8		Dr. A. Arwin Amiruddin, ST., MT	Civil
PIU TCP 2011			
1	Head of PIU TCP	Dr. Ir. Zahir Zainuddin M.Sc	Electrical
2	Member	Mukhsan Putra Hatta, ST.,MT.,Ph.D	Civil
3	Member	Prof.Dr.rer.nat Ir. A. M. Imran, PhD.	Geology
4	Member	Novy R. A. Mokobombang, ST., MT.	Electrical
5	Member	Dr. Elyas Palantei, ST., M.Eng.	Electrical
6	Member	Isfa Sastrawati, ST., MT.	Architecture
7	Member	Dr. Daeng Paroka, ST., MT.,	Naval
8	Member	Dr. A. Arwin Amiruddin, ST., MT.	Civil
9	Member	Dr. Rafiuddin*	Mechanical
10	Member	Suprihadi, SE.,M.Si.	Head of Administrative of FE UNHAS

＊ Appointed by Dean(FE) from Oct.2011, Head of Control and Robotics Lab., (Pilot Lab. of Mechanical Study Program), Vice Head of PIU Loan Project

６．活動計画（Plan of Operation：PO）

As of Dec 2011

Plan of Operation (Based on revised PDM) **Plan** **Activities/Achievement**

		1st Year				2nd Year				3rd Year				Responsible Organization
		I	II	III	IV	I	II	III	IV	I	II	III	IV	
Project Period														
Output 1 Education in the faculty becomes practice/research–oriented.														
1	The Faculty introduce plan for practice/research–oriented Education which is prepared and authorized by the faculty.													Dean
2	The Faculty secure resource to enhance the understanding of practice/research-oriented education.													Dean
Output 2 The education and research capacity of academic staff through research activities is enhanced.														
1	The Faculty formulate plan and guideline to transform the assignment of academic staff and research activity into a Labo-based education (LBE) system.													Dean
2	Each department set up the pilot research laboratories for conducting LBE.													Head of Laborateries
3	The pilot laboratories prepare action plan (research, seminar, workshop, budget).													Head of Laborateries
4	The Faculty implements workshops to share and discuss the pilot laboratories' activities among academic staff.													Head of Laboratories
5	Pilot research laboratories submit research activity report.													Head of Laborateries
6	Pilot research laboratories share the output of research activity through existing academic network.													Head of Laborateries
Output 3 Education based on the curriculum and syllabus according to the needs of regional sustainable development in the northeastern part of Indonesia is implemented.														
1	The Faculty set a taskforce in each department for revising curriculum and syllabus with consideration to the principle of practice /research-oriented engineering education.													Dean
2	Each study program grasps social needs of the field of engineering in the northeastern part of Indonesia.													Heads of Departments
3	Each department/ academic staff reviews the existing curriculum and													Dean
4	Each department/ academic staff revises and introduces the curriculum or syllabus in consideration on the social needs.													Heads of Departments
Output 4 Quality of lecture in the Faculty is improved.and contents and materials are improved.														
1	Academic staff share the importance of the educational cycle .which is defined as preparation for class and experiment, implementation, evaluation and improvement.													Heads of Departments
2	The Faculty set up a taskforce for improvement of lecture's quality.													Heads of Departments
3	The taskforce formalizes integrated policy on quality improvement.													Heads of Departments
4	The taskforce and each department monitor the quality of education in each study program according to the policy set up by taskforce.													Heads of Departments
Output 5 The planning and management capacity needed for the appropriate management of the faculty is improved.														
1	The Faculty establishes the Faculty's strategic plan appropriately based on introduction of LBE.													Dean
2	Each department formulates Research Roadmap for better operation and management.													Heads of Departments

Strategic Plan
Faculty of Engineering
Hasanuddin University
2011-2020

CAMPUS UNHAS TAMALANREA
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VALIDATION SHEET

STRATEGIC PLAN DOCUMENT ENGINEERING

FACULTY of HASANUDDIN UNIVERSITY

APPROVED and LEGALIZED BY THE SENATE

Of ENGINEERING FACULTY HASANUDDIN

UNIVERSITY

on 26-27, March 2011

Chairman of FT-UH Senate	Secretary of FT-UH Senate
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PREFACE

This strategic plan document is arranged to provide an informative image of development plan of Engineering Faculty of UNHAS (FE-UH) within work period of 2001-2014. This document describes five main points as follows;

1. Vision, Mission, and Educational goals
2. Objective formulation and Target of the strategic plan turning
3. The issue of Engineering Faculty development
4. Strategic plan to achieve the objective
5. Target achievement quantification of development issue

With the completion of this document, we hereby gratefully acknowledge to the author team of strategic plan document for their hard works, the heads of department, and the members of FE-UH Senate. Also, this document should become a guidance in order to increase performance of the academic community during the implementation of Three Pillars of Higher Educational Services.

Finally, we are really expecting all academic community supports in order to achieve the development and management objective of FE-UH. We hope that all of our works would be blessed by the mighty God and in the future we could be the centre of excellent at engineering field for global development.

Makassar, March 2011

Engineering Faculty – Hasanuddin University

Dr-Ing. Ir. Wahyu H. Piarah, MSME
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VISION, MISSION, AND EDUCATIONAL TARGET

Vision

To be a center of excellence in engineering for global sustainability with the spirit of maritime culture

Mission

- To develop engineering education, research and community service in the spirit of maritime culture
- To foster engineers with broad knowledge, advanced technology, and innovative capability ***(Education)***
- To establish an excellent engineering center for sustainable development ***(Research)***
- To disseminate the appropriate technology to improve the human quality of life and to sustain the potential of natural resources ***(Research and Community Service)***

Educational Goals

- Balanced research-education: seamless linkage of comprehensive education in undergraduate school, and creative, cutting-edge researches in graduate school through Labo-Based Education ***(Education and Research)***
- Implementation of LBE for research-oriented education ***(Education)***
- Establishment of international education/research network ***(Education and Research)***
- Establishment of interdisciplinary education/research ***(Education and Research)***
- Graduates who meet the international engineering criteria eg.the ABET criteria 3 ***(Education)***
- Graduates with market-driven competences ***(Education)***
- Enhancement of education/research for sustainable development of global society ***(Education and Research)***
- Intensive researches for sustainable development of Eastern Indonesia ***(Research)***

OBJECTIVE FORMULATION AND TARGET OF THE STRATEGIC PLAN

Objectives of the Strategic Plan

1. Become the faculty organizer of Student Centered Learning (SCL) characterized with Labo-Based Education (LBE) model.
2. Become the faculty which organizing the international quality research.
3. Become the faculty with real social responsibility.
4. Become the faculty with effective and efficient organization management in implementing three pillars of higher education services of the university.

Targets of the Strategic Plan

Educational organizer based on Student Centered Learning (SCL) method which is characterized with Labo-Based Education (LBE);

1. The increasing of learning quality of SCL based and implementation of LBE.
2. Development of international class/program.
3. The increasing of students' and lecturers' activities in international academic forum.
4. The increasing of alumnus competitiveness at national and international level.
5. The realization of conduciveness situation at campus life in order to support students' creativity and potency development.

Faculty organizer of international quality research.

6. The realization of continuous and quality research culture.
7. The produce of international research which contributed to development of knowledge, technology, art, and culture at Indonesian maritime continent in order to increase country competitiveness.

DEVELOPMENT ISSUE

A. Academic Affairs: Education and Research

A1. To increase Grade Point Average (GPA/IKK) ***(Education)***

A2. To reduce waiting time of students to get their first job ***(Education)***

A3. To increase student activities (PKM) ***(Education)***

A4. To improve output-input ratio ***(Education)***

A5. To improve quality of student's final project ***(Education)***

A6. To strengthen supervising students' final project ***(Education)***

A7. To make students enter the laboratory at the beginning of 7th semester to initiate their final projects **(Education)**

A8. To make more coordination among Vice Dean, Heads of Department and Heads of Study Program ***(Education)***

A9. To arrange class scheduling more properly ***(Education)***

A10. To shift learning method to Student Centered Learning (SCL) ***(Education)***

A11. To increase opportunities of research and community service ***(Research & Community Service)***

A12. To increase contribution of lectures to Study Program ***(Education)***

A13. To evaluate lecture's performance ***(Education)***

A14. To shorten average length of study per student ***(Education)***

A15. To improve curriculum ***(Education)***

A16. To increase number of student intake ***(Education)***

A17. To increase accreditation status

A18. International accreditation

B. Planning and Administration Affairs

B1. To maintain quality of JNS (Non subsidized students) ***(Education)***

B2. To promote public relations of FT UNHAS ***(Education and Research)***

B3. To increase number of regular students intake in Master and Doctoral programs ***(Finance)***

B4. To increase number of non-regular students intake in Master and Doctoral programs ***(Finance)***

B5. To increase number of teaching staffs to be involved with consultancy services ***(Finance)***

B6. To increase number of laboratories to collaborate with government, industry, and international organizations ***(Research)***

B7. To increase number of laboratories to collaborate with private universities ***(Research and Finance)***

B8. To establish a training center for professional certification by certified laboratories ***(Community Service and Finance)***

B9. To provide inspection and training services for industries by certified laboratories ***(Community Service and Finance)***

B10. To provide Research and Development facilities for industry by Center of Technology ***(Research and Finance)***

B11. To provide training and certification to meet the government regulation

C. Students Affairs

C1. TOEFL

C2. Research for students

C3. Student involvement in safe campus

C4. Increase scholarships

C5. KKN (Student Field Service)

C6. Innovate program at each study program

C7. Sports

C8. Competition / Contest

C9. To increase active students in extra curricular activities (at least 1,000 students)

C10. Transcript for extra-curricular activities

C11. Annual budget for student activities – Rp.40 billion per year

C12. Basic study skills

C13. Alumni association

C14. Job placement center

FORMULATION of STRATEGIC PLAN ACHIEVEMENT

Organizer of SCL (Student Centered Learning) Based Learning which Characterized by LBE Model

1. The improvement of SCL based learning quality and implementation of LBE
   - Increasing the capacity of academic community in SCL based learning, with the work program
     - Improvement programs at students capacity in learning based SCL and LBE
     - Improvement programs at lecturer capacity in the method and learning assessment/evaluation based on SCL and utilization of ICT/TIK as a SCL-LBE based learning media
     - Transformation of final assignment implementation to LBE model
     - Comprehensive capacity strengthening program, mindset, act and behavior of academic community in SCL and LBE based learning
   - Increasing SCL and LBE based learning facility
     - Expansion access program and the increasing of learning source quality. Also the improvement of the amount and the quality of learning source based on ICT/TIK
     - Quality improvement program and updating GBRP and SAP of the course by emphasizing at LBE implementation model.
   - Increasing the quality and the effectiveness of the implementation of SCL and LBE based learning
     - Quality and quantity improvement program of SCL and LBE based learning variety of methods
     - The improvement of students learning evaluation methods (assessment) based on SCL and LBE
     - Monitoring program and evaluation implementation of SCL and LBE based learning
     - The improvement of system quality program and organization in implementing SCL and LBE based learning
2. Increasing the amount of international class/program
   - Development of international class/program at the several department
     - Improvement program of curriculum based on international standard

- Development of international program (dual degree, twining program, exchange program)
- International class/courses promotion program.

3. The improvement of students and lecturers activities in any international academic forum

- To extend the network partnership with universities and leading agencies outside and inside the country
  - Extending and increasing academic cooperation with universities/agencies inside and outside of the country
  - Improvement and expansion program of students and lecturer active role in any international workshop, conference and seminar
  - Improvement program of academic cooperation management quality and effectiveness
- To increase students' and lecturers' academic knowledge, conception and experience at universities/agencies inside and outside the country
  - Improvement and expansion program in post-doc, sandwich, fellowship, and accreditation (quality assurance) at university overseas.
  - Improvement program at students and lecturers exchange program at leading university inside and outside the country
  - Improvement program of external examiner and supervisor quality and quantity inside and outside the country
  - Improvement program at English skills and TIC (Technology, Information and Communication) for the students and the lecturers
  - Improvement and expansion of international and national conference, seminary, workshop and publication

4. The improvement alumnus competitiveness in national and international level

- To increase the network with alumnus and stakeholder
  - Improvement program in the cooperation intensity and quality with the alumnus

- Improving the quality of general study program which involves the alumnus and the alumnus user
- Implementation of Job Market development programs in UNHAS
- Optimization program of TIU (Technical Implementation Unit) Job Placement Program function

- To improve entrepreneurial skills of students
  - Increasing the number and quality of student entrepreneurial business units
  - Increasing the number and quality of students entrepreneurship cooperation
  - Quality and quantity improvement program of entrepreneurship course
- To develop relevant soft skill required by the student in corresponding projections on future competency
  - Student creativity training program
  - Integration program of soft skill into the curriculum program of study
  - Improving the students work readiness (job skills); retooling and apprenticeships for senior students

5. The creation of the International standard of learning environment

- To improve E-Library system quality service
  - Improving the e-library based quality service
  - Improving the e-library facilities and infrastructures
  - Improving the quality and quantity of digital library material and e-journal
  - Improving the quality and quantity of librarian
  - Improving the system effectiveness, management and organization of the library
- To develop Knowledge Management System (KMS)
  - Improving the system effectiveness, management and organization of the Knowledge Management System (KMS)
  - Improving the capacity of KMS human resources
- To improve the quality and adequacy of facilities and infrastructure levels of learning

- Classroom renovation and development of new classroom and laboratory
- Increasing the quantity and quality of lectures and lab space facilities
- Increasing the level of comfort and safety of lecture halls and laboratories.
- Enhance the safety and the hygiene of campus environment

6. Developing a conducive environment in order to support students potential and creativity

- To improve the quality of the implementation of student learning capacity
  - Improvement program of the quality of Basic Study Skills (BSS) implementation
  - English language enhancement program and improving the students' oral and writing skills
- To develop the academic cultures and behaviors, ethics and scholarships
  - Improvement program at academic guideline and campus code of conduct which covering the regulation of expression, academic freedom and scholarships behavior
  - Improvement program of quality and quantity of mental activities
  - Development of discipline enforcement at campus life in both academic and non-academic activities
- To encourage and facilitate student participation in various of national and international events
  - Increasing the effectiveness of students mentoring who will follow the student competition
  - Provision of facilities, budget and incentive for the students who will participate at any national and international students competition

Implementation of international quality research

1. The creation of a sustainable and beneficial quality research culture.

- To form a group of researchers / interest involving both senior and junior faculty in the scientific disciplines and cross-disciplinary research in accordance with the roadmap

- A mapping program of lecturer competence in the field of research
- Improvement program of lecturer participation in any national and international research
- Improvement program of cognate research roadmap, inter and cross-disciplinary
- Improvement program of students involvement in lecturer research

2. The produce of international research publication results to the development of science and technology of maritime continent

- To expand and enhance research collaboration with prominent university/ institutions both national and international
  - Promotion program of research results at national and international level in order to establish research collaborations
  - Increasing international publications and the involvement of lecturers in international seminars/conference/workshop and seminar
  - Increasing the number and quality of research collaborations in both national and international partners
- To encourage and facilitate the faculty in the acquisition and implementation of competitive research grants both national and international level
  - To increase lecturer and students access to the current international journal
  - To expand and enhance lecturer and students access to research facilities at both national and international
  - Lecturer research apprenticeship program at the leading University/institutions at both in national and international level
  - To Increase the acquisition of Intellectual Property Rights and Patents
  - To increase the number and quality of facilities, infrastructure and prominent research laboratory facilities
  - To held training program in making proposal, writing of international publications and the acquisition of IPR/Patents
- To develop research in the field of maritime continent, both in the field of cognate study program, as well as inter-and cross-disciplinary

- Infrastructure development program of research to explore the uniqueness\excellence both in cognate continents maritime and in inter-and cross-disciplinary

- To promote studies and research in the field of maritime continent at the national and international level
  - Implementation of national and international seminar with Maritime Continent theme
  - Expansion and improvement program of the maritime continent research collaboration at both national and international level
  - Publication program of studies and research result in the Maritime Continent of Indonesia

3. The integration of research activities with teaching and community service (USR)
   - To expand and enhance cooperation in the utilization of research results both locally, nationally and internationally
     - The development program of the incubator of eminent research results
     - Scale up program in utilization of the eminent research result at the industry scale through a good cooperation in locally, nationally and internationally
   - To integrate lecturer's research result in the learning process
     - Internal grant program of book writing and publishing, teaching material, module based on lecturer research result.
     - Optimization of field laboratory role
     - The realization program of research based academic atmosphere.

Realization of University Social Responsible (USR)

1. The improvement of UNHAS engineering faculty in USR locally, nationally and internationally
   - To expand and improve cooperation with partners in the university social responsibility activities (USR), locally, nationally and internationally
     - Synchronization program of university social responsibility activities
     - Expansion and quality improvement program of cooperation in the field of social responsibility locally, nationally and internationally

- To increase the involvement of the Faculty of Engineering UNHAS academicians in university social responsibility activities (USR)
    - Increasing the number and quality of USR activities involving faculty and students
    - Re-orientation and revitalization program of Field Work Experience (CCN) in the context of community empowerment and resolving problems faced by the community.

