



Unit of Study Information

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|-------|-------------------------------|----------------------|------------|-----------------|
| Code | Unit | Evaluation Method | Mode | Session options |
| CSF13 | Fundamentals of Programming 1 | Grade and Attendance | Presencial | Semestral |

| Workload | | | | | |
|--|----|----|-----|------|-------|
| TC | PC | OA | SPA | PACC | Total |
| 3 | 3 | 6 | 0 | 0 | 90 |
| <ul style="list-style-type: none">TC: Theorethic Classes (per week);PC: Practical Classes (per week);OA: Out-of-class Activities (hours per session);SPA: Supervised Practical Activities (classes per session);PACC: Practical Activities as Curricular Components (classes per session, included in OA and SPA);Total: total workload in hours. | | | | | |

| Learning Outcomes | | | | | | | | | | | | | | | | | |
|---|--|--|-------|----------|---------|---|-----------------------------|--|---|---|--|---|--|--|---|---------------------------------|---|
| <p>This course aims at learning a set of skills and concepts fundamental to the practice of computer programming as well as the development of abstraction, the practice of conceptual solution and strategies for dealing with complex problems independently coding paradigms. It covers basic computer programming, algorithmic problem solving, and basic data structure concepts, as well as the design and development of problem solving by building algorithms and programs using a programming language.</p> | | | | | | | | | | | | | | | | | |
| Syllabus | | | | | | | | | | | | | | | | | |
| <p>Basic Concepts in Computing. Introduction to the structured programming paradigm. Basic syntax and semantics of a high level programming language for structured programming. Algorithms and problem solving.</p> | | | | | | | | | | | | | | | | | |
| Content | | | | | | | | | | | | | | | | | |
| <table><tr><th>Order</th><th>Syllabus</th><th>Content</th></tr><tr><td>1</td><td>Basic Concepts in Computing</td><td>Basic concepts of computer architecture. Numerical bases. Basic concepts of programming languages. Introduction to problem solving by computer</td></tr><tr><td>2</td><td>Introduction to the structured programming paradigm</td><td>Basic aspects of the structured programming paradigm. Introduction to the considered language.</td></tr><tr><td>3</td><td>Basic syntax and semantics of a high level programming language for structured programming</td><td>Data types and abstraction. Variables, types, expressions, and assignments. Standard input and output. Logic and arithmetic operators. Selection structures. Repetition structures. Vectors, arrays, and strings. Identifier scope concept. Concept of function, parameters and return. Parameter passing. Pointers. Registers. Advanced topics.</td></tr><tr><td>4</td><td>Algorithms and problem solving.</td><td>Basic concepts of algorithms and data structures. Numeric and non-numeric applications. Problem solving and algorithm implementation strategies. Problem structuring.</td></tr></table> | | | Order | Syllabus | Content | 1 | Basic Concepts in Computing | Basic concepts of computer architecture. Numerical bases. Basic concepts of programming languages. Introduction to problem solving by computer | 2 | Introduction to the structured programming paradigm | Basic aspects of the structured programming paradigm. Introduction to the considered language. | 3 | Basic syntax and semantics of a high level programming language for structured programming | Data types and abstraction. Variables, types, expressions, and assignments. Standard input and output. Logic and arithmetic operators. Selection structures. Repetition structures. Vectors, arrays, and strings. Identifier scope concept. Concept of function, parameters and return. Parameter passing. Pointers. Registers. Advanced topics. | 4 | Algorithms and problem solving. | Basic concepts of algorithms and data structures. Numeric and non-numeric applications. Problem solving and algorithm implementation strategies. Problem structuring. |
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| Basic Resources |
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| CORMEN, Thomas H. et al. Algoritmos: teoria e prática. Rio de Janeiro, RJ: Elsevier, 2012. xvi, 926 p. ISBN 9788535236996. |
| SCHILDT, Herbert. C, completo e total. 3. ed., rev. e atual. São Paulo, SP: Makron, c1997. xv, 827 p. ISBN 8534605955. |
| CELES, Waldemar; CERQUEIRA, Renato Fontoura de Gusmão; RANGEL NETTO, José Lucas Mourão. Introdução a estruturas de dados: com técnicas de programação em C. Rio de Janeiro, RJ: Elsevier, 2004. xiv, 294 p. (Campus Sociedade Brasileira de Computação) ISBN 8535212280. |

| Aditonal Resources |
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| ZIVIANI, Nivio. Projeto de algoritmos: com implementações em Pascal e C. 3. ed. São Paulo: Pioneira, c1996. 267 p. : (Pioneira Informática) |
| FEOFILOFF, Paulo. Algoritmos em linguagem C. Rio de Janeiro, RJ: Elsevier; Campus, 2009. ix, 208 p ISBN 9788535232493. |
| DEITEL, Paul J.; DEITEL, Harvey M. C: como programar . 6. ed. São Paulo, SP: Pearson Prentice Hall, 2011. xxvii, 818 p. ISBN 9788576059349. |
| KERNIGHAN, Brian W.; RITCHIE, Dennis M. C, a linguagem de programação. 4. ed. Porto Alegre, RS: EDISA; Rio de Janeiro, RJ: Campus, 1988. 208 p. ISBN 8570014104. |
| TENENBAUM, Aaron M.; LANGSAM, Yedidyah; AUGENSTEIN, Moshe. Estruturas de dados usando C. São Paulo, SP: Pearson Makron Books, c1995. xx, 884 p. ISBN 8534603480. |