ITS
Institut
Teknologi
Sepuluh Nopember

Material & Process

DESCRIPTION OF COURSE UNIT

Program Studi Sarjana (S1) Desain Produk

Bachelor of Industrial Design (BOID)

2018-2023

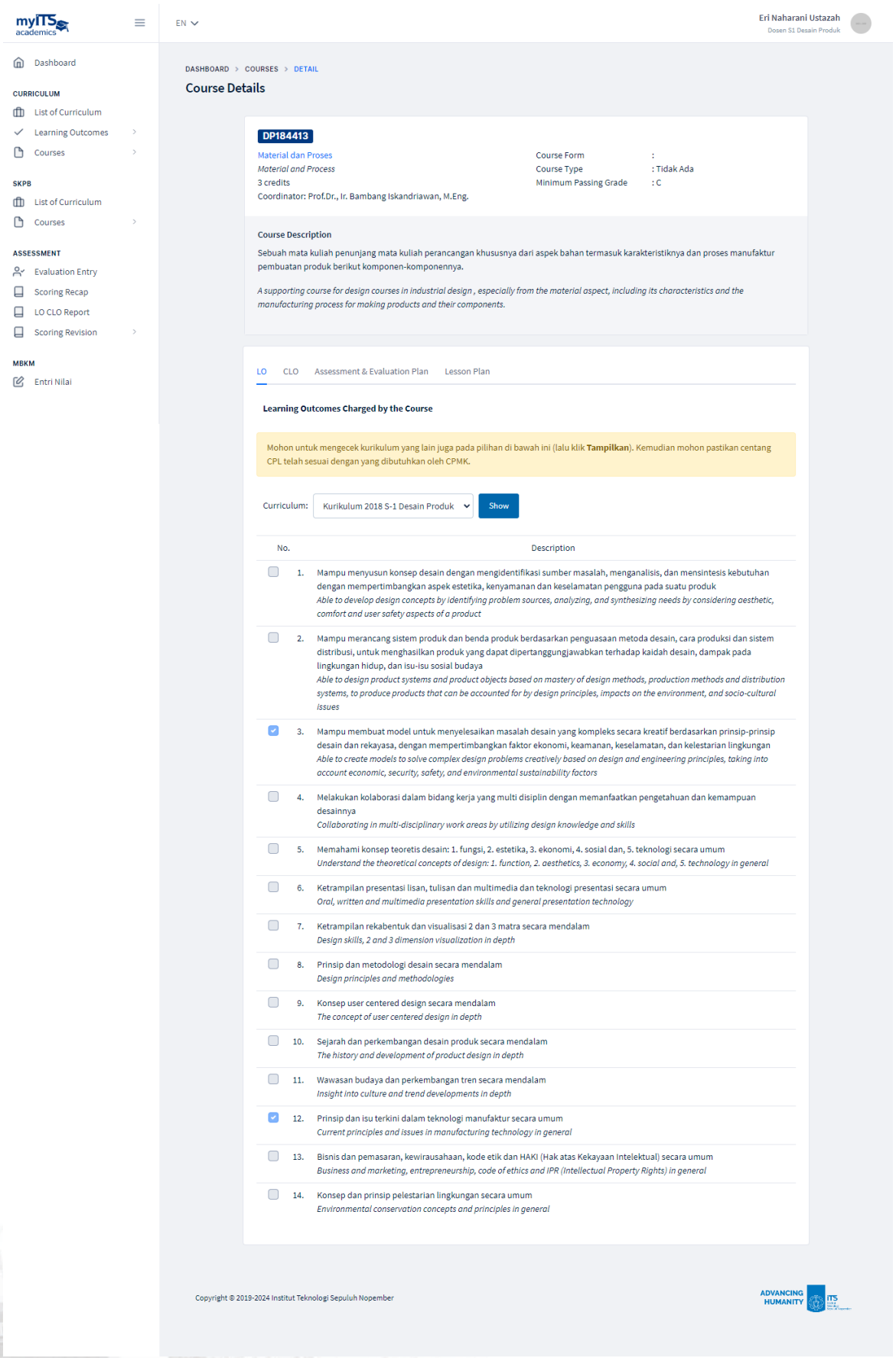
Gedung Desain Produk ITS Jl. Despro No.1 Kampus ITS Sukolilo Surabaya. 60111
Hotline Call official : +623115931147 email : despro@its.ac.id