2. Spreading the public access to the Faculty of Engineering UNHAS fairly
    - To expand and improve the quality of Tree higher education services activities that can be accessed by all levels of society
        - Increasing the quantity and quality of service for the community (training, consulting, utilization of campus facilities, etc.)
        - Increasing the quantity and quality of MK delivery based on Open Course Ware (OCW) in the Faculty of Engineering UNHAS website
        - Expansion and improvement program of the scholarship sources
        - Increasing the capacity to accommodate high academic potential student but from poor society
        - Training program for the other university in order to increase the quality of university three higher services quality
3. The increasing of the UNHAS engineering faculty's role and contribution in local eminent development to the national and international level.
    - To develop and promote the uniqueness
        - Developing program of study centre in order to develop the local uniqueness (study, work and product)
        - Program development cooperation with relevant partners to develop local uniqueness (studies, work and products)
        - Implementation program of performances, exhibitions and seminars in order to raise the uniqueness/superiority of the local to national and international level
        - Book publishing program which is connected with the local uniqueness aspect (Study, work and product)

- Development program of students activities which is connected with the local eminent and uniqueness

Effective and efficient way of organization and management to meet the goal of University three higher education services (vision-mission)

1. To Create an effective organization to achieve the goal of Tridharma (University three pillars of higher education services) (Vision-Mission)
   - Restructure and redesign program of UNHAS engineering faculty
     - Evaluation program of the effectiveness of the UNHAS Faculty of Engineering organization at this time
     - Analysis program on the need of change and development appropriate with the environmental dynamics strategy, rules and legislation
     - Restructuration program of the organization (Statuta, OTK, Policy, and SOP/Manual)
     - Restructuration of the capacity of the service unit which covering the human resources aspect, technology, work ethic and job design
   - Development and expansion of Engineering faculty of UNHAS
     - Developing and follow up the effort of the engineering faculty development and expansion in the first stage become 3 Faculty; Faculty of Architecture and Urban Planning, Faculty of civil and environmental engineering, Faculty of industrial engineering (Covering Machine engineering, Electrical and informatics engineering, Shipbuilding and geology engineering)
     - Establish the Development and Expansion Team of UNHAS engineering faculty
     - Realization program of UNHAS engineering faculty development and expansion
2. The improvement of management effectiveness
   - The increasing of the finance management effectiveness, efficiency, transparency and accountability.
     - The improvement of the financial system, management and organization which has been developed by I-MHERE

- The improvement and development of financial management SOP/manual availability in every work unit.
- The improvement program of the effectiveness and efficiency of budgeting, administration and budget reporting/finance
- Increasing the capacity and professionalism of the financial management staff
- Improvement and development program at information system utilization by the finance management

- Strengthening the planning capacity at each work unit
  - Improvement program of planning cycle and increasing the quality of work unit RKAT forming based on planning cycle
  - Increasing the use of information system in forming RKAT
  - Improving the capacity and professionalism of human resources in the field of planning in every work unit
- The increasing of the effectiveness, efficiency, transparency and accountability of human resources management system
  - Improving the system, management and organization of human resources management (recruitment, placement, development, career, and retirement)
  - Improvement and development program of the availability of human resources management SOP/manual in every work unit
  - Improving the competence based human resources Renstra (strategic plan)
  - Improving the professionalism and the capacity of the staff in the field of human resources management in every work unit
  - Improving the use of human resources management system information
- Increasing the effectiveness, efficiency, transparency and accountability of management system facility and infrastructure
  - Improving the system, management, and organization in managing facilities and infrastructure (planning, procurement, utilization, maintenance and disposal)

- Improving the availability of SOP/manual in facility and infrastructure management at every work unit
- Developing long term planning and Master plan of the campus (Blueprint)
- Increasing the professionalism and capacity of human resources in the field of infrastructure and facility management in every work unit
- Improving the use of system information in facility and infrastructure management.
- Improving the quality of the operational and asset maintenance

- Increasing the effectiveness, efficiency, transparency and accountability of academic service system
  - Improving the quality of students admission system
  - Improving administration quality of SCL and LBE based learning service
  - Improving academic information system
  - Developing online academic service
  - Integrating the academic service system with human resource service, asset and finance
  - Increasing the capacity and professionalism of human resources in the field of academic service management at every work unit

3. The increasing effectiveness and efficiency of quality assurance system and internal supervision system
   - Increasing the effectiveness and efficiency of quality assurance system in implementation of three higher education service and university management
     - Improving and empowering the capacity and professionalism of quality assurance system in every work unit
     - Implementation program of three higher education services and overall management
     - Meta evaluation program of quality assurance system
     - Improving the instrument and quality standard
     - Improving the system, management and organization of quality assurance system
     - Improving the capacity and professionalism of quality auditor

- The increasing of effectiveness and efficiency of internal supervision system
    - Restructuration program of SPI institutional
    - Increasing the capacity and professionalism of internal auditor
    - Improvement program of code of conduct, SOP, instrument and internal control reporting system

4. The increasing of accountability and public image at the local, national and international stage
    - Increasing the accreditation status of PS both by BAN-PT or international accreditation institution
        - Improving the filling of EPSBED in every work unit
        - Increasing the PS accreditation status by BAN-PT
        - Increasing effectiveness and efficiency of PS accreditation implementation by international accreditation institution
    - Encourage and facilitate the work unit in obtaining certification from international and national certification institution
        - Preparation of the document related to work unit certificate
        - Socialization program of work unit certification
        - Capacity and professionalism preparation of the work unit staff who will be certified
        - Increasing the effectiveness and efficiency of work unit certification implementation
        - Evaluation and monitoring program of certified work unit performance
    - Optimizing the role and function of public relation in local, national and international stage
        - Increasing system effectiveness, function mechanism and public relation role
        - Increasing the capacity and professionalism of public relation management
        - Hold any events which can increase the image of UNHAS nationally and internationally

- Optimize the UNHAS engineering faculty assets for income generating (including mobile asset and non-mobile asset, RESO program, Tamalanrea Campus and New Campus at Gowa)
    - Empowering the assets and infrastructure function of engineering faculty with a big potential to draw income generating
    - Increasing system, work unit organization effectiveness and efficiency. Increasing the capacity and professionalism of asset management staff which potentially can draw income generating
    - Optimize the Tamalanrea campus asset and the infrastructure for research and academic activities which potentially can draw income generating (Centre Study and recent technology research, production centre and commercialization of R&D production).
    - Evaluation and monitoring program of asset management which potentially can draw income generating
- Expanding and increasing the cooperation intensity for income generating
    - Increasing the effectiveness, efficiency, transparency, and system accountability, organization and cooperation mechanism
    - Promoting the potential of UNHAS engineering faculty at local, national and international industries/institutions to rally an income generating cooperation
    - Monitoring and evaluation of cooperation in order of income generating
    - Increasing the income generating management staff professionalism and capacity

QUANTIFICATION ACHIEVEMENTS TARGET of DEVELOPMENT ISSUES

A. Targets in Academic Affairs

Issues	Existing condition(2010)	Mid-term goals(2015)	Long-term goals (2020)
A1. To increase Grade Point Average (GPA/IKK)	2.7	3.0	3.2
A2. To reduce waiting time of students to get their first job	1 year	9 months	6 months
A3. KKN (Student Field Service) completion	30% of students to finish KKN before the 7th semester	70% of students to finish KKN before the 7th semester	100% of students to finish KKN before the 7th semester
A4. To improve output-input ratio	300 (graduates on time) /900 (total intake) =30%	50%	75%
A5. To improve quality of student's final project	-problem solving + field survey -local journal -module development -design or research -analysis+design+reliability -testing -LBE (0%)	LBE (25%)	LBE (50%)
A6. To strengthen supervising students' final project	Length of supervision (1 to 2 years)	Maximum 6 months	Maximum 6 months
A7. To make students enter the laboratory at the beginning of 7th semester to initiate their final projects	10%	50%	75%
A8. To make more coordination among Vice Dean, Heads of Department and Heads of Study Program	Adequate	More intensive (at least every month) + dissemination	More intensive (at least every month) + dissemination
A9. To arrange class scheduling more properly	Limited due to facilities	No more conflicting schedules	No more conflicting schedules; re-arrange the schedule (morning for classes; afternoon for meetings, researches, etc)

A10. To shift learning method to Student Centered Learning (SCL)	SCL=30%, LBE=10%	SCL=75%, LBE=30%	SCL=100%, LBE=75%
A11. To increase opportunities of research and community service	Rp.400 million / year (Seed money from faculty)	Rp.600 million / year	Rp.1 billion / year
A12. To increase contribution of lectures to Study Program	10%	50%	100% of UNHAS FE staffs
A13. To evaluate lecture's performance	Evaluation by department	Evaluation by students + evaluation by department	Comprehensive evaluation
A14. To shorten average length of study per student	5.3 years	5 years	4.5 years
A15. To improve curriculum	Prescriptive curriculum	Partially LBE + fully SCL	LBE + SCL + international standard (Outcome based curriculum)
A16. To increase number of students intake	900/year	900/year (+more S2 students)	900/year (+more S2/S3 students)
A17. To increase accreditation status	2 study programs with "A" accreditation	9 study programs with "A" accreditation	All study programs with "A" accreditation
A18. International accreditation	N/A	2 study programs	4 study programs

B. Targets in Planning and Administration Affairs

Issues	Existing condition(2010)	Mid-term goals(2015)	Long-term goals (2020)
B1. To maintain quality of JNS (Non subsidized students)	>Reschedule of test >200 of 900 students (Rp 25 million as entrance fee + Rp 5 million as tuition fee per year)	400 of 900 students (Fee Rp 50 million + Rp 6 million per year)	600 of 900 students (Fee Rp 75 million + Rp 8 million per year)
B2. To promote public relations of FT UNHAS	East part of Indonesia	More intensive	All over Indonesia

		(including Kalimantan)	
B3. To increase number of regular students intake in Master and Doctoral programs	>S2: 250 students per year (Fee: Rp 8 million per year) >S3: 20 students per year / Fee: Rp 13 million per year)	>S2: 450 students per year (Fee: Rp 13 million per year) >S3: 50 students per year / Fee: Rp 20 million per year)	>S2: 600 students per year (Fee: Rp 20 million per year) >S3: 100 students per year / Fee: Rp 30 million per year)
B4. To increase number of non-regular students intake in Master programs	60 students (Fee: Rp 12 million per year)	150 students (Fee: Rp 20 million per year)	250 students (Fee: Rp 30 million per year)
B5. To increase number of teaching staffs to be involved with consultancy services	Fee = 5% of physical contract	Number of staffs involved should be increased.	More staffs involvement
B6. To increase number of laboratories to collaborate with government, industry, and international organizations	N/A	Each laboratory should be self-supported for operation and maintenance or Rp 25 billion per year per faculty.	Each laboratory should be self-supported for operation and maintenance or Rp 100 billion per year per faculty.
B7. To increase number of laboratories to collaborate with private universities	N/A	64 laboratories x Rp 20 million x 10 activities	64 laboratories x Rp 30 million x 10 activities
B8. To establish a training center for professional certification by certified laboratories	N/A	2 categories x 13 study programs x 20 activities x Rp 10 million.	5 categories x 13 study programs x 30 activities x Rp 15 million.
B9. To provide inspection and training services for industries by certified laboratories	N/A	-15 laboratories x 10 testing x Rp 20 million per year	-25 laboratories x 20 testing x Rp 30 million per year
B10. To provide Research and Development facilities for industry by Center of Technology	N/A	2 departments to obtain tenants to rent UNHAS facilities	6 departments to obtain tenants to rent UNHAS facilities
B11.To provide training and certification to meet the government regulation	N/A	25 laboratories x 10 activities x Rp50 million per year	25 laboratories x 20 activities x Rp75 million per year

C. Targets in Students Affairs

Issues	Existing condition(2010)	Mid-term goals(2015)	Long-term goals (2020)
C1. TOEFL	400	450 / minimum	475 / minimum
C2. Research for students (Awards out of proposals)	14/60	26/130	39/195
C3. Student involvement in safe campus	N/A	50% of students active in keeping campus safe	100% of students active in keeping campus safe
C4. Increase scholarships	3,000 students to receive Rp.200,000 per month	4,000 students to receive Rp.500,000 per month	4,000 students to receive Rp.1,000,000 per month
C5. To increase student activities (PKM)	14/year with category "B"	26/year with category "B"	39/year with category "A"
C6. Innovated program at each study program	1 per study program	2 per study program	3 per study program
C7. Sports for students	N/A	Each student plays 1 sport (recommended)	Each student plays 1 sport (mandatory)
C8. Competition / Contest (Awards out of events)	N/A	4/13 per study program	15/39 per study program
C9. To increase active students in extracurricular activities	N/A	1,000 students	2,000 students
C10. Transcript for extra-curricular activities	N/A	1,000 students to receive transcript	2000 students to receive transcript
C11. Annual budget for student activities	N/A	Rp.20 billion per year	Rp.40 billion per year
C12. Basic Study Skills (BSS) at FT UNHAS	N/A	FT UNHAS based BSS is mandatory	FT UNHAS based BSS is mandatory
C13. Supports from alumni association	Newly established	To provide scholarships, job opportunities, guest lecturers, etc.	To provide scholarships, job opportunities, guest lecturers, etc.
C14. Job placement center or division	N/A	39 companies will accommodate graduates of FT UNHAS	52 companies will accommodate graduates of FT UNHAS

**Technical Cooperation Project for
the Development of the Engineering Faculty of
Hasanuddin University**

GUIDELINE FOR THE INTRODUCTION OF

LABO-BASED EDUCATION (LBE)

PEDOMAN UNTUK PENGENALAN

PENDIDIKAN BERBASIS LABORATORIUM (LBE)

March 2011

**Faculty of Engineering UNHAS
cooperating with
Japan International Cooperation Agency (JICA)**

Legalization

Halaman Pengesahan

GUIDELINE FOR THE INTRODUCTION OF LABO-BASED EDUCATION (LBE)

PEDOMAN UNTUK PENGENALAN PENDIDIKAN BERBASIS LABORATORIUM (LBE)

Approved and legalized by the Senate of
Faculty of Engineering, Hasanuddin University
Makassar, March 28th 2011

Disetujui dan disahkan melalui Rapat Senat
Fakultas Teknik Universitas Hasanuddin
di Makassar, tanggal 28 Maret 2011

Chair of Senate, Faculty of Engineering, UNHAS *Ketua Senat Fakultas Teknik,* *UNHAS*	Secretary of Senate, Faculty of Engineering, UNHAS *Sekretaris Senat Fakultas Teknik,* *UNHAS*
Dr-Ing. Ir. Wahyu H. Piarah, MSME. NIP. 19600302 198609 1 001	**Dr. Ir. Muhammad Arsyad, MT.** NIP. 19601231 198609 1 001

Introduction and Acknowledgement

This guideline is drafted in Technical Cooperation Project (TCP) for the Development of the Engineering Faculty of Hasanuddin University as the Project's Activity 2-1 "Formulate plan and guideline to transform the assignment of academic staff and research activity into a Labo-based Education (LBE) system", for its Output 2 "The education and research capacity of academic staff through research activities is enhanced". Texts in Indonesian follow explanations by English.

Appreciation should be delivered to JICA missions and experts for their presentations on theory of LBE in Engineering Education in Japanese Universities and experiences of research activities based on laboratory. In particular, for drafting this guideline inputs from the professors which dispatched by JICA were fully referred. Faculty of Engineering UNHAS shall express many thanks to them.

We hope that this guideline could serve as primary basis for enhancement of education, research, and community services through implementation of LBE system for each study program in the Engineering Faculty of Hasanuddin University. This is expected to foster competitive role and contribution of the Faculty in providing technological expertise in order to meet the needs of current and future industrial society.

Makassar, 28 March 2011
Faculty of Engineering, Hasanuddin University
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Pendahuluan dan Ucapan Terimakasih

Pedoman ini disusun dalam kerangka Proyek Kerjasama Teknis bagi Pengembangan Fakultas Teknik Universitas Hasanuddin, sebagai Kegiatan Proyek 2-1 "Merumuskan rencana dan pedoman untuk mengubah bentuk (men-transformasi) penugasan staf akademik dan kegiatan penelitian ke dalam sistem pendidikan berbasis laboratorium (LBE)" untuk Keluaran 2 "Kapasitas pendidikan dan penelitian staf akademik (dosen) melalui kegiatan penelitian ditingkatkan." Teks dalam Bahasa Indonesia mengikuti penjelasan dalam Bahasa Inggris.

Penghargaan disampaikan kepada Proyek Misi JICA dan para tenaga ahli untuk presentasi-presentasi tentang teori LBE pada pendidikan teknik di universitas-universitas Jepang serta pengalaman pelaksanaan kegiatan penelitian berbasis laboratorium. Khususnya guna penyusunan Pedoman ini, berbagai masukan dari para Profesor yang diutus oleh JICA telah menjadi acuan yang mendasar. Fakultas Teknik Universitas Hasanuddin menyampaikan terima kasih yang sebesar-besarnya kepada mereka.

Kita harapkan Pedoman ini dapat menjadi landasan utama bagi peningkatan mutu pendidikan, penetitian, dan pengabdian kepada masyarakat melalui pengembangan dan implementasi sistem LBE untuk setiap Program Studi dalam lingkungan Fakultas Teknik Universitas Hasanuddin. Hal tersebut selanjutnya diharapkan akan meningkatkan peran kompetitif dan kontribusi Fakultas Teknik dalam menghasilkan keahlian teknologi yang tanggap terhadap kebutuhan masyarakat industri masa kini dan mendatang.

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Part 1. What is Labo-Based Education and research?
Bagian 1. Apa itu Laboratorium berbasis Pendidikan dan Penelitian?

Labo-Based Education (LBE) is one of educational methods which foster students through research works based in laboratory. Therefore LBE also could be synonymous with research based education and / or problem based learning.

LBE adalah salah satu metode pendidikan yang mendorong para mahasiswa melakukan penelitian berdasarkan kegiatan dalam laboratorium. Oleh karena itu, LBE juga identik dengan pendidikan berbasis penelitian dan / atau pembelajaran berbasis masalah.

What does a laboratory mean in terms of LBE?

Apa yang dimaksud dengan laboratorium menurut LBE?

Even now Faculty of Engineering, UNHAS (herein after referred to as the Faculty) has a lot of laboratories, however, most of them always functions as a place for students' practice and much different from the concept of laboratory in engineering universities of Japan. A laboratory in terms of LBE should be defined as "Research infrastructure consisting of faculty members, undergraduate and graduate students, and facilities targeting specified education subject and research topics".

Bahkan sekarang Fakultas Teknik UNHAS (yang selanjutnya disebut sebagai FT UNHAS) memiliki banyak laboratorium, namun, kebanyakan selalu berfungsi sebagai tempat praktikum mahasiswa dan sangat berbeda dari konsep laboratorium di universitas teknik di Jepang. Laboratorium dalam konteks LBE harus didefinisikan sebagai "Infrastruktur penelitian yang terdiri dari dosen/staf pengajar, mahasiswa sarjana dan pascasarjana, dan fasilitas pendidikan yang sasarannya adalah matakuliah-mata kuliah dan topik-topik penelitian tertentu."

What is research?

Apa itu penelitian?

A JICA expert, Prof. NAGAO Masayuki of Toyohashi University of Technology, states that "the result of research work yields scientific papers, patents or new technologies while projects does not but only follow what is already known". He also points that "In doing research works, we must always consider *What's New*? New idea, new concept, new findings, etc. are essential to create new technologies and to write scientific papers."

