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|   | **Course Syllabus** |

**1.** **Course Title:**

Algorithmization and Programming

**2. Academic Level:**

Bachelor

**3. ECTS Credits:**

8 credits

**4. Semester:**

1, fall semester and 2, spring semester

**5. School/Department:**

Institute of Computer Technologies and Information Security

**6. Location:**

347922, Taganrog, 2 Chekhov St.

**7. Instructor:**

Associate Prof. Dmitry Zaporozhets, email: duzaporozhets@sfedu.ru

**8. Language of Instruction:**

English

**9. Course Description:**

To provide an ideas and knowledge about the ways of presenting information in computers, modern algorithmic languages and their areas of application; stages of software application development; basic algorithms and data structures; to teach how to use modern methods and tools for developing algorithms and programs, methods of structural and the basics of object-oriented programming.

**10. Course Aims:**

Study development tools for programs and their components; algorithmization methodology; gain practical skills in using the C / C ++ programming language; ways to debug programs; design program documentation.

**11. Specific entry requirements (if any):**

Basics of presentation and processing of information in a PC, Algorithmization, Basic data structures and data processing algorithms. Algorithm design.

**12. Intended Learning Outcomes:**

Upon completion of this course students will be able to:

Prepare regulatory, technical, and reporting documentation, considering standards, norms and rules

Select data structures and develop algorithms for solving professional problems

Develop software implementation of the algorithm

Debug and test programs

**13. Learning and Teaching Methods:**

Practical assignments, laboratory works, individual assignments

**14. Methods of Assessment/Final assessment information:**

Fall semester – differential credit; spring semester – exam

**15. Reading List:**

1. Novozhilov, OP Informatics in 2 hours. Part 1: textbook for universities / OP Novozhilov. - 3rd ed., Rev. and add. - Moscow: Yurayt Publishing House, 2020.- 320 p. - (Higher education). - ISBN 978-5-534-09964-5. - Text: electronic // EBS Yurayt [site]. - URL: https://urait.ru/bcode/455239
2. Tsarev R.Yu. Programming in C / R.Yu. Tsarev - Krasnoyarsk: Siberian Federal University, 2014.- 108 p. [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=364601
3. Ogneva, M.V. Programming in C ++: a practical course: a textbook for universities / M.V. Ogneva, E.V. Kudrina. - Moscow: Yurayt Publishing House, 2020.- 335 p. - (Higher education). - ISBN 978-5-534-05123-0. - Text: electronic // EBS Yurayt [site]. - URL: https://urait.ru/bcode/454165 (date of access: 05/17/2020) Velikovich, L.S.
4. Kernighan B.V. Programming language C / B.V. Kernighan; D.M. Richie - Moscow: Internet University of Information Technologies, 2006. - 272 p. [Electronic resource]. - URL: http://biblioclub.ru/index.php?page=book&id=234039
5. Gnidenko, I. G. Technologies and methods Programming languages: educational (C / C ++): educational-methodical manual for universities / I. G. Gnidenko, F. F. Pavlov, D. Yu. Fedorov. - Moscow: Yurayt Publishing House, 2020. - 235 /. - Omsk: Omsk State University, 2013. - 200 p. - (Higher education). - - ISBN 978-5-534-02816-4. - Text: electronic // EBS Yurayt [site]. —7779-1566-5; The same [Electronic resource]. - URL: https: // uraithttp: //biblioclub.ru/bcode/450999index.php? Page = book & id = 237519
6. Guide to the implementation of a cycle of laboratory work on the discipline "Programming" No. 5044, part 1, Taganrog, SFedU Publishing House, 2013. - URL: http://ntb.tti.sfedu.ru/UML/UML\_5044\_1.pdf
7. Guide to the implementation of a cycle of laboratory work on the discipline "Programming" No. 5044 part 2, Taganrog, SFedU Publishing House, 2013. - URL: http://ntb.tti.sfedu.ru/UML/UML\_5044\_2.pdf