Description of Course Unit
according to the ECTS User's Guide 2015

Course unit title	Material and Process
Course unit code	DP184413
Type of course unit	Compulsory
Level of course unit	First cycle Bachelor
Year of study when the course unit is delivered	2nd year
Semester/trimester when the course unit is delivered	4th semester
Number of ECTS credits allocated	6,4 ECTS Credits
Name of lecturer	Prof.Dr., Ir. Bambang Iskandriawan, M.Eng.
Learning outcomes of the course unit	Students can comprehensively explain the criteria for: 1. Material properties and material selection in product design. 2. Manufacturing processes. 3. Joints. 4. Springs. 5. Shafts, pins, and bearings. 6. Power screws. 7. Mechanical transmission. 8. Structure and construction. 9. Systems/sub-systems in products, sustainable design.
Mode of delivery	face-to-face
Prerequisites and co-requisites	-
Course content	This course serves as a supporting subject for design courses, especially focusing on material and process aspects. 1) Material properties: density, Young's modulus, strength, and cost. 2) Material properties: elongation, toughness, resistivity, energy content, maximum service temperature, and recycling. 3) Material selection for product design. 4) Molding process in the production of product components. 5) Casting process in the production of product components.

	6) Bulk forming process in the production of product components. 7) Sheet forming process in the production of product components. 8) Rapid prototyping process, lay-up method, and powder methods in the production of product components. 9) Use and selection of joints in product design. 10) Use and selection of springs in product design. 11) Use and selection of shafts, pins, and bearings in product design. 12) Use and selection of power screws in product design. 13) Use and selection of mechanical transmission (belt, chain, and gear) in product design. 14) Use and selection of structure and construction in product design. 15) Concept and implementation of Sustainable Design
Recommended or required reading and other learning resources/tools	• Asbhy, Mike and Kara Johnson. 2010. Materials and Design-The Art and Science of Material Selection in Product Design. Burlington: Butterworth-Heinemann • Cross, Nigel.2000. Enginering Design Methods: Strategies for Product Design, 3rd edition, New York: John Wiley & Sons. Ltd • Mott, R.L., 2009, “Elemen-elemen Mesin dalam Perancangan Elemen Mesin Terpadu”, Penerbit Andi, Buku 1 dan 2 • Karl T. Ulrich and Steven D. Eppinger, 2015, Product Design And Development (6th Edition) • Daniel F. Cuffaro, 2014, The Industrial Design Reference + Specification Book
Planned learning activities and teaching methods	Case Method; Team Based Learning
Language of instruction	Indonesia
Assessment methods and criteria	Assignment, Project, Midterm Evaluation and Final Evaluation

Capture My ITS ACADEMIC



Gedung Desain Produk ITS Jl. Despro No.1 Kampus ITS Sukolilo Surabaya. 60111
Hotline Call official : +62315931147 email : despro@its.ac.id

myITS academics

EN

Eri Naharani Ustazah
Dosen S1 Desain Produk

- Dashboard

CURRICULUM
- List of Curriculum
- Learning Outcomes
- Courses

SKPB
- List of Curriculum
- Courses

ASSESSMENT
- Evaluation Entry
- Scoring Recap
- LO CLO Report
- Scoring Revision

MBKM
- Entri Nilai

DASHBOARD > COURSES > DETAIL

Course Details

DP184413

Material dan Proses
Material and Process
3 credits
Coordinator: Prof.Dr., Ir. Bambang Iskandriawan, M.Eng.

