

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
«IGOR SIKORSKY KYIV POLITECHNIC INSTITUTE»

ELECTROMECHANICS DEPARTMENT

Mykola Reutskiy, Anna Shymanska, Evgen Dubchak

**BACHELORS PRE-DIPLOMA PRACTICE OF
ELECTROMECHANICS DEPARTMENT**

*Recommended by the Methodical Council of the Igor Sikorsky KPI
as a tutorial for students studying for*

specialty

*141 «Electricity, electrical engineering and electromechanics»,
educational program*

«Electric Machines and Apparatus»

KYIV
Igor Sikorsky KPI
2021

Bachelor pre-diploma practice of Electromechanics department [Electronic resource]: Tutorial for students studying for Specialty 141 «Electricity, electrical engineering and electromechanics», educational program «Electric Machines and Apparatus» / Igor Sikorsky KPI; compilers: Mykola Reutskiy, Anna Shymanska, Evgen Dubchak . – Electronic text data (1 file: 512 kB). – Kyiv: Igor Sikorsky KPI, 2021. – 48 p.

Status is given by the Methodical Council of the Igor Sikorsky KPI

(Protocol № 1 since 16.09.2021)

at the request of the Academic Council of the FEA

(Protocol № 10 since 28.06.2021)

Electronic network educational edition

Bachelor pre-diploma practice of Electromechanics department

Compilers: *Reutskiy Mykola*, PhD, Associate Professor
Shymanska Anna, PhD, Associate Professor
Dubchak Evgen, Senior lecturer

Executive editor: *Shynkarenko Vasyl*, Doctor of Technical Sciences, Professor

Reviewer: *Ostroverkhov Mykola*, Doctor of Technical Sciences, Professor

Implementation of the work program of pre-diploma practice by 4th year students (3rd year of accelerated form of education) is provided in accordance with the Law of Ukraine "On Higher Education" № 1556-VII of 01.07.2014, the provision "On the practice of students of higher educational institutions Of Ukraine ", approved by the order of the Ministry of Education of Ukraine dated 08.04.1993 № 93 (as amended), letters of the Ministry of Education and Science of Ukraine dated 07.02.09 № 1 / 9-93" On practical training of students ", recommendations on practice students of higher educational institutions of Ukraine, developed by the State Scientific Institution "Institute of Innovative Technologies and Content of Education" in 2013, taking into account the Regulations on the organization of the educational process in Igor Sikorsky KPI and bachelor's degree programs for EPP "Electric Machines and Apparatus"

The work contains the purpose and objectives of pre-diploma practice, the basic requirements for its organization, guidelines for the work provided for in the program, recommendations for the formation, design and defense of the report. Designed for teachers and students majoring in 141 "Electric Power, Electrical Engineering and Electromechanics", specialization "Electrical Machines and Apparatus".

© Mykola Reutskiy, Anna Shymanska, Evgen Dubchak, 2021

© Igor Sikorsky KPI, 2021

CONTENT

INTRODUCTION.....	4
1. GENERAL PROVISIONS.....	7
1.1 Practice content.....	7
1.2 Organization of practice at the enterprise.....	8
1.3 Organization of practice in remote mode	12
1.4 Bases of practice of the Electromechanics department	13
1.5 Material support of practice	15
2. PRACTICE PROCESS.....	16
2.1 The purpose and main tasks of practice	16
2.2 Organization of work and term of practice	17
2.3 Responsibilities of future bachelors and supervisors during the practice.....	19
2.4 Responsibilities of practice supervisors	19
2.5 Control during of the practice period.....	23
2.6 Requirements for the results of pre-diploma practice.....	23
3. DESIGN AND DEFENSE OF PRACTICE RESULTS	25
3.1 Requirements for a practice diary	25
3.2 Requirements for the preparation of a practice report.....	27
3.3 Defence of practice results	28
3.4 Summing up the practice	29
4. RATING SYSTEM FOR EVALUATION OF PRACTICE PROGRAM IMPLEMENTATION RESULTS	31
REFERENCES.....	33
Annex A. Work program (syllabus) of pre-diploma practice	34
Annex B. Practice diary	43
Annex C. Agreement on the organization of pre-diploma practice for applicants for higher education in the workplace, institutions and organizations	47

INTRODUCTION

Practical training of applicants for higher education is a mandatory component of the educational-professional program (EPP) of the first (bachelor's) level of higher education in the specialty 141 "Electric Power, Electrical Engineering and Electromechanics" in the field of knowledge 14 "Electrical Engineering" [1].

According to the EPP, after pre-diploma practice, students must demonstrate program learning outcomes, namely: general competencies: the ability to apply knowledge in practice, the ability to use information and communication technologies, the ability to search, process and analyze information from various sources, the ability to make informed decisions, willingness and ability to perform high quality work both independently and collectively and to make decisions within their professional knowledge and competencies, ability to communicate with representatives of other professional groups of different levels; professional competencies: ability to solve practical problems related to the operation of electric machines, devices and automated electric drive, compliance with standards, norms and specifications for the design of electrical, electrical and electromechanical equipment, compliance with safety, labor protection and industrial sanitation at the enterprises of electric power and electromechanical complexes, awareness of the need to constantly expand their knowledge about new technologies in electric power, electrical engineering and electromechanics, emergency preparedness in electric power and electromechanical systems, ability to identify, receive and analyze and place necessary experimental research and modeling of electrical machines and devices, critically evaluate data and draw conclusions, the ability to effectively use new technologies in the process of modernization and reconstruction electrical equipment, electrical machines and apparatus, electric transport, electrical devices, systems and complexes, the ability to develop physical and mathematical models of the studied machines, drives, systems, processes, phenomena and objects in the professional field, develop methods and organize experiments with analysis results; to acquire knowledge about modern methods of experimental research of electric machines and devices, electromechanical

energy converters, electromechanical complexes and skills to study physical phenomena and processes in electric machines and devices, electromechanical energy converters, electromechanical complexes.

The purpose of practice is to consolidate the theoretical knowledge gained by students in the study of professional disciplines, taking into account the specifics of the bases, gaining practical skills and abilities to solve current professional problems in the field of electrical equipment and control systems, deepening and consolidating theoretical knowledge and practical skills. and general cultural competencies; consolidation of knowledge and practical skills acquired by students in the study of disciplines of technological and computational design; acquisition of practical skills in repair, prevention, operation of electrical equipment and control systems; preparation of design documents for the bachelor's thesis project; deepening and consolidation of theoretical knowledge and practical skills in the specialty; performance of an individual task, mastering of professional experience and skills of independent labor activity in the conditions of the enterprise, institution, organization; mastering modern methods, forms of labor organization, tools in the field of their future specialty.

The scope of practice is determined by the educational and professional program of the first (bachelor's) level of higher education, which is reflected in the curricula, working curricula and schedules of the educational process, respectively.

