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## SYLLABUS

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Date/ Revision	03 August 2016
Faculty	Engineering
Approval	Dean of Engineering Faculty

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### SUBJECT : INNOVATION PRODUCT DEVELOPMENT

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#### 1. Identification of Subject:

Name of Subject	: Innovation Product Development
Code of Subject	: PROD-2100
SKS	2
Semester	: 5
Study Program	: ELE, MTE, AVE, INE, MEE
Lecturer	: Dr.ir. Tutuko Prajogo, MSMfgE; Norman Yahya, MBA



#### 2. Competency

After finishing the Innovation Product Development study course, the student will be able to:

- Describe the importance of product in the level of individual, company, and nation as the survival tool;
- Describe the product life cycle in terms of cost and revenue, cash flow, its phases, and some important points
- Describe that Product Development as the set of activities beginning with the perception of a market opportunity and ending in the production, sale, and delivery of a product
- Familiarity with product development terminologies
- Able to analyze an existing product in terms of product development terminologies
- Able to identify product opportunities and process them into a set of possible development
- Able to identify customer needs from customer statement obtained from several activities
- Strategically able to define product mission, product specification and reconcile some factors to become final specification
- Able to plan product based on product architecture and platform
- Able to generate concepts of the product, do some selection, and test them
- Able to define and to do industrial design based on the nature of a product
- Know what the purposes of prototypes and use them as the medium to implement some product development concepts
- Know to how to consider environment aspect in the design, manufacturing cost and robustness of the product and able to implement them in their proposed project
- Understand about intellectual property right
- Able to manage a product development project

#### 3. Description of Subject:

The course introduces students to the awareness about product as consumer as well as producer that might change their attitude toward product; the importance of product to the individual, company, as well as nation; and the importance of product development. The course provides the

body of knowledge and yet still practical for students in their first exposure to the product development by acquiring the concept through student-group project as the medium to exercise. After introduced to the basic terminologies of product development, the students are given the chance to exercise them by analyzing existing products and continue by implementing it to their proposed-product. The students are expected to be able to implement product development concepts to their proposed product in the project, challenge to be more creative in putting value added features and expand to improve them as they go through their projects.

#### 4. Learning Approach

Approach : Combination of Expository - inquiry and colaborative  
 Method : Discussion, question answer, existing product analysis, group work  
 Student Task : Student Project, project documentation, prototype, presentation  
 Media : Powerpoint presentation, teaching aids (product), video clips.

#### 5. Evaluation

a) Absence maximum : 25%  
 b) Participation in discussion : 5 points  
 c) Project, presentation : 15 points  
 d) Daily Quiz : 20 points  
 e) Final Examination : 60 points  
 Total : 100 points

#### 6. Contents/ Topics of Lecturing:

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	<b>Introduction, Development Processes and Organization</b> <ul style="list-style-type: none"> <li>Product : Goods, Services</li> <li>Product Life Cycle</li> <li>Development Processes and Organization</li> <li>Group of student propose Product Development Project: Product proposed, core team, background, purpose, scope and limitation</li> <li>Chapter reading tasks and development project as a scheme for collaborative learning</li> </ul>	Ch-1 Introduction  Ch-2 Development Processes and Organization	
2	<b>Product Opportunity Identification</b> <ul style="list-style-type: none"> <li>What is an opportunity</li> <li>Type of opportunity</li> <li>Tournament Structure of Opportunity Identification</li> <li>Opportunity identification process</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-3 Opportunity Identification	
3	<b>Product Planning Process</b> <ul style="list-style-type: none"> <li>What is product planning</li> <li>Types of product development project</li> </ul>	Ch-4 Product Planning	Quiz-1

	<ul style="list-style-type: none"> <li>Product planning process</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>		
4	<ul style="list-style-type: none"> <li><b>Product Architecture</b></li> <li>What is product Architecture?</li> <li>Implication of the Architecture</li> <li>Establishing the Architecture</li> <li>Platform Planning</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-10. Product Architecture	
5	<b>Identifying Customer Needs</b> <ul style="list-style-type: none"> <li>Gather raw data from customers</li> <li>Interpret raw data in terms of customer needs</li> <li>Organize the needs into hierarchy</li> <li>Establish the relative importance of the needs</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-5. Identifying Customer Needs	
6	<b>Product Specification</b> <ul style="list-style-type: none"> <li>What are the specifications</li> <li>When are specifications established</li> <li>Establishing target specifications</li> <li>Setting the final specifications</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-6. Product Specification	Quiz-2
7	<b>Concept Generation, Selection &amp; Testing</b> <ul style="list-style-type: none"> <li>What is product concept</li> <li>Concept generation</li> <li>Concept selection</li> <li>Concept testing</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-7. Concept Generation  Ch-8 Concept Selection  Ch-9 Concept Testing	Quiz-2
8	<b>MIDTERM SEMESTER BREAK</b>		
9	<b>Industrial Design &amp; Prototyping:</b> <ul style="list-style-type: none"> <li>What is Industrial Design</li> <li>The impact of Industrial Design</li> <li>Industrial Design Process</li> <li>Assessing the quality of Industrial Design</li> <li>Understanding prototypes</li> <li>Principles of prototyping</li> <li>Prototyping technologies</li> <li>Planning for prototypes</li> <li>Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-14 Prototyping  Ch-11 Industrial Design	
10	<b>Design For Environment</b>	Ch-12	Quiz-3

	<ul style="list-style-type: none"> <li>• What is Design for environment</li> <li>• The design for environment process</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Design For Environment	
11	<b>Design For Manufacturing</b> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Estimate the manufacturing cost</li> <li>• Reduce the costs of components</li> <li>• Reduce the costs of assembly</li> <li>• Reduce the costs of supporting production</li> <li>• Consider the impact of DFM decisions on other factor</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-13 Design For Manufacturing	
12	<b>Robust Design</b> <ul style="list-style-type: none"> <li>• What is robust design</li> <li>• Robust design process</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-15 Robust Design	Quiz-4
13	<b>Patents and Intellectual Property</b> <ul style="list-style-type: none"> <li>• What is intellectual property</li> <li>• Intellectual property process</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-16. Patents and Intellectual Property	
14	<b>Product Development Economics</b> <ul style="list-style-type: none"> <li>• Elements of economic analysis</li> <li>• Product development economic process</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-17 Product Development Economics	
15	<b>Managing Projects</b> <ul style="list-style-type: none"> <li>• Understanding and representing tasks</li> <li>• Baseline project planning</li> <li>• Accelerating projects</li> <li>• Project execution</li> <li>• Student-proposed product development project as medium for exercise and discussion</li> </ul>	Ch-18 Managing Projects	Quiz-5
16	<b>FINAL EXAMINATION</b>		

## 7. Book Reference:

- a) **Main Text Book:** “*Product Design and Development*” ,5<sup>th</sup> edition, 2012, **Authors:** Karl T. Ulrich and Steven D. Eppinger, **Publisher:** Mc Graw-Hill Education, **ISBN:** 978-007-108695-0
- b) **Supplement Textbooks:**
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