Course Form :
Course Type : Tidak Ada
Minimum Passing Grade : C

Course Description

Sebuah mata kuliah penunjang mata kuliah perancangan khususnya dari aspek bahan termasuk karakteristiknya dan proses manufaktur pembuatan produk berikut komponen-komponennya.

A supporting course for design courses in industrial design , especially from the material aspect, including its characteristics and the manufacturing process for making products and their components.

LO | CLO | Assessment & Evaluation Plan | Lesson Plan

Course Learning Outcomes

Mohon untuk mengecek kurikulum yang lain juga pada pilihan di bawah ini (lalu klik **Tampilkan**). Kemudian mohon pastikan centang CPL telah sesuai dengan yang dibutuhkan oleh CPMK.

Curriculum: Kurikulum 2018 S-1 Desain Produk | Show

Code	Description of CLO	Mapping of CLO to LO		Weight of CLO
		LO 3	LO 12	
CLO-1	Mahasiswa mampu menjelaskan secara komprehensif spesifikasi teknik produk dan fungsi setiap komponen produk. *Students are able to comprehensively explain the product technical specifications and functions of each product component.*	☑	☑	20%
CLO-2	Mahasiswa mampu menjelaskan secara komprehensif bahan dan karakteristik bahan sebuah produk tertentu. *Students are able to comprehensively explain the materials and material properties of a particular product.*	☑	☑	30%
CLO-3	Mahasiswa mampu menjelaskan secara komprehensif proses pembuatan produk secara industri. Memilih dan menjelaskan proses manufaktur yang paling sesuai. *Students are able to explain comprehensively the process of making industrial products. Select and describe the most suitable manufacturing process.*	☑	☑	30%
CLO-4	Mahasiswa mampu menjelaskan bagian-bagian penting dari sebuah produk: sambungan; pegas; poros, pasak dan bearing; ulir pemutar; transmisi mekanik; dan struktur & konstruksi produk. *Students are able to explain the important parts of a product: joint/connection; spring; shafts, pins and bearings; turning thread (power screw); mechanical transmission; and product structure & construction.*	☑	☑	20%
	Total Weight	**50%**	**50%**	**100%**

ADVANCING HUMANITY

Gedung Desain Produk ITS Jl. Despro No.1 Kampus ITS Sukolilo Surabaya. 60111
Hotline Call official : +62315931147 email : despro@its.ac.id

myITS academics

EN

Eri Naharani Ustazah
Dosen S1 Desain Produk

- Dashboard

CURRICULUM
- List of Curriculum
- Learning Outcomes
- Courses

SKPB
- List of Curriculum
- Courses

ASSESSMENT
- Evaluation Entry
- Scoring Recap
- LO CLO Report
- Scoring Revision

MBKM
- Entri Nilai

DASHBOARD > COURSES > DETAIL

Course Details

DP184413

Material dan Proses
Material and Process
3 credits
Coordinator: Prof.Dr., Ir. Bambang Iskandriawan, M.Eng.

Course Form :
Course Type : Tidak Ada
Minimum Passing Grade : C

Course Description

Sebuah mata kuliah penunjang mata kuliah perancangan khususnya dari aspek bahan termasuk karakteristiknya dan proses manufaktur pembuatan produk berikut komponen-komponennya.