Seorang expert JICA, Prof NAGAO Masayuki dari Toyohashi University of Technology, menyatakan bahwa "Penelitian menghasilkan karya ilmiah, hak paten, atau teknologi baru sementara proyek tidak demikian, melainkan hanya mengikuti apa yang sudah diketahui."Beliau juga menekankan bahwa "Dalam melakukan penelitian, kita harus selalu mempertimbangkan "Apa yang Baru". Ide-ide baru, konsep-konsep baru, penemuan-penemuan baru, dan lain-lain, yang penting untuk menciptakan teknologi baru dan menulis karya ilmiah."

Part 2. Why is LBE important for us?
Bagian 2. Mengapa LBE sangat penting bagi kita?

LBE is one of the characteristics in engineering education of Japanese universities and, according to Prof. Satryo of ITB and JICA Indonesia, it is expected to bring the Faculty positive impacts as follows;

- To improve the quality and relevance of engineering education
- To increase faculty members involvement in research
- To increase students involvement in laboratory
- To enhance 'student-centered learning' process
- To increase interaction between faculty members and students

LBE merupakan salah satu karakteristik pendidikan teknik di kampus-kampus Jepang dan menurut Prof. Satryo dari ITB dan JICA Indonesia, hal tersebut sangat diharapkan akan memberikan dampak positif bagi fakultas, sebagai berikut;

- *Untuk meningkatkan kualitas dan relevansi pendidikan teknik.*
- *Untuk meningkatkan keterlibatan anggota fakultas dalam penelitian*
- *Untuk meningkatkan keterlibatan mahasiswa di laboratorium*
- *Untuk meningkatkan proses pembelajaran yang berpusat pada mahasiswa*
- *Untuk meningkatkan interaksi antara anggota fakultas dan mahasiswa*

Prof. NAGAO also notes the importance of LBE as "Teaching gives students only knowledge. LBE offers students how to use the knowledge to solve the real problems. So LBE (Graduation Research) is very important and is thought as final education in university. Through the research work students have experiences to solve problems which will occur in industries they will join."

Prof Nagao juga menjelaskan pentingnya LBE dalam "Memberikan pengetahuan pada mahasiswa. LBE menawarkan bagaimana mahasiswa menggunakan pengetahuan untuk memecahkan permasalahan nyata. Jadi LBE (Penelitian Tugas Akhir) sangat penting dan dianggap sebagai akhir dari pendidikan universitas. Melalui penelitian mahasiswa memiliki memperoleh pengalaman untuk memecahkan masalah yang akan terjadi dalam industri tempat mereka akan bergabung."

Part 3. How can we implement LBE?
Bagian 3. Bagaimana kami bisa melaksanakan LBE?

Minimum requirements to implement LBE are 1) curriculum, 2) human resources, 3) facility, and 4) research topics in the form of roadmap, 5) laboratory activities, 6) Standard Operational Procedure (SOP) for Laboratory management.

Persyaratan minimum untuk melaksanakan LBE adalah

1) *Kurikulum*
2) *Sumber daya manusia*
3) *Fasilitas*
4) *Topik-topik penelitian dalam peta jalan penelitian*
5) *Kegiatan laboratorium*
6) *Prosedur Operasional Standar (*SOP*)pengelolaan laboratorium*

(1) Curriculum to underlie LBE

Kurikulum untuk mendasari LBE

In order to practice LBE through research works, curriculum in all study programs and departments of the Faculty should be elaborated. Firstly, research activities should officially be accommodated in curriculum. They can be done in the form of “a special topic course”, “project-based research or case-based research”, “seminar”, “undergraduate thesis or design project (for S1 student)”, “master thesis (for S2 student)”, or “dissertation (for S3 student)”. Secondly, curriculum should make students involved with research activities for certain period in whole academic years. For undergraduate (S1) students, ideally research works starts from the 7th semester while for master (S2) students from the 3rd semester, so that at least 1 year can be spared for their research activities. Thirdly, each laboratory is responsible for minimum 4 credits contribution of subjects in curriculum. Fourth, compatibility of final exam system and graduation exam system with the LBE system in terms of time and procedure. Fifth, curriculum towards “research university” and “techno-entrepreneurship”.

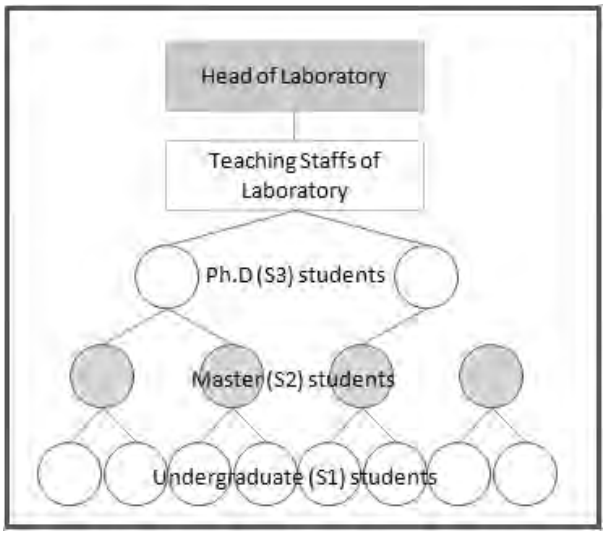
Untuk mempraktekkan LBE melalui penelitian, kurikulum di semua jurusan dan program studi FT UNHAS wajib dikembangkan. Pertama, kegiatan penelitian resmi harus diakomodasi dalam kurikulum. Mereka dapat dilakukan dalam bentuk "Kuliah topik khusus," “penelitian berbasis proyek/kasus nyata”, "seminar", "Skripsi atau proyek disain (untuk mahasiswa S1)", "tesis master (untuk mahasiswa S2)" atau "disertasi (bagi mahasiswa S3)". Kedua, kurikulum harus membuat mahasiswa terlibat dalam kegiatan penelitian untuk jangka waktu tertentu pada keseluruhan tahun akademik. Untuk mahasiswa S1, idealnya penelitian dimulai dari semester ketujuh sementara penelitian mahasiswa (S2) dimulai dari semester 3 sehingga minimal waktu 1 tahun dapat digunakan

untuk kegiatan penelitiannya. Ketiga, setiap laboratorium memiliki kontribusi mata kuliah pada kurikulum sebanyak minimum 4 sks. Keempat, adanya kesesuaian dalam hal waktu dan prosedur antara sistem ujian akhir dan ujian kelulusan dengan sistem LBE. Kelima, kurikulum menuju pada "universitas riset" dan "techno-entrepreneurship"

(2) Human resources: laboratory members / hierarchy and their roles
Sumber daya manusia: hierarki/anggota laboratorium dan peran mereka

Laboratory members / hierarchy
Hierarki/Anggota laboratorium

- A laboratory as basement of LBE shall be composed by following members:
  Sebuah laboratorium sebagai basis dari LBE terdiri dari anggota sebagai berikut:
  - Head of laboratory
    Kepala Laboratorium
  - Secretary of laboratory *
    Sekretaris Laboratorium
  - Teaching staffs of laboratory
    Tenaga pengajar pada lab.
  - Doctor course (S3) students**
    Mahasiswa program Doktor (S3)
  - Master course (S2) students**
    Mahasiswa program master (S2)
  - Bachelor course (S1) students
    Mahasiswa program sarjana (S1)
  - Technicians or Laborants
    Teknisi atau Laboran



* if necessary *(bila perlu)* ** if available *(bila ada)*

NOTE/CATATAN:

- UNHAS' "a Head : a Secretary : Teaching Staff" Model could be regarded in composition as Japan's "a Professor : an Associate Professor : an Assistant Professor" Model, yet with "multi-assistants" depending on number of teaching staff within the same field of research group.
  Model UNHAS dengan komposisi "Kepala Lab : Sekretaris Lab : Staf Akademik/Staf Pengajar" dapat disejajarkan dengan Model Jepang "Professor : Asosiasi Profesor : Asisten Profesor" namun dengan jumlah asisten majemuk lebih dari seorang, tergantung pada

jumlah staf pengajar dengan kelompok bidang keahlian yang sama.

- Quantity of laboratory members should fit with available capacity of room.
  Jumlah anggota laboratorium semestinya sesuai dengan kapasitas ruang yang tersedia (terutama menyangkut jumlah mahasiswa S1, S2, S3).
- Variation of laboratory model is possible considering adoption/adaptation of or combination with other models, however should be within the same core model
  Variasi model laboratorium dimungkinkan mengingat adopsi/adaptasi atau kombinasi dengan model lain, namun sebaiknya tetap dalam model inti yang sama.

- Head, Secretary, and teaching staffs of laboratory are ideally Ph.D. holders. However, in due process of laboratory formation when PhD. holders have not been available, at least Head of Laboratory is Ph.D. holder. In case still not available temporarily a Master-degree holder lecturer with the rank of "Lector Kepala" may act as Head of Laboratory until Ph.D. holder is available.
  Kepala, Sekretaris, dan Staf Akademik laboratorium idealnya bergelar Ph.D./Doktor Namun, saat dalam proses pembentukan laboratorium belum ada staf bergelar Ph.D./Doktor maka setidaknya Kepala Laboratorium saja. Pada kasus dimana sama sekali belum ada staf laboraorium yang bergelar Ph.D/Doktor maka seorang staf pengajar bergelar Master/Magister dengan pangkat atau jabatan akademik Lektor Kepala dapat diangkat menjadi Kepala Laboratorium.

- Those who are assigned as Head, Secretary, or Teaching Staffs of laboratory must be full time employees.
  Staf akademik yang ditugaskan sebagai Kepala Laboratorium, Sekretaris, ataupun Staf Pengajar anggota Laboratorium harus tenaga penuh waktu.

- Students of S3, S2, and S1 choose and enter laboratory based on suitable capability and interest, and each of them belongs to one laboratory together.
  Mahasiswa S3, S2, dan S1 memilih dan memasuki laboratorium berdasarkan kesesuaian kemampuan dan minat, dan mereka bersama-sama menjadi bagian dalam satu keanggotaan laboratorium.

Roles of laboratory members

Peran anggota laboratorium

- Head, secretary, & teaching staff of laboratory should act as facilitators & mediators
  Kepala, Sekretaris, dan Staf Pengajar dalam laboratorium harus bertindak sebagai fasilitator dan mediator.

- Head, secretary, and teaching staffs should provide overall design of research topics in laboratory in a form of "Research Roadmap", and every topic should be

divided into several subtopics for students' research activity.

Kepala, Sekretaris, dan Staf Pengajar dalam laboratorium harus menyediakan desain keseluruhan topik penelitian di laboratorium dalam bentuk "Roadmap Penelitian" *dan setiap topik dibagi menjadi beberapa sub-topik masing-masing untuk kegiatan penelitian mahasiswa.*

- Senior students assist junior students as a mentor; subsequently S3 students for S2's and S2's for S1's.

  Mahasiswa senior sebagai mentor membantu membimbing mahasiswa junior; mahasiswa S3 membimbing mahasiswa S2, mahasiswa S2 membantu membimbing mahasiswa S1.

- Laboratory is designed for problem-based learning (PBL) and / or case-based learning (CBL).

  Laboratorium dirancang untuk "pembelajaran berbasis masalah" dan / atau "pembelajaran berbasis kasus / pembelajaran berbasis penelitian".

- Students work in a group or as a team (team work).

  Mahasiswa bekerja dalam kelompok atau tim (kerja tim).

(3) Facilities

Fasilitas-fasilitas

- Set of desks, chairs, and lockers for each students should be prepared. Available area of laboratory needs to be considered as basis for quantity of members.

  Seperangkat meja, kursi, dan loker untuk setiap mahasiswa harus disiapkan. Ketersediaan luas ruang laboratorium perlu dipertimbangkan sebagai dasar penetapan jumlah anggota laboratorium.

- Adequate computing facilities including basic software will be prepared.

  Fasilitas komputer yang memadai termasuk software dasar akan disiapkan.

- Internet connection should be secured. Then students can access scientific information such as journals, technical reports, codes & standards, references, manuals.

  Koneksi internet harus disediakan, sehingga mahasiswa dapat mengakses informasi seperti jurnal ilmiah, laporan teknis, kode & standar, referensi manual.

- Technicians may be needed for the laboratory as supporting component but actually quality student could be asked for that on part time base. Supporting components include persons-in-charge of equipment management, references & archive management, room & furniture management, etc.

  Teknisi mungkin diperlukan untuk laboratorium sebagai komponen pendukung, namun

sebenarnya mahasiswa yang berkualitas dapat diberdayakan dengan ditugasi sebagai tenaga paruh-waktu. Komponen pendukung termasuk petugas-petugas penanggungjawab untuk: pengelolaan alat & bahan, pengelolaan pustaka & arsip, pengelolaan infrastruktur ruang & perabot/furnitur, dan lain-lain.

- If some equipment is too expensive, they could be shared as common facilities among laboratories.
  Jika beberapa peralatan terlalu mahal, maka bisa diatur penggunaannya sebagai fasilitas bersama antar laboratorium.
- Students and faculty members should be aware that resources are very limited, so that they require effective and efficient usage.
  Mahasiswa dan staf pengajar harus menyadari keterbatasan sumber daya yang membutuhkan efektifitas & efisiensi dalam pemanfaatan.
- Every member of laboratory should maintain mutual sense of responsibility by careful usage and proper maintenance of laboratory facilities.
  Setiap anggota laboratorium harus menjaga rasa tanggungjawab bersama dalam penggunaan dan pemeliharaan setiap fasilitas secara seksama dan semestinya.

(4) Research topic

Topik penelitian

- Each laboratory should have research topics in the form of “research roadmap”. They need to be closely related to the current research work / grant of the lecturers.
  Setiap laboratorium harus memiliki topik-topik penelitian yang tersusun dalam bentuk peta penelitian (“research roadmap”). *Topik-topik tersebut harus terkait erat dengan penelitian yang sedang dikerjakan oleh para staf pengajar anggota laboratorium.*
- Each laboratory should arrange regular research activities
  Setiap laboratorium harus mengatur kegiatan penelitian reguler
- The main point on implementing LBE is to arrange regular research activities including research consultation, weekly presentation, and preparation for the thesis presentation.
  Titik utama dalam pelaksanaan LBE adalah untuk mengatur kegiatan penelitian reguler termasuk penelitian, konsultasi penelitian, presentasi mingguan, dan persiapan untuk presentasi tesis.
- Each laboratory enables collaborative topics with other laboratory (-ies).
  Setiap laboratory memungkinkan topic-topik kolaboratif dengan cara bekerjasama dengan laboratorium lain.

(5) Laboratory activities

Kegiatan laboratorium

- Student assessment in LBE should be based on the quality of the study result, team work, initiative, leadership, curiosity, knowledge, attitude, and ethics

  Penilaian mahasiswa dalam LBE harus didasarkan pada kualitas hasil penelitian, kerja tim, inisiatif, kepemimpinan, rasa keingintahuan, pengetahuan, sikap, etika.

- Student research groups should solve one case / project per semester

  Mahasiswa kelompok penelitian harus memecahkan satu proyek atau satu kasus per semester.

- Laboratory should be open as long as possible

  Laboratorium harus terbuka selama mungkin.

(6) Standard Operational Procedure (SOP) for laboratory management

Prosedur operasional standar untuk pengelolaan laboratorium

- Towards "24/7-accessible" laboratories (open and accessible for 24 hours 7 days a week) where each member has the right to hold a key for access.

  Menuju laboratorium dengan jam buka setiap waktu yang "dapat diakses selama 24 jam 7 hari per minggu", dan tiap anggota berhak memegang satu kunci akses.

- Necessity of General Guidelines and SOP applied for all laboratories, covering usage and maintenance of research equipments & materials, references & archives, also infrastructures, rooms, and furniture.

  Perlu penyusunan Pedoman Umum dan SOP bagi setiap laboratorium, tentang penggunaan dan pemeliharaan laboratorium meliputi: peralatan & bahan, pustaka & arsip, serta infrastruktur, ruang, dan perabot.

- Necessity of guidelines for proposal preparation which is accessible through website of Engineering Faculty.

  Perlu penyiapan Pedoman Penyusunan Proposal Penelitian yang dapat diakses melalui website Fakultas Teknik.

- Necessity to simplify the administrative works in laboratory operation and management while at the same time pursue effectiveness.

  Perlu menyederhanakan pekerjaan administrasi menyangkut operasional dan pemeliharaan laboratorium, sekaligus berusaha mencapai efektifitas.

- Needs to clarify job description for every member of laboratory from Head to students until technicians, also clarify type of relation among these members, while at the same time maintain "mutualistic symbiosis" way

Perlu kejelasan deskripsi tugas untuk setiap anggota laboratorium mulai Kepala ke mahasiswa sampai teknisi, juga kejelasan hubungan kerja antaranggota, dalam rangka menjaga cara simbiose mutualisme yakni kerjasama saling menguntungkan.

- Necessity for officially-established laboratories by the Engineering Faculty with certain degree of authority in conducting activities, particularly in: directly receiving research projects ("outside jobs"), organizing seminars/conferences also trainings, in order to foster "self-supported & sustainable laboratories" within the Faculty.

  Perlu penetapan secara resmi oleh Fakultas terhadap setiap laboratorium dengan ketentuan yang jelas tentang tingkat kewenangan dalam melaksanakan kegiatan penelitian dan pembelajaran, khususnya dalam hal: penerimaan proyek-proyek penelitian dari luar lingkungan universitas, penyelenggaraan seminar & konferensi serta pelatihan-pelatihan sesuai bidang kerja atau roadmap laboratorium, dan lainnya, dalam rangka mendorong terbentuknya laboratorium mandiri secara finansial dan berkelanjutan dalam naungan Fakultas Teknik.

- Necessity to enhance roles of laboratories as "spearhead" of the Engineering Faculty through learning-and-financing basis, including roles in: (i) research activities towards research patents, design patents, or marketable/manufaturable products, (ii) students' practice, (iii) students' incubators. (iv) collaboration with industry.

  Perlu meningkatkan peran laboratorium-laboratorium sebagai "ujung tombak" Fakultas Teknik melalui basis pembelajaran-dan-pembiayaan, termasuk peran dalam: (i) kegiatan penelitian berorientasi pada dihasilkannya paten penelitian, paten disain, ataupun produk-produk yang dapat dipasarkan; (ii) praktikum mahasiswa; (iii) inkubasi penelitian dan pembelajaran mahasiswa; dan (iv) kerjasama dengan pihak industri.

- Needs for possibility to modify structure of Laboratory considering other alternative systems/ models which implement other relations among members, such as: more "moderate hierarchy", more "independent members".

