



MODULE HANDBOOK DESCRIPTION

Module designation	Basic Telecommunication System Laboratory	
Code	FBS2127	
Semester(s) in which the module is taught	2 / first year	
Person responsible for the module	Djul Fikry B., ST., MT.	
Language	Indonesian	
Relation to curriculum	Compulsory for all Majors	
Teaching methods	Contextual Instruction (CI)	
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester : <ul style="list-style-type: none"> • Practice: 1 x 50 minutes • Data analysis: 1 x 50 minutes • Writing report: 1 x 50 minutes. Total study hours = 2 hours 30 minutes/week	
Credit points	1 (~ 1,6 ECTS)	
Required and recommended prerequisites for joining the module	- Basic Telecommunications (FBS1217)	
Module objectives/intend ed learning outcomes	1. Students are able to analyze the amplitude modulation signal, the effect of inductors and capacitors on the modulation signal, the effect of the modulation index on the modulation signal, the shape of the output signal from the frequency domain amplitude modulation, frequency modulation signal, cellular signal and pulse code modulation signal.	PLO3
	2. Students are able to design radio communication with AM and FM modulation.	PLO4
	3. Students are able to compare AM, FM and PCM component modulation by experiment.	PLO5

<p>Content</p>	<ol style="list-style-type: none"> 1. Observing the shape of the amplitude modulation signal circuit 2. Observing the effect of inductors and capacitors on the modulation signal 3. Observing the shape of the output signal from amplitude modulation in the time domain 4. Observing the effect of the modulation index on the modulation signal 5. Observing the shape of the output signal from the frequency domain amplitude modulation 6. Determine the upper side band (USB) and lower side band (LSB) values from the AM signal spectrum observations 7. Know the shape of the frequency modulation signal circuit. 8. Observing the effect of inductors and capacitors on the modulation signal. 9. Observing the shape of the output signal from frequency modulation in the time domain 10. Determine the value of the modulation index on the frequency modulation signal 11. Understand the parameters (SWR, Power, and Bandwidth) of the FM Radio communication system 12. Knowing the effect of parameters (SWR, Power, and Bandwidth) 13. Know the shape of the spectrum before and after adding the information signal 14. Determine the effect of changes in distance to the received signal level. 15. Find out the comparison of 3G and 4G signal levels at the same provider. 16. Find out the comparison of 3G and 4G signal levels at different providers. 17. Learn/explain quantization and binary encoding functions. 18. Study / explain the PCM signal generation process. 19. Study / explain the PCM signal transmission process.
<p>Examination forms</p>	<ol style="list-style-type: none"> 1. Pre-test 2. Practice skills 3. Practice report 4. Response
<p>Study and examination requirements</p>	<p>The final grade in the module is composed of:</p> <ol style="list-style-type: none"> 1. Pre-test and practice skills = 20% 2. Practice report and response = 80% <p>Students must have a final grade of 65% or higher to pass</p>

Reading list	<ol style="list-style-type: none">1. Suhana dan Shoji, S., 1981, Pengantar Teknik Telekomunikasi, Penerbit Pt Pradnya Paramita.2. Hayt, W.H., and Buck, J.A., 2011, Engineering Electromagnetics, Eight Edition, McGraw-Hill Companies.3. Schenk, TCW., R.J.C. Bultitude, L.M. Augustin, R.H. van Poppel and G. Brussaard, 2002, Analysis of Propagation Loss in Urban Microcells at 1.9 GHz and 5.8 GHz, Proc. URSI Commison F Open Symposium on Radiowave Propagation and Remote Sensing, Garmisch-Partenkirchen, Germany, February 12-15.4. Sam, S.K., 2013, Digital and Analog Communication System, Wiley.5. Usman, U.K., 2010, Pengantar Ilmu Telekomunikasi, Penerbit Informatika Bandung.
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