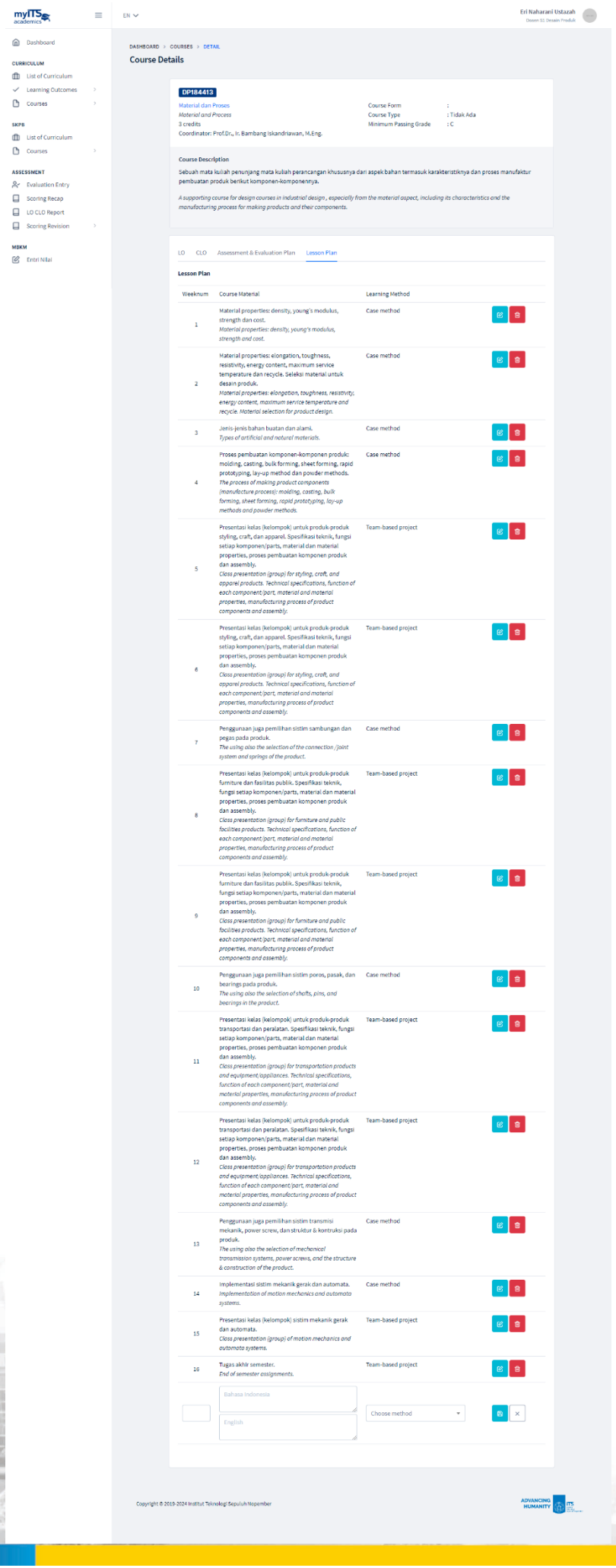
A supporting course for design courses in industrial design , especially from the material aspect, including its characteristics and the manufacturing process for making products and their components.

LO CLO Assessment & Evaluation Plan Lesson Plan

Assessment & Evaluation Plan

No.	Evaluation Plan	CLO-1	CLO-2	CLO-3	CLO-4	Total Weight
1	Produk styling, craft, dan apparel. *Styling, craft and apparel products.* Hasil proyek | *Team-based Project*	4%	6%	6%	4%	20%
2	Produk furniture dan fasilitas publik. *Furniture products and public facilities* Hasil proyek | *Team-based Project*	4%	6%	6%	4%	20%
3	Produk transportasi dan peralatan. *Transportation products and appliances.* Hasil proyek | *Team-based Project*	4%	6%	6%	4%	20%
4	Model animasi transmisi mekanik/automata *Mech./automata transmission animation.* Hasil proyek | *Team-based Project*	4%	6%	6%	4%	20%
5	Pemahaman artikel jurnal desain produk. *Understanding of product design journal* Kognitif - Quiz | *Cognitive - Quiz*	2%	3%	3%	2%	10%
6	Majalah material dan proses 2021. *Material and process magazine 2021.* Hasil proyek | *Team-based Project*	2%	3%	3%	2%	10%
	TOTAL *Target*	**20%** *20%*	**30%** *30%*	**30%** *30%*	**20%** *20%*	**100%** *100%*