  Perlu memungkinkan modifikasi bentuk/struktur laboratorium dengan pertimbangan alternatif sistem/model lain yang mengimplementasikan bentuk/struktur hubungan antaranggota yang berbeda, misalnya: hirarki antaranggota yang lebih longgar, peran setiap anggota yang lebih bebas.

- Necessity of arrangement for possible collaborative research involving other laboratory(-ies) in the same or in different Study Program(s) in a cross-laboratory or a cross-studyprogramme basis.

  Perlu pengaturan kemungkinan-kemungkinan kolaborasi penelitian yang melibatkan laboratorium lain dalam Program Studi yang sama atau berbeda dalam suatu basis lintas-

lab ataupun lintas-prodi.

- Importance to encourage Laboratory members particularly students to be “journal-minded” or “journal-oriented”, and consequently needs to improve access to submit to as well as to refer to national and international scientific journals (accepted for publication).

  Penting untuk mendorong anggota laboratorium khususnya mahasiswa untuk selalu berpikir dan berorientasi pada pengacuan penelitian pada jurnal dan penghasilan publikasi ilmiah dalam jurnal, sehingga sebagai konsekuensi perlu memperbaiki akses laboratorium terhadap jurnal ilmiah nasional dan internasional.

- Necessity for financial support from Engineering Faculty for sustainable LBE implementation, through potential minimum allocation of Rp.300-400 million annually (ref. value in 2010) covering research & community service grants.

  Perlu dukungan financial dari Fakultas Teknik untuk keberlanjutan implementasi LBE, melalui alokasi dana potensial minimum sebesar Rp.300-400 juta per tahun (nilai pada tahun 2010) mencakup hibah penelitian dan pengabdian pada masyarakat.

- Promotion of LBE laboratory, such as: (i) roadmaps socialisation, (ii) student incentive i.e. Lab membership as one of requirements for obtaining student scholarship fund and other facilities; (iii) others.

  Perlu mempromosikan laboratorium LBE, misalnya: (i) sosialisasi lingkup bidang kerja pada roadmap penelitian; (ii) pemberian insentif bagi mahasiswa seperti keanggotaan aktif suatu laboratorium sebagai salah satu persyaratan untuk mendapatkan dana beasiswa dan fasilitas lain; (iii) lainnya.

Part 4. FAQ in implementing LBE
Bagian 4. Tanya-Jawab seputar Implementasi LBE

Q1. In our department Doctor course (S3) has not been started yet. How can we implement LBE?

Q1. Di jurusan kami, program Dokter (S3) belum dimulai lagi. Bagaimana kami bisa menerapkan LBE ?

A1. If it is impossible to get S3 students involved at this moment, a laboratory can be run with teaching staffs and S2 and S1 students only. However, once a S3 course is offered, it is essential to include them a laboratory member since S3 students can be expected to important role in guiding junior students.

A1. Jika saat ini tidak mungkin melibatkan mahasiswa S3, sebuah laboratorium dapat dijalankan oleh tenaga pengajar dan mahasiswa S1 dan S2 saja. Namun, sekali saja sebuah program S3 dibuka, maka sangat wajar jika mahasiswa S3 dilibatkan menjadi anggota laboratorium karena mereka diharapkan untuk berperan penting dalam membimbing mahasiswa junior.

Q2. Every year budget distribution to each laboratory is not so much. How can we make research activities sustainable?

Q2. Setiap tahun anggaran distribusi untuk masing-masing laboratorium tidak begitu banyak. Bagaimana kami bisa membuat kegiatan penelitian berkelanjutan?

A2. Challenge to get grant or fund is most important. No proposal yields no budget. As Prof. NAGAO suggests apply for fund with “DAME-MOTO Spirits” as much as possible; he also states that “DAME-MOTO Spirits: dame=not to success, moto=starting point. Even if the application is not successful, it is not necessary to be disappointed. Situation is at least the same with starting point or in most case becomes better. You must consider a lot on your research through the applications and your level is upgrading”.

A2. Tantangan untuk memperoleh hibah atau dana merupakan hal yang paling penting. Tidak ada proposal maka tidak menghasilkan anggaran. Seperti yang diusulkan Prof NAGAO yang menyarankan aplikasi dana dengan "Dame-MOTO Spirits" sebanyak mungkin; ia juga menyatakan bahwa "Dame-MOTO Spirits: Dame = tidak berhasil, Moto = titik mulai. Bahkan jika aplikasi tersebut tidak berhasil, tidak perlu kecewa. Situasi ini setidaknya sama dengan titik awal atau dalam beberapa kasus, menjadi lebih baik.. Anda harus mempertimbangkan banyak hal penelitian melalui banyak aplikasi dan meningkatkan level Anda."

Q3. In FT UNHAS, many students takes "Final project" in the 8th semester. What is difference between "Research" and "Project"?

Q3. Dalam FT UNHAS, banyak siswa yang mengambil Proyek "Final" di semester ke delapan. Apa perbedaan antara "Penelitian" dan "Proyek"?

A3. A big difference can be found in the end. Results of research works always produce or lead to scientific papers, patents, or new technologies. But project works will solve the current problem using the existing theory or approach.

A3. Sebuah perbedaan yang besar dapat ditemukan pada hasil akhir. Hasil dari penelitian selalu memproduksi atau menghasilkan karya ilmiah, paten, atau teknologi baru. Tapi karya proyek akan memecahkan masalah sekarang ini dengan menggunakan teori atau pendekatan yang sudah ada.

Part 5. Practices toward LBE-Lessons from the JICA LBE Fund
Bagian 5. Praktek terhadap pelajaran LBE dari Pendanaan JICA LBE

The technical cooperation project between the Faculty of Engineering, UNHAS and JICA has offered a competitive fund to support an implementation of LBE. Among 22 research proposals, 8 proposed research groups have been granted the fund for 9 months between December 2009 and August 2010. Followings are lessons and practices learned from some of the granted research teams;

Case 1: Team led by Dr.Ir.Ria Wikantari, M.Arch, Architecture Department

Case 2: Team led by Daeng Paroka,ST.,MT.,Ph.D, Naval Department

Case 3: Team led by Dr. Tri Harianto, ST., MT, Civil Department

Case 4: Team led by Ir. Budi Rochmanto, M.Sc, Geology Department

Case 5: Team led by Prof.Muhammad Wihardi Tjaronge Dr.Eng, Civil Department

Case 6: Team led by Prof.Dr.S.Trisutomo, Architecture Department

Case 7: Team led by Sharifuddin M. Parengreng, Mechanical Department

Case 8: Team led by Prof. Dr. Ir. Salama Manjang, Electrical Department

Proyek kerjasama teknik antara JICA dan FT UNHAS menawarkan dana kompetitif untuk mendukung pelaksanaan LBE. Di antara 22 proposal penelitian, 8 kelompok penelitian diusulkan untuk diberikan dana selama 9 bulan antara Desember 2009 dan Agustus 2010. Berikut ini adalah pelajaran dan praktek dari tim penelitian diberikan;

Kasus 1: Tim dipimpin oleh Dr. Ir. Ria Wikantari, M. Arch. JurusanTeknik Arsitektur.

Kasus 2: Tim dipimpin oleh Daeng Paroka,ST.,MT.,Ph.D. Jurusan Teknik Perkapalan.

Kasus 3: Tim dipimpin oleh Dr. Tri Harianto, ST., MT Jurusan Teknik Sipil.

Kasus 4: Tim dipimpin oleh Ir. Budi Rochmanto, M.Sc, Jurusan Teknik Geologi.

Kasus 5: Tim dipimpin oleh Prof.Muhammad Wihardi Tjaronge Dr.Eng, Jurusan Teknik Sipil.

Kasus 6: Tim dipimpin oleh Prof.Dr.S.Trisutomo, JurusanTeknik Arsitektur.

Kasus 7: Tim dipimpin oleh Sharifuddin M. Parengreng, Jurusan Teknik Mesin

Kasus 8: Tim dipimpin oleh by Prof. Dr. Ir. Salama Manjang, Jurusan Teknik Elektro.

Case 1: Architecture Department

Head of Research Team
Dr.Ir.Ria Wikantari, M. Arch.

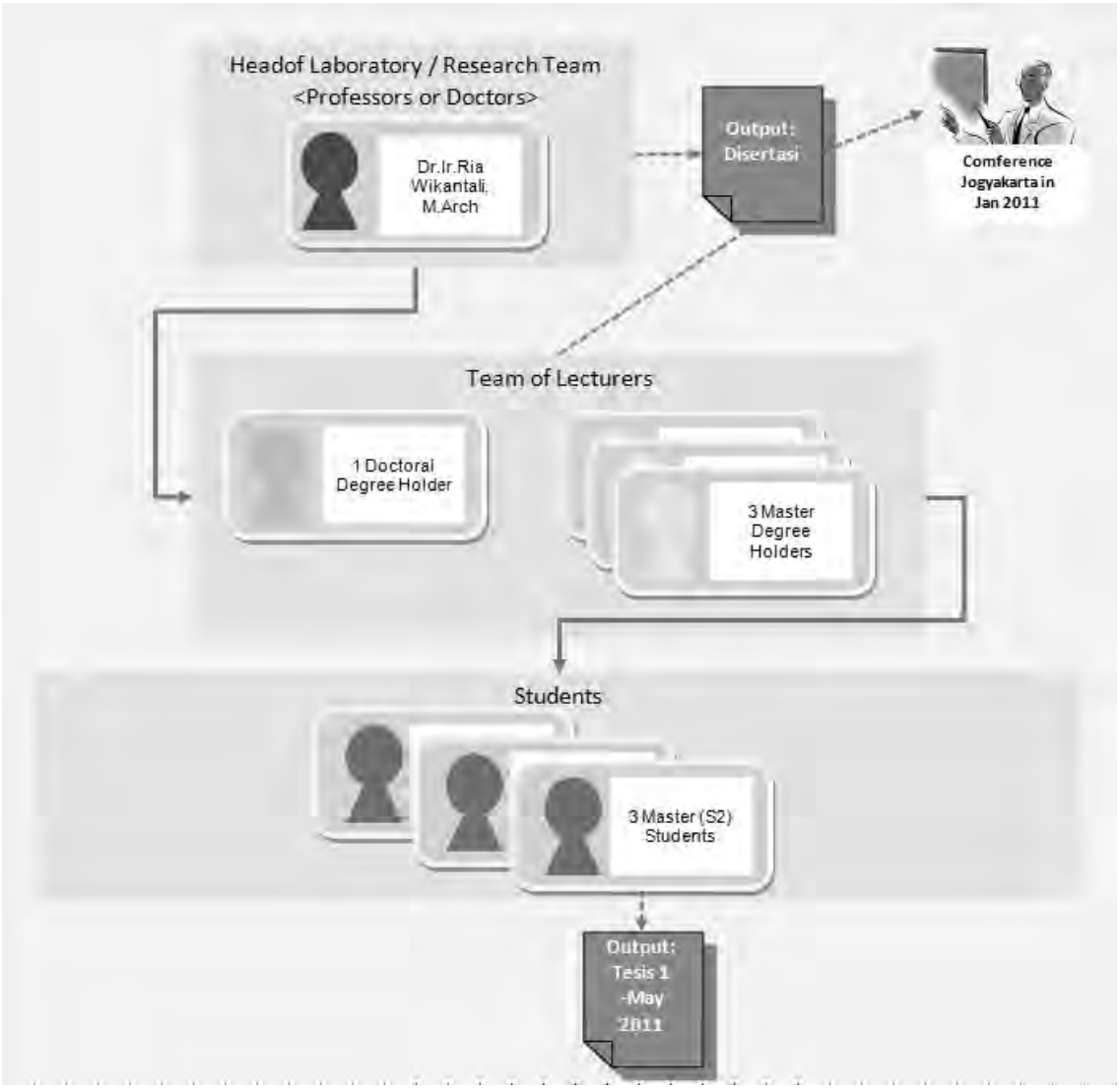
Team Members
5 teaching staffs, 3 Master (S2) students, and 1 Bachelor (S1) students

- in the long run 1 of S1 students started her final project and entered Final Project Studio

1 S2 student substituted the S1

Team Based at:
Architectural Theory-History and Behavior Laboratory

Chart: Organization and outputs of the research team



Q1.Have the team member been given roles and responsibility in its activities?

Q1. Apakah anggota tim telah memberikan peranan dan tanggung jawab terhadap kegiatan tersebut?

All personnel work as a team, in which each member has been given roles and responsibility in every stage of research activities. Head of lab coordinates implementation of activities, supported by Secretary of lab. Head, Secretary, and 3 staff members act as facilitators for students in their learning process. S1 students assist S2 students, reciprocally S2 students guide S1 students.

Semua anggota berkerja sebagai tim, dimana setiap anggota diberikan peran dan tanggung jawab dalam setiap tahap kegiatan penelitian. Ketua mengkoordinasikan jalannya kegiatan, didukung oleh sekretaris dan 3 anggota staf yang bertindak sebagai fasilitator mahasiswa dalam proses pembelajaran. Mahasiswa S1 membantu mahasiswa S2, sebagai balasannya mahasiswa S2 membimbing mahasiswa S1.

Q2.How often has the team had a regular meeting where progress of each member is monitored?

Q2. Seberapa sering tim mengadakan pertemuan-pertemuan rutin dimana digunakan untuk memantau perkembangan tiap anggota?

Each member is encouraged to make use of the laboratory freely within campus hours. However, not every member can always be in the laboratory all the time. Therefore we carry out weekly meeting regularly on Wednesday or Thursday for discussion and coordination.

Setiap anggota dianjurkan untuk memanfaatkan laboratorium selama jam kampus. Namun, tidak semua anggota bisa setiap waktu ada di laboratorium. Oleh karena itu kami mengadakan pertemuan rutin pada hari Rabu dan Kamis untuk berdiskusi dan berkoordinasi.

Q3. Are minimum facilities including an access to books or journals available to the team members at the base laboratory?

Q3. Apakah fasilitas minimum termasuk akses ke buku-buku atau jurnal yang tersedia kepada anggota tim di laboratorium dasar?

Students have made good use of procured books, and procured equipments, i.e. printer, scanner, copier, GPS, and distance meter. Laboratory has cancelled renting computers since 1 unit of desktop has previously been available, and each member has used own laptop.

Unfortunately, we have encountered inconveniences since we have to go out the Lab in order to reach internet access (available in public hall of Architecture Department).

Mahasiswa memanfaatkan dengan baik buku dan peralatan yang di beli, yaitu printer, scanner, mesin fotokopi, GPS, dan meter jarak. Laboratorium telah membatalkan penyewaan komputer karena 1 unit komputer desktop sebelumnya telah tersedia, dan setiap anggota telah menggunakan

laptop sendiri.

Sayangnya kami menemui kendala dalam mencapai akses internet dimana kami harus keluar dari lab (tersedia di ruang publik Jurusan Arsitektur).

Q4. Can the based laboratory be open anytime to the team members?

Q4. Dapatkah laboratorium terbuka setiap saat untuk anggota tim?

Ideally the laboratory should open anytime. However, due to security problem it has been closed whenever none of member works inside. Members have to contact Department staff in order to open the Labo, and report back when need to close.

Idealnya, laboratorium harus terbuka setiap saat. Namun, karena alas an keamanan, laboratorium di tutup ketika tidak ada satu anggota pun yang bekerja di dalamnya/ anggota harus menghubungi staf jurusan untuk dapat membuka laboratorium, dan melaporkannya kembali bila hendak menutupnya.

Q5. In what aspects LBE has contributed to education for students?

Q5. Dalam aspek apa LBE berkontribusi dalam pendidikan bagi mahasiswa?

Students learn about the followings:

- Substance of the granted research topic and its position in laboratory's (draft) Research Roadmap
- Conceptual and theoretical basis regarding the topic of research
- Skills in carrying out research process, including: understanding about the research topic, preparation and implementation of field surveys, data compilation and analysis, writing of the research report and scientific paper for conference
- Usage and maintenance of Labo's facilities and equipments
- Attitudes & ethics as Labo members working in a solid team

Siswa belajar mengenai berbagai hal berikut:

- *Isi pokok topik penelitian dan posisinya dalam (draft) Roadmap Penelitian Laboratorium*
- *Dasar konsep dan teori tentang topik penelitian*
- *Keterampilan dalam melaksanakan proses penelitian, termasuk: pemahaman tentang penelitian topik, dan pelaksanaan survei lapangan, kompilasi dan analisa data, penulisan laporan penelitian dan makalah ilmiah untuk konferensi.*
- *Penggunaan dan pemeliharaan fasilitas dan peralatan Laboratorium.*
- *Sikap & etika sebagai anggota lab yang bekerja dalam suatu tim yang solid*

Q6. How has the team shared outputs of its activities?

Q6. Bagaimana tim membagi hasil dari kegiatan tersebut?

The team shared outputs by:

- Presentation and discussion among team members
- Preparation of field survey reports
- Preparation of Final Report

- Preparation of scientific paper for conference
- Making of banners for display of Labo's activity, research process and results, (draft) research roadmap
- Presentation in international conference (planned) ***

  *** A paper has been accepted for an international conference to be held in Yogyakarta, previously scheduled on 26-27 November 2010.

  Unfortunately, due to natural disaster of Merapi volcano eruption the conference has been postponed to 21-22 January 2011

Tim membagi output melalui:

- *Presentasi dan diskusi di antara anggota tim*
- *Penyusunan laporan survey lapangan*
- *Penyusunan Laporan Akhir*
- *Persiapan karya ilmiah untuk konferensi*
- *Pembuatan spanduk untuk menampilkan kegiatan Labo, proses penelitian dan hasil, (draft) roadmap penelitian*
- *Presentasi di konferensi internasional (yang direncanakan) ****

  *** Laporan telah diterima untuk suatu konferensi internasional yang akan diselenggarakan di Yogyakarta, yang sebelumnya dijadwalkan pada tanggal 26-27 November 2010.*

  Sayangnya, karena bencana alam letusan Gunung Merapi konferensi tersebut telah ditunda hingga 21-22 Januari 2011

NOTE:

- We apply transparency in financial matters.
- An S2 student has been assigned to be in charge of cash flow and financial documentation, another student in charge of equipments
- Other students have been allowed to make use of the Laboratory although not involve directly in activity of research grant.

