

Pemetaan Program Learning Outcome pada Kurikulum

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Satuan Penjaminan Mutu ITB

Workshop Pengembangan Kurikulum Dengan Paradigma
Outcomes Based Education, Aula Barat ITB, 16 – 17 Juli
2018

Terminologi

ABET	ASIIN	AUN-QA	BAN PT / KKNI
Program Educational Objective	Programme Objectives	Expected Learning Outcome	Profil dan Profesi Lulusan (PPL)
Student Outcome	Programme Learning Outcome		Capaian Pembelajaran
Performance Index	Outcome		
Assessment	Assessment	Assessment	
Evaluation	Evaluation	Evaluation	Evaluasi
Continuous Improvement	Improvement	Improvement	Perbaikan Berkelanjutan

Programme Learning Outcome

- Pernyataan yang secara spesifik menggambarkan **kompetensi** yang diketahui dan dikuasai oleh mahasiswa pada saat lulus dari program studi
- Meliputi **keterampilan, pengetahuan dan sikap** yang dibina selama mahasiswa menjalani pendidikan dalam program studi tersebut
- Didefinisikan agar para **pendidik memiliki ekspektasi yang selaras** terhadap pemenuhan PLO pembelajaran, **melaksanakannya secara konsisten** dalam seluruh kurikulum dan **mengukurnya** berdasarkan indikator kriteria yang ditetapkan



Contoh PLO

No	ABET Student Outcomes	
1	(a)	An ability to apply knowledge of mathematics, science, and engineering
2	(b)	An ability to design and conduct experiments, as well as to analyze and interpret data
3	(c)	An ability to design a system, component, or process to meet desired needs with realistic constraints
4	(d)	An ability to function on multi-disciplinary teams
5	(e)	An ability to identify, formulate, and solve engineering problems
6	(f)	An understanding of professional and ethical responsibility

