

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

**Ternopil Volodymyr Hnatiuk
National Pedagogical University**

**Educational-professional program
015.10 Vocational Education (Computer Science)**

First (bachelor's) degree

Bachelor

THE FIELD OF KNOWLEDGE: 01 Education/Pedagogy

015.10 Vocational Education (Computer Science)

Approved by Academic Council

Head of Academic Council

_____/V. Kravets/

(protocol №13 from June 27 2017)

Educational program comes into force September 1 2017

(order №220/R from August 30 2017)

Ternopil 2017

APPROVAL LETTER

of educational-professional program

FIELD OF KNOWLEDGE	01 Education/Pedagogy
SPECIALTY	015.10 Vocational education (Computer science)
SUBJECT AREA (SPECIALIZATION)	-
THE SECOND SPECIALIZATION (SUBJECT SPECIALIZATION)	-
SPECIALIZATION	-
LEVEL OF HIGHER EDUCATION	The first (bachelor)
DEGREE	Bachelor
QUALIFICATION	Specialist in computer science and other computer science disciplines

APPROVED

Head of Guidance Council

Ternopil Volodymyr Hnatiuk National
Pedagogical University

_____ H. Tereshchuk

" _ " _____ 2017

DESIGNED AND RECOMMENDED

by work group

of engineer-pedagogical faculty

of Ternopil Volodymyr Hnatiuk National
Pedagogical University

Guarantor of educational program

_____ Yu. Franko

" _ " _____ 2017

Guarantor of educational program,
(supervisor)

Yu. Franko

Program approved on the session of computer science department
Report №__ from " __ " _____ 2017

Head of computer science department

I. Hevko

Program approved by Academic Council of engineer-pedagogical faculty
Report №__ from " __ " _____ 2017

Head of Department Council

B. Struhanets

Educational program is recommended to be launched by Academic Council of Ternopil
Volodymyr Hnatiuk National Pedagogical University
Report №__ from " __ " _____ 2017

Academic Secretary of University

L. Merva

**Profile of the educational and professional program 015.10 Vocational Education
(Computer Science)**

1 – General information	
Full name of higher educational institution and structural unit	Ternopil Volodymyr Hnatiuk National Pedagogical University engineer-pedagogical faculty computer science department
The degree of higher education and the name of the qualification in the language of the original	Bachelor
The official name of the educational program	Educational professional program
Type of diploma and the volume of the educational program	The bachelor's degree, unitary, 240 credits ECTS, the term of study - 4 years
Availability of accreditation	Accreditation Committee of Ukraine Ukraine 2018
Cycle/Level	(NQF - national qualifications framework) Ukraine - level 6, FQ-EHEA - first cycle, EQF-LLL - level 6
Prerequisites	Availability of bachelor's degree
Teaching languages	Ukrainian
The duration of the educational program	2023
Internet address of the permanent description of the educational program	
2 – The purpose of the educational program	

To provide theoretical knowledge and practical skills and abilities sufficient for successful fulfillment of professional duties in specialty Computer Science and prepare students for further study.

3 - Characteristics of the educational program

Subject area (branch of knowledge, specialty, specialization)	01 Education/Pedagogy 6.010104 Vocational Education (Computer Science)
Orientation of the educational program	Educational-professional
The main focus of the educational program and specialization	Formation and development of professional competence for activities in the field of computer science, including pedagogy and engineering.
Peculiarities of the program	Wide range of disciplinary and profile training of specialists.

4 – Eligibility of graduates for employment and further training

Eligibility for employment	Teaching in educational institutes and institutes of professional engineering education
Further training	Possibility to study at a higher level: master program of professional education and master interdisciplinary programs close to vocational education in light industry technology: NRC (NQF - national qualifications framework) - level 6, FQ-EHEA - first cycle, EQF-LLL - level 6

5 - Teaching and assessment

Teaching and studying	Student-oriented and problem-oriented studying, self studying. Problematic, interactive, projective, informational and computer self-developmental, collective, integrative and contextual technologies of studying. Guidance providing and consulting of self-reliant work is done through university virtual educational environment.
Assessment	Types of control: <i>due to levels:</i> self-control, control by teacher, by head of department, by dean's office, by university administration, state supervision; <i>due to deadline:</i> on-line inspection (incoming, current, mid-term, final) and extended. Forms of control: oral and written examinations; testing control; presentations of scientific work, laboratory reports, current evaluations, defense of bachelor's work, exams and state exam.

6 - Program competencies	
Integral competency	The ability to comprehensively solve complex professional and practical problems in the field which involves research and/or innovations and are characterized by complexity and uncertainty of the conditions and needs.
General competencies	GC1 Knowledge of using foreign languages and apply it while working in professional educational institutes and industries. GC2 Ability to make understandable and definite conclusions and also knowledge and explanations to specialists and students. GC3 To be fluent in different communicative style: informal, formal and scientific. GC4 Ability to work in multidisciplinary and multinational environment. GC5 Understanding of importance of abidance of ethical and legal regulations and apply it on industrial, educational and scientific spheres. GC6 Readiness to self cognitive work, permanent upgrade of knowledge and self actualization. GC7 Understanding of your role in national and worldwide culture, education and science development. GC8 Ability to critical thinking of professional activity results and its improvement. GC9 Understanding of responsibilities for results in professional activity in industrial, educational and scientific spheres.

Professional competencies of the specialty	PC1 Ability to analyze philosophical basis of professional knowledge, abundance of methodological regulations and application of them while solving problematic situations, striving to constant improvement of educational and scientific level, actualization and implementation of personal potential, striving to self-development. PC2 Ability to implement art elements during working process, implementation of nonstandard approaches to accomplish professional duties, implementation of eccentric ideas on solving industrial and pedagogical problems. PC3 Ability to design multilevel educational projects and programs due to professional demands to specialists and premises of implementation of educational-behavioral process in professional school. PC4 Ability to create, exploit and improvement of educational facilities of classes, laboratories and workshops. PC5 Ability to design and apply software of industrial and educational processes. PC6 Ability to design innovative technologies in studying and bringing up future specialists depending on goals, development of strategic and tactical programs of realization of innovations in own activity and also making examinations. PC7 Ability to innovative activity in teaching of professionally directed and special disciplines. PC8 Ability to reflect due to results of innovative activity. PC9 Ability to carry out effective management of innovative activity in education and industrial. PC10 Ability to develop management programs by branch or educational structure, organizational and managerial conditions for implementation of projects of professional activity, further educational way in the field of management. PC11 Ability to communicate with subordinates, colleagues and administration at work, pedagogical communication with students (college students), parents and colleagues, effective use of the complex of means of communication in different situations. PC12 Ability to prepare documents regulating the relations between the subjects of the industrial or educational process, on the basis of relevant legislative acts, conceptual provisions and results of diagnostics. PC13 Ability to analyze and prove spatial-temporal, logistical, financial-economic and other resources for carrying out professional activity in the educational and industrial sphere due to specialization. PC14 The ability to solve standard specialized tasks related to
---	---

the choice of materials, the implementation of necessary calculations, the design of technical objects in their subject area in accordance with specialization, taking into account the innovations, complexity and uncertainty of conditions.

PC15 Ability to solve complex specialized problems and practical problems in the process of realization of technological processes in a certain area of professional activity in accordance with the specialization, which involves the application of modern scientific

	and technological achievements and is characterized by complexity and uncertainty of the conditions. FC16 Ability to apply special knowledge for optimal organization of professional activities on the industrial according to specialization. PC17 Ability to analyze existing problems in the industrial or educational branches, determine the state of their solution, proving the relevance and formulation of the categorical set of the study. PC18 Ability to develop and implement a program of applied research, which involves clarifying already known phenomena and objects in order to improve the branch or educational processes, as well as experimental verification of the results of the study. PC19 Ability to protect copyright on the results of its own innovation and scientific activities in accordance with legal norms. PC20 Ability to build a trajectory of personal career and professional development.
--	---

7 - Program outcomes of studying

PO01	To apply different system of foreign means due to professional communication situations; reasonably, clearly and unambiguously formulate statements, create texts of different purposes.
POS2	To analyze and define working conditions in a multidisciplinary and multinational environment, choose the appropriate model of behavior and methods of social interaction; to observe ethical and legal norms in professional activity.
POS3	To carry out cognitive activities independently, self-actualize, define the role in the development of national and world culture, education and science, to preserve and disseminate their assets.
POS4	To analyze and critically overthink the results of professional activity, to determine the ways, ways and means of its improvement.
POS5	Розробляти дослідницькі, пошукові, інформаційні, просвітницькі, соціальні, творчі, ігрові, практично-орієнтовані, кооперативні та інші освітні проекти і програми згідно професійних вимог до фахівця в галузі.
POS6	To develop research, search, informative, educational, social, creative, game, practical oriented, cooperative and other educational projects and programs in accordance with professional requirements for a specialist in the field.
POS7	To develop and apply the software of production or educational processes in the conditions of rapid development of information technologies.

POS8	To design the means of educational innovation; to develop a strategic program for the introduction of innovations into the educational process through a system of interrelated tasks defined for the purpose of innovative development of the pedagogical process;
POS9	to develop a tactical program to integrate innovations into the educational process through a system of concrete measures for the implementation of the objectives of the strategic program;
POS10	to apply expertise from experts in conducting an examination of innovative teaching and learning technologies.
POS11	To implement knowledge of pedagogical innovations in the teaching of professionally directed and special disciplines.
POS12	To develop maps of self-analysis of the teacher's innovative activity and those who study, on the results of the educational process.
POS13	To develop programs of management by branch or educational structure, to determine the conditions for implementation of projects of innovative activity, further educational route in the field of management.
POS14	Demonstrate a high level of communicative culture in a specific socio-cultural situation, both in the work of the branch institution and in the educational process.
POS15	To optimize spatial-temporal, material, technical, financial, economic and other resources for the professional activity in the educational and industrial branch according to specialization.
POS16	To carry out multifactorial analysis of source data, to select materials, to perform necessary calculations, to design technical objects in their subject area in accordance with specialization taking into account innovations, complexity and uncertainty of conditions.
POS17	To solve complex specialized problems and practical problems in implementation of technological processes in a certain area of professional activity according to specialization, which involves the application of modern achievements of science and technology and is characterized by complexity and uncertainty of conditions.
POS18	To choose and apply the optimal forms of organization of professional activity in the industry according to specialization.
POS19	To analyze the problems in the industrial or educational sectors, to substantiate the relevance of the research, to create the categorical apparatus of the study.
POS20	To develop and implement a program of applied research aimed at improving sectoral or educational processes; determine the levels, criteria and performance indicators of the proposed measures;

POS21	To analyze the results of the study with the formulation of relevant conclusions and recommendations.
POS22	To prepare documents regulating the relationship between the subjects of the industrial or educational process; to draw up the results of creative, innovative and scientific activities in the form of objects of intellectual property rights; implement them and monetize.
8 - Resource support for the implementation of the program	
Personnel support	Developers of the program: 5 candidates of sciences. All developers are regular staff of Ternopil Volodymyr Hnatiuk National Pedagogical University. Guarantor of the educational program: Yu.Franko — Ph.D., Associate Professor of the Department of Computer Science. To implement the program all scientific and pedagogical staff with academic degrees and/or academic degrees, as well as highly qualified specialists are involved. For the purpose of raising the professional level. All scientific and pedagogical workers undergo internship every five years, including overseas.
Material and technical support	- educational buildings; - dormitories; - technique laboratories; - specialized laboratories; - computer classes; - eateries; - wireless access points to the Internet; - multimedia equipment; - sports hall, sports grounds.
Information and studying and methodological support	– Official web page: tnpu.edu.ua – wireless access points to the Internet; – library; – virtual learning environment Moodle (elr.tnpu.edu.ua); – MS Office 365 package; – corporate mail; – educational and working plans; – curricula of the educational process; – educational-methodical complexes of disciplines; – training and work programs of disciplines; – didactic materials for independent and individual work of students from disciplines; – practice programs; – guidance on the implementation of course projects (works); – criteria for assessing the level of training;

	–packages of complex tests.
9 - Academic mobility	
National Credit Mobility	Certification training (internship) of scientific-pedagogical workers in Підвищення кваліфікації (inter) науково-педагогічних працівників in domestic partner universities
International Credit Mobility	–
Studying of foreign applicants for higher education	–

2. List of components of the educational and professional program and their logical consistency

2.1. List of components of educational and professional program

Code	Components of the educational program (educational disciplines, course projects (work), practice, qualification work)	Credits	Assessment
1	2	3	4
1. OBJECTIVE COMPONENTS OF EDUCATIONAL PROGRAM			
OC1	Philosophy	3	Exam

OC2	Foreign language	7.5	Exam
OC3	History of Ukrainian statehood and national culture	3	Exam
OC4	Ukrainian language (professional aim)	3	Exam
OC5	Civil protection and labor protection	6	Credit
OC6	Psychology	6	Exam
OC7	Pedagogy	9	Exam
OC8	Higher Mathematics	4.5	Exam
OC9	Physics	4.5	Exam
OC10	Man and the environment	3	Credit
OC11	Educational technologies	3	Credit
OC12	Electronics and microprocessor systems	3	Credit
OC13	Engineering and computer graphics	6	Exam
OC14	Basics of informatic	6	Exam
OC15	Basics of the scientific research	3	Exam
OC16	Automated workflow	6	Credit
OC17	Methodology of professional training	9	Exam
OC18	Applied technologies and WEB-programming	9	Exam
OC19	Computer technologies in teaching the process	6	Exam
OC20	Repairing and upgrading PC	4.5	Credit
OC21	Computer networks and data protection	6	Exam
OC22	Fundamentals of artificial intelligence	3	Credit
OC23	Design and operation of information systems	7.5	Exam
OC24	Computer-analytical activity	3	Exam
OC25	Discrete programming	4.5	Credit
OC26	Information technology teaching methods	3	Credit
OC27	Perspective web development languages	4.5	Exam

Total		136.5	
SELECTIVE COMPONENTS OF THE EDUCATIONAL PROGRAM*			
Discipline of an independent choice of an educational institution			
SC1.1	Economics	3	Credit
	Fundamentals of Marketing and Management		
SC1.2	Sociology	3	Credit
	Religious studies		
SC1.3	Politology	3	Credit
	Science of law		
Disciplines of free choice			
SC2.1	Simulation of technical systems	6	Exam
	Data analysis		
SC2.2	3D modeling, animation and video editing	6	Credit
	Development and analysis of algorithms		
SC2.3	Operating Systems	6	Credit
	Development of massive open online courses		
SC2.4	Computer design and multimedia	6	Exam
	WEB design		
SC2.5	Computer Architecture	6	Exam
	Computer electronics		
SC2.6	Mathematical modeling	3	Credit
	Computer logic		
SC2.7	Fundamentals of Automated Design Systems (ADS)	6	Credit
	Technologies of designing computer systems		
SC2.8	Office computer technology	6	Exam
	Fundamentals of modern design		
SC2.9	CAD\CAE modern systems	6	Exam
	“Scretch” algorithms and projects		

SC2.10	Organization of databases	4.5	Exam
	Network Information Technology		
SC2.11	Architectural visualization	3	Credit
	Computer systems and networks design		
Total		67.5	
Practical training			
OC28	Bachelor’s work	6	Credit
OC29	Technological practice	6	Credit
OC30	Industrial practice	21	Credit
OC31	State attestation	3	Exam
Total		36	
General		240	

3. Form of certification of higher education applicants

Certification of graduates of educational program of specialty 015 Vocational Education (Computer Science) is carried out in the form of qualifying, including educational program of disciplines of professional and practical practice and ends with the issuance of a document of a standard sample for awarding them a bachelor's degree with a qualification: a teacher of practical education in computer science of specialty 015 Vocational Education (Computer Science)