CATATAN:

- *Kami menerapkan transparansi dalam hal keuangan.*
- *Seorang mahasiswa S2 telah ditugaskan untuk memimpin arus kas dan dokumentasi keuangan, mahasiswa lain yang bertanggung jawab atas peralatan*
- *Mahasiswa lain telah diizinkan untuk menggunakan Laboratorium meskipun tidak terlibat langsung dalam kegiatan hibah penelitian.*

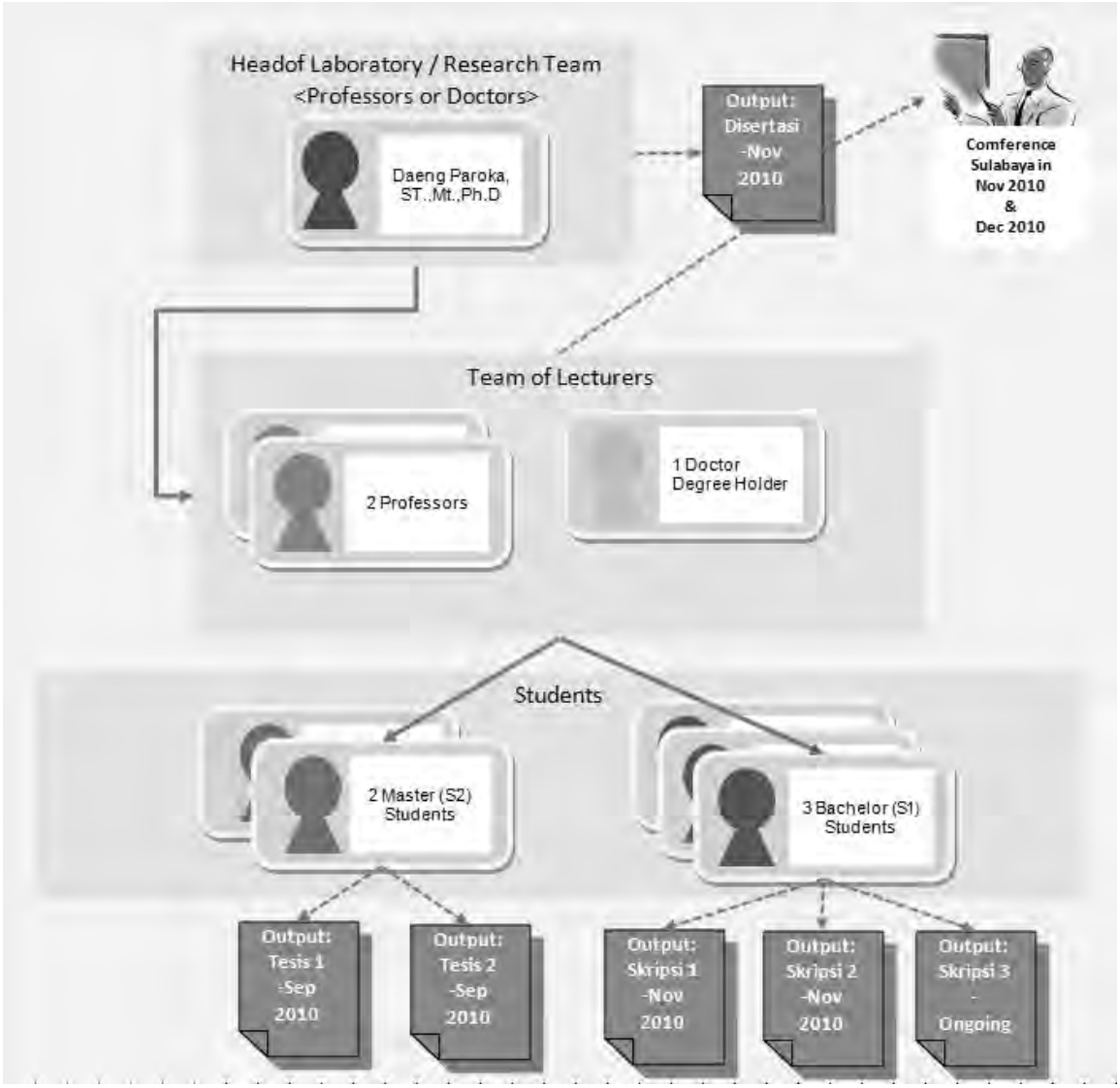
Case 2: Naval Department

Head of Research Team:
Daeng Paroka, ST., MT., Ph.D

Team Members:
3 teaching staffs, 2 Master (S2) students, and 3 Bachelor (S1) students

Team Based at:
Hydrodynamics Laboratory

Chart: Organization and outputs of the research team



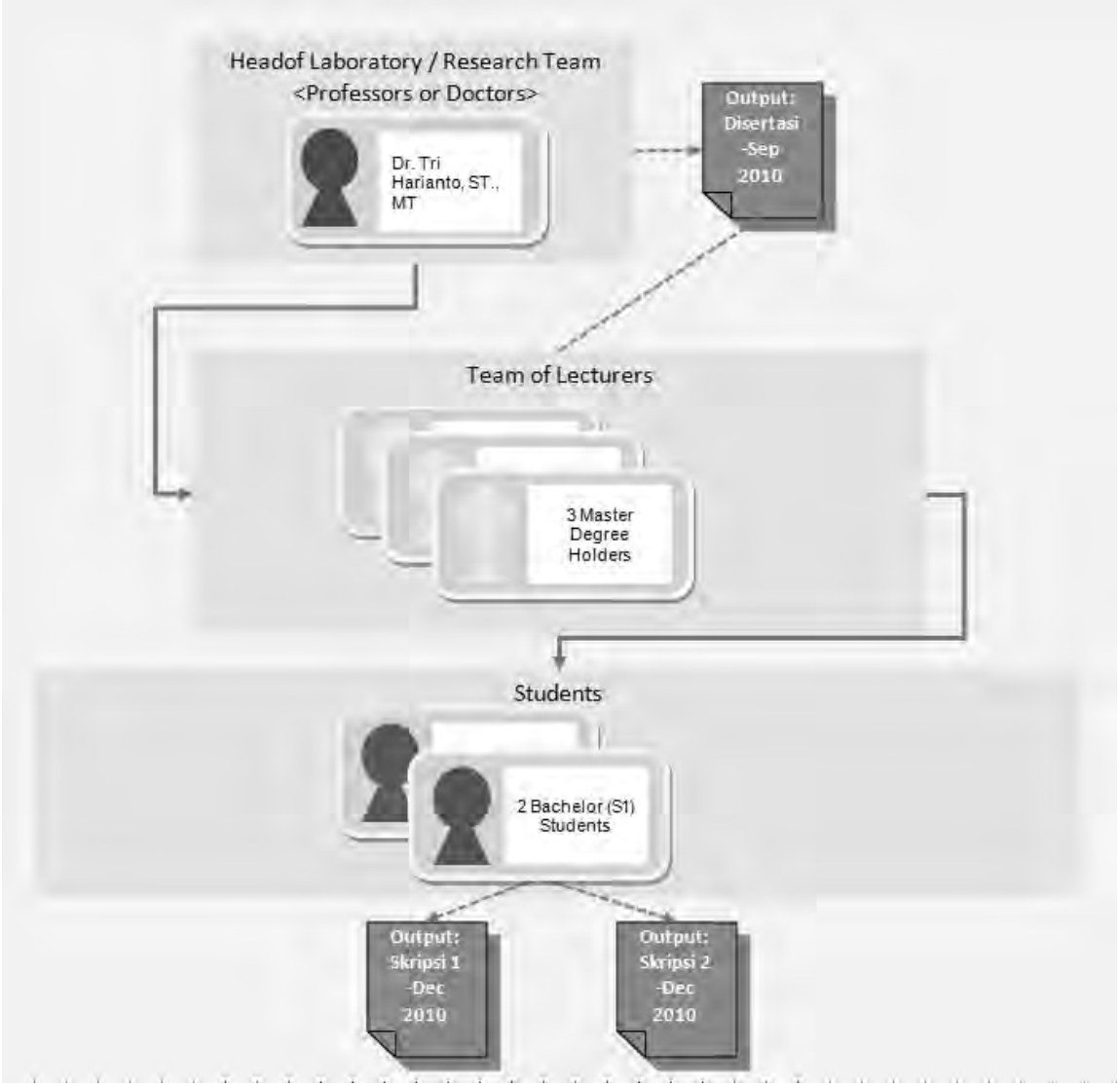
Case 3: Civil Department

Head of Research Team:
Dr. Tri Harianto, ST., MT

Team Members:
2 teaching staffs, 3 Master (S2) students, and 2 Bachelor (S1) students.

Team Based at:
Soil Mechanics Laboratory

Chart: Organization and outputs of the research team



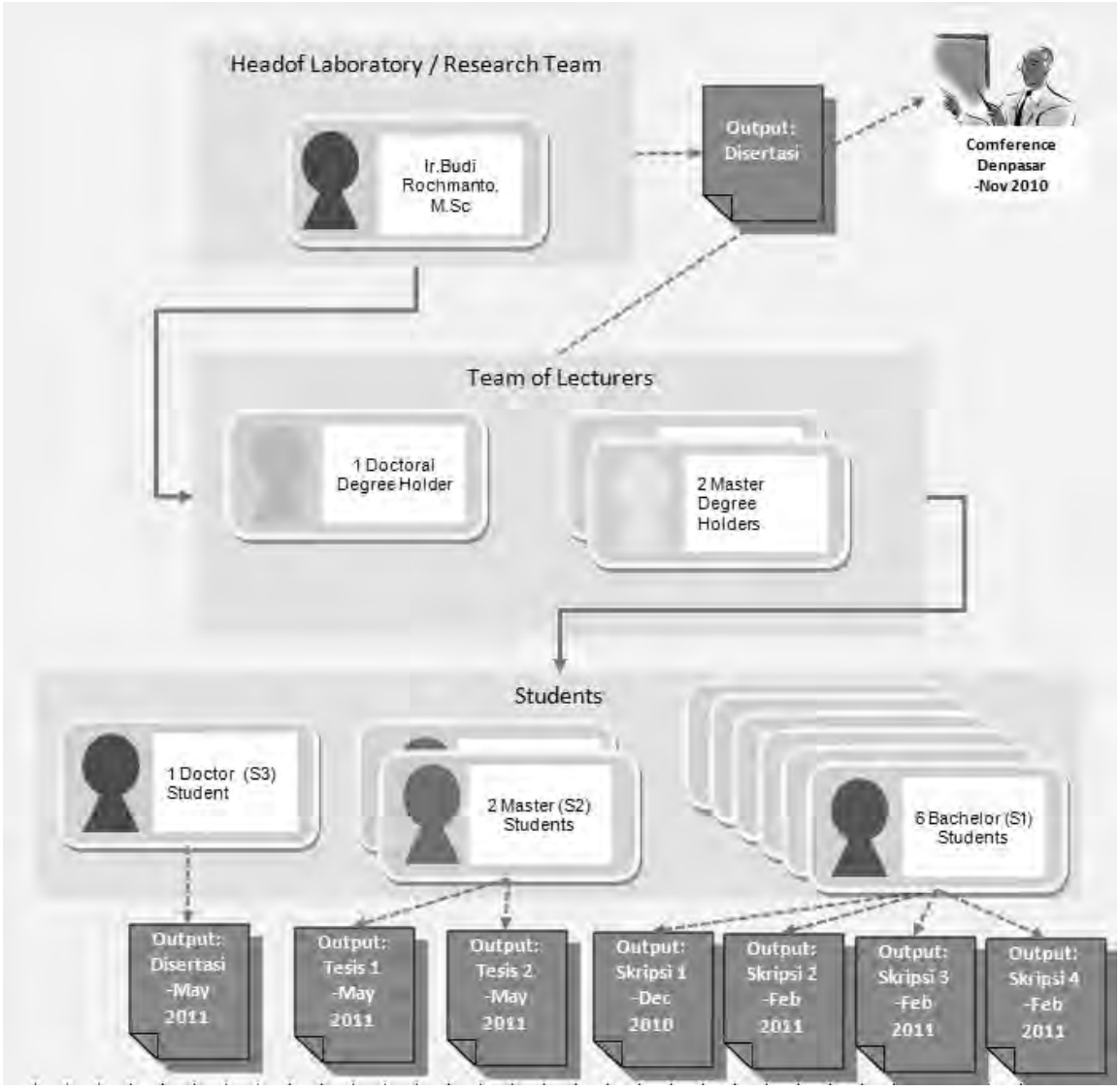
Case 4: Geology Department

Head of Research Team:
Ir. Budi Rochmanto, M.Sc

Team Members:
3 teaching staffs, 1 Doctor (S3) student, 2 Master (S2) students, and 6 Bachelor (S1) students

Team Based at:
Sedimentology Laboratory & Coastal Engineering Laboratory

Chart: Organization and outputs of the research team



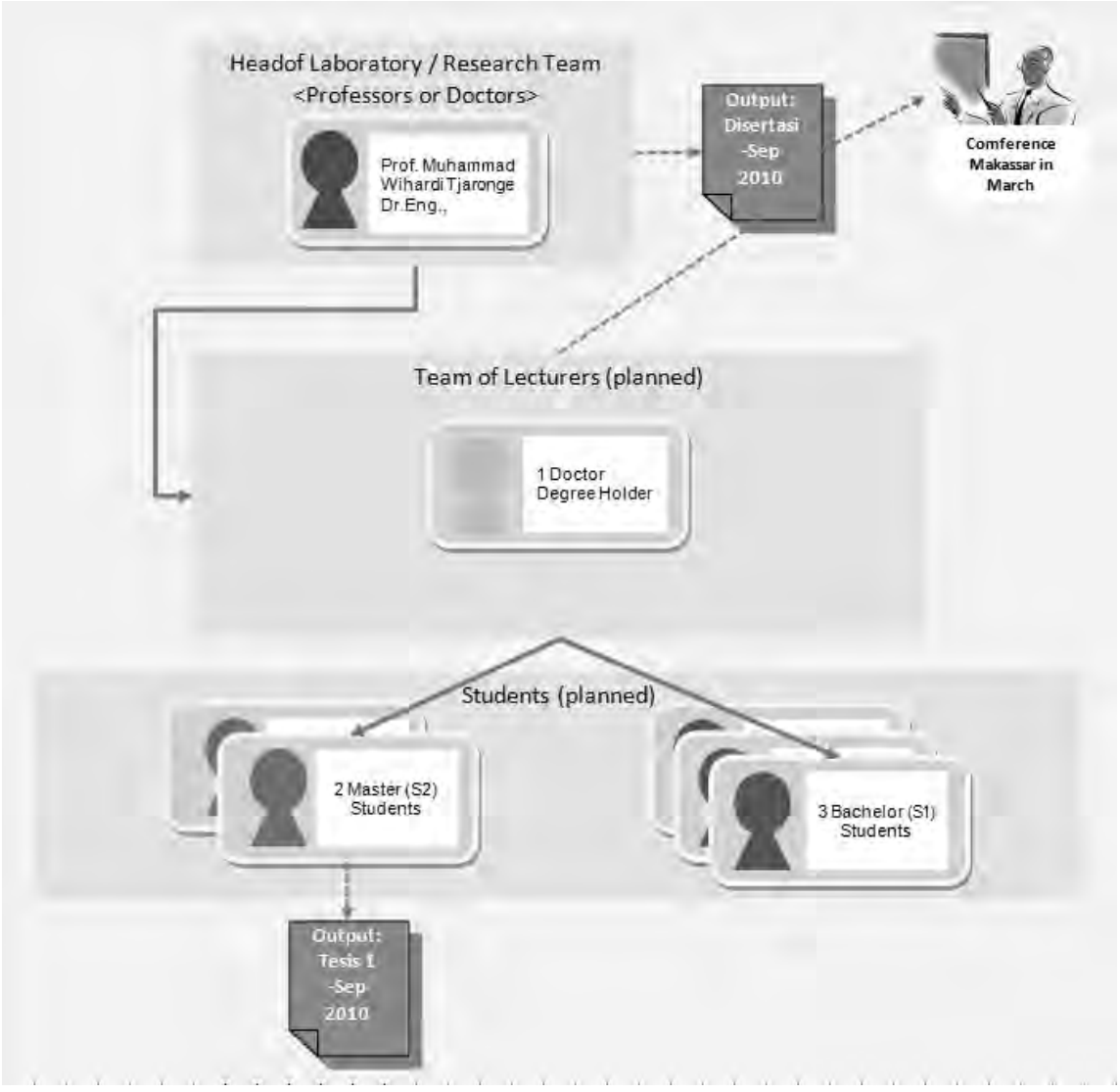
Case 5: Civil Department

Head of Research Team:
Prof. Muhammad Wihardi Tjaronge Dr.Eng,

Team Members:
2 teaching staffs, 2 Master (S2) students, and 4 Bachelor (S1) students

