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|  | | **UNIVERSITAS NEGERI PADANG**  **FACULTY OF ENGINEERING**  **ELECTRONICS DEPARTMENT**  **INFORMATICS EDUCATION STUDY PROGRAM** | | | | | | | | | | **Document Code** | | |
| **SEMESTER LEARNING PLAN** | | | | | | | | | | | | | | |
| **COURSES** | | | | | | **CODE** | **Course Group** | | **Credit Point(s)** | | **SEMESTER** | | **Date Of Creation** | |
| **Konsep Sistem dan Teknologi Informasi (Concepts of Information Systems and Technology)** | | | | | |  | Compulsory Courses of the Study Program | | 2 credits (theory) | | 1 | | July 2017 | |
| **AUTHORIZATION** | | | | | | **Lecturer** | | | **Course Coordinator** | | **Coordinator of Study Program** | | | |
| **Ahmaddul Hadi, S.Pd, M.Kom**  **NIP. 197612092005011003** | | | **Prof. Dr. Kasman Rukun** | | **Ahmaddul Hadi, S.Pd, M.Kom**  **NIP. 197612092005011003** | | | |
| **Learning Outcomes (CP)** | | | **PLO** | | | | | | | | | | | |
| PLO- S1 | Have faith in God Almighty and able to show a religious attitude. | | | | | | | | | | |
| PLO- S9 | Demonstrate an attitude of responsibility for work in their field of expertise independently | | | | | | | | | | |
| PLO- PP7 | Mastering basic concepts in designing information systems | | | | | | | | | | |
| PLO- 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 | | | | | | | | | | |
| PLO- KK3 | The ability to master and use Information Technology products in learning and teaching skills in the field of Information Engineering | | | | | | | | | | |
| **CO** | | | | | | | | | | | |
| CO-1 | Able to explain the principles and concepts of information technology | | | | | | | | | | |
| CO-2 | Able to explain the basic concepts of computer systems | | | | | | | | | | |
| CO-3 | Be able to explain the work process of input and output devices and provide examples of application | | | | | | | | | | |
| CO-4 | Able to explain the storage work process | | | | | | | | | | |
| CO-5 | Able to explain the working concept of application software | | | | | | | | | | |
| CO-6 | Able to explain the working concept of system software | | | | | | | | | | |
| CO-7 | Able to explain multimedia and virtual reality concepts and principles | | | | | | | | | | |
| CO-8 | Be able to explain the concepts and principles of artificial intelligence and its applications | | | | | | | | | | |
| CO-9 | Able to explain the concepts and principles of current and future telecommunication and computer network models | | | | | | | | | | |
| CO-10 | Able to explain the internet and use the latest internet applications | | | | | | | | | | |
| CO-11 | Be able to explain the use of databases | | | | | | | | | | |
| CO-12 | Able to explain the concepts and principles of information systems and their development in the future | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Course Description** | | | Able to understand basic concepts, recognize and explore the potential of information technology as well as the implications and applications of various types of current information technology and systems. | | | | | | | | | | | |
| **Course Matter** | | | 1. Information Technology 2. Basic concept of computer systems 3. Input device 4. Storage device 5. Software 6. Kinds of software 7. Multimedia concept 8. Basic artificial intelligence 9. The role of telecommunications 10. The basic concept of the internet 11. The role of the database 12. Information and information systems | | | | | | | | | | | |
| **References** | | | **Main:** | | |  | | | | | | | | |
| [1] Abdul Kadir dan Terra Ch. Triwahyuni, 2003, *Pengenalan Teknologi Informasi*, Penerbit Andi: Yogyakarta.  [2] Jogiyanto. 2007. *Pengenalan Komputer*. Penerbit Andi: Yogyakarta.  [3] William Sowyer. 2006. *Using Information Tehnology*. Mc.Graw Hill.  [4] [Turban, McLean & Wetherbe](http://www.wiley.com/college/turban2e), 2001. *Information Technology for Management, Making Connections for Strategic Advantage, 2nd Edition*, John Wiley & Sons,  [5] Suyanto. 2007. *Artificial Intelligence*. Informatika: Bandung  [6]. Janner Simarmata. 2008. *Basis Data*. Andi Publiseher.  [7] David Groth. 2002, *Network Study Guide*. [WWW.Cibex.com](http://www.cibex.com), London.  [8] Peter Loshin, 1998, *Desain dan Implementasi Extranet (Extranet Design and Implementation)*, Elex Media (Sybex Inc.), Jakarta.  [9] Team Wahana Komputer Semarang, 2003, *Konsep Jaringan Komputer dan Pengembangannya*, Salemba Teknika, Jakarta. | | | | | | | | | | | |
| **Media** | | | **Software:** | | | | | | **Hardware :** | | | | | |
| MS Office | | | | | | LCD & Projector | | | | | |
| **Lecturer** | | | **Ahmaddul Hadi, S.Pd, M.Kom** | | | | | | | | | | | |
| **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 | Able to explain the principles and concepts of information technology | | | | 1. Accuracy in explaining the meaning of information technology 2. Accuracy in explaining information technology systems 3. Accuracy in identifying information technology systems 4. Accuracy in the role of information technology | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-1**: describes information technology, information technology system components and information technology system classification   **[BT: 1x (2x60 ")]** | | 1. Understanding Information Technology 2. Digitalization of Technology. 3. Information technology system components 4. Information technology system classification 5. The Role of Information Technology | | | | **10%** |
| 2-3 | Able to explain the basic concepts of computer systems | | | | * + - 1. Basic precision describes bits of information       2. Accuracy describes data units, units of time and frequency       3. Accuracy in converting to binary systems and decimal systems       4. Accuracy in explaining the system unit, processor, internal memory       5. Accuracy in analysing computer developments in the future | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 2x (2x50 ")]**   * **Independent:**   **[BM: 2x (2x60 ")]**   * **Task-2**:   Converts binary to decimal system and converts decimal numbers to binary  **[BT: 2x (2x60 ")]** | | 1. From bits to information 2. Data units 3. Unit of time and frequency 4. Character encoding system 5. Converting Binary System and Decimal System 6. System unit section 7. Processor 8. Internal Memory 9. Future development of computers | | | | **15%** |
| 4 | Be able to explain the work process of input and output devices and provide examples of application | | | | * + - 1. Accuracy describes the type of input device.       2. The shooting accuracy is respectable and out of format       3. The accuracy of identifying the output device | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-3**:   Describes the input device, describes the types of input devices  Describe the output device, identify the output device  **[BT: 1x (2x60 ")]** | | 1. Type of input device 2. Typing tools 3. Pointing device 4. Formatted image capture 5. Taking pictures not format 6. Sound 7. Video 8. Movement 9. Sensor 10. Radio Frequency Indentification Device 11. Smart card reader 12. Type of output device 13. Monitor 14. Printer, Ploter 15. Computer Output microfil 16. Audio | | | | **10%** |
| 5 | Able to explain identifying storage devices based on storage work processes | | | | * + - 1. Accuracy describes the various storage devices       2. The accuracy of identifying the types of storage devices | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-4**:   Identify the various storage devices based on their functions and characteristics   * **[BT: 1x (2x60 ")]** | | 1. Types of storage devices 2. Hard drive 3. Floppy Disk 4. Zip Disk 5. Optical Devices 6. USB Flash Disk 7. Smart Card 8. Memory card | | | | **5%** |
| 6 | Able to explain the working concept of application software | | | | * + - 1. Accuracy describes software wars       2. The accuracy in classifying the type of software       3. The accuracy of identifying the user interface in using the software | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-5**:   Make a learning journal on the topic of using software and explain the identification of software groupings   * **[BT: 1x (2x60 ")]** | | 1. Role of software 2. Grouping software 3. Version and release terms 4. User interface 5. Application software (Word processing, Spreadsheet, Desktop publishing, Presentation graphics, Communication, Personal information manager, Data management) 6. Siute software | | | | **5%** |
| 7 | Able to explain the working concept of system software | | | | * + - 1. Accuracy describes the types of system software       2. The accuracy of using the operating system, utility device.       3. Accuracy in understanding and implementing programming language | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-6**:   Describe the functions of the operating system software and implement the system software   * **[BT: 1x (2x60 ")]** | | * + - 1. Types of system software       2. Operating system       3. Utility  1. Device drive 2. Programming Language | | | | **5%** |
| 8 | **Midterm exam** | | | | | | | | | | | | |  |
| 9 | Able to explain multimedia and virtual reality concepts and principles | | | | * + - 1. Accuracy in explaining multimedia concepts       2. Accuracy in explaining data visualization technology       3. Accuracy in analysing multimedia elements       4. Accuracy in identifying examples of multimedia applications       5. Accuracy in using multimedia software | | * Assignments / Exercises * Presentation * Midterm exam * Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-7**:   Explain the use of multimedia software   * **[BT: 1x (2x60 ")]** | | * + - 1. Multimedia concept       2. Data Visualization Technology       3. Multimedia Elements * Use of Multimedia * Multimedia Component * Examples of multimedia applications * Use of multimedia software * Virtual Reality Concept * Virtual Reality Tools * How Virtual Reality Works * Virtual Reality Application | | | | **5%** |
| 10 | Be able to explain the concepts and principles of artificial intelligence and its applications | | | | * + - 1. Accuracy explains the basic concepts of artificial intelligence       2. Accuracy in identifying artificial intelligence with human intelligence       3. The accuracy of implementing artificial intelligence applications | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-8**:   Making examples of the application of artificial intelligence applications in several fields in the form of a paper and presentation   * **[BT: 1x (2x60 ")]** | | * + - 1. Basic Artifical Intelligence       2. Comparison of artificial intelligence and human intelligence       3. AI application areas * Natural language processing * Computer vision * Conversation introduction * Robotics * Expert system * Fuzzy logic * Artificial neural network * Genetic Algorithm * Hybrid system * Intelligent agent * Cyborg * Artifical life * Machine learning | | | | **5%** |
| 11-12 | Be able to explain the concepts and principles of present and future telecommunication and computer network models | | | | * + - 1. Accuracy explains the concept of the role of telecommunications       2. Accuracy describes the principles and models of telecommunications       3. Accuracy describes transmission media and computer networks | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 2x (2x50 ")]**   * **Independent:**   **[BM: 2x (2x60 ")]**   * **Task-9**:   Creating a paper on telecommunication concepts and identifying current and future telecommunication and computer network models   * **[BT: 2x (2x60 ")]** | | * + - 1. The role of telecommunications       2. Cue network       3. Data rate  1. Frequency spectrum and band width 2. Serial and parallel transmission 3. Communication line configuration 4. Transmission direction and mode 5. Circuit switching and packet switching 6. Multiplexing 7. Transmission media (cable and non-cable) 8. Computer network 9. Computer network classification 10. Computer network topology 11. Communication protocol 12. Interconnection between networks | | | | **15%** |
| 13 | Able to explain the internet and use the latest internet applications | | | | * + - 1. Accuracy in explaining basic internet concepts       2. Accuracy in identifying resources on the internet       3. Accuracy in explaining applications in internet usage | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-10**:   Compile a paper on the basic concepts of the internet and identify internet applications   * **[BT: 1x (2x60 ")]** | | 1. The basic concept of the internet 2. How to access the internet 3. Identifying IP Address 4. Resources on the internet 5. Electronic mail 6. Mailing List 7. Newsgroup 8. World Wide Web 9. Social networking 10. FTP 11. Telnet 12. Voip 13. Internet application for business 14. Various servers for the internet   Build web pages | | | | **10%** |
| 14 | Be able to explain the use of databases | | | | * + - 1. Accuracy describes the role of the database       2. Accuracy in describing data structures and databases       3. The accuracy of identifying the type of database according to access | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-11**:   Analysing the role of databases and data structures and databases   * **[BT: 1x (2x60 ")]** | | 1. The role of the database 2. Data structures and databases 3. DBMS 4. Database type according to access 5. Data models 6. DBMS components 7. SQL 8. Data warehouse and data mart 9. OLAP 10. Data mining 11. 11. ERP | | | | **10%** |
| 15 | Able to explain the concepts and principles of information systems and their development in the future | | | | * + - 1. Accuracy in explaining information and information systems       2. The accuracy of management execution and information flow       3. The accuracy of identifying the type of information system | | 1. Assignments / Exercises 2. Presentation 3. Midterm exam 4. Final exams | * Lectures:   Presentation  **[TM: 1x (2x50 ")]**   * **Independent:**   **[BM: 1x (2x60 ”)]**   * **Task-12**:   Making papers and presentation materials on information and information systems   * **[BT: 1x (2x60 ")]** | | 1. Information and information systems 2. Management level and information flow 3. Types of decisions 4. Type of information system 5. Inter-organizational systems 6. Information system service unit 7. Information system development 8. Insourcing 9. Prototyping 10. Use of software packages 11. Selfsourcing 12. Soutsourcing | | | | **10%** |
| 16 | **Final exams** | | | | | | | | | | | | | |