

**Bibliographic Reference:** Leligkou, E., Voliotis, S., & Kakarountas, A. (2016). Logic Design in the Laboratory [Laboratory Guide]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-691

## Abstract

The e-book is addressed to undergraduate students of HEIs and its main purpose is the assimilation of the concepts and methodology of logic design and the familiarization with widely used technologies of digital systems, such as TTL and FPGA, through laboratory exercises on the design, implementation/programming and experimentation with digital circuits. As logic design is a subject taught in more than twenty universities nationwide, the authors provide guidance on the sequence of laboratory exercises that is appropriate to follow depending on the curriculum in which it is part of (e.g. whether the course is taught in one or two semesters). The ebook includes: Section 1: Title page, ISBN, contributors, edition. Section 2: Contents. Section 3: Preface - Introduction. Section 4: 5 Chapters. Section 5: List of learning objects. Section 6: Index of terms. Section 7: Appendix (examples of VHDL codes).

Module 4 contains the following five chapters: 1. Digital circuit design and implementation technologies and tools. 2. Combinational circuits with TTL integrated circuits (9 laboratory exercises). 3. Sequential circuits with TTL integrated circuits (8 laboratory exercises). 4. Circuit design with VHDL language (6 lab exercises). 5. Integrated circuit programming - experimentation with FPGA (8 laboratory exercises). Each laboratory exercise includes: - Theoretical background in which the theoretical knowledge related to and required for the execution of the laboratory exercise is summarized. - Experimental part in which instructions are given for the execution of the experiment and the manipulation of basic elements (e.g. integrated circuits) [Extensive use of multimedia objects]. - Self-assessment exercises [Extensive use of interactivity] - Student evaluation sheet. - Relevant bibliography.



The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.