Team Based at:
Laboratory of Concrete and Eco-metal

Chart: Organization and outputs of the research team



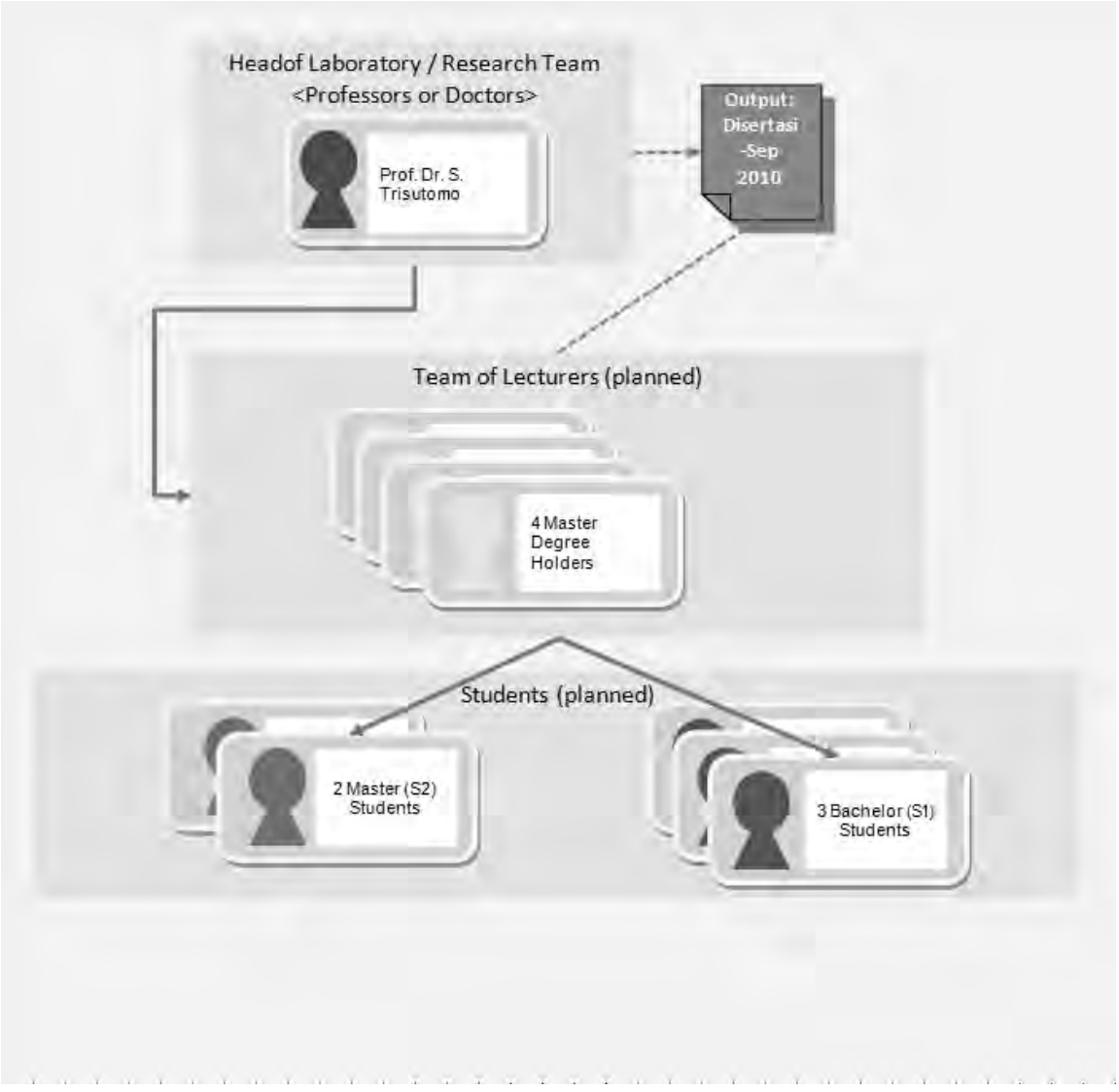
Case 6: Architecture Department

Head of Research Team:
Prof. Dr. S. Trisutomo

Team Members:
4 teaching staffs, 1 Master (S2) students, and 2 Bachelor (S1) students

Team Based at:
Waterfront Planning and Development Laboratory

Chart: Organization and outputs of the research team



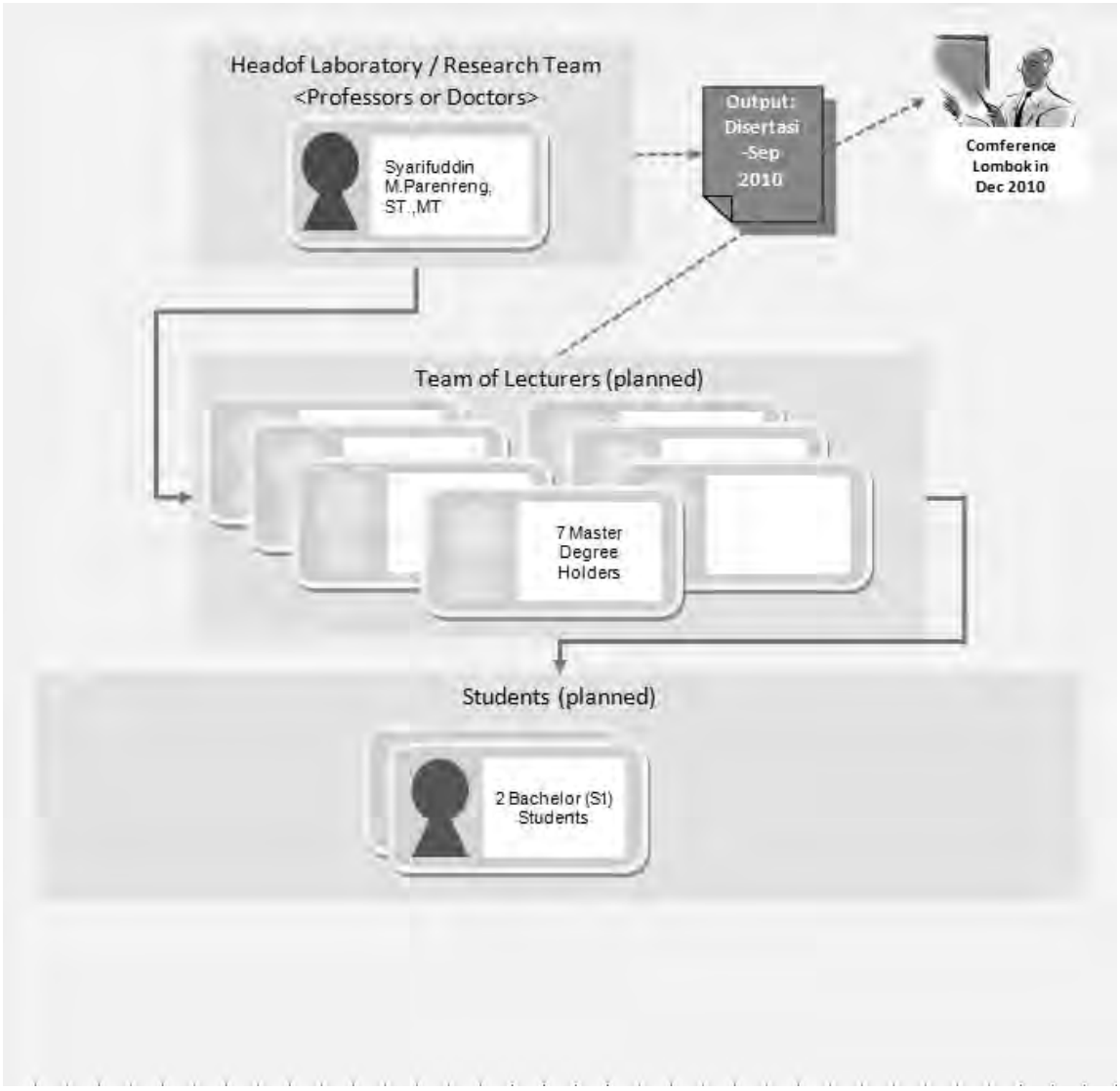
Case 7: Mechanical Department

Head of Research Team:
Syarifuddin M.Parengreng, ST.,MT

Team Members:
7 teaching and 2 Bachelor (S1) students

Team Based at:
Computer Laboratory

Chart: Organization and outputs of the research team



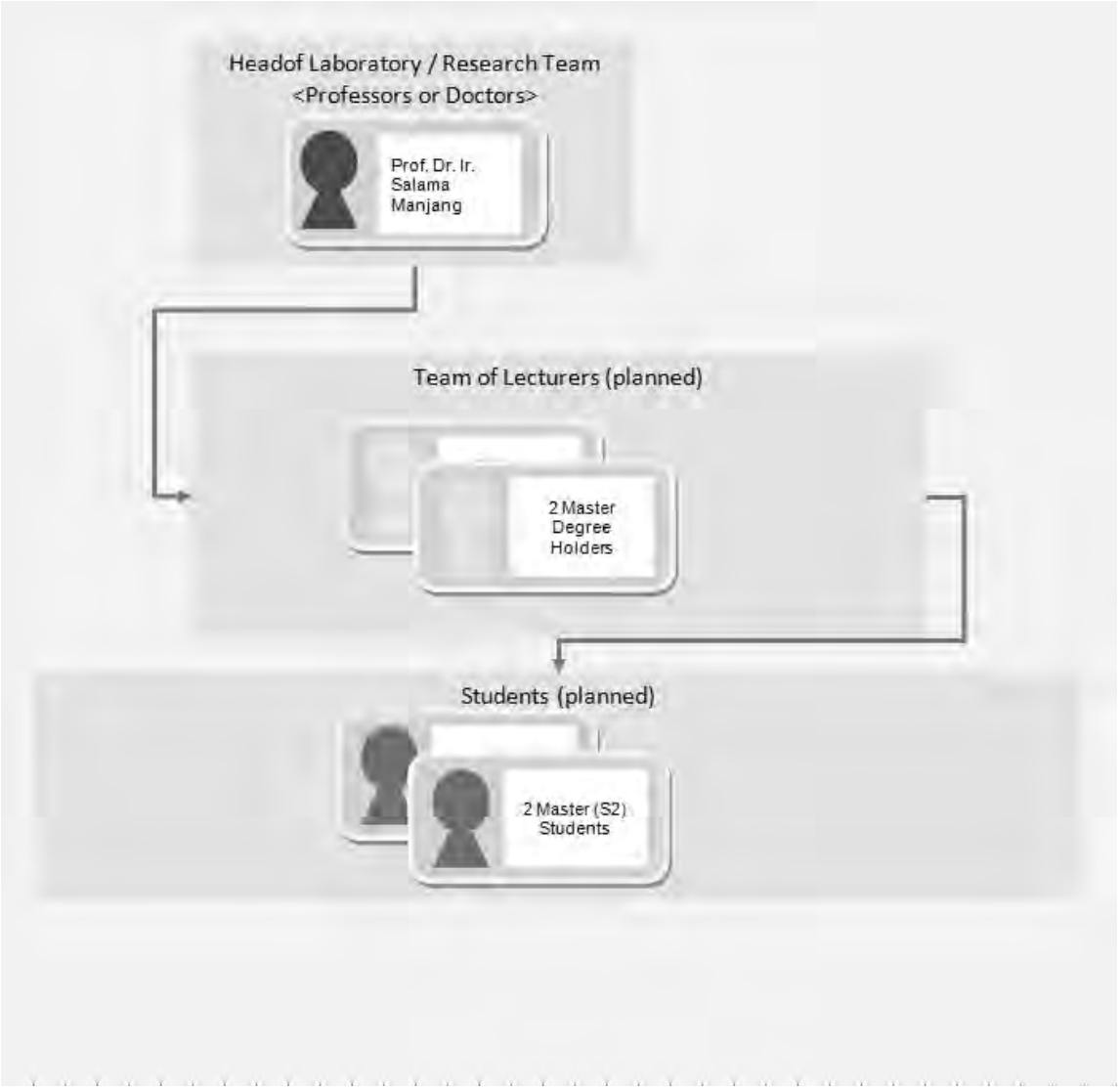
Case 8: Electrical Department

Head of Research Team:
Prof. Dr. Ir. Salama Manjang

Team Members:
2 teaching staffs and 2 Master (S2) students

Team Based at:
High Voltage Laboratory

Chart: Organization and outputs of the research team

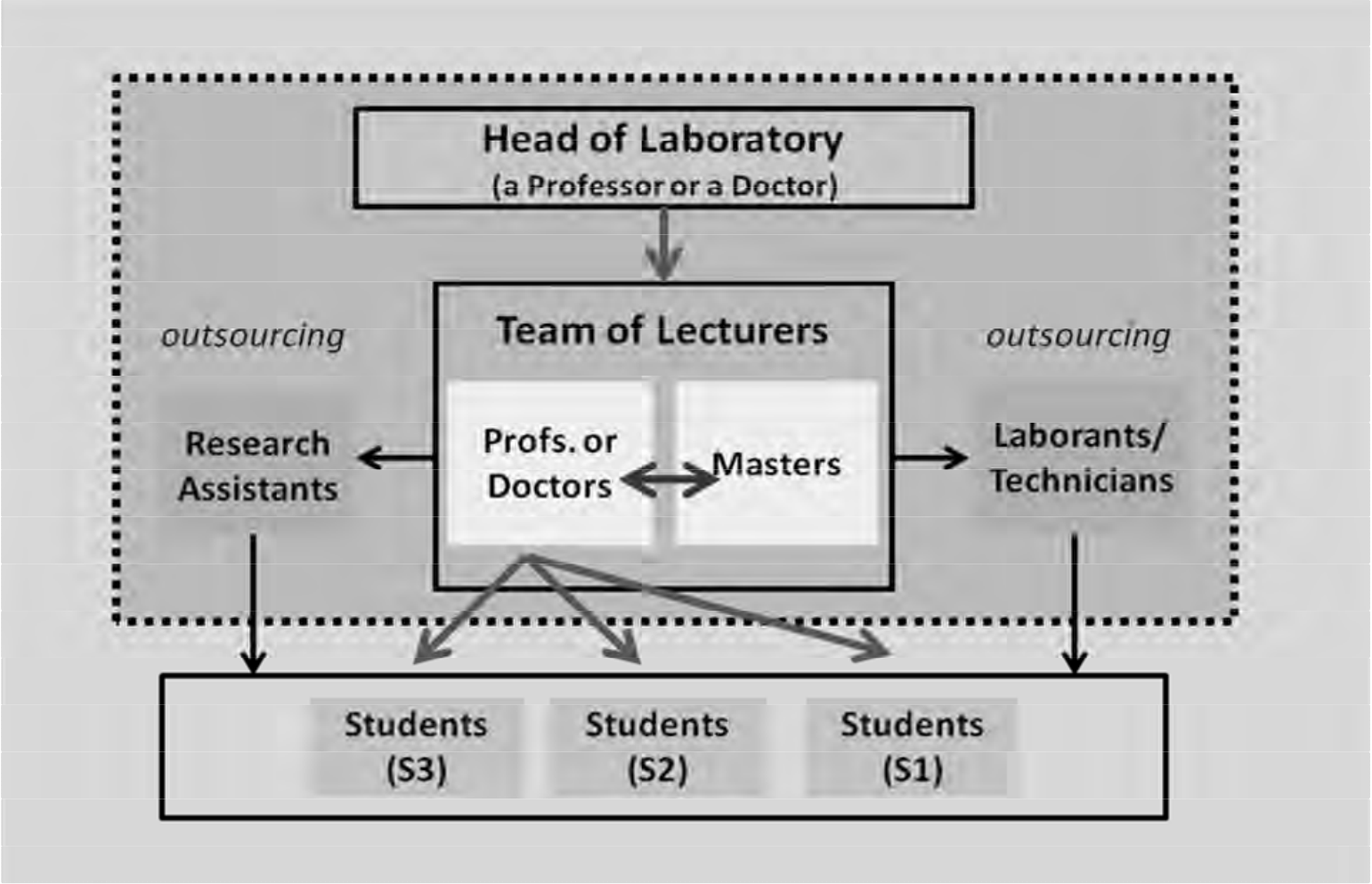


APPENDICES

1. **CONCEPTUAL MODEL OF BASIC LBE FORM**
2. **CONCEPTUAL MODEL OF STUDENTS' ACTIVITY RELATIONS IN LBE**
3. **CONCEPTUAL MODEL CURRICULUM STRUCTURE WITH LBE IMPLEMENTATION**
4. **CONCEPTUAL MODEL OF STUDENTS' RESEARCH ACTIVITIES IN LBE**
5. **CASE OF ARCHITECTURE DEPARTMENT: FACILITY PLANNING FOR LBE IMPLEMENTATION IN GOWA CAMPUS**

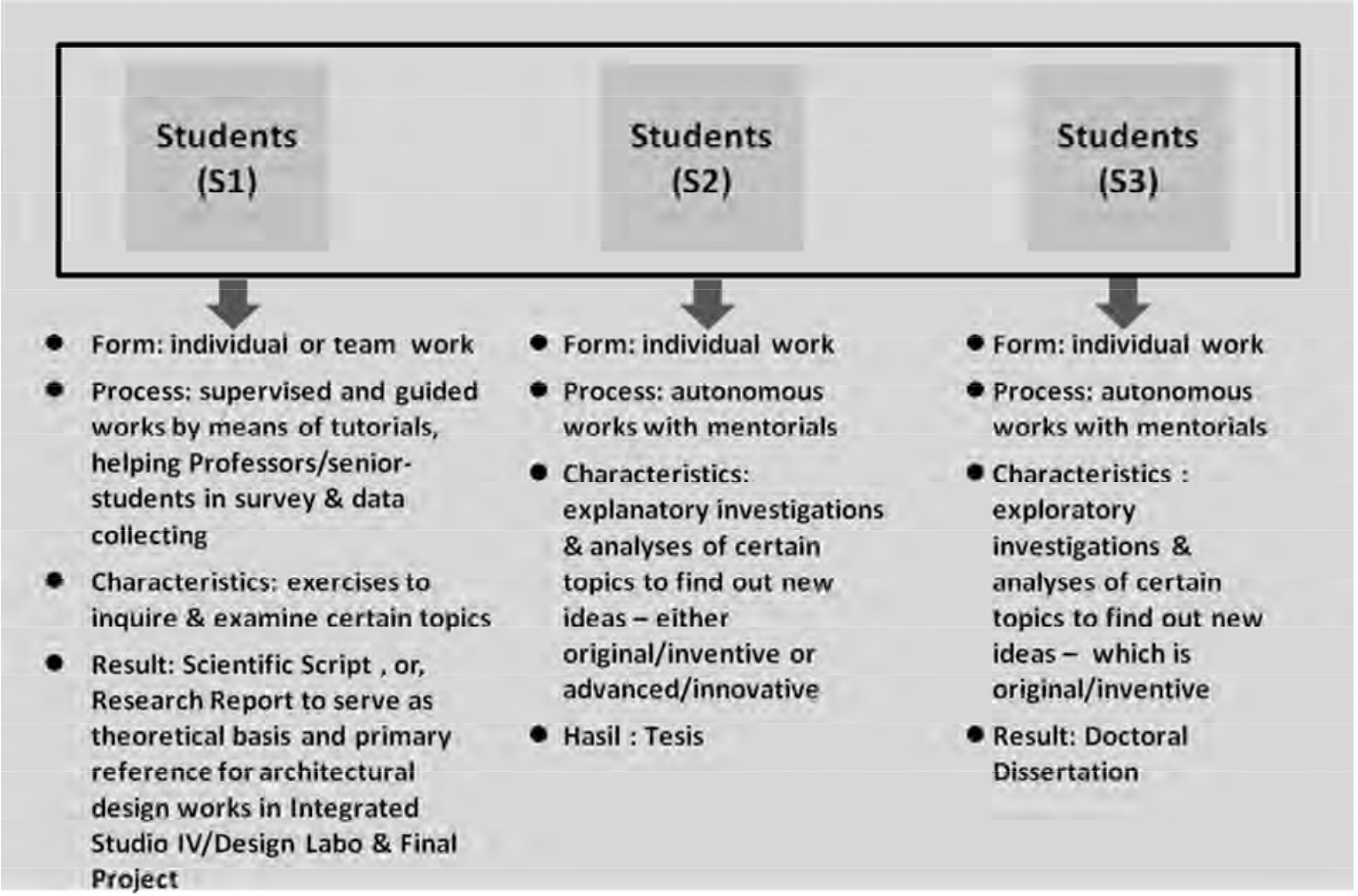
APPENDIX 1: CONCEPTUAL MODEL OF BASIC LBE FORM

