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|  | **STATE UNIVERSITY OF PADANG****FACULTY OF ENGINEERING****ELECTRONIC DEPARTMENT****INFORMATIC EDUCATION STUDY PROGRAM** | **Document Code** |
| **COURSES** | **CODE** | **Course Group** | **Credit Point(s)** | **SEMESTER** | **Date Of Creation** |
| System Design Analysis | TIK196 |  |  2 credits (Theory) | 4  | July 2017 |
| **Authorization:** | **Lecturer** | **Course Coordinator** | **Coordinator of Study Program** |
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| **Learning Outcomes (LO)** | **PLO** |
| S8 | Internalizing academic values, norms and ethics  |
| S9 | Demonstrate an attitude of responsibility for work in their field of expertise independently. |
| P3 | Able to formulate various real problems based on concepts related to the field of information and programming. |
| KU1 | Able to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values ​​in accordance with their field of expertise. |
| KU5 | Able to make decisions appropriately in the context of problem solving in their area of ​​expertise, based on the results of information and data analysis. |
| KU9 | Capable of documenting, storing, securing, and recovering data to ensure validity and prevent plagiarism |
| KK1 | Able to apply information technology to solve real problems in the era of the industrial revolution 4.0. |
| **CO** |
| CO-1 | Able to master theoretical concepts related to information systems, characteristics and classifications. |
| CO-2 | Able to master the concept of system analysis based on the stages of system analysis and be able to make analysis reports |
| CO-3 | Able to master the concept of system design based on system business process analysis and the personnel involved |
| CO-4 | Able to master the concept of Structured Design and able to formulate problems of use based on the analysis of these problems |
| CO-5 | Able to master the concept of detailed system design including Output and Input design and can perform input validation. |
| CO-6 | Able to master the concept of database design in a system development |
| CO-7 | Able to master object-oriented design concepts and be able to apply them into the form of analysis and design. |
| CO-8 | Able to do object-oriented system design using UML tools. |
| CO9 | Able to select and use analysis and design methods / tools appropriately based on the system being developed |
| **Course Description** | This course provides students with an understanding of the concept of visual programming, as well as providing basic skills to use it. |
| **Course Matter** | 1. System definition and characteristics.
2. Meaning of System Design
3. System Design Objectives
4. Personnel involved
5. General system design
6. System flowchart
7. Context Diagram and DFD
8. DETAILED SYSTEM DESIGN
9. Designing Database
	1. Entity Relationship Diagram (ERD)
	2. DFD, ERD and Normalization Relationships
10. Object Oriented Modeling.
11. Object Oriented Analysis.
12. Object Oriented Design.
13. Introduction to UML.
14. A Brief History of UML.
15. UML parts ..
16. Steps to Create UML
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| **References** | **Main:** |
| 1. Burch, J.G., **System, Analysis, Design, and Implementation**, Boyd & Fraser Publishing Company, 1992.
2. D. Suryadi H.S., Bunawan, **Pengantar Perancangan Sistem Informasi**, Gunadarma, 1996.
3. Elmasri/Navathe, **Fundamentals of Database System**, Benjamin/Cummings Publishing Company, Inc, 1989.
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| **Supporting:** |
| 1. Jogiyanto, **Analisis dan Disain Sistem Informasi**, Andi Offset, Yogyakarta, 1990.
2. Senn, James A., **Analysis and Design of Information Systems***,* McGraw-Hill Publishing Company,
3. Tavri D. Mahyuzir, **Analisa Perancangan Sistem Pengolahan Data**, PT. Elex Media Komputindo, Jakarta, 1989.
4. Yourdon, Edward, **Modern Structure Analysis**, Prentice-Hall, Inc, 1989.
5. Anonim, **Pengantar Analisis dan Perancangan Sistem Terstruktur**, Gunadarma, 1995.
6. Kendall & Kendall, **Analisis dan Perancangan Sistem**, Edisi Ke 5 – Jilid 1, PT. Prenhallindo, Jakarta, 2003.
7. Kendall & Kendall, **Analisis dan Perancangan Sistem**, Edisi Ke 5 – Jilid 2, PT. Indeks, Jakarta, 2003.
8. Ariesto Hadi Sutopo, **Analisis dan Desain Berorientasi Objek**, J&J Learning, Yogyakarta, 2002.
9. Adi Nugroho, **Analisis dan Perancangan Sistem Informasi dengan Metodologi Berorientasi Objek**, Informatika, Bandung, 2003
10. A. Suhendar, Hariman Gunadi, **Visual Modeling Menggunakan UML dan RATIONAL ROSE**, Informatika, Bandung, 2002. Schmuller, Josep, **SAMS Teach Yourself UML ini 24 Hours**, Second Edition, Sams Publishing, 2002
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| **Learning Media** | **Software:** | **Hardware :** |
| Visio Software, [Diagram Designer](https://gawainesia.com/aplikasi-membuat-flowchart/#6_Diagram_Designer), [PlantUML](https://gawainesia.com/aplikasi-membuat-flowchart/#7_PlantUML) | Laptop, LCD & Projector |
| **Lecturer** | Lecturer Team of System Design Analysis |
| **Prerequisites** |  |
| **Weeks-** |  **Sub-CO****(Expected Final Ability in each learning stage)** | **Assessment Indicator**  | **Assessment Criteria** | **Learning Method, Students’ Learning Experience****[Time Allocation]** | **Learning Material** **[Topic from Reference]** | **Score (%)** |
| **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** |
| 1-2 | Able to master theoretical concepts related to information systems, characteristics and classifications. | Obtain general knowledge concepts related to information systems, their characteristics and classifications. | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]**• **Independent**  **[BM: 1x (3x60 ”)]** **Task 1**: the general concept of knowledge is related to information systems, their characteristics and classifications.**[BT: (1) x (3x60 ”)]** | Definition and System characteristics. | **10** |
| 3 | Able to master the concept of system analysis based on the stages of system analysis and be able to make analysis reports  | Obtain the concept of system analysis based on the stages of system analysis and be able to report the results of the analysis | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]*** **Task-2:**Resume the concept of system analysis is based on the stages of system analysis and is able to report the results of the analysis

**[[BT: (1) x (3x60 ”)]** | Stages of System Analysis | **15** |
| 4-5 | Able to master the concept of system design based on system business process analysis and the personnel involved | Obtain a system design concept based on an analysis of the system business process and the personnel involved | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

Presentation**[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-4-5:**Resume system design concept based on system business process analysis and the personnel involved **[BT: (1) x (3x60 ”)]** | 1. Meaning of System Design
2. System Design Objectives
3. Personnel involved
4. General system design
	1. Output design
	2. Input Design
	3. Process Design
	4. Database Design
	5. Control Design
	6. Network Design
	7. Computer Design
 | **15** |
| 6-7 | Able to master the concept of Structured Design and able to formulate problems of use based on the analysis of these problems | Obtain a Structured Design concept and be able to formulate the problem of its use based on the analysis of the problem | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-6-7:**Structured Design concept and able to formulate problems of use based on the analysis of these problems **[BT: (1) x (3x60 ”)]** | 1. System flowchart
2. Context Diagram and DFD
 | **5** |
| 8 | **UTS / Mid Semester Examination** |
| 9 | Able to master the concept of detailed system design including Output and Input design and can perform input validation. | Obtain a detailed system design concept including designing Output and Input and can perform input validation. | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-9:**DETAILED SYSTEM DESIGN (OUTPUT AND INPUT)**[BT: (1) x (3x60 ”)]** | DETAILED SYSTEM DESIGN(OUTPUT AND INPUT) | **5** |
| 10-11 | Able to master the concept of database design in a system development | Obtaining the concept of database design in a system development | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-10-11:**Designing Database* 1. Entity Relationship Diagram (ERD)
	2. DFD, ERD and Normalization Relationships

**[BT: (1) x (3x60 ”)]** | Designing Database* 1. Entity Relationship Diagram (ERD)
	2. Normalization

2. Relationship DFD, ERD and Normalization. | **15** |
| 12 | Able to master object-oriented design concepts and be able to apply them into the form of analysis and design. | Obtaining object-oriented design concepts and being able to apply them to analysis and design. | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-11-15:**1. Object Oriented Modeling.
2. Object Oriented Analysis.
3. Object Oriented Design.

**[BT: (1) x (3x60 ”)]** | 1. Object Oriented Modeling.
2. Object Oriented Analysis.
3. Object Oriented Design.
 | **10** |
| 13-14 | Able to do object-oriented system designUsing UML tools. | Obtain the concept of array structures and do programming using one programming language | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]*** **Assignments 13-14:** designing Steps to Create UML

**[BT: (1) x (3x60 ”)]** | 1. Introduction to UML.
2. A Brief History of UML.
3. UML parts.
	1. View.
	2. Diagram.

Steps to Create UML | **10** |
| 15 | Able to select and use analysis and design methods / tools appropriately based on the system being developed | As a group discussing the task of using models / analysis tools and designing the right system in accordance with the system tasks being developed | **Criteria:**1. Assessment quiz
2. Assessment assignments
 | * **Lectures:**

 Presentation **[TM: 1x (3x50 ”)]*** **Independent**

 **[BM: 1x (3x60 ”)]****Task-11-15:**Use of Analysis and Design Models / Tools **[BT: (1) x (3x60 ”)]** | Discussion on the Use of the Model / Tool for Analysis and Design  | **15** |
| **17** | **UAS / Final Semester Evaluation** |  |