According to the connections of pre-diploma practice in the logical-structural scheme of EPP students must consolidate theoretical knowledge of the courses "Electric Machines", "Design of Electric Machines", "Technology of Electric Machines", "Theoretical Foundations of Electrical Engineering", "Computer Engineering", and also other special disciplines (prerequisites of pre-diploma practice) and to prepare the basic part of data for preparation of attestation work of the bachelor (postrequisites of pre-diploma practice), namely:

- to get acquainted with the content of official design documentation and learn to independently compile similar forms of documents;
- to collect and summarize the necessary material for the preparation of a report on practice, analyze and plan the preparation of a bachelor's thesis;

- to get technically competent to record the results of work, draw up a report on pre-diploma practice;
- to collect all the necessary information for the preparation of certification work.

The current textbook for the implementation of the working program of pre-diploma practice by students of the 4th year (3rd year accelerators) of the Department of Electromechanics KPI. Igor Sikorsky is made in accordance with the Law of Ukraine "On Higher Education" № 1556-VII of 01.07.2014 [2], the provision "On the practice of students of higher educational institutions of Ukraine", approved by the order of the Ministry of Education of Ukraine from 08.04.1993 93 (as amended) [3], letters of the Ministry of Education and Science of Ukraine dated 07.02.09 № 1 / 9-93 "On practical training of students", recommendations on the practice of students of higher educational institutions of Ukraine, developed by the State Scientific Institution Institute innovative technologies and the content of education" in 2013, taking into account the Regulations on the organization of the educational process in Igor Sikorsky KPI [4] and bachelor training programs for EPP "Electric Machines and Apparatus" [1].

1. GENERAL PROVISIONS

1.1 Practice content

The content of practice is determined by the program developed at the Department of Electromechanics in accordance with the curriculum regulated by the educational-professional program of the first (bachelor's) level of higher education in specialty 141 "Power Engineering, Electrical Engineering and Electromechanics", field of knowledge 14 "Electrical Engineering" for Faculty of Electrical power engineering and Automation and approved by the Dean of the Faculty.

The practice program is the main organizational and methodological document that regulates the purpose, content and sequence of the practice, summarizing the practice and contains recommendations on types, forms and methods of quality control of training, the level of competencies that higher education students should receive during the practice. The practice program is developed and discussed at the meeting of the department (Annex A), which is agreed with the management of the practice bases. Development of practice programs for new educational programs is carried out no later than one semester before the start of practice.

The main task of the practice program is to clearly plan and regulate all activities of higher education seekers and managers during the practice period. Guided by the program, the department describes the requirements for the stages of practice and work programs of practice, made taking into account the specifics of the place of practice.

In addition to the approved practice program, the Department of Electromechanics has developed a current textbook that will contribute to achieving high quality of practical training of higher education.

Duration of practice, volume and terms of carrying out are defined by the approved standard of higher education on a specialty 141 "Electric power, electric engineering and electromechanics" for the first (bachelor's) level and the educational program "Electric cars and devices".

1.2 Organization of practice at the enterprise

Responsibility for the organization and conduct of the practice rests with the rector of Igor Sikorsky KPI. The general organization of practice and control over its carrying out is carried out by the vice-rector on educational work. The Department of Electromechanics of the Faculty of Electrical power Engineering and Automation provides direct educational and methodological guidance and implementation of the practice program.

Practice must be issued by orders prepared by the deans on the submission of the departments of the lists of applicants for higher education. Orders on conducting practices with the provision of lists of distribution of applicants for higher education by places of practice in accordance with the concluded agreements are agreed with the educational department and submitted to the department for accompanying documents of applicants for higher education. The order specifies the course, group, term of practice, surname, name and patronymic of the head of practice from the University, as well as, if necessary, the period of stay of the head on the basis of practice. Orders are submitted within the timeframe regulated by the order on the organization of the practice of higher education students of the University and curricula. Lists of applicants for higher education-citizens of Ukraine who study at the expense of legal entities or individuals are submitted separately. Orders for the practice of foreign higher education applicants are submitted to the Center for International Education.

Organizational measures to ensure the preparation of the practice are:

- development of programs of practice of applicants for higher education, the preparation of which is carried out according to various educational programs;
- appointment of the person responsible for the organization of the practice of higher education at the department;
- definition of practice bases;
- concluding agreements on practices between the University and the enterprise, organization, institution;
- appointment of direct practice leaders from the department; development of

work programs of practice;

- compilation of topics for individual tasks for practice;
- distribution of applicants for higher education on the basis of practice;
- registration of the direction on practice according to the concluded agreements;
- acquaintance with the rules of filling in the practice diary; preparation of forms of reporting documentation based on the results of the practice.

The main organizational and methodological document that regulates the activities of higher education seekers and practice leaders is the practice program, which should be developed on the basis of the educational training program, take into account the specifics of the specialty and reflect the latest achievements of science and industry. The development of the practice program for new educational programs is carried out not later than a semester before its beginning. The practice program (Annex A) contains the following main sections:

- purpose and objectives of practice;
- organization of practice;
- content of practice;
- individual tasks;
- requirements for the practice report;
- summarizing the practice.

In addition, sections of the practice program may include guidelines (recommendations) for the practice, a list of literature and necessary documentation, excursions during the practice and other activities that help consolidate the knowledge gained during training.

Practice managers from the Department of Electromechanics and from enterprises where higher education students undergo practices are appointed to lead the practice. The head of practice from the department (often is also the head of the attestation work of the applicant) carries out the general management of practice, controls the implementation of the work program of practice, monitors attendance at practice, together with the head of practice from the enterprise.

The head of practice from the enterprise (institution, organization) provides the

higher education applicant with safety instruction and acquaintance with the Rules of Internal Procedure of the enterprise, supervises the work of the higher education applicant directly at the workplace, monitors the implementation of specific individual calendar tasks, provides assistance in collecting the necessary materials for the report, evaluates the quality of work of each higher education applicant during the practice.

Responsible for the organization and conduct of the practice of higher education students of the faculty is the dean, director, who manages the teaching and methodological and organizational support of the practice; exercises control over the organization and conduct of practices by departments, implementation of practice programs, timely preparation of tests and reporting documentation based on the results of practices; listens to the reports of the departments on the practice at the meeting of the Academic Council of the Faculty of Electrical power Engineering and Automation.

The implementation of direct educational and methodological guidance of the practice of higher education seekers is provided by the head of the Department of Electromechanics. In addition, the department carries out the following activities:

- development of programs, work programs of practice;
- determination of bases of practices, coordination with them of the number of applicants of higher education accepted for practice, drawing up of the corresponding application which is submitted to educational department for the conclusion of complex contracts;
- development of individual tasks for the period of practice;
- development (if necessary) of methodical recommendations of carrying out practice in a remote mode;
- holding a meeting of applicants for higher education on practice with the participation of practice leaders;
- implementation of management and control over the practice;
- discussion of the results and analysis of the implementation of internship programs at the meetings of the department;
- submission to the deans of faculties, directors of institutes of reports on the practice with proposals for improving its organization.

