	Universitas Brawijaya **Faculty of Mathematics and Natural Sciences** **Department of Statistics / Bachelor Statistics Study Programme**
Module Handbook	
Module Name:	Data Structure (MAS62133)
Module Level:	Bachelor
Abbreviation, if applicable:	-
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	4th / Second Year
Module Coordinator(s):	Dwi Ayu Lusia, S.Si., M.Si.
Lecturer(s):	Dwi Ayu Lusia, S.Si., M.Si.
Language:	Indonesian
Classification within the curriculum:	Elective course
Teaching format / class per week during semester:	2 × 50 minutes + 100 minutes laboratory session
Workload:	1.67 hours lectures, 2 hours structural activities, 2 hours individual studies for 16 weeks + 1.67 hours laboratory session, 2 hours structural activities, 2 hours individual studies for 8 weeks and total 136 hours per semester 4.50 ECTS
Credit Points:	3
Requirements:	Basic Programming (MAS61131)
Learning goals / competencies:	**General Competence (Knowledge):**
	ILO1 — The students are able to master basic scientific concepts and statistical analysis methods applied on computing, social science, humanities, economics, industry and life science.
	ILO4 — The students are able to master at least two statistical softwares, including based on open source.
	ILO5 — The students are able to apply logical, critical, systematic, and innovative thinking independently when applied to science and technology that contain humanities values, based on scientific principles, procedures and ethics with excellent and measurable results.
	ILO7 — The students are able to improve and develop a job networks, then supervise and evaluate the team's performance they lead.
	Specific Competence:
	M1 — Students are able to understand and explain the

		definition of data structures, data types, and data operations (ILO1, ILO4, ILO5, ILO7)
	M2	Students are able to explain and apply the concept of pointers, dynamic variables, List, Stack, and Queue (ILO1, ILO4, ILO5, ILO7)
	M3	Students are able to explain and apply the concepts of Tree, B-Tree, BST, and Traversal (ILO1, ILO4, ILO5, ILO7)
	M4	Students are able to explain and apply graph concepts (ILO1, ILO4, ILO5, ILO7)
	M5	Students are able to explain and apply the concept of searching (ILO1, ILO4, ILO5, ILO7)
	M6	Students are able to explain and apply the concept of sorting (ILO1, ILO4, ILO5, ILO7)
Contents:	1	Data structure, data type, and data operation
	2	Pointers and dynamic variables
	3	List
	4	Stack
	5	Queue
	6	Tree
	7	Graph
	8	Searching
	9	Sorting
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	Final score (NA) is calculated as follow: 20% assignments, 30% Quizzes, 20% Midterm Exam, 20% Final Exam, 10% Laboratory Session. Final index is defined as follow: A : > 80 - 100 B+ : > 75 - 80 B : > 69 - 75 C+ : > 60 - 69 C : > 55 - 60 D+ : > 50 - 55 D : > 44 - 50 E : 0 - 44	
Forms of media:	Software(Free Pascal, MS. Word), laptop, LCD projector	
Learning methods:	Lecture, assessments, and discussion	
Literature:	Main:	
	1. Tanembaum, A.M. dan Agustein, M. J., 1981. Data Structure Using Pascal, Printice Hall	

	2. Daniel, W.W. 1978. Applied Non parametric Statistics. Houghton Mifflin Co.
	3. Sprent, P. 1989. Applied Non Parametric Statistical Methods. Chapman and Hall, London
	4. Effron, B. and Tibshirani, R. J. 1993. An Introduction to the Bootstrap. Chapman and Hall, London.
	Support:
	1. Scneider, G.M., 1978. An Introduction to Programming And Problem Solving With Pascal, John Wiley and Sons, New York
	2.Horn, Wayne, L., 1995. Structured Programming With Turbo Pascal, Pensacole Junior College.
Notes:	