Competence Based Skills

Soft Skills

Contoh Capaian Pembelajaran

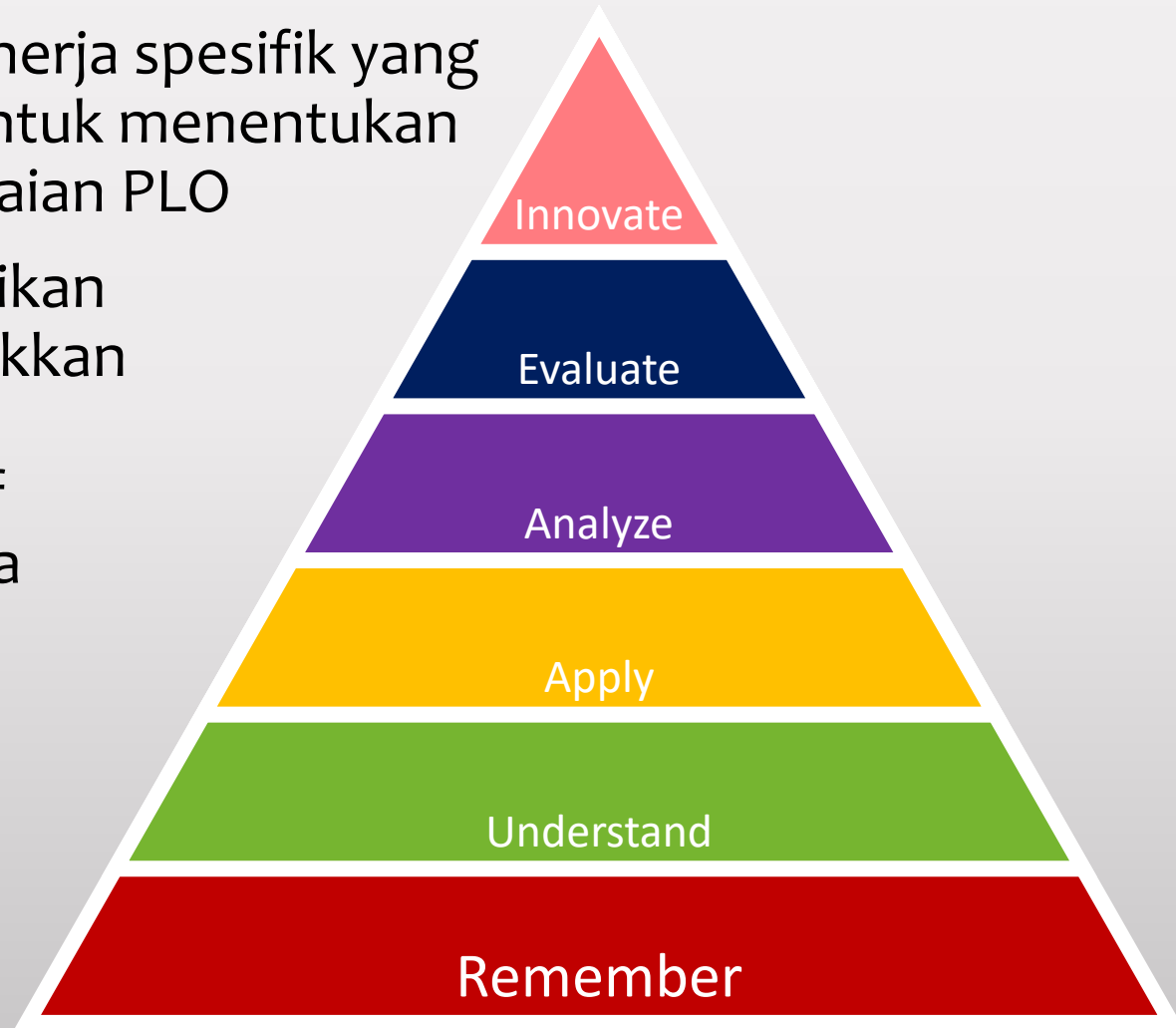
No	ABET Student Outcomes	
7	(g)	an ability to communicate effectively
8	(h)	the broad education necessary to understand the impact of engineering and physics solutions in a global, environmental, and societal context
9	(i)	a recognition of the need for and an ability to engage in life-long learning
10	(j)	a knowledge of contemporary issues
11	(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Soft Skills