Head of practice from the enterprise, institution, organization:

- is personally responsible for the practice;
- organizes acquaintance of applicants for higher education with the rules of safety and labor protection;
- organizes practice in accordance with work programs of practice;
- determines the places of practice, provides the greatest efficiency of its passage;
- ensures the implementation of agreed with the curriculum schedules of practice in the structural units of the enterprise;
- gives applicants for higher education - trainees the opportunity to use the available literature, the necessary documentation;
- monitors the observance of internal regulations by applicants for higher education;
- creates the necessary conditions for the trainees to master new equipment, advanced technologies, modern methods of work organization;
- monitors the implementation of the Labor Code of Ukraine, etc.

If there are vacancies, higher education students of the University can be enrolled in full-time positions, if the work on them meets the requirements of the internship program. At the same time, at least 50% of the time is devoted to general professional training according to the practice program.

Applicants for higher education during the practice are required to:

- before the start of the practice to receive from the head of the practice from the University directions, methodical materials (methodical instructions, program, diary, individual task) and consultations on registration of all necessary documents;
- arrive at the practice base on time;
- fully perform all tasks provided by the work program of practice and instructions of its leaders;
- study and strictly follow the rules of labor protection, safety, industrial sanitation and internal regulations;
- be responsible for the work performed;
- timely draw up reporting documentation and take a test in practice.

1.3 Organization of practice in remote mode

Practice, which provides for its passage on the basis of enterprises, institutions or organizations, may be conducted remotely or directly on the territory of the enterprise, organization or institution at the request of an adult applicant, provided that the practice base is located as close as possible to his place of residence.

The decision on the form of pre-diploma practice is made by the Department of Electromechanics, Faculty of Electrical power Engineering and Automation. In the case of a decision on remote pre-diploma practice and to implement the order of the rector of Igor Sikorsky KPI from 11.03.2020 № 7/54, during all forms of distance learning during the quarantine period it is necessary to provide classes with the use of information and communication technologies.

Given the need for constant monitoring of the quality of the educational process, it is necessary to ensure the reflection in the electronic classrooms of the "Electronic Campus" teachers information on selected forms of distance learning (used applications, platforms, links, software products, resources, etc.). At the same time, it is recommended to display the results of students' performance of the stages of the tasks of pre-diploma practice using the service "Current Control" in the system "Electronic Campus".

In addition to previously recommended resources and platforms, teachers can use the free tool Microsoft Teams, which is available at [5]. Microsoft Teams makes it possible to access learning materials and tasks, conduct interactive classes online, interaction of teachers and students using online tools, cooperation in the organization of teamwork, joint or individual performance of tasks. You can read the easy start guide for Microsoft Teams at [5].

1.4 Bases of practice of the Electromechanics department

The bases of practice can be enterprises, institutions, organizations of various types of economic activity, as well as structural units of the University, provided that they ensure the full implementation of internship programs.

Determining the bases of practice is carried out by the management of educational units on the basis of direct agreements with enterprises, institutions, organizations, as well as agreements on partnership and cooperation, regardless of organizational and legal forms and forms of ownership of enterprises, institutions, organizations.

Based on the orders provided by the departments to the educational department, complex agreements (including several faculties / institutes) are drawn up between the University and enterprises, organizations, institutions for the practice of the calendar year.

Applicants for higher education can independently, in agreement with the management of the department, choose the base of practice and offer it for use provided that it fully meets the requirements of practice programs.

Faculties (institutes) enter into individual agreements with enterprises, organizations, institutions offered by higher education seekers for internships in a certain form (Annex B), taking into account agreements on partnership and cooperation with enterprises, institutions, organizations concluded by faculties and institutes.

In the case of training specialists under targeted agreements, the bases of practice may be enterprises (organizations, institutions) for which such training is carried out. If the contract for the training of a specialist stipulates the place of practice, separate contracts are not concluded.

In the case of training specialists on the orders of individuals, legal entities, practice bases may be determined by the terms of the agreement (contract) for their training.

For applicants for higher education of foreigners, the bases of practice are

provided in the relevant contract or agreement of the customer country for training and can be located both in Ukraine and abroad - in the customer country.

For applicants for higher education by correspondence, internships are conducted according to an individual plan without separation from production.

According to the approved educational and professional program of the first (bachelor's) level of higher education in the specialty 141 "Power Engineering, Electrical Engineering and Electromechanics" in the field of knowledge 14 "Electrical Engineering" pre-diploma practice of 6 ECTS credits. with which targeted long-term agreements have been concluded, namely:

- Institute of Electrodynamics of the National Academy of Sciences of Ukraine;
- Institute of Electric Welding of the National Academy of Sciences of Ukraine;
- Research Institute "QUANTUM";
- Private Joint Stock Company "Ventilation Systems";
- LLC "Diada Group";
- PJSC "Kyivenergo";
- ASTC Antonov;
- KP "Kyiv Metro";
- Scientific and Technical Center "Reducer";
- Kyivoblenerho OPGC;
- OJSC Kyivelektromontazh;
- LLC Research and Production Center "Vertical";
- PJSC "Ukrelektroaparat";
- Kabelinvest LLC;
- LLC "BF PARQUET";
- ENERSIS-Ukraine LLC;
- Cascade of Kyiv HPPs and PSPs;
- JSC "Kyivenergo" CHP-5;
- Otis CJSC.

- The choice of a research institute or enterprise for pre-diploma practice is performed at the student's own request in the formation of his individual curriculum.

The content and technology of pre-diploma practice is determined by the program of practice, which is developed by the graduating department.

The department and the dean's office assist students in mastering modern means, methods, forms of organization of production processes during the acquisition of working professions, as well as during production activities at enterprises; organizes events to provide students with a deep understanding of the importance of "hard skills" and "soft skills" for their quality future employment; organizes meetings of students with employers in the framework of the "Job Fair", which often results in a change of individual trajectories of students in the projection for future employment; enters into agreements with enterprises for all types of practices.

1.5 Material support of practice

Sources of funding for the practice of higher education are determined by the form of the order for specialists: state or regional funds, funds of individuals and / or legal entities. Additional sources of funding, which are not prohibited by law, may be used to finance the practice of higher education seekers. Financing of expenses for the organization and carrying out of practice of the applicants of the higher education studying under the state order, is not provided by a separate position in estimates at the expense of the general fund of the state budget. These contributions are allowed only at the expense of savings within the approved estimates. Payment for business trips to teachers of the University-heads of practice of higher education seekers is carried out in accordance with current legislation within the available funding.

Travel to the bases of practice and back by urban and suburban (up to 50 km) transport is paid by applicants for higher education at their own expense. During the internship during the period of work at workplaces and positions with payment of salaries for applicants for higher education, the right to receive a scholarship based on the results of semester control is preserved. During this practice, the applicant may also acquire a working specialty. The training load of managers is determined based on the number of training hours provided by the curriculum.

