DIPLOMA DESIGN
Syllabus

Requisites of the Course	
Level of higher Education	First (bachelor's)
Field of Study	12 Informational technologies
Specialty	121 Software Engineering
Education Program	Computer Systems Software Engineering
Type of Course	Normative
Mode of Studies	Full-time (full-time) / part-time
Year of studies, semester	4 course, spring semester
ECTS workload	6 credits, 180 hours
Testing and assessment	Defense of qualification work (bachelor's diploma project)
Course Schedule	180 hours of self-study work of the student
Language of Instruction	English
Head of the course / Course Instructors	Head of the course: head of the department, D.sc., Prof. Stirenko S. G. , sergii.stirenko@gmail.com Senior lecturer, Andrey Simonenko, comsys.spz@gmail.com
Access to the course	Provisions and methodological recommendations for the implementation of diploma projects on acquisition degree bachelor's degree by educational and professional program "Computer Systems Software Engineering" specialty 121 "Software Engineering" http://comsys.kpi.ua/

Outline of the Course

1. Description educational disciplines, her goal, subject learning and the results teaching

Description of the discipline. During the diploma project, the student prepares an attestation work - bachelor's diploma project (hereinafter "project"), which is the final stage of studies at the bachelor's level of education. By by the results preparation and protection project examination commission (further EC) carries out decision about appropriation to the corresponding student qualifications and educational degree

Subject educational disciplines: bachelor's degree diploma project.

The purpose study disciplines is formation in students abilities

- Summarize, fasten and deepen knowledge, received by all time teaching in university, and use their for justified adoption project decisions;
- Acquiring a survey of the performance of pre-project search and comparative analysis of information, at choice most acceptable algorithms, protocols, interfaces, components, programs on economic and technical characteristics;

- Inoculate knowledge and skill at design systems in as a whole and practically fasten skills developments her basic components: software, informative and technical software for complexes (CAD), information and reference systems, computer networks, systems artificial intelligence, systems remote teaching etc;

- To acquire experience in design and graphic design materials, drafting explanatory notes, specifications, information on software software and another design department documentation.

The main tasks in studying the discipline. According to the educational and professional program of the discipline " Diploma design" is the last component in the structural and logical scheme of training, therefore, when mastering this educational component, students, in addition to acquiring new competencies and program learning outcomes, also consolidate and strengthen competencies and program learning outcomes of previous disciplines. In general, the following results can be stated

Knowledge:

- modern informative technologies and informative environment;
- methods systematization and analysis information;
- methodologies and computer software creation technologies systems and networks;
- specialized languages, means and technologies programming;
- technologies for deploying software systems and creating softwarecomputational systems and networks;
- methodology developments mathematical models objects, methods modeling distributed systems by help modern applied software packages;
- methods solution practical problems in within the framework corresponding specialty

Skills:

- analyze requirements to modern highly productive computer systems;
- use methods evaluations productivity computational systems;
- learn the main ones architectural concept and analyze suitability specific operational systemsfor designing effective programs;
- use modern technologies designing and implementation computational systems and networks, choose available components, means and technologies for their buildings;
- use IT infrastructure management technologies, choose components of the existing oneinfrastructure IT for buildings new infrastructure;
- automate processes deployment IT infrastructure and necessary software software;
- choose means buildings components integrated computational systems and networks,implement algorithms management by with the help of modern technologies programming;
- solve practical tasks with buildings computational systems and networks

Experience:

- development of software for high-performance computer systems;
- development of network software, web systems;

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- design of information systems, systems management
- development of mobile applications;
- developments software software on base microcontrollers;
- creation projects systems real time, for Internet of Things systems.

2. Prerequisites and post-requisites disciplines (place in structural and logical schemes teaching byappropriate educational program)

Prerequisites: discipline "Diploma design" is the last component in the structural and logical scheme of training under the Educational-professional program " Computer Systems Software Engineering " for bachelors, therefore it is based on the results of mastering all educational components of this educational program .

Post-requisites: qualifying work in the form of a bachelor's diploma project and defense of this qualifying work.

3. Content educational disciplines

The main ones task diploma designing:

- systematization, consolidation and expansion of theoretical knowledge obtained in the process of training educational program bachelor, and their practical using at solutions specific
  engineering, scientific, economic and social and production questions in certain industry professional activities;

- development of experience of independent work, mastering the methodology of research and experimentation, physical or mathematical modeling, use of modern information technologies in process solution tasks, which provided for task on project;

- definition compliance equal preparation acquirer higher education requirements educational programs, him readiness and capabilities to independent work in conditions market economy, modern production, progress of science, techniques and cultures

The project should be based on the knowledge and skills acquired during the study of the disciplines as a whole the period of study at the higher education institution and may be partially based on the results of the course design. The project can provide implementation research, project, settlement, experimental works

Topics projects determine in compliance with the following directions:
- Scientific interest manager in industry computer of science and computer engineering;
- Scientific and research directions, which engaged chair;
- Software educational process;
- Implementation household contractual topics;
- Professional interests executor

It is recommended choose topics, what are related with automation designing, organization computing processes in computer systems, complexes and networks using modern automated systems, modeling, organization computational processes in computational systems, management computing systems and networks, forecasting visualization, development of information and search systems, expert systems, databases, web technologies, and questions analysis and processing data, prognostication, management, ecology and t. and.

The topic of the project in general is not determined by the directions listed above and can be proposed a student in boundaries specialty "Computer engineering" or "Software engineering".

Projects can be complex. Complex projects take place during development or use complex and multifunctional software software, or at implementation laborious design solutions. They are performed by two or even more students. At the same time, as a rule, general part of the works is the software system as a whole, and the division by project works consists of different sections objective region, or consists of in implementation different functions systems and stages designing.

4. Educational materials and resource

Basic literature

1. LAW UKRAINE About higher education // Vedomosti Verkhovna councils (VVR), 2014, #37-38, Art. 2004 (in the current version)
2. POSITION about graduation certification students KPI named after Igor Sikorsky / Structure.: IN. P. Golovenkin, IN.Yu. Ugolnikov. - Kyiv, KPI named after Igor Sikorsky, 2018. – 100 p.
3. Position about organization educational process in KPI named after Igor Sikorsky
4. *Position and methodical recommendations implementation diploma projects on acquisition degree bachelor's degree by educational and professional program "Engineering software software computer systems" specialty 121 "Software engineering"* /author. Stirenko S. G., Simonenko V. P., Simonenko A. V., NTUU "KPI" / website of the department OT http://comsys.kpi.ua/

Auxiliary literature

1. DSTU GOST 2.104:2006 ESCD The main ones inscriptions
2. DSTU GOST ISO 8790:2003. Systems processing information Symbols and conditional marks for schemesconfigurations computational systems.
3. DSTU GOST 2.702:2013 ESCD Rules implementation electric schemes
4. DSTU 3008-95. Documentation. reports in sphere science and techniques Structure and rules design.
5. DSTU ISO 5807:2016. Processing information Symbols and agreements of documentation concerning data, programs and system block diagram, schemes network programs and schemes system resources.
6. DSTU 8302:2015. Information and documentation. Bibliographical link. general position andrules drafting.

Educational content

5. Methodology

Organizationally process implementation project consists with the following stages:

- preparatory which begins with the student choosing a topic and receiving an individual task from the supervisor regarding the issues that must be resolved during the pre-diploma practice of the chosen one topic (familiarization with the state of the problem, collection of actual materials, conducting the necessary observations, experiments, of research etc), includes development programs pre-diploma practice and is ending folding and protection report on her passage;

- the main one, which begins immediately after the defense of the practice report and ends approximately after two weeks before the project defense, when the project is submitted for preliminary defense. On this stage project has be fully done, checked manager and consultants;

- the final one, which includes getting feedback from the manager and a review. Completed project with feedback supervisor is submitted by the student to the graduation department no later than one week before the day of the defense. Head department by by the results interviews with a student and familiarization with submitted materials accepts decision about admission to protection and signs titular page project student Decision manager department is drawn up appropriate protocol meeting

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departments;

- · preparation to speech on meetings EC and itself procedure protection project

The project consists of a text part and a graphic part. The text part of the project has a concise and clear form disclose creative plan project, to contain analysis modern state problems methods solving project tasks, justifying their optimality, methods and calculation results, description carried out experiments, analysis their results and conclusions with them; to contain necessary illustrations, sketches, graphs, charts, tables, schemes, drawings and other IN her have be missing common knowledge provisions, redundant descriptions, breeding complex formulas etc. Graphic part contains at least three graphic materials

Structurally, the student's report at the EC meeting can be divided into three parts, each of which is represented by an independent meaningful block, but in general they are logically connected and characterize content held research.

IN the first parts reports necessary introduce topic project, give characteristic relevance the chosen one topics, give description problems and also formulate purpose and task project

IN the second parts reports necessary to provide characteristic Each section of the project At this special attention allocate to methods, for help whose received factual material and final results

IN third parts reports necessary introduce general conclusions

6. Self-study

No s/p	Name topics, what carried out on independent processing	Number of hours
1	Review and analysis available solutions by subject task project	15
2	Description objective environment	10
3	Definition subject and tasks diploma designing	5
4	Definition incoming and weekends data	5
5	Definition methods and means for solution tasks diploma designing	15
6	Description structures base data	10
7	development systems or subsystems	20
8	development informative base	15
9	Detailed designing elements systems	20
10	Creation software software systems	10
11	Creation graphic materials to project	10
12	Writing and design explanatory notes to project	10
13	Preparation reports for protection project	5

Policy and CONTROL

7. Course Policy

Student obliged:

- · on time to choose topic project and get previous task on project and recommendations frommanager of selection and processing materials under time carrying out pre-diploma practices;
- · regular, not Less one once on week, inform manager about state implementation projectin accordance

to calendar plan give on him requirement necessary materials for inspections;

- independently perform individual project or individual part complex the project;
- when developing questions, take into account modern achievements of science and technology, use advanced ones methods scientific and experimental research, accept substantiated and optimal decision from application systemic approach;
- answer by correctness accepted solutions justifications, calculations, quality design textual and graphic material, their conformity methodical recommendations graduation department regarding the performance of attestation works, current normative documents and standards higher education;
- follow calendar plan implementation project, installed rules behavior in laboratories and auditoriums, on time and adequately respond on remark and recommendations manager and consultants the project;
- submit the project for review to the manager and consultants within the specified period and after their elimination remarks return to the manager for receiving him feedback;
- get all necessary signatures on titular leaves project, and also resolution manager graduation department about admission to protection;
- personally submit project, admitted to protection, reviewer; on him requirement to provide necessary explanation with questions;
- get acquainted with content feedback manager and reviews and prepare (in case necessary) reasoned answers on their remark at protect project in EC. To enter any changes or correction in project after receiving feedback manager and reviews is prohibited;
- pass previous protection project on departments;
- submit to the department a project prepared and approved for defense with the manager's feedback and a review not less than a week to him protection in EC;
- to arrive on time for the defense of the project or to warn the head of the graduation department and the head of the EC (by secretary EC) about impossibility presence on protect from indication reasons this and next providing documents, which testify dignity reasons IN case absence such documents EC may be accepted decision about not certification student, as such what not appeared on
  protection of the project without valid reasons, with subsequent expulsion from the university. If the student does not was able to warn in advance about the impossibility of his presence at the defense of the project, but in period work EC provided necessary justified documents, EC may to transfer the date protection project

8. **Kinds control and rating system assessment results teaching (RSO) on discipline"Diploma design"**

Result protection project are drawn up protocol protection Assessment

project determine the following Indexes:

1. Rating software product, created a student;
2. Rating protection;
3. Rating decorated to protection documents

In accordance to these components produced the following criteria evaluations project

Project is evaluated on "excelent", if:

At implementation project:

- used modern software means;
- implemented modern interface work with by the user;
- used in-depth knowledge at least with one with discipline with professional preparation;
- Obviously an advantage project is:

- development and justified application original software means;
- study and representation in program objective industry, what difficult formalized;
- study and using the newest informative technologies.

On protect student:

- clearly and full reports about purpose project and task, implemented developed program;
- determines users software systems, level access and functions systems, provided to everyoneto the user; describes incoming and day off information for Each task, implemented in system;
- justifies using software means;
- explains essence used methods implementation task and justifies their choice;
- competently represents and explains schemes algorithms (if is);
- demonstrates and explains key fragments dialogue software systems with by the user and the results solution everyone delivered tasks;
- on question responds full of can professionally defend own point visionTo

project *are added the following documents* by appropriate requirements:

Explanatory note, in which:

- content quite responds task;
- material fine structured, laid out exhaustingly full of clearly and competently;
- design strictly responds normative requirements.

Drawing schemes algorithm:

- what describes algorithm work the whole systems, or
- basic method, realized in system, or
- software fragment module, what contains features software implementation, on which reporter wantsto turn attention;
- is performed as drawing in strict compliance with standards design schemes algorithm.

Cry:

- contain illustrations to reports;
- are performed in compliance with standards accepted for design posters

Response manager project

Review external reviewer (not may be teacher graduation departments).

Project is evaluated on "good", if:

At implementation project:

- used modern software means;
- implemented modern interface work with by the user but dialogue built not optimally withlook amenities user or forms breeding and accommodation information;
- used knowledge and skill, received at studies one with special discipline

On protect student:

- reports about executed project Yes itself, as specified in criteria on assessment "perfectly", butallows insignificant errors and inaccuracies;
- can professionally defend own point vision;
- on question responds in general right, but allows insignificant errors and inaccuraciesTo

project *are added the following documents* by relevant requirements:

Explanatory note, in which:

- content quite responds task;
- material not completely successfully structured;
- material laid out clearly and short, but have place stylistic mistakes; design with insignificant deviation from regulatory requirements

Drawing schemes algorithm, what:

- has content, what responds requirements, offered on assessment "perfectly";
- is performed as drawing with insignificant deviations from standards design schemes algorithm.

Cry, what:

- contain illustrations to reports;
- are performed with insignificant deviations from standards, accepted for design posters

Response manager project

Review external reviewer (not may be teacher graduation departments).

Project is evaluated on "satisfactorily", if

At implementation project:

- correctly are made calculations, what not require using numerical methods;
- realized a real impractical task, but the application of modern softwaresoftware and computer technologies.

On protect student:

- reports in general right, however report built illogically, unclear contains inaccuracies;
- answers questions incompletely, makes mistakes and inaccuracies.

To project are added the following documents by appropriate

requirements:

Explanatory note, in which:

- content responds the task but material unsuccessfully structured, laid out unclear is grammaticalerrors;
- design with deviations from regulatory requirements

Drawing schemes algorithm, what:

- has content, what responds requirements, offered on assessment "perfectly";
- is performed as drawing with deviation from standards design schemes algorithm.

Cry, what:

- contain illustrations to reports;
- are performed with deviations from standards, accepted for design posters

Response manager project

Review external organizations (maybe reviewing a teacher another departments).

Correspondence of ratings points to the defense scores on the university scale

Score (rating points)	*Grade*
100-95	Excellent
94-85	Very good
84-75	Good
74-65	Satisfactory
64-60	Sufficient
Less 60	Fail
Not performed conditions admission	Not Graded

Syllabus

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