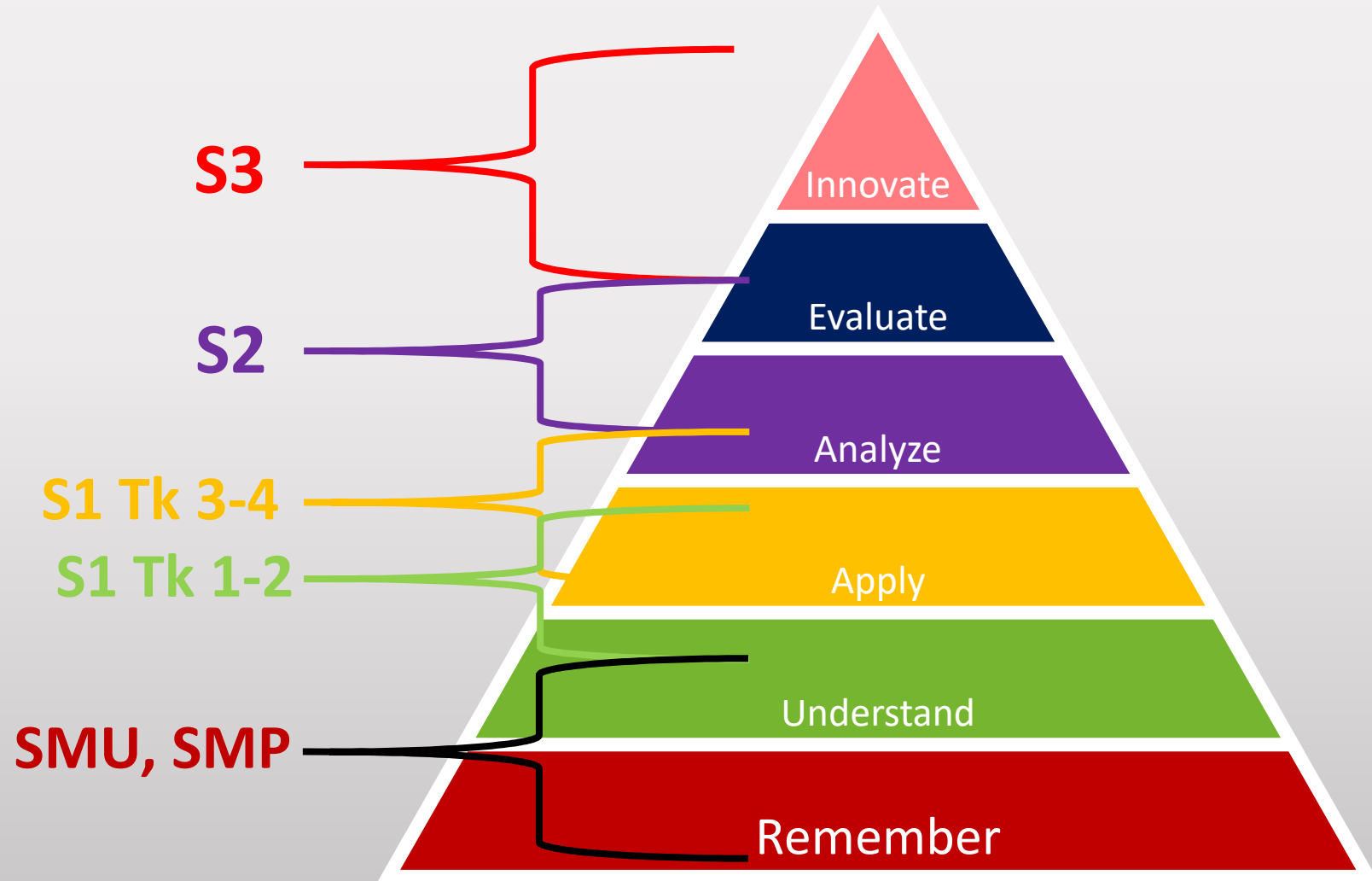
Competence Based Skills

Indikator Kinerja

- Menyatakan kinerja spesifik yang dapat diukur untuk menentukan tingkat pencapaian PLO
- Dapat didefinisikan untuk menunjukkan perkembangan tingkat kognitif sepanjang masa pembelajaran