2. PRACTICE PROCESS

2.1 The purpose and main tasks of practice

The main purpose of pre-diploma practice is to consolidate the theoretical knowledge gained by students in the study of professional disciplines, gain practical skills and abilities to solve current professional problems in the field of electrical equipment and control systems, deepen and consolidate theoretical knowledge and practical skills in the specialty, mastering professional and general skills.

Directly during the internship the student must:

- consolidate theoretical knowledge of the courses "Electric Machines", "Design of Electrical Machines", "Technology of Electrical Machines", "Theoretical Foundations of Electrical Engineering", "Computer Engineering", as well as other special disciplines in accordance with the prerequisites specified in the work program (syllabus);

- get acquainted with the content of official design documentation and learn to independently compile similar forms of documents;

- collect and process the necessary material for the preparation of a report on practice, analyze and plan the preparation of the bachelor's thesis;

- technically competent to record the results of work, draw up a report on pre-diploma practice;

- gather all the necessary information for the preparation of the thesis;

- draw up a diary of pre-diploma practice.

Upon completion of the internship, the student must be able to:

- work with the official design documentation of the enterprise (know the content and be able to draw up documentation in the form of tables, graphs, drawings of general form, etc.);

- to determine trends and specifics of development of electromechanical systems and devices;

- evaluate and analyze the existing electromechanical equipment;

- to make programs of the automated designing of the electric car or a mode of its

management, or the automated processing of results of its work;

- to get acquainted with the advanced domestic and foreign experience in the chosen field of research, determined by the topic of qualification work;

- mastering the methods of adoption and implementation on the basis of the obtained theoretical knowledge of technical solutions aimed at improving or creating new electromechanical systems and devices;

- mastering the methods of analytical independent research work to study the principles of operation and functioning of electromechanical systems and devices;

- to collect the necessary materials for the preparation and writing of the final qualifying work.

2.2 Organization of work and term of practice

Before starting the internship, each student must be instructed in occupational safety (introductory and in the workplace) with the appropriate documentation.

The head of the internship from the university gives each student an individual internship task, which must be consistent with the topic of the final certification work received by the student at the beginning of the academic year (Annex B).

Under quarantine, undergraduate practice is conducted at the Department of Electromechanics Igor Sikorsky KPI. Therefore, communication between the head of practice from the university and the student is remote.

During the undergraduate practice, the student takes a direct part in research and adjustment work carried out on the topic of qualifying work. When collecting materials, special attention should be paid to finding information in business databases, libraries, as well as on the Internet. When choosing the basic technical solutions, preference should be given to new technologies that ensure the conservation of energy and natural resources. Students take a personal part in conducting experimental research, development and adjustment of experimental equipment.

According to the educational-professional program of the first (bachelor's) level in the specialty 141, the duration of the practice is five weeks.

The practice is based on agreements, bilateral agreements between KPI. Igor Sikorsky and enterprises, research institutions and organizations that provide places for practices, regardless of their organizational and legal forms and forms of ownership.

The tasks of the practice and the execution of the relevant documents must be completed during all five weeks. The approximate schedule of tasks of undergraduate practice is given in Table 2.1.

Table 2.1

Calendar plan of practice and deadline for tasks

The content of the task, type of work	Deadline
Arrival of the student for practice, registration and reception of passes.	1 st day
Conducting training on safety and labor protection.	1 st day
Carrying out excursions on the enterprise, acquaintance with a place of work.	2,3 st day
Execution of the program of practice and individual task (with weekly check).	All practice duration
Registration of daily, report and drawing up of offset on practice.	3 days
Calculation and delivery of the pass.	1 day

Students can independently search for internships at specialized enterprises and institutions. In this case, students submit to the department a request from the company or institution to provide a place of practice.

During the pre-diploma practice the student must: get acquainted with the organization of development and operation of new types of electrical machines and electrical equipment; to study the main provisions of the ESKD; carefully study the tasks for diploma design; to study features and specifics of designs of electric cars and the electric equipment corresponding to a diploma subject; to conduct a patent search on the topic of the thesis; to study the method of analysis of electric machines; to get acquainted with methods of calculation of economic efficiency of new developments; collect the necessary materials for the thesis.

2.3 Responsibilities of future bachelors and supervisors during the practice

Applicants for higher education at the Department of Electromechanics Igor Sikorsky KPI during the practice are obliged to:

- before the start of the practice to receive from the head of the practice from the University directions, methodical materials (methodical instructions, program, diary, individual task) and consultations on registration of all necessary documents;
- arrive at the practice base on time;
- fully perform all tasks provided by the work program of practice and instructions of its leaders;
- study and strictly adhere to the rules of labor protection, safety, industrial sanitation, internal regulations and fire safety;
- be responsible for the work performed;
- timely draw up reporting documentation and take a test in practice.

If there are vacancies, higher education students of the University can be enrolled in full-time positions, if the work on them meets the requirements of the practice program. At the same time, at least 50 percent of the time is devoted to general professional training according to the practice program.

2.4 Responsibilities of practice supervisors

Supervision of pre-diploma practice from the department is performed by the supervisor of the future bachelor, who must:

- no later than two weeks before the start of the internship to agree with enterprises, institutions and organizations working programs of the internship;
- not later than 7 days before the start of the internship to provide enterprises, institutions, organizations with lists of applicants for higher education-interns for registration of a temporary pass to the enterprise;
- to warn applicants for higher education about the issuance of a medical certificate of health (if necessary) before the start of practice;
- to provide working programs of practice of heads of divisions of the enterprise,

establishment, the organization where applicants of higher education pass practice;

- when sent to the enterprise, institution, organization for the practice of three or more applicants for higher education to appoint a senior group who is an assistant to the head of practice;

- hold meetings with applicants for higher education on internships;

- to acquaint applicants for higher education with the work program of the internship;

- to issue diaries with individual tasks to applicants for higher education.

- to agree with the student on the topic of the final certification work of the bachelor;

- to make the working schedule (plan) of carrying out practice;

- to develop an individual task for the student, which he must perform during the internship;

- to control the observance of the terms of the practice and the compliance of its content with the established requirements;

- provide students with the necessary forms (practice diary, work program) in electronic form;

- provide methodological assistance to students in performing their individual tasks, as well as in collecting materials for the final qualification work during the pre-diploma practice;

- evaluate the results of the student's internship;

- to evaluate the pre-diploma practice of bachelors based on the results of the submitted report;

- on the second day after the beginning of the internship to provide a report to the head of the department or the person in charge of the internship department about the beginning of the student's internship.

The content of the individual task must meet both the objectives of the educational process and the needs of production, take into account the capabilities and proposals of the enterprise, organization, institution. In the case of pre-diploma (research) practice, the content is consistent with the subject of the qualification work.