ADVANCING HUMANITY ITS


myITS academics
EN
Eri Naharani Ustazah
Dosen S1 Desain Produk
Dashboard
CURRICULUM
List of Curriculum
Learning Outcomes
Courses
SKPB
List of Curriculum
Courses
ASSESSMENT
Evaluation Entry
Scoring Recap
LO CLO Report
Scoring Revision
MBKM
Entri Nilai
DASHBOARD > COURSES > DETAIL
Course Details
DP184413
Material dan Proses
Material and Process
3 credits
Coordinator: Prof.Dr., Ir. Bambang Iskandriawan, M.Eng.
Course Form :
Course Type : Tidak Ada
Minimum Passing Grade : C
Course Description
Sebuah mata kuliah penunjang mata kuliah perancangan khususnya dari aspek bahan termasuk karakteristiknya dan proses manufaktur pembuatan produk berikut komponen-komponennya.
A supporting course for design courses in industrial design , especially from the material aspect, including its characteristics and the manufacturing process for making products and their components.
LO
CLO
Assessment & Evaluation Plan
Lesson Plan
Lesson Plan
Weeknum
Course Material
Learning Method
1
Material properties: density, young's modulus, strength dan cost.
Material properties: density, young's modulus, strength and cost.
Case method
2
Material properties: elongation, toughness, resistivity, energy content, maximum service temperature dan recycle. Seleksi material untuk desain produk.
Material properties: elongation, toughness, resistivity, energy content, maximum service temperature and recycle. Material selection for product design.
Case method
3
Jenis-jenis bahan buatan dan alami.
Types of artificial and natural materials.
Case method
4
Proses pembuatan komponen-komponen produk: molding, casting, bulk forming, sheet forming, rapid prototyping, lay-up method dan powder methods.
The process of making product components (manufacture process): molding, casting, bulk forming, sheet forming, rapid prototyping, lay-up methods and powder methods.
Case method
5
Presentasi kelas (kelompok) untuk produk-produk styling, craft, dan apparel. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for styling, craft, and apparel products. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
6
Presentasi kelas (kelompok) untuk produk-produk styling, craft, dan apparel. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for styling, craft, and apparel products. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
7
Penggunaan juga pemilihan sistim sambungan dan pegas pada produk.
The using also the selection of the connection /joint system and springs of the product.
Case method
8
Presentasi kelas (kelompok) untuk produk-produk furniture dan fasilitas publik. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for furniture and public facilities products. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
9
Presentasi kelas (kelompok) untuk produk-produk furniture dan fasilitas publik. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for furniture and public facilities products. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
10
Penggunaan juga pemilihan sistim poros, pasak, dan bearings pada produk.
The using also the selection of shafts, pins, and bearings in the product.
Case method
11
Presentasi kelas (kelompok) untuk produk-produk transportasi dan peralatan. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for transportation products and equipment/appliances. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
12
Presentasi kelas (kelompok) untuk produk-produk transportasi dan peralatan. Spesifikasi teknik, fungsi setiap komponen/parts, material dan material properties, proses pembuatan komponen produk dan assembly.
Class presentation (group) for transportation products and equipment/appliances. Technical specifications, function of each component/part, material and material properties, manufacturing process of product components and assembly.
Team-based project
13
Penggunaan juga pemilihan sistim transmisi mekanik, power screw, dan struktur & kontruksi pada produk.
The using also the selection of mechanical transmission systems, power screws, and the structure & construction of the product.
Case method
14
Implementasi sistim mekanik gerak dan automata.
Implementation of motion mechanics and automata systems.
Case method
15
Presentasi kelas (kelompok) sistim mekanik gerak dan automata.
Class presentation (group) of motion mechanics and automata systems.
Team-based project
16
Tugas akhir semester.
End of semester assignments.
Team-based project
Bahasa Indonesia
English
Choose method
Copyright © 2019-2024 Institut Teknologi Sepuluh Nopember
ADVANCING HUMANITY