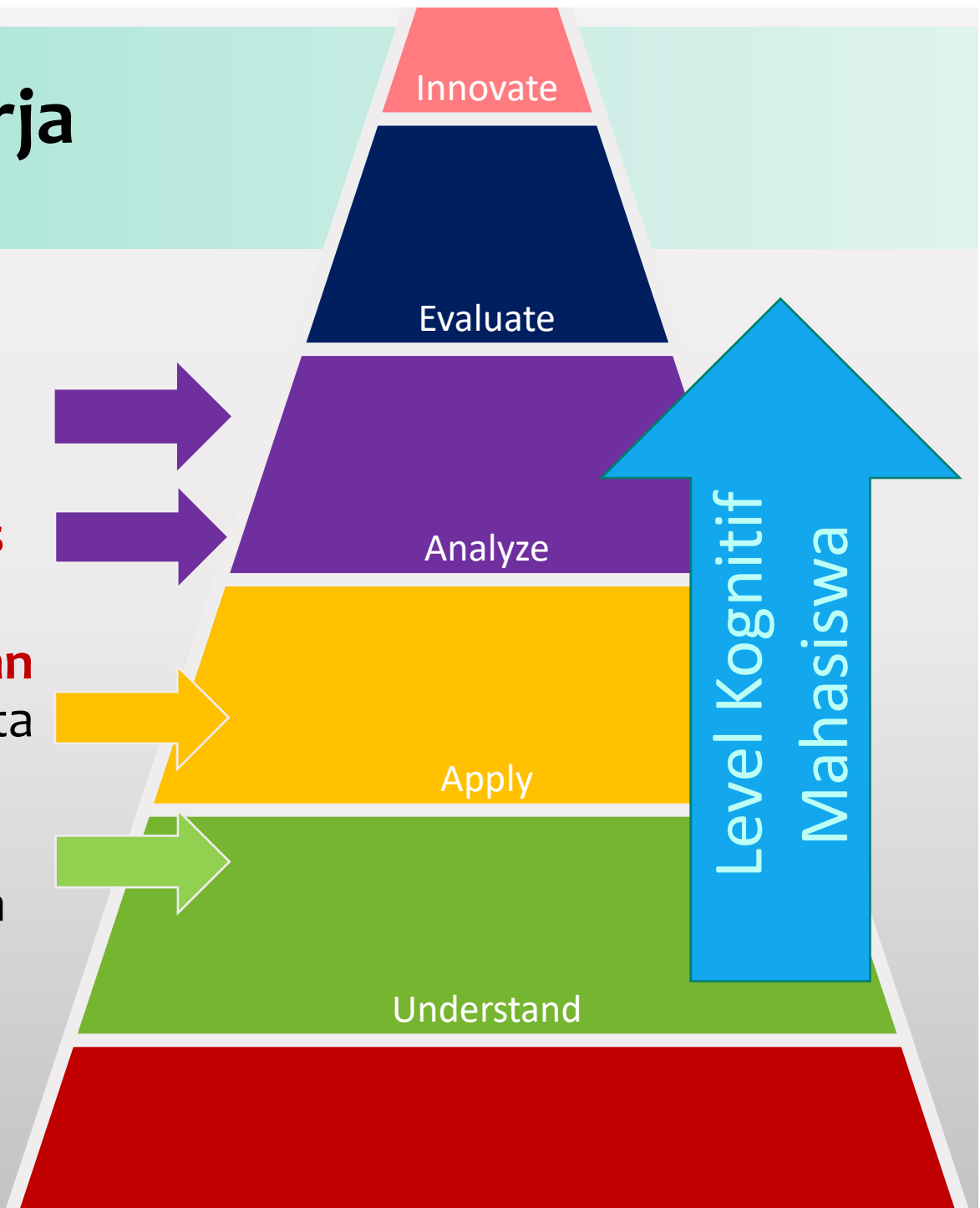


Tingkat Kognitif pada Indikator Kinerja



Indikator Kinerja

- Contoh:
 - Mampu **merancang** eksperimen
 - Mampu **menganalisis** data eksperimen
 - Mampu **mengolah dan menginterpretasi** data eksperimen
 - Mampu **mengikuti prosedur** eksperimen yang ditetapkan



Capaian Pembelajaran dan Indikator Kinerja

Capaian Pembelajaran		Indikator Kinerja	
a	an ability to apply knowledge of mathematics, science, and engineering	a1	an ability to apply knowledge of mathematics
		a2	an ability to apply knowledge of science
		a3	an ability to apply knowledge of basic engineering
b	an ability to design and conduct experiments, as well as to analyze and interpret data	b1	an ability to identify the type and objective of experiment/field survey
		b2	an ability to prepare and carry out an experiment/field survey
		b3	an ability to interpret result data from experiment/field survey
c	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	c1	an ability to design a component to meet desired needs within realistic constraints
		c2	an ability to design a system or process to meet desired needs within realistic constraints

Capaian Pembelajaran dan Indikator Kinerja

Capaian Pembelajaran		Indikator Kinerja	
d	an ability to function and corporation on multi-disciplinary teams	d1	an ability to explain the role of each member of a multi-disciplinary team
		d2	an ability to participate in active discussion within a multi-disciplinary team
		d3	an ability to summarize discussion results within multi-disciplinary team
e	an ability to identify, formulate, and solve engineering problems	e1	an ability to identify engineering problems
		e2	an ability to formulate engineering problems
		e3	an ability to solve engineering problems
f	an understanding of professional and ethical responsibility	f1	an ability to explain roles, responsibilities and professional ethics of an engineer.
		f2	an ability to use codes or standards in Ocean Engineering area.
		f3	an ability to make decision based on professional and ethical responsibility
g	an ability to communicate effectively	g1	an ability to prepare and do a presentation
		g2	an ability to make a written report
		g3	an ability to effectively discuss an argument