In addition, the supervisor of practice from the University must also:

- draw up a journal of practice, as well as conduct safety briefings, if applicants for higher education are practicing at university departments;
- write a referral for practice to an enterprise, institution, organization for a higher education applicant or a group of higher education applicants;
- to ensure the timely arrival of applicants for higher education to places of practice and to control the passage of practice;
- systematically, at least once a week, to advise and monitor the stages of the individual task;
- to assist the head of practice from the enterprise in compiling the characteristics of each applicant for higher education;
- Participate in accepted tests in practice;
- to inform about the end of practice;
- check the return of all applicants for higher education passes, literature and property of the enterprise, institution, organization;
- submit to the dean's office a report on the results of the internship with proposals for its improvement;
- get information about the adaptation and quality of training of graduates in the presence of young professionals who graduated from KPI. Igor Sikorsky;
- provide (if necessary) the possibility of remote control of practice in accordance with the developed guidelines.

The results of the practice are discussed at meetings of the department and meetings of the Academic Council of the Faculty of Electrical power Engineering and Automation.

Supervisor of practice from the enterprise, institution, organization:

- is personally responsible for the practice;
- organizes acquaintance of applicants for higher education with the rules of safety and labor protection;
- organizes internships in accordance with work programs of internships;
- determines the places of practice, provides the greatest efficiency of its passage;

- ensures the implementation of agreed with the curriculum schedules of practice in the structural units of the enterprise;
- gives applicants for higher education - trainees the opportunity to use the available literature, the necessary documentation;
- monitors the observance of internal regulations by applicants for higher education;
- creates the necessary conditions for the trainees to master new equipment, advanced technologies, modern methods of work organization;
- monitors the implementation of the Labor Code of Ukraine, etc.
- gets acquainted with the program of undergraduate practice and agrees on the individual task, content and planned results of practice;
- provides safe conditions for the student's internship, which meet the sanitary norms and requirements of labor protection;
- instructs students on labor protection, safety, fire safety, as well as the rules of internal labor regulations;
- provides the student with a workplace with computer equipment;
- advises future bachelors on issues related to the selection of materials for the report on practice;
- creates the necessary conditions for deep mastering by future bachelors of the material provided by the program of practice;
- at the end of the internship checks the report of the future bachelor, provides in the diary an objective description and evaluation of the student's work during the internship on a five-point system, certifies the diary and report with his signature and seal of the organization.

The main normative and methodological document that regulates the work of the future bachelor in practice is the internship program. Each future bachelor should make the most of the time allotted for the internship to ensure the high quality of all tasks provided by the practice program.

2.5 Control during of the practice period

The practice is under the constant control of practice leaders from the company and the university. The duration of the practice is five weeks. Before the beginning of undergraduate practice the task for work which is the main task for undergraduate practice is developed.

The head of the bachelor's work is at the same time the head of practice from the university and performs general management. In terms of remote practice management, the head of practice from the university is also the head of practice from the company. His responsibilities include: together with the head of the company to develop a student work schedule; advise students on practices and report on practices; check the quality of student work.

The supervisor of practice from the enterprise (the specialist appointed by the management of the base enterprise) should: take part in drawing up of the calendar plan of passing of practice by the student; to provide the student with a workplace and to acquaint with the rules of internal procedure of the enterprise and their execution; provide the opportunity to collect and process the necessary data on the topic of the final work; upon completion of the practice to provide a written description of the intern's work, check and certify the report prepared by the student.

The current control over the student's work is performed by the head of the enterprise and makes notes in the diary.

A student who has not completed the practice program cannot be admitted to the defense of the attestation work.

2.6 Requirements for the results of pre-diploma practice

At the end of the practice, higher education students report on the implementation of the program and the individual task. The practice reporting form is a submission of a written report, signed and evaluated directly by the supervisor from the practice database. The written report together with other documents established by the University and specified in the work program of practice, are submitted for review to

the head of practice from the University. The report should contain information on the applicant's performance of all sections of the practice program and individual task, conclusions and suggestions, list of references, etc. The report on the requirements defined in the program of practice is made out.

The report is defended by applicants for higher education in a commission appointed by the head of the department. The commission consists of teachers-heads of practice from the department and (if possible) the head from the base of practice. The commission takes credit from the applicant for higher education on the basis of practice in the last days of its passage or at the University during the first ten days after the end of practice. The report on practice is stored at the department for three years.

An applicant for higher education who has not completed the practice program without good reason may be granted the right to repeat the practice under the conditions specified by the University. The applicant for higher education, who last received a negative assessment in practice in the commission, is expelled from the University.

The result of the practice test is entered in the test-examination list and in the record book of the applicant under the signature of the chairman of the commission and is taken into account by the scholarship commission when determining the scholarship together with its estimates based on the final control.

The results of each practice are discussed at a meeting of the department, and the general results of the practice are summed up at a meeting of the Academic Council of the educational unit at least once during the academic year.

3. DESIGN AND DEFENSE OF PRACTICE RESULTS

3.1 Requirements for a practice diary

On the eve of the practice, the head of the practice from the department instructs students and issues:

- completed diary (or business trip certificate);
- work program for the group and for the head of practice from the company;
- individual practice tasks;
- directions for accommodation in a dormitory (if necessary).

Upon arrival at the company, the student must submit to the head of practice from the company diary and work program of the practice, acquaint him with the content of the individual task, undergo occupational safety training, familiarize with the workplace, equipment operation rules and agree on an practice plan.

During the practice, the student must follow the rules of the internal regulations of the enterprise. The student can leave the place of practice only with the permission of the head of practice from the enterprise.

The report on practice is made by the student according to the program of practice and the individual task. The practice test is conducted on the last day of practice by the commission of the department, to which the student submits a diary and report.

The diary is the main document of the student during the practice, in which the student keeps brief notes on the implementation of the practice program and individual task.

For students undergoing an practice outside Kyiv, the diary (or business trip certificate) is a financial document for reporting on the expenditure of funds received for the practice.

Once a week, the student is required to submit a diary for review to practice leaders from the university and the company.

At the end of the practice, the diary and report should be reviewed by the supervisors and signed; compiled reviews of the practice and everything is issued to the student in the final form. The student must submit the completed diary together with the

report to the department. Without a completed and approved diary, the practice is not credited.

The diary is filled in by the student personally, except for the sections of the feedback on the student's work in practice.

After completing the undergraduate practice, the student must submit a practice diary, which he kept during the same period of practice. The diary is filled in all the sections provided in it. Signatures of officials from the base of practice must be certified by the seals of the organization.

The calendar-thematic plan of the practice in the diary should contain a list of sections and topics provided by the practice program, as well as specific deadlines.

The third section of the diary records the practice. It reflects the daily work of the future bachelor on certain issues of the practice program, a summary of the work performed and the name of the department of the organization where it was performed.

These records are checked daily by the head of practice from the company and in terms of remote practice by the head of practice from the university. One entry for several days is not allowed. In case of deviation from the calendar-thematic plan in the diary it is necessary to make records that explain the reasons for the violation of the work schedule.

A description of the future bachelor in the diary is provided by the head of the practice base from the organization. It should contain an assessment of the future bachelor's ability to use the theoretical knowledge obtained at the university in performing practical tasks. In the description, the supervisor must evaluate the student's work on a five-point scale. The description is signed by the head of the practice base and certified by the seal of the organization.

