

## PROGRAM LEARNING OUTCOME

**Apply for 2019 or later**

*(Issued by Decision No.1859A/QĐ-DHM on August 26, 2019,  
Signed by The Rector of Ho Chi Minh City Open University)*

### **I. General information**

1. Major in Vietnamese: **Khoa học máy tính**
2. Major in English: Computer Science
3. Major code: 7480101
4. Level of training: Undergraduate
5. Mode of training: Fulltime
6. Time of the programme: 4 years
7. Program's knowledge volume (total credits):126 credits
8. Name of degree: Bachelor of Science

### **II. Learning Outcomes**

<b>Outcome</b>	<b>Description</b>
<b>Knowledge</b>	
<b>PO1: Equip learners with fundamental knowledge of nature, society, and people to serve professional development and self-improvement.</b>	
PLO1: Apply fundamental knowledge of the natural sciences and mathematics to analyze and to solve problems which occur in work and life.	
PLO1.1	Be able to apply basic quantitative skills and logical skills to solve problems.
PLO1.2	Be able to explain the basic relationship between the natural environment, social and human problems.
PLO1.3	Present the fundamental knowledge of electronic computers, data representation and data organization, hardware, software, operating systems, computer networks. Use office software and know how to exploit the fundamental services on the Internet.
PLO1.4	Apply some basic knowledge of calculus and descriptive statistics to solve the problems.
PLO2: Apply basic knowledge of politics, law, economics, the social sciences and humanities to analyze the problems in work and life.	

PLO2.1	Apply scientific views on the revolution, humanity of Marxism- Leninism, Ho Chi Minh thought, the Party's policy to solve fundamental problems in practice.
PLO2.2	Explain some basic issues of the society and humanity to serve work and life.
PLO2.3	Explain the nature and the role of the Law to understand and consciously comply with the law in work and life.
<b>PO2: Learners have fundamental knowledge of computer science.</b>	
PLO3: Apply the fundamental knowledge of Computer Science.	
PLO3.1	Proficient in programming to solve specific problems in the direction of procedural programming.
PLO3.2	Present the structures and operation principles of electronic computers.
PLO3.3	Build the client side of a web application.
PLO3.4	Present the knowledge of discrete mathematics which are applied to models and to solve the problems in the field of information technology such as: formal logic, mapping and relations, Boole algebra, graph theory, ...
PLO4: Apply computer science knowledge in solving professional problems.	
PLO4.1	Program to install the data structures, apply the algorithms to solve problems.
PLO4.2	Program to solve specific problems in the direction of object orientation programming.
PLO4.3	Present the role of the operating system, the functional components of the operating system and related mechanisms.
PLO4.4	Analyze and design relational databases which are based on the relational entity model. Use SQL language to query data.
PLO4.5	Present the fundamental knowledge of computer networks. Install and configure some of the network's standard services. Set up a peer-to-peer network.
PLO4.6	Build a Windows Form Application.
PLO4.7	Analyze, design, develop a part or all parts of the information system.
<b>PO3: Learners have cognitive skills, professional practice skills</b>	
PLO5: Apply professional skills in solving problems in the direction of database / computer network / computer graphics.	
Learners can reach one of the directions:	
	<b>Database Direction</b>
PLO5.1	Analyze, design, program, query the distributed database.
PLO5.2	Develop applications that interact with databases.

PLO5.3	Analyze, design and implement the management information systems using modern tools.
PLO5.4	Manage and control the relationship database system.
	<b>Computer Network Direction</b>
PLO5.5	Set up infrastructure services of the network.
PLO5.6	Develop network applications.
PLO5.7	Develop web applications.
PLO5.8	Design, deploy and manage the network system for enterprise organization.
	<b>Computer Graphics Direction</b>
PLO5.9	Install and implement the fundamental algorithms of graphical fields.
PLO5.10	Process graphics on the computer with graphical tools.
PLO5.11	Program the fundamental algorithms in image processing.
PLO5.12	Develop graphic processing applications.
<p>PLO6: Apply professional practice skills, apply complementary knowledge in applying and solving professional problems in computer science.</p> <p><i>Learners achieve 3 separate contents from PLO.6.1 to PLO.6.13 or achieve 3 contents in PLO.5 (from PLO5.1 to PL05.13) which are different from the chosen direction.</i></p>	
PLO6.1	Develop applications of artificial intelligence to solve intelligent control problems and object recognition.
PLO6.2	Deploy the security of information systems for enterprises/organizations.
PLO6.3	Develop RIA and web applications using Java technology.
PLO6.4	Develop the applications based on open-source technology.
PLO6.5	Present the concepts of software technology and software production processes. Analysis, design software.
PLO6.6	Manage a Software project.
PLO6.7	Test a Software, evaluate software.
PLO6.8	Deploy cloud computing services. Develop cloud-based applications.
PLO6.9	Present the integrated business enterprise system (ERP). Analyze the production and business activities of the enterprise based on a specific ERP system. Create, exploit and control the ERP system of the organization.
PLO6.10	Develop applications on mobile devices.

PLO6.11	Use data mining to support decision-making.
PLO6.12	Develop applications to solve problems in the field of computer vision: object recognition, object classification, motion estimation.
PLO6.13	Update the modern technology trends which are necessary for professional work.
PLO7: Analyze and solve complex problems in computer science.	
PLO7.1	Have skills of systematic and critical thinking.
PLO7.2	Have skills to identify and to solve problems.
PLO7.3	Have creative skills.
PLO8: Be able to impart knowledge in researching/teaching fields.	
PLO8.1	Have professional practice skills, be able to study / research.
PLO8.2	Have professional practice skills and apply professional practice skills in instructing /teaching for colleagues/learners.
PLO9: Apply communication skills in work and life	
PLO9.1	Have listening, speaking, reading, writing skills
PLO9.2	Have presentation skills
PLO9.3	Have critical skills
PLO10: Be able to communicate in spoken and written, verbal and non-verbal languages and work in an international environment.	
PLO10.1	Have effective speaking and writing communication skills in English.
PLO10.2	Have English skills with the level of being able to understand the main ideas of a report or speech on familiar topics. in the work related to Information Technology / Computer Science. Be able to use English to express and handle some common professional situations. Be able to write a report with simple content which presents opinions related to professional work.
<b>PO4: Learners work independently, teamwork, share knowledge and experiences, write reports, give presentations, negotiate, and solve problems.</b>	
PLO11: Be able to work independently and can work in a team.	
PLO11.1	Actively participate in the discussing, decision-making of the team.
PLO11.2	Get the job done efficiently and on time, coordinate well.
PLO11.3	Apply behavior skills and develop a sense of responsibility within the team.
PLO12: Be able to organize their works, learn from experiences, and develop themselves.	
PLO12.1	Be able to self-manage and manage other people's work.
PLO12.2	Be able to innovate the work and have the startup mindset.

PLO12.3	Be able to self-learn and self-develop.
<b>Competence of self- management and responsibility</b>	
<b>PO5: Learners have a sense of responsibility for the community; sense of serving to the country; have good political qualities; have a sense of discipline; have a right working style, have professional ethics; be aware of the role of the information technology industry in the constructing and developing the economy and the society.</b>	
PLO13: Be aware of rules of professional ethics and a sense of responsibility	
PLO13.1	Be honesty, credibility
PLO13.2	Behave professionally.
PLO13.3	Recognize the importance and potentially fulfill responsibility of an individual, community and country.

**Rector of Ho Chi Minh City Open University**

**Nguyen Minh Ha**