Capaian Pembelajaran dan Indikator Kinerja

Capaian Pembelajaran		Indikator Kinerja	
h	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	h1	an ability to understand the impact of engineering solutions in a global, economic, environmental, and social context
		h2	an ability to explain the impact of engineering solutions to global-environmental and social-economic context
i	a recognition of the need for, and an ability to engage in life-long learning;	i1	an ability to understand on the importance and needs of life-long learning;
		i2	an ability to explain various career choices for the engineering graduate and professional associations related to engineering area.
		i3	an ability to collect information from many sources in an efficient and effective manner.
j	a knowledge of contemporary issues;	j1	an ability to understand current global issues
		j2	an ability to discuss the contemporary issues related to engineering field

Capaian Pembelajaran dan Indikator Kinerja

Capaian Pembelajaran		Indikator Kinerja	
k	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;	k1	an ability to develop a computational program to solve engineering problem.
		k2	an ability to make algorithm based on certain numerical method to solve engineering problem
		k3	an ability to use up-to-date software application to solve engineering problem

Pemetaan PLO terhadap Kurikulum



Dapat **mengidentifikasi mata kuliah yang memiliki pengaruh tinggi pada PLO** yang relevan

Memastikan **semua PLO dapat tercapai** melalui pelaksanaan semua mata kuliah dalam kurikulum

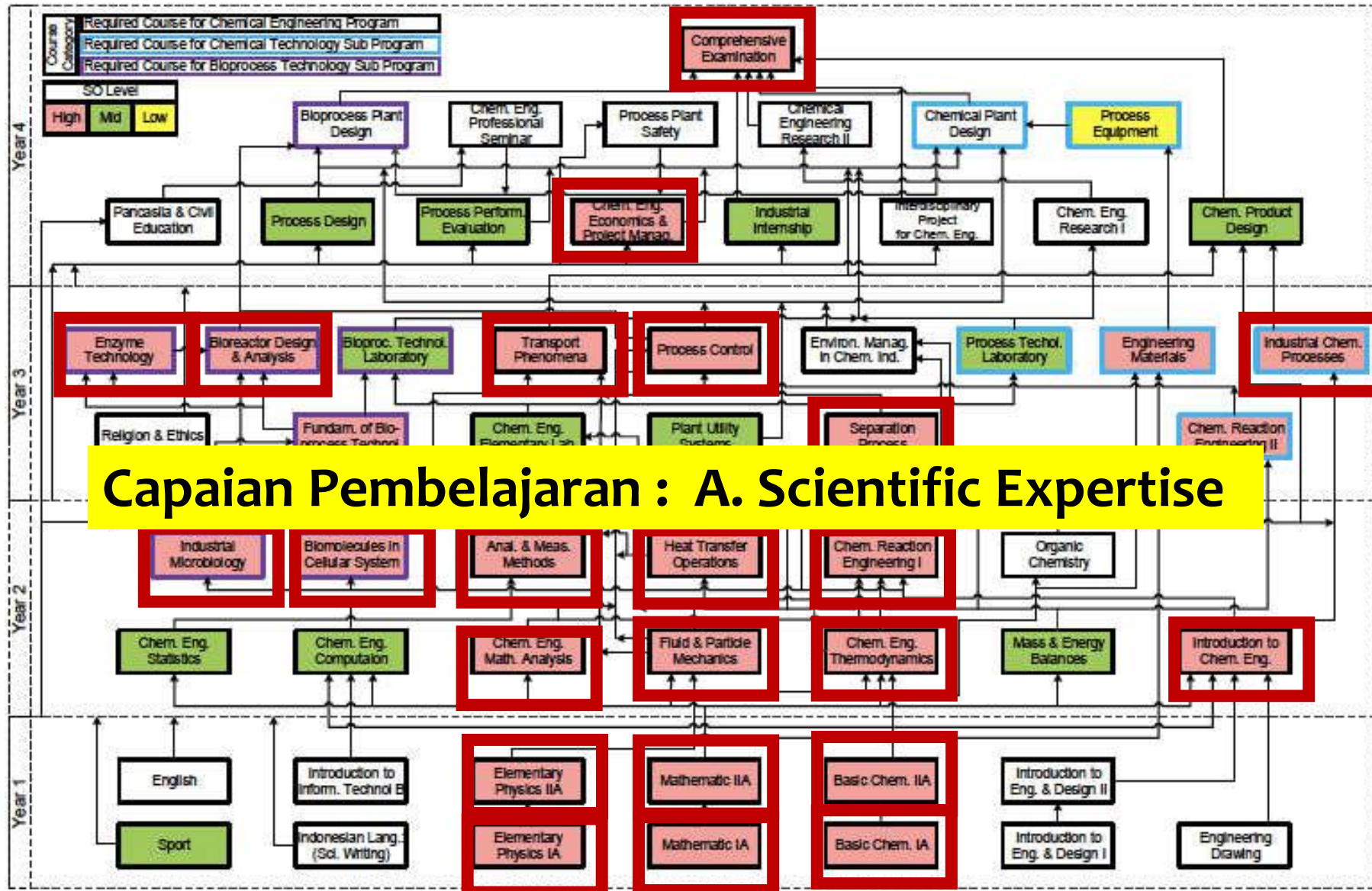
Melihat **kekurangan kurikulum Program Studi** apabila PLO tidak terpenuhi