MODEL KONSEPTUAL FORMAT LBE



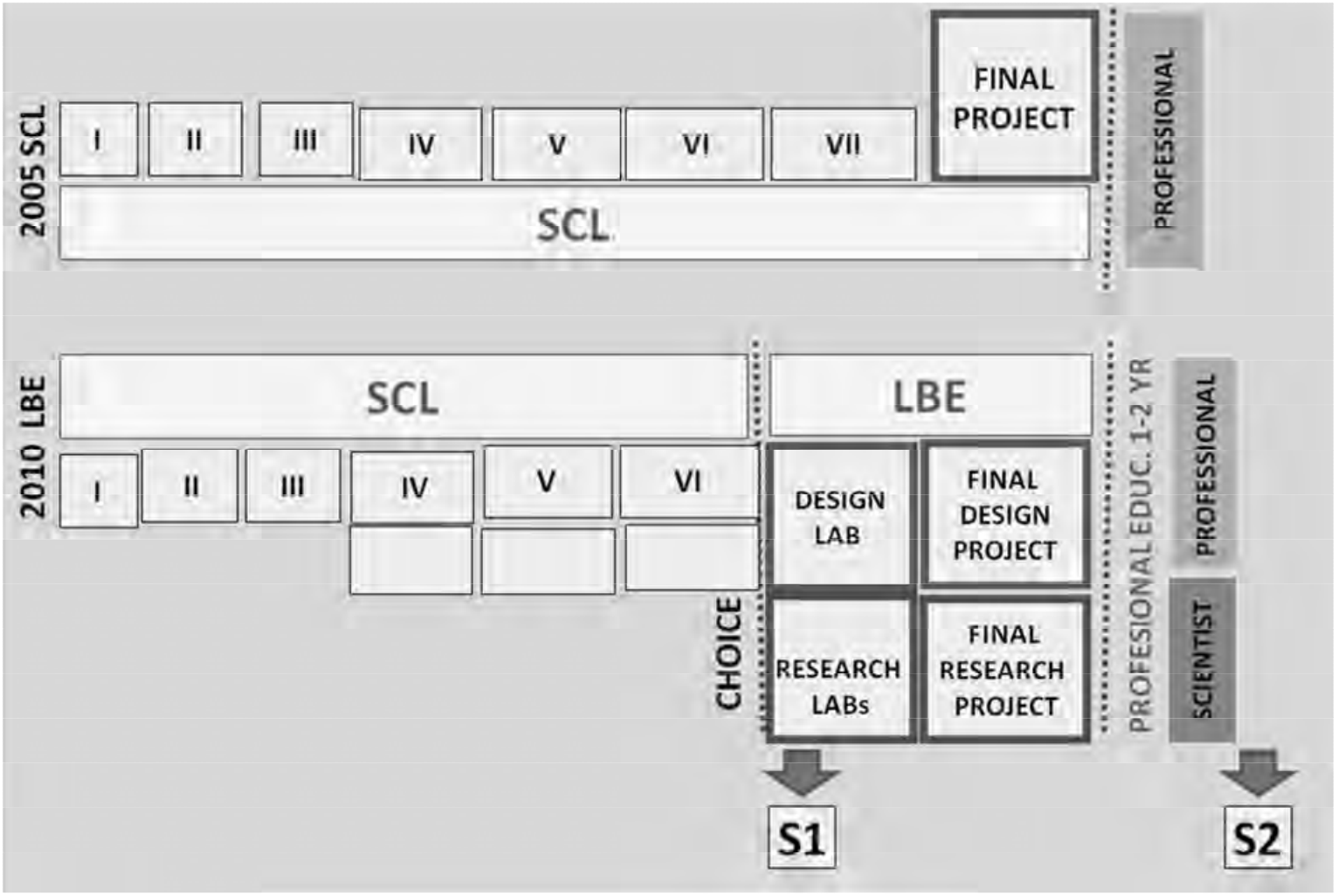
APPENDIX 2: CONCEPTUAL MODEL OF STUDENTS' ACTIVITY RELATIONS IN LBE

MODEL KONSEPTUAL HUBUNGAN ANTARMAHASISWA DALAM LBE



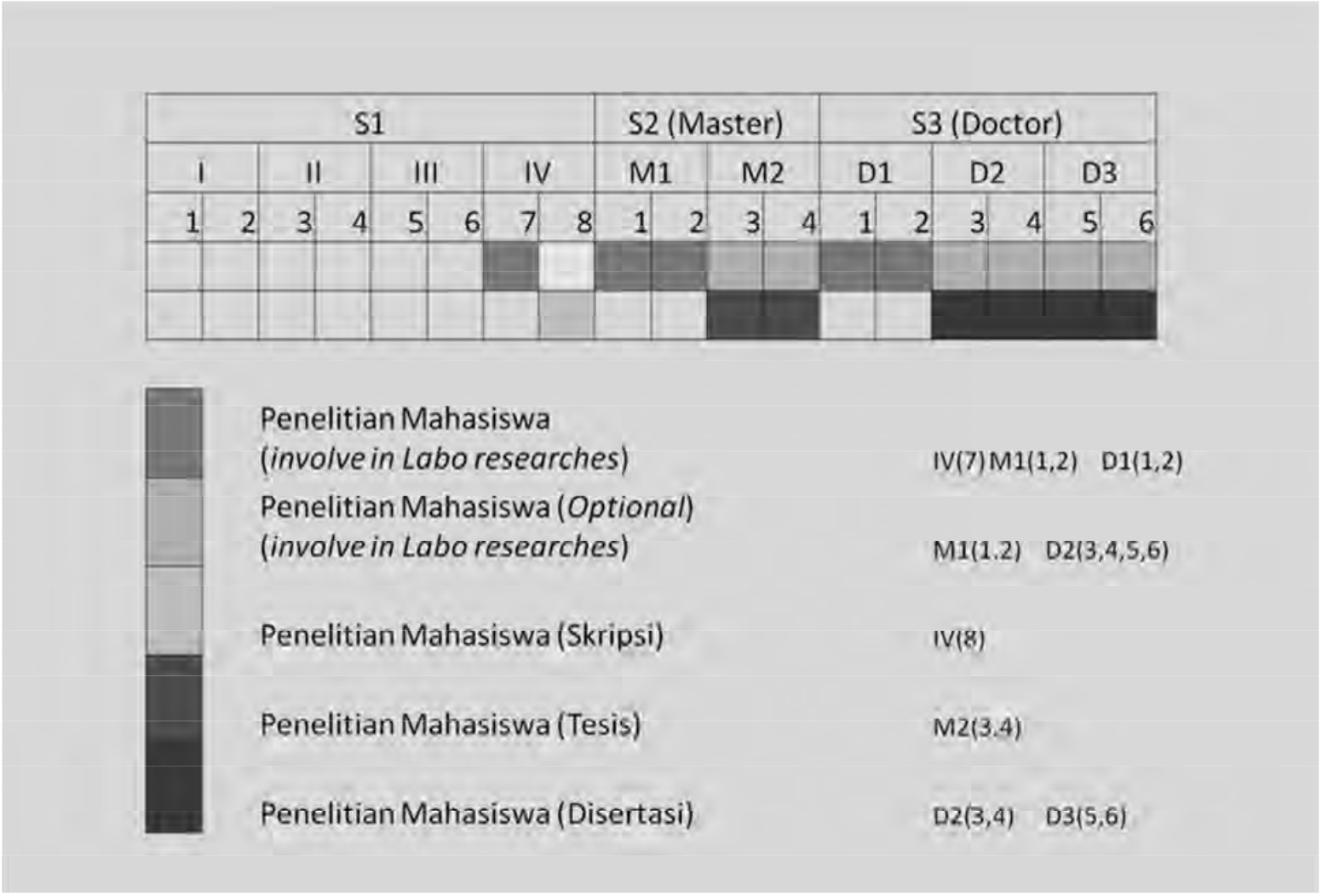
APPENDIX 3: CONCEPTUAL MODEL CURRICULUM STRUCTURE WITH LBE IMPLEMENTATION

MODEL KONSEPTUAL IMPLEMENTASI LBE PADA STRUKTUR KURIKULUM



APPENDIX 4: CONCEPTUAL MODEL OF STUDENTS' RESEARCH ACTIVITIES IN LBE

MODEL KONSEPTUAL IMPLEMENTASI LBE PADA HUBUNGAN ANTARMAHASISWA SELURUH JENJANG S1 S2 S3



APPENDIX 5: CASE OF ARCHITECTURE DEPARTMENT: FACILITY PLANNING FOR LBE IMPLEMENTATION IN GOWA CAMPUS

PERENCANAAN FASILITAS UNTUK IMPLEMENTASI LBE (PADA KAMPUS BARU FT DI GOWA)

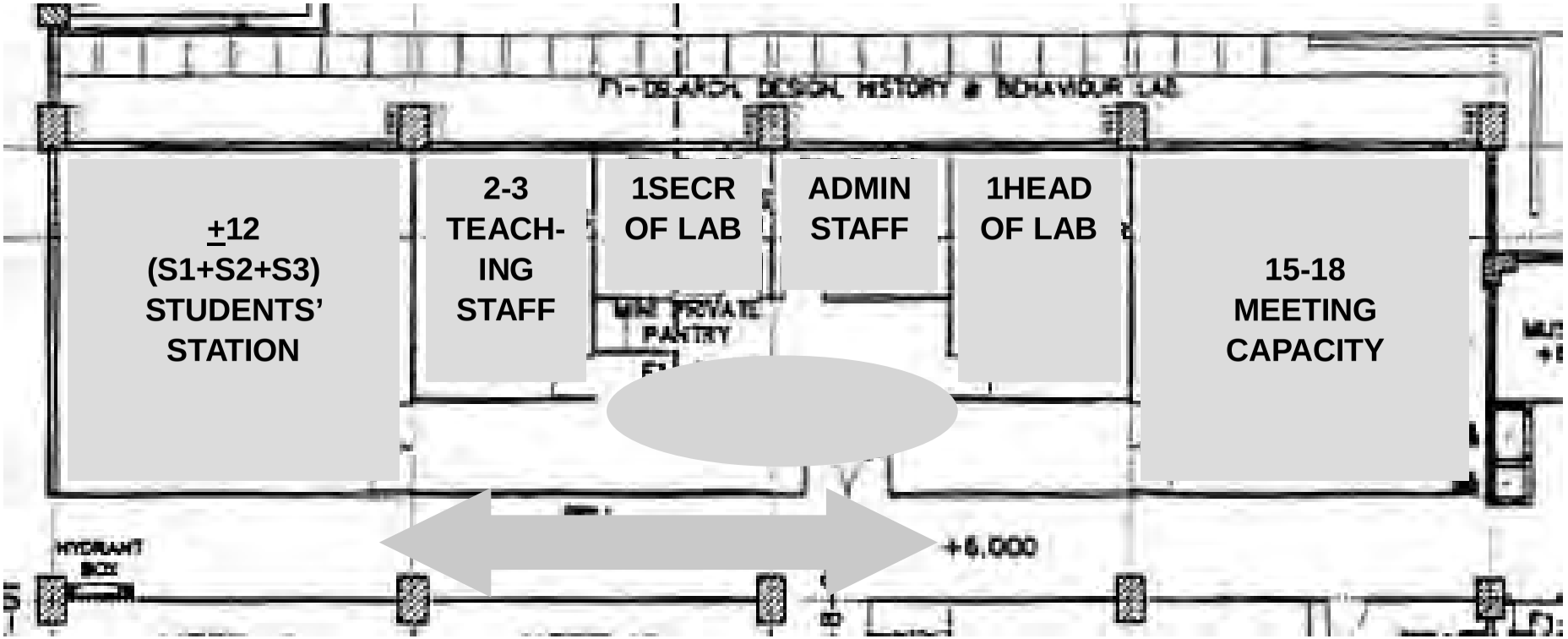
KASUS JURUSAN ARSITEKTUR

Fasilitas Laboratorium: masing-masing 1 s/d 5 pada Prodi Arsitektur & Prodi PWK

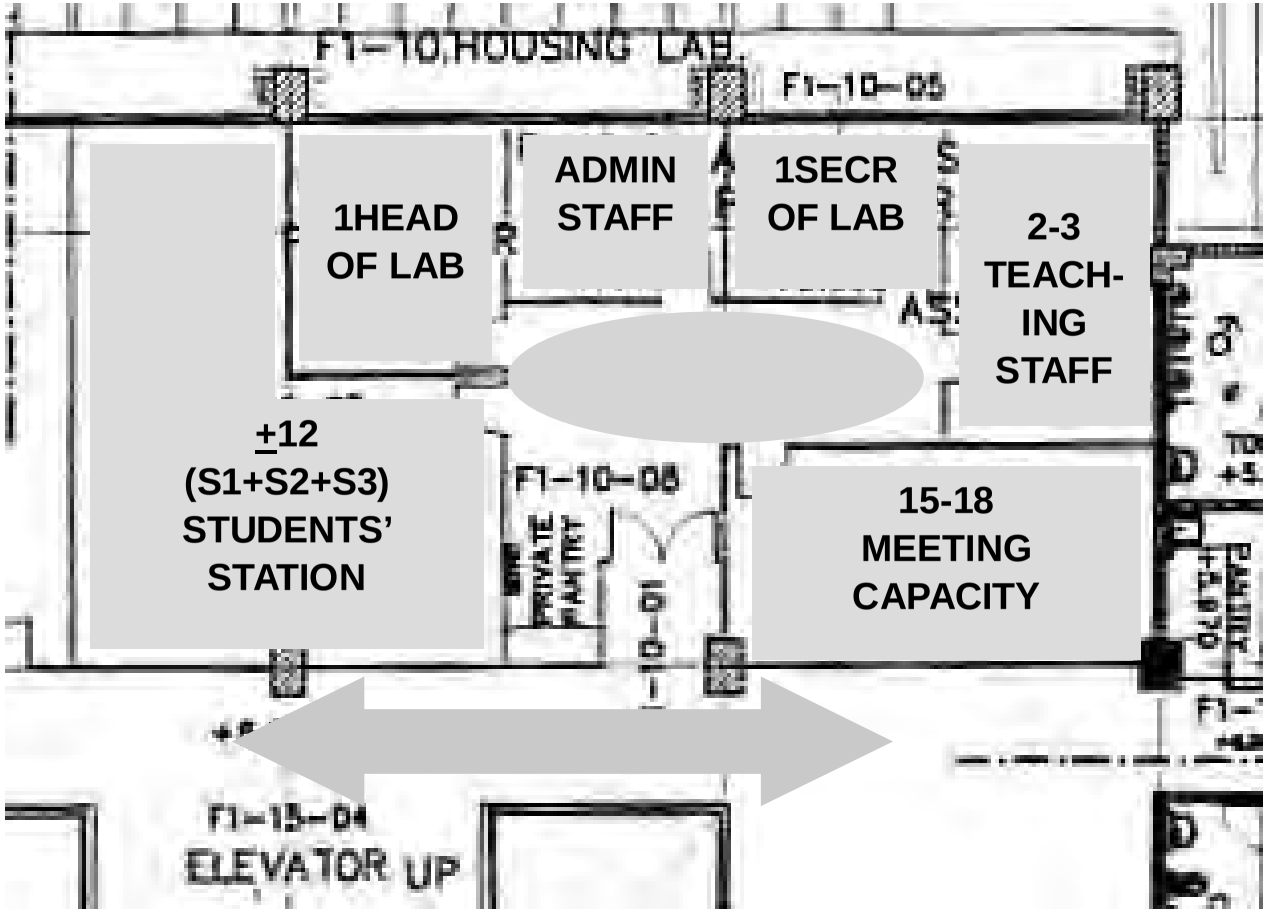
Fasilitas Praktikum: tunggal (A4, A5), sharing lintas-lab (A12345, B12345), sharing lintas-Prodi (AB), kemungkinan lintas-Jurusan

A. PRODI ARSITEKTUR				B. PRODI PENGEMB.WILAYAH KOTA			
NO	LABORATORIUM PENELITIAN		PRAKTIKUM	NO	LABORATORIUM PENELITIAN		PRAKTIKUM
1	Lab. Teori, Sejarah Arsitektur & Lingkungan Perilaku	A12345	Studio Perancangan Arsi 1	1	Lab. Perenc. Kawasan Tepian Air	B12345	Studio Perenc. Tata Ruang 1
2	Lab. Perumahan & Permukiman	A12345	Studio Perancangan Arsi 2	2	Lab. Perenc. Pariwisata & Mitigasi B.	B12345	Studio Perenc. Tata Ruang 2
3	Lab. Interior & Lansekap	A12345	Studio Perancangan Arsi 3	3	Lab. Perenc. & Perancangan Kota	B12345	Studio Perenc. Tata Ruang 3
4	Lab. Bahan, Konstruksi & Struktur B.	A4	Bahan, Konstruksi, Struktur	4	Lab. Perenc. & Peranc. Lingkungan	B12345	Pemetaan & Inderaja
5	Lab. Sains Bangunan	A5	Thermal	5	Lab. Perenc. & Peranc. Infrastruktur	B12345	Studio Tugas Akhir
		A5	Lighting				
		A5	Akustik				
		A5	Echo				
		A12345	Studio Tugas Akhir				
AB Model							
AB Komputer/Digital							
AB Cinema							

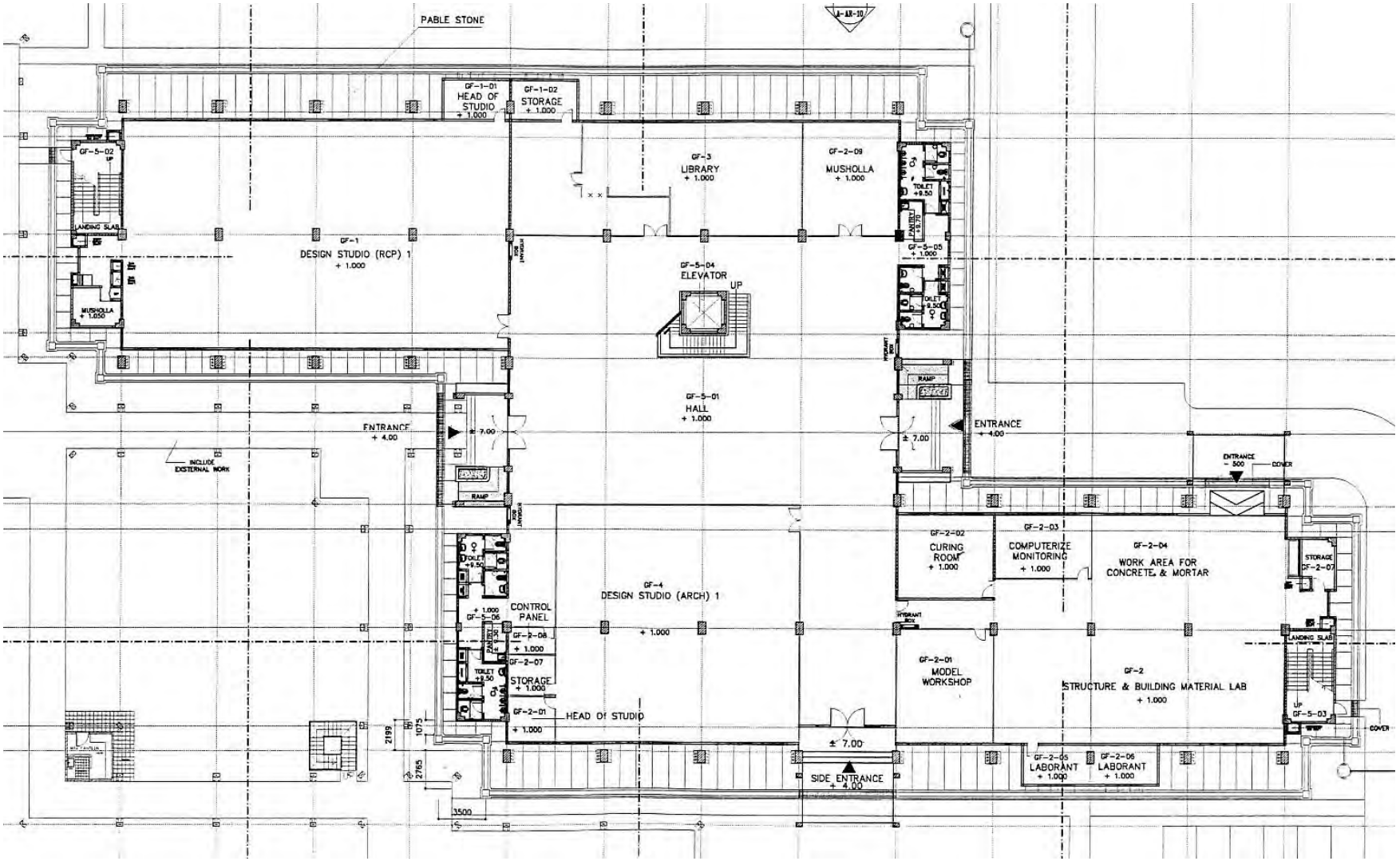
ARCHITECTURAL THEORY-HISTORY & BEHAVIOUR ENVIRONMENT LABORATORY



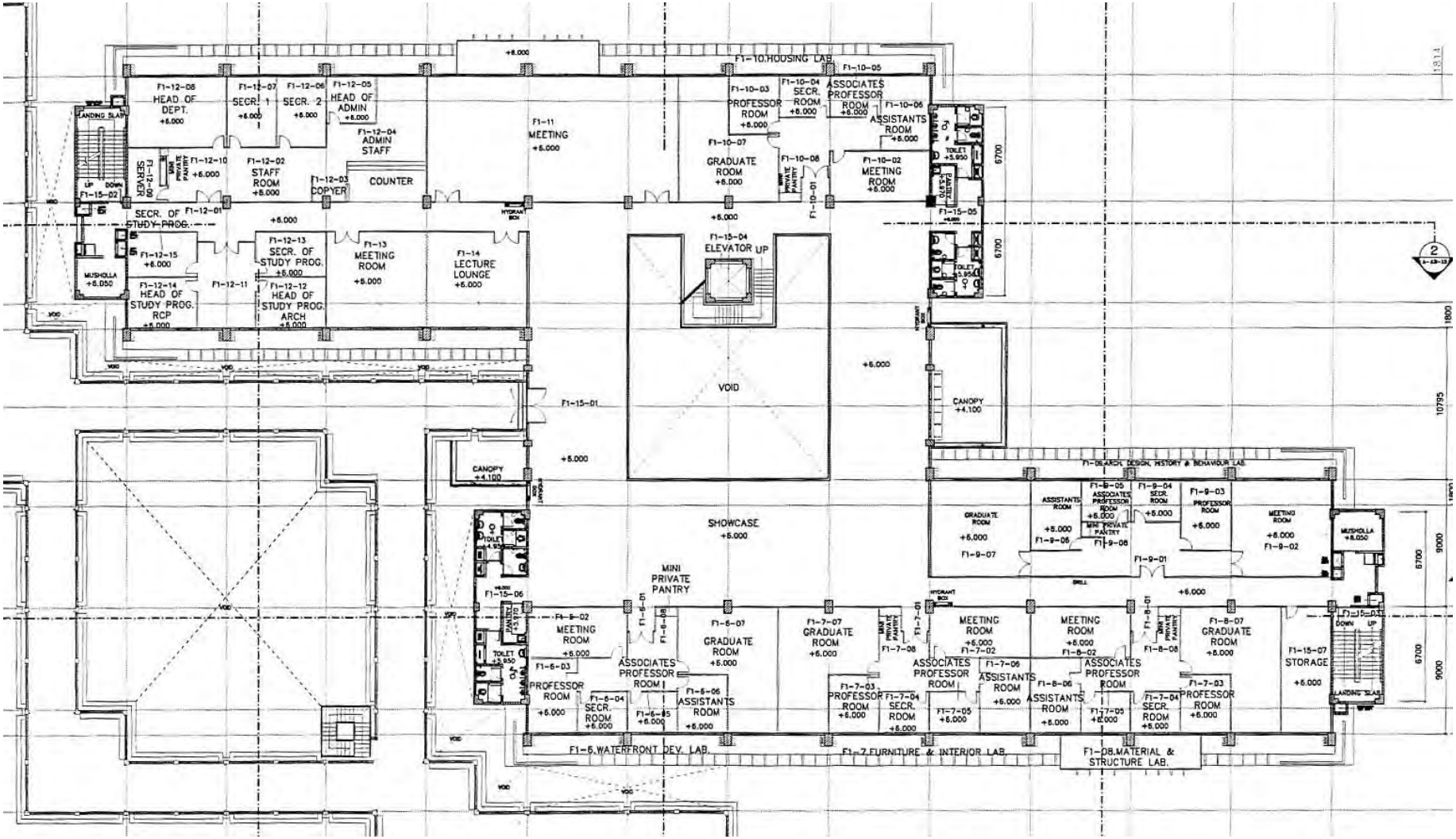
HOUSING & SETTLEMENT LABORATORY



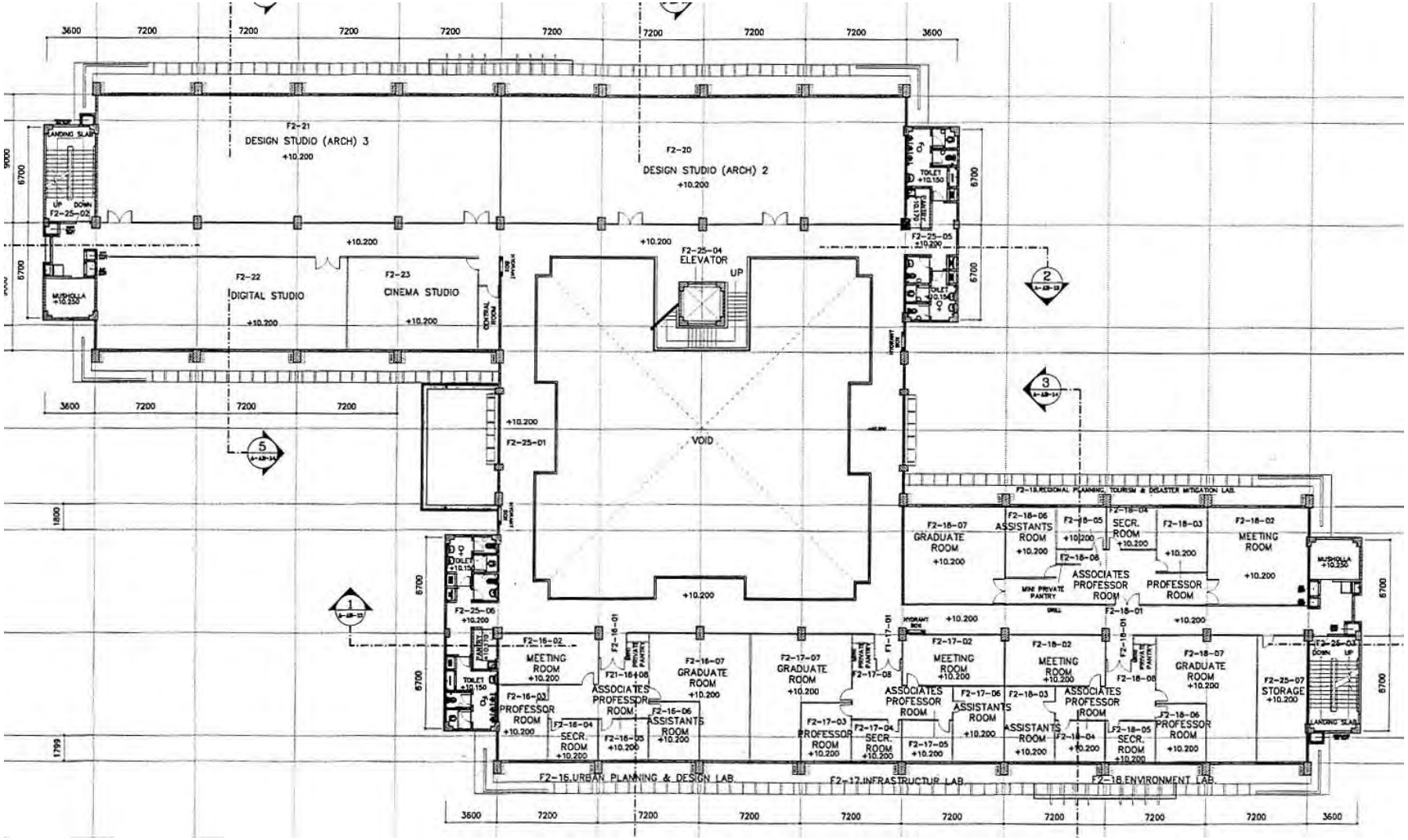
GROUNDFLOOR PLAN



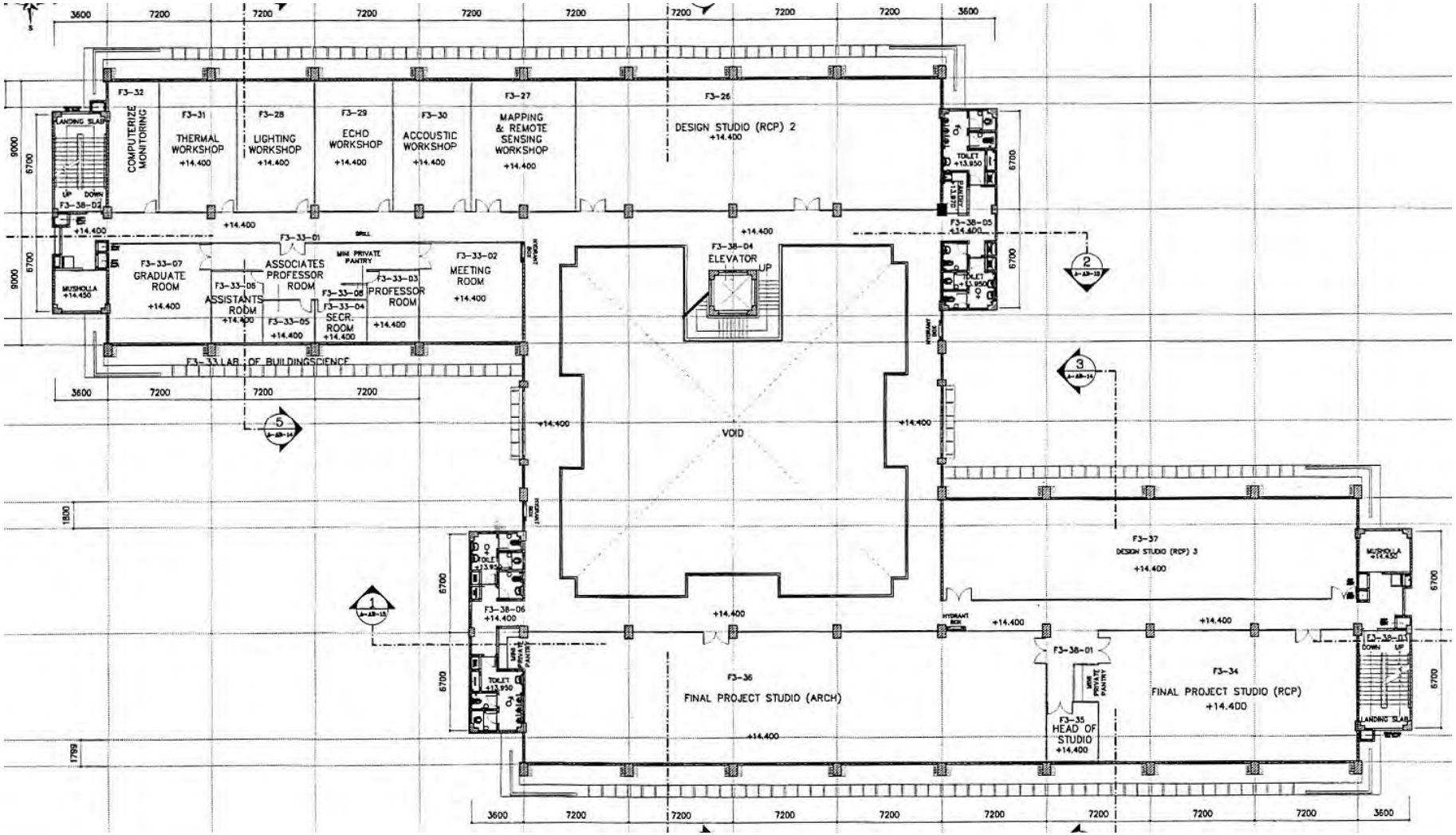
FIRSTFLOOR PLAN



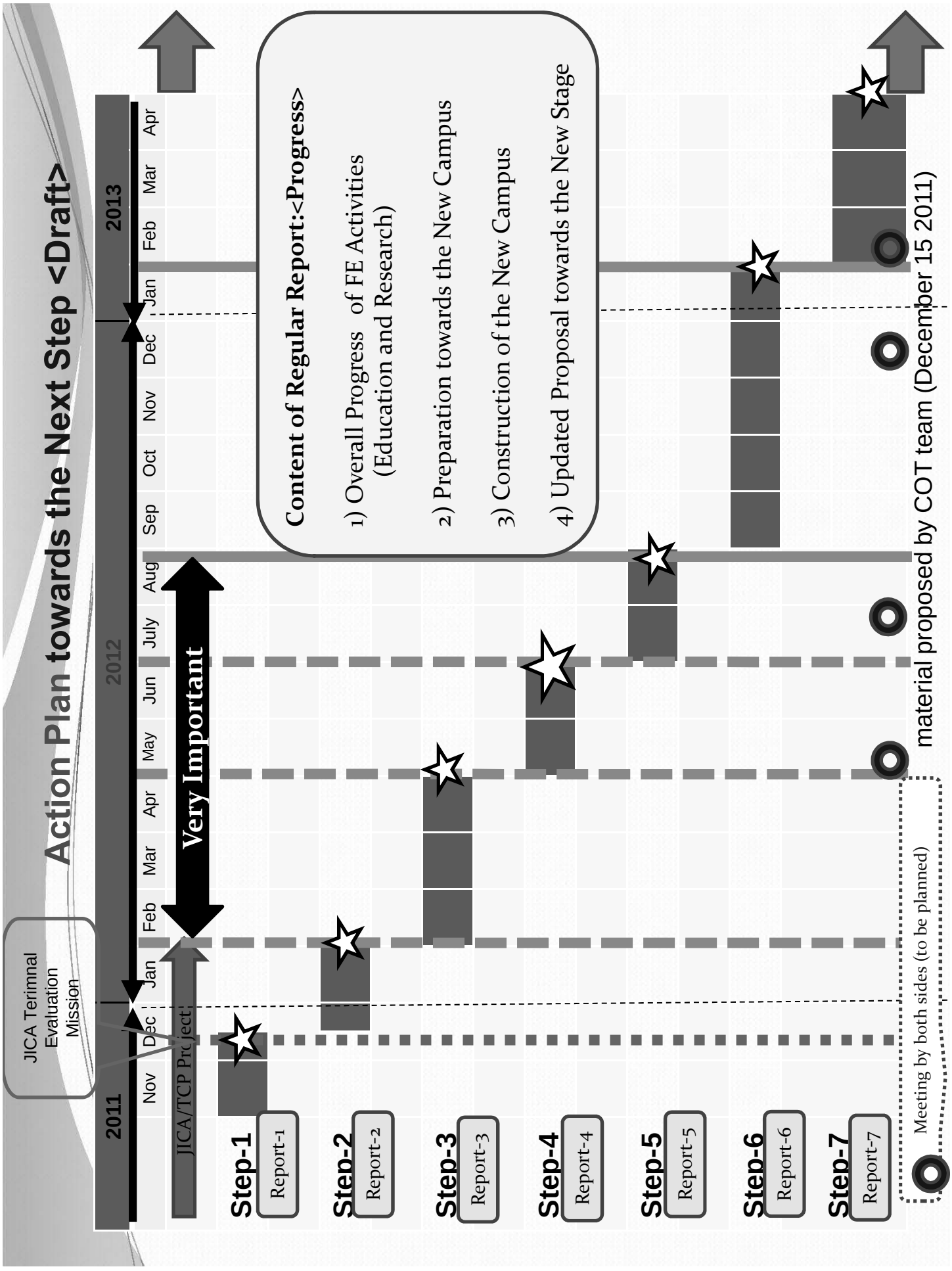
SECONDFLOOR PLAN



THIRDFLOOR PLAN



９．プロジェクト終了後の UNHAS 側のアクションプラン




ジャイカ
JICA