



Unit of Study Information

Code	Unit	Evaluation Method	Mode	Session options
CSF30	Data Structures 2	Grade and Attendance	Presencial	Semestral

Workload					
TC	PC	OA	SPA	PACC	Total
2	1	3	8	0	45
<ul style="list-style-type: none"><li>• TC: Theorethic Classes (per week);</li><li>• PC: Practical Classes (per week);</li><li>• OA: Out-of-class Activities (hours per session);</li><li>• SPA: Supervised Practical Activities (classes per session);</li><li>• PACC: Practical Activities as Curricular Components (classes per session, included in OA and SPA);</li><li>• Total: total workload in hours.</li></ul>					

Learning Outcomes		
Provide students with theoretical and practical programming knowledge, involving the study of concepts in data structures.		
Syllabus		
Binary trees. Search trees and basic and advanced balanced trees. Scatter tables. Structures for graph representation.		
Content		
Order	Syllabus	Content
1	Binary trees	Introduction to the Study of Binary Trees and Trees, Tree data access
2	Basic and advanced search trees and balanced trees	Binary Search Tree Concepts and Operations, Balanced Binary Tree, Concepts and Operations on B trees. Tree Concepts, Properties and Operations. Introduction to the study of heap, operations, heap-sort, and priority queues.
3	Scatter tables	Hash table concept, Hash functions, Collision handling
4	Structures for graph representation	Graph Basics, Width Search, Depth Search

Basic Resources
CORMEN, Thomas H. et al. Algoritmos: teoria e prática. Rio de Janeiro, RJ: Elsevier, 2012. xvi, 926 p. ISBN 9788535236996.
TENENBAUM, Aaron M.; LANGSAM, Yedidyah; AUGENSTEIN, Moshe. Estruturas de dados usando C. São Paulo, SP: Pearson Makron Books, c1995. xx, 884 p. ISBN 8534603480.
SZWARCFITER, Jayme Luiz; MARKENZON, Lilian. Estruturas de dados e seus algoritmos. 2. ed. rev. Rio de Janeiro, RJ: LTC, c1994. 320 p. ISBN 8521610149.

Aditonal Resources
WIRTH, Niklaus. Algorítmos e estruturas de dados. Rio de Janeiro, RJ: LTC, c1989. 255 p. ISBN 85-216-1190-0.
GUIMARÃES, Ângelo de Moura; LAGES, Newton Alberto de Castilho. Algoritmos e estruturas de dados. Rio de Janeiro: LTC, 2008. 216p. ISBN 85-216-0378-9
LUCCHESI, C.L.; KOWALTOWSKI, T. Kowaltowski. Estruturas de Dados e Técnicas de Programação. Instituto de Computação - UNICAMP, 2003.
ZIVIANI, Nivio. Projeto de algoritmos: com implementações em Java e C++. São Paulo: Thomson, c2007. xx, 621 p. ISBN 8522105251.
HOROWITZ, Ellis; SAHNI, Sartaj. Fundamentos de estruturas de dados. 3. ed. Rio de Janeiro: Campus, c1984, 1987. 494 p. ISBN 8570014228