Teknik Pemetaan I

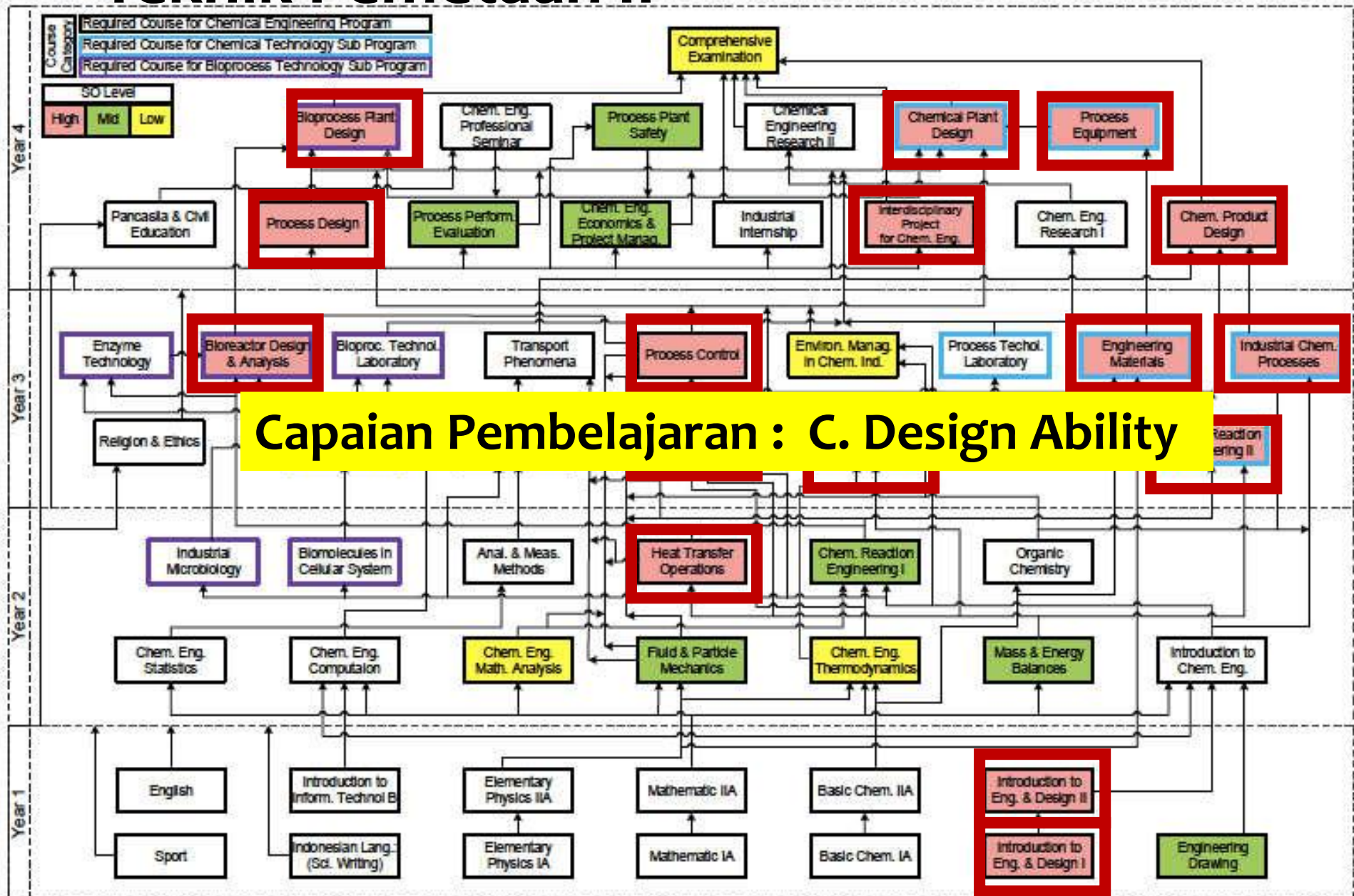
Chemical Engineering Undergraduate Program Courses – 2013 Curriculum		Credits	Student Outcomes											
			Scientific Expertise	Experimental Training	Design Abilities	Teamwork	Problem Solving	Professional Ethic	Communication Skills	Societal	Leadership	Communication	Technical	Number
Code	Course Name		a	b	c	d	e	f	g	h	i	j	k	
Required Courses														
TK2101	Introduction to Chemical Engineering	2	H				M			H				3
TK2102	Analytical and Measurement Methods	3		H									M	2
TK2103	Chemical Engineering Thermodynamics	3	H				M						M	3
TK2104	Chemical Engineering Mathematical Analysis	2	H				H						M	3
TK2105	Chemical Engineering Statistics	2	H	H									M	3
TK2106	Chemical Engineering Computation	3	M				M						H	3
TK2107	Fluid and Particle Mechanics	3	H		H		M							3
KI22xx	Organic Chemistry	3	H	M										2
TK2201	Mass and Energy Balances	3	H		H		M							3
TK2202	Chemical Reaction Engineering I	3	H		M		H						M	4