3.2 Requirements for the preparation of a practice report

Based on the results of the practice, a written report is drawn up, which is compiled individually on the basis of factual data obtained by the student during the undergraduate practice. Graphs, tables, schemes, completed forms (forms) of documents are attached to the report.

All graphical elements of the report are numbered either through numbering or by sections, such as "Figure 2.4", "Table 3.1".

The formula number is located to the right of it in parentheses. Only those formulas to which the reference in the text is necessary have numbering.

The volume of the practice report is 20-30 typewritten pages (without annexes). The text should be printed at 1.5 intervals in Times New Roman font, size 14, with margins: left (binder field) - 2.5 cm, right - 1.5 cm, top - 2.0 cm, bottom - 2.0 cm.

All report headers are numbered. The number is placed before the name, a dot is placed after each group of digits. A full stop is not placed at the end of the title. The names of the content of the work on the text of the work are placed in the center, highlighted in bold capital letters.

All pages of the work are numbered, starting with the title page, but affixed, starting with the third page, in the lower right corner of the letter.

Abbreviations, except for the common ones, are not allowed.

The report must be certified on the title page by the student's signature and the signature of the head of practice from the University. Also on the title page is dated.

Appendices to the report are numbered in Arabic numerals, each of which must begin on a new page with the word "Appendix" in the upper right corner, its serial number (without the sign №). The application should have a thematic title that reflects its content.

The practice report should contain:

- title page;
- tasks for undergraduate practice;
- content;

- introduction;
- the main part;
- conclusions;
- list of references;
- annexes (if necessary).

The references list of used sources should contain a list of all sources that were used in compiling the report. The list is in the following sequence:

- normative materials, standards, instructions;
- monographs, educational literature articles from scientific journals;
- Internet resources.

3.3 Defence of practice results

Differentiated test in practice is held no later than one week after the end of pre-diploma practice. On credit the student represents:

- report on practice, signed by the head of the enterprise;
- diary with notes on the internship;
- collected materials on the subject of qualification work.

The report on pre-diploma practice, in essence, is the first version of the final qualifying work (bachelor's work).

After verification, the report may be recommended for defense or may be returned for revision. In case of return for revision, future bachelors must make appropriate corrections and additions in accordance with the comments made by the supervisor and re-submit the report for review and obtain permission to defend the report.

The defense of the report on pre-diploma practice is carried out at the Department of Electromechanics in the form of pre-defense of the main provisions of the final qualification work not later than one week after the end of pre-diploma practice.

The future bachelor must prepare a report for the speech (not more than 5 minutes), which will highlight the main provisions of the study. The report is defended

by a commission consisting of the head of the Department of Electromechanics and the head of the bachelor's thesis, scientific supervisors of other bachelor's theses. Members of the commission ask questions to future bachelors on the results they received during the final qualification work during the pre-diploma practice, as well as make comments. The specific list of questions for each future bachelor depends on the topic of work and the results obtained during the internship.

After discussing the content of the report and the answers of future bachelors, the commission either recommends the final qualifying work taking into account the comments made to the defense for obtaining a bachelor's degree in the educational-professional program of the first (bachelor's) level "Electrical Machines and Apparatus" or rejects it. If the final qualifying work is recommended for defense, the future bachelor receives a test and a corresponding assessment in pre-diploma practice, otherwise - the practice is not credited.

3.4 Summing up the practice

At the end of the practice, higher education students report on the implementation of the program and the individual task. The form of reporting on the practice is to submit a written report, signed and evaluated directly by the head of the practice base. The written report together with other documents established by the University and specified in the work program of practice, are submitted for review to the head of practice from the University. The report should contain information on the applicant's performance of all sections of the practice program and individual task, conclusions and suggestions, list of references, etc. The report on the requirements defined in the program of practice is made out.

The report is defended by applicants for higher education in the commission appointed by the head of the department. The commission consists of teachers-heads of practice from the department and (if possible) the head from the base of practice. The commission takes credit from the applicant for higher education on the basis of practice in the last days of its passage or at the University during the first ten days

after the end of practice. The report on practice is stored at the department for three years.

An applicant for higher education who has not completed the practice program without good reason may be granted the right to repeat the practice under the conditions specified by the University. The applicant for higher education, who last received a negative grade from the practice in the commission, is expelled from the University.

The result of the practice test is entered in the test-examination list and in the record book of the applicant under the signature of the chairman of the commission and is taken into account by the scholarship commission when determining the scholarship together with its estimates based on the final control.

The results of each practice are discussed at a meeting of the department, and the general results of the practice are summed up at a meeting of the Academic Council of the Faculty of Electrical power Engineering and Automation at least once during the academic year.

4. RATING SYSTEM FOR EVALUATION OF PRACTICE PROGRAM IMPLEMENTATION RESULTS

The rating system of evaluation (RSE) of students' learning results involves determining the number of points obtained by a student in the process of studying a particular credit module. The evaluation of results takes into account the student's work discipline, timely implementation of the student's internship program, the degree of independence of tasks and creative approach to solving scientific problems, as well as the quality and completeness of the materials presented in the report and diary. A student who does not complete the internship program, receives an unsatisfactory performance or a poor grade on the test, is expelled from the university.

Regulations on the rating system for assessing the success of students in undergraduate practice are developed in accordance with the "Regulations on the credit-module organization of the educational process in Igor Sikorsky KPI, as well as in accordance with the working curriculum of the Department of Electromechanics. The size of the rating scale is 100 points.

The student's rating is established based on the results of the main (mandatory) and additional types of work. Mandatory types of work are set by the working curriculum.

The evaluation criteria for the test are as follows:

1. Rating of defense $P_3 = 95 - 100$ points - the future bachelor has fully completed the entire scope of work provided for in the internship plan, timely issued and submitted a report on the internship and a diary. In defending the report competently and logically consistently set out the main provisions of the report in the form of a report, in the process of answering questions demonstrated the presence of deep comprehensive knowledge, or solid and sufficiently complete knowledge.

2. Rating of defense $R_3 = 85 - 94$ points - answering questions, the student makes some mistakes, but can correct them with the help of the teacher, knows the definition of basic concepts and quantities, generally understands the physical nature of electromagnetic processes in objects studied, timely drew up and submitted a report on

the internship and a diary.

3. Defense rating $R_3 = 75 - 84$ points - the student answers almost all questions during the defense of the report, shows knowledge and understands the physical essence of electromagnetic processes on the topic of the bachelor's thesis. The answers are sometimes inconsistent and vague. He drew up and submitted a report on the internship and a diary in a timely manner.

4. Rating of defense $R_3 = 65 - 74$ points - the student partially answers all questions during the defense of the report, shows knowledge, but does not sufficiently understand the physical essence of electromagnetic processes on the topic of the bachelor's thesis. The answers are inconsistent and unclear. He did not draw up and submit a report on the internship or a diary in time.

5. Rating of defense $R_3 = 60 - 64$ points - the student partially answers some questions during the defense of the report, shows mediocre knowledge and insufficient understanding of the physical essence of electromagnetic processes on the topic of the bachelor's thesis. The answers are inconsistent and unclear. He did not draw up and submit a report on the internship or a diary in time. During the internship he violated discipline, did not perform his tasks in time.

6. Defense rating $R_s < 60$ points - in response, the student makes significant mistakes, shows a lack of understanding of the physical nature of electromagnetic processes on the topic of the bachelor's thesis, can not correct mistakes with the help of the teacher. The answers are incorrect, and in some cases do not correspond to the essence of the question. He did not draw up and submit a report on the internship or a diary in time. During the practice he grossly violated discipline, did not perform his tasks with great delay.

Students who do not submit a report on the internship and a diary in a timely manner and those who do not receive credit for the internship are considered to have academic debts and must be expelled from the university in the manner prescribed by applicable law.

REFERENCES

1. Освітньо-професійна програма першого (бакалаврського) рівня вищої освіти за спеціальністю 141 «Електроенергетика, електротехніка та електромеханіка» галузі знань 14 «Електрична інженерія» [Електронний ресурс]. – Режим доступу: http://em.fea.kpi.ua/images/doc_stud/opp_m_emsemetk.pdf ;
<http://osvita.kpi.ua/index.php/op>
2. Закон України «Про вищу освіту» № 1556-VII від 01.07.2014 р. [Електронний ресурс]. – Режим доступу: <https://zakon.rada.gov.ua/laws/show/1556-18#Text>
3. Положення «Про проведення практики студентів вищих навчальних закладів України» від 08.04.1993 р. № 93 (зі змінами) [Електронний ресурс]. – Режим доступу: <https://zakon.rada.gov.ua/laws/show/z0035-93#Text>
4. Положення про організацію освітнього процесу в КПІ ім. Ігоря Сікорського [Електронний ресурс]. – Режим доступу: <https://kpi.ua/regulations>
5. Посібник для легкого старту з Microsoft Teams [Електронний ресурс]. – Режим доступу: <https://aka.ms/AA7qbfw>

During the practice it is also necessary to use the guidelines, technical and regulatory documents of the industry that are relevant to the topic of qualification work and a list of references on the subject of qualification work provided by the head of undergraduate practice from the department.

Annex A

To the Regulations on the procedure of practice
applicants for higher education Igor Sikorsky KPI



MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
«IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE»

03056, Kyiv, Peremohy av., 37, 044-406-82-38

Faculty of Electrical Power Engineering and Automation

«Approved»
Dean of the faculty
prof. Olexandr Yandulsky

Place for stamp

«__»_____2021

AGREED with

Chief specialist of the enterprise

Head of Electromechanics Department

Vasyl Shynkarenko

«__»_____2021 p.

«__»_____2021 p.

SYLLABUS

of pre-diploma practice (bachelor)

of higher education students of 4th year students (3rd year accelerators)

specialty "141 Power Engineering, Electrical Engineering and Electromechanics",

specialization "Electrical Machines and Apparatus"

at the enterprise

since «__»_____2021 p. to «__»_____2021 p.

Syllabus is based on the program approved by the dean of the faculty

«__»_____2021 p.

INTRODUCTION

Practical training of higher education students of the University is a mandatory component of educational-professional and educational-scientific training programs and aims to acquire higher education skills and abilities, to comply with the educational training program, to provide the applicant with one or more competencies; determine the sequence of obtaining practical knowledge and skills; contain a description of the procedure and specific criteria for assessing the level of knowledge, skills and abilities that must be achieved by higher education students during the internship.

The purpose of practice is to apply, generalize and consolidate the knowledge obtained at the University in practice, mastering professional experience and skills of independent work in the enterprise, institution, organization; mastering modern methods, forms of labor organization, tools in the field of their future specialty.

The scope of practice is determined by educational-professional and educational-scientific training programs for higher education, which are reflected in the curricula, working curricula and schedules of the educational process, respectively.

1. PURPOSE AND TASKS OF PRACTICE

The main purpose of practice - consolidation of theoretical knowledge gained by students in the study of professional disciplines, taking into account the specifics of the bases, gaining practical skills and abilities to solve current professional problems in the field of electrical equipment and control systems, deepening and consolidation of theoretical knowledge and practical skills. professional and general cultural competencies; consolidation of knowledge and practical skills acquired by students in the study of disciplines of technological and computational design; acquisition of practical skills in repair, prevention, operation of electrical equipment and control systems; preparation of design documents for the bachelor's thesis project; deepening and consolidation of theoretical knowledge and practical skills in the specialty; performance of an individual task.

During the internship the student must:

- to consolidate theoretical knowledge from the courses "Electric machines", "Design of electric machines", "Technology of production of electric machines", "Theoretical foundations of electrical engineering", "Computer engineering", as well as other special disciplines;
- get acquainted with the content of official design documentation and learn to independently compile similar forms of documents;
- collect and process the necessary material for the preparation of a report on practice, analyze and plan the preparation of the bachelor's thesis;
- technically competent to record the results of work, draw up a report on undergraduate practice;
- gather all the necessary information for the preparation of the thesis;
- draw up a "Diary" of undergraduate practice.

Upon completion of the internship, the student must be able to:

- work with the official design documentation of the enterprise (know the content and be able to draw up documentation in the form of tables, graphs, drawings of general form, etc.);
- to determine trends and specifics of development of electromechanical systems and devices;
- evaluate and analyze the existing electromechanical equipment;
- to make the program of the automated designing of the electric car or a mode of its management, or the automated processing of results of its work;
- study of best practices in the chosen direction;
- mastering the methods of adoption and implementation on the basis of the obtained theoretical knowledge of technical solutions aimed at improving or creating new electromechanical systems and devices;
- collecting the necessary materials for the preparation and writing of the final qualifying work.

2. BASICS OF PRACTICE

The place of practice may be enterprises, institutions, organizations of various economic activities, forms of ownership in Ukraine, which meet the conditions of the practice program. The structural subdivisions of the University, which have the necessary equipment and correspond to the internship programs, can be used as bases of practice of higher education seekers.

Determining the bases of practice is carried out by the management of educational units on the basis of direct agreements with enterprises, institutions, organizations, as well as agreements on partnership and cooperation, regardless of organizational and legal forms and forms of ownership of enterprises, institutions, organizations.

Applicants for higher education can independently, in agreement with the management of the department, choose the base of practice and offer it for use provided that it fully meets the requirements of practice programs.

Faculties (institutes) conclude with enterprises, organizations, institutions offered by applicants for higher education, individual agreements for internships in a certain form, taking into account agreements on partnership and cooperation with enterprises, institutions, organizations concluded by faculties, institutes.

In the case of training specialists under targeted agreements, the bases of practice may be enterprises (organizations, institutions) for which such training is carried out. If the contract for the training of a specialist stipulates the place of practice, separate contracts are not concluded.

In the case of training specialists on the orders of individuals, legal entities, the bases of practice may be determined by the terms of the agreement (contract) for their training.

For applicants for higher education of foreigners, the bases of practice are provided in the relevant contract or agreement of the customer country for training and can be located both in Ukraine and abroad - in the customer country. During the internship in Ukraine, applicants for higher education - foreigners adhere to this Regulation.

For applicants for higher education by correspondence, internships are conducted according to an individual plan without separation from production.

3. ORGANIZATION OF PRACTICE

The responsibility for the organization and conduct of the internship rests with the Rector of the University. The general organization of practice and control over its carrying out is carried out by the vice-rector on educational work. Direct educational and methodical guidance and implementation of the internship program are provided by the relevant departments of faculties and institutes.

Internships must be formalized by orders prepared by the deans on the submission of the departments of the lists of applicants for higher education. Orders on conducting internships with the provision of lists of distribution of higher education applicants by places of internship in accordance with the concluded agreements are agreed with the educational department and submitted to the department of accompanying documents of higher education applicants. The order specifies the course, group, term of practice, last name, first name and patronymic of the head of practice from the University, as well as, if necessary, the period of stay of the head on the basis of practice. Orders are submitted within the timeframe regulated by the order on the organization of the practice of higher education students of the University and curricula. Lists of applicants for higher education - citizens of Ukraine who study at the expense of legal entities or individuals are submitted separately. Orders for the practice of applicants for higher education - foreigners are submitted to the Center for International Education.

Organizational measures to ensure the preparation and conduct of the practice are:

- development of practice programs for applicants for higher education, the preparation of which is carried out according to various educational programs;
- appointment of the person responsible for the organization of the practice of higher education at the department;
- determination of practice bases;
- concluding agreements on internships between the University and the enterprise, organization, institution;
- appointment of direct supervisors of practice from the department; development of work programs of practice; drawing up of subjects of individual tasks for practice; distribution of applicants for higher education on the basis of practice; registration of a referral for practice according to the concluded agreements; acquaintance with the rules of filling in the practice diary; preparation of forms of reporting documentation based on the results of the internship.

The main organizational and methodological document governing the activities of higher education seekers and practice leaders is a program of practice, which should be developed on the basis of the educational training program, take into account the specifics of the specialty and reflect the latest achievements of science and industry. The development of the internship program for new educational programs is carried out not later than a semester before its beginning. In addition, sections of the internship program may include guidelines (recommendations) for the internship, a list of literature and necessary documentation, excursions during the internship and other activities that help consolidate the knowledge gained during training.

Practice managers from the University departments and from the enterprise are appointed to lead the practice. The head of practice from the department carries out the general management of practice, supervises performance of the working program of practice, carries out control over attendance of practice, together with the head of practice from the enterprise accepts a test from practice.

The head of practice from the enterprise, institution, organization provides the applicant with training in safety and familiarization with the Rules of Procedure of the enterprise, institution, organization manages the work of the applicant directly at the workplace, monitors the implementation of higher education specific individual tasks of the calendar, provides assistance in collecting the necessary materials for the report, assesses the quality of work of each applicant for higher education during the internship.

The direct educational and methodical guidance of the practice of higher education seekers is provided by the head of the department.

Head of practice from the enterprise, institution, organization:

- is personally responsible for the practice;
- organizes acquaintance of applicants for higher education with the rules of safety and labor protection;
- organizes internships in accordance with work programs of internships;
- determines the places of practice, provides the greatest efficiency of its passage;
- ensures the implementation of agreed with the curriculum schedules of practice in the structural units of the enterprise;
- gives applicants for higher education - trainees the opportunity to use the available literature, the necessary documentation;
- monitors the observance of internal regulations by applicants for higher education;
- creates the necessary conditions for the trainees to master new equipment, advanced technologies, modern methods

of work organization;

- monitors the implementation of the Labor Code of Ukraine, etc.

If there are vacancies, graduates of the University can be enrolled in full-time positions, if the work meets the requirements of the internship program. At the same time, at least 50 percent of the time is devoted to general professional training according to the internship program.

4. ORGANIZATION OF PRACTICE IN REMOTE MODE.

4.1. The internship, which provides for its passage on the basis of enterprises, institutions or organizations, may be conducted remotely or directly on the territory of the enterprise, organization or institution at the request of an adult applicant, provided that the internship base is located as close as possible to his place of residence.

4.2. The decision on the form of all types of practices is made by the graduating department.

4.3. Ways of remote communication with students:

In pursuance of the order of the rector of NTUU "KPI" them. I. Sikorsky from 11.03.2020 № 7/54, during all forms of distance learning during the quarantine period it is necessary to provide classes with the use of information and communication technologies.

From the point of view of the need for constant monitoring of the quality of the educational process, it is necessary to ensure that information on selected forms of distance learning (used applications, platforms, links, software products, resources, etc.) is displayed in e-classrooms of the "Electronic Campus". In this case, it is recommended to display the results of students' stages of tasks using the service "Current Control" in the system "Electronic Campus".

In addition to previously recommended resources and platforms, teachers can use the free Microsoft Teams tool, which is available at <https://cut.ly/JthVljk>. Microsoft Teams makes it possible to access training materials and tasks, conduct interactive classes online, interaction of teachers and students with online tools, cooperation in the organization of teamwork, joint or individual performance of tasks.

5. CONTENT OF PRACTICE

Before starting the internship, each student must be instructed in occupational safety and health (introductory and in the workplace) with the appropriate documentation.

The head of the internship from the university gives each student an individual internship task, which must be consistent with the topic of the final certification work received by the student at the beginning of the academic year.

Officially, the practice in quarantine is carried out at the Department of Electromechanics of NTUU "KPI" named after I. Sikorsky. Therefore, communication between teacher and student is remote with the help of computer technology.

During the undergraduate internship the student must:

- get acquainted with the organization of development and operation of new types of electrical machines and electrical equipment;
- study the main provisions of the ESDC;
- carefully study the tasks for diploma design;
- to study the features and specifics of the construction of electrical machines and electrical equipment that correspond to the theme of the diploma;
- conduct a patent search on the topic of the thesis;
- to study the method of analysis of electric machines;
- get acquainted with the methods of calculating the economic efficiency of new developments;
- collect the necessary materials for the thesis.

During the undergraduate practice the student takes a direct part in research and adjustment works carried out on the topic of the diploma project.

When collecting materials for the thesis project, special attention should be paid to finding information in business databases, libraries, as well as on the Internet.

When choosing the basic technical solutions in the thesis, preference should be given to new technologies that ensure the conservation of energy and natural resources.

Students take a personal part in conducting experimental research, development and adjustment of experimental equipment.

6. RIGHTS AND OBLIGATIONS OF FUTURE UNDERGRADUATE TRAINING

Applicants for higher education at the University during the internship are required to:

- before the start of the internship to receive from the head of the internship from the