21B33C206 – Data Communication

Module designation	Data Communication (Undergraduate)
Semester(s) in which the module is taught	2nd
Person responsible for the module	Shabrina Syntha Dewi, S.Pd., M.Pd.
Language	Indonesia – English
Relation to curriculum	This course is a compulsory course
Teaching methods	Lecture, Presentation
Workload (incl. contact hours, self-study hours)	CH: 09.00-17.00 Face to face: 2x50 minutes / week Independent Study: 2x50 minutes / week Structured assignment: 2x50 minutes / week
Credit points	2 SKS (equivalent 3.4 ECTS)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	**Program Learning Outcomes (PLO)** PLO 3: Demonstrate a responsible attitude towards work in their field of expertise independently; PLO 4: Mastering the concepts, theories and applications in the field of informatics and computer engineering taught at secondary and vocational education levels; PLO 7: Able to apply logical, critical, creative, 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 8: Able to demonstrate independent, quality, measurable and responsible performance; PLO 7: Able to implement and develop technological knowledge and carry out research in accordance with their expertise based on scientific principles, procedures and ethics in order to produce solutions, ideas and criticism PLO 9:

	Able to be responsible for the achievement of group work results and supervise and evaluate the completion of work assigned to workers under his/her responsibility; PLO 9: Able to carry out a self-evaluation process for work groups under his/her responsibility, and able to manage learning independently; **Course Learning Objectives (CLO)** The Data Communication course discusses the basic principles of data communication, data communication architecture and protocols, transmission media, data transmission, data coding, data communication interfaces, data link control, multiplexing, error detection and correction, packet switching, frame relay, ATM, WAN and LAN. **Sub CLO:** Sub-CLO 1: Students are able to describe the definitions of data communications and computer networks. Sub-CLO 2: Students are able to analyze the function and workings of protocol architectural layers. Sub-CLO 3: Students are able to analyze the types and ways of data transmission. Sub-CLO 4: Students are able to analyze the types and how transmission media work. Sub-CLO 5: Students are able to explain the types and how signal coding techniques work. Sub-CLO 6 Students are able to describe the types of digital data communication techniques. Sub-CLO 7 Students are able to explain the data link control protocol. Sub-CLO 8 Students are able to explain the types of multiplexing. Sub-CLO 9 Students are able to describe the phases of circuit switching. Sub-CLO 10 Students are able to explain the concepts and types of spread spectrum. Sub-CLO 11 Students are able to explain routing in a switching network Sub-CLO 12 Students are able to explain network security Sub-CLO 13 Students are able to describe the types of needs and attacks on network security.
Content	Students will learn about: ● Data communications and computer networks ● Protocol architecture layers ● Data transmission ● Transmission Media ● Digital data communication techniques ● Data link control protocol ● Multiplexing ● Circuit Switching ● Spread spectrum ● Switching networks ● Network security
Examination forms	Assessment Techniques: Exam, Presentation, Case Based Learning Assessment Forms: Assignment, Presentation Assessment

Study and examination requirements	● Students have to inform the lecturer when they are not able to attend the class due to sickness etc ● Active in making projects by showing participation in making projects in class ● Able to present and answer questions that exist during project presentations
Reading List	● Stallings, William. 2007. *Data and Computer Communication*. US of America: Pearson Education, Inc. ● Januar, dkk. 2021. Komunikasi Data. Jakarta: Ruang Buku.