2-3 PLO per mata kuliah

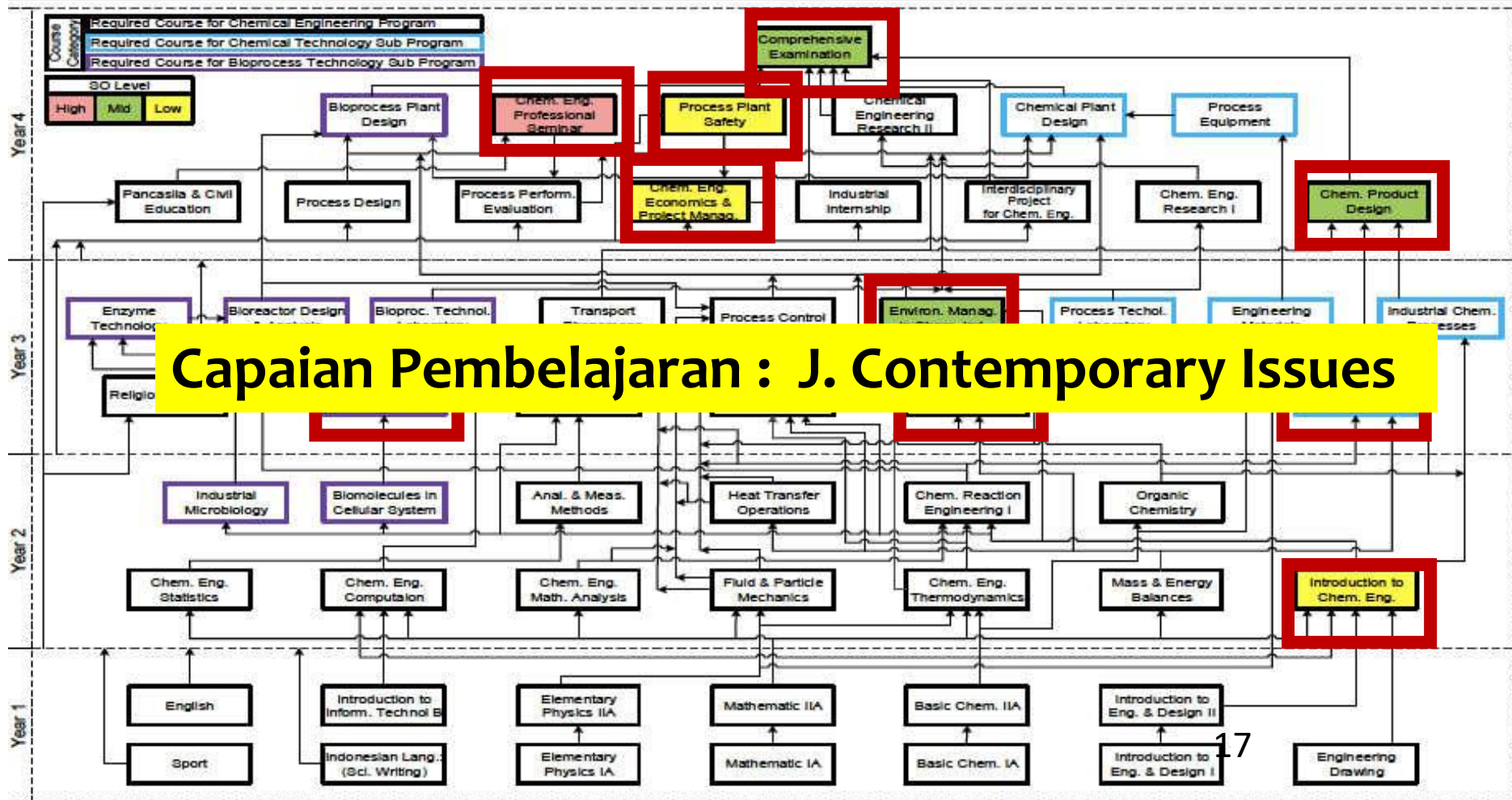
Teknik Pemetaan II



Teknik Pemetaan II



Teknik Pemetaan II



Rubrik Penilaian Indikator Kinerja Prodi

Contoh Indikator PLO-a

Menjadi dasar bagi rubrik indikator yang lebih detail pada level perkuliahan.

Indikator	Rubric			
	Exemplary	Satisfactory	Developing	Unsatisfactory
a.1	Can apply the proper mathematical formulation to solve engineering problems with minor errors.	Can apply the proper mathematical formulation to solve engineering problems with errors not more than 50%.	Can apply the proper mathematical formulation to solve engineering problems with errors more than 50%.	Cannot apply the proper mathematical formulation to solve engineering problems.
a.2	Can apply the proper knowledge of science to solve engineering problems with minor errors.	Can apply the proper knowledge of science to solve engineering problems with errors not more than 50%.	Can apply the proper knowledge of science to solve engineering problems with errors more than 50%.	Cannot apply the proper knowledge of science to solve engineering problems.
a.3	Can apply the proper basic engineering knowledge to solve engineering problems with minor errors.	Can apply the proper basic engineering knowledge to solve engineering problems with errors not more than 50%.	Can apply the proper basic engineering knowledge to solve engineering problems with errors more than 50%.	Cannot apply the proper basic engineering knowledge to solve engineering problems.

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Latihan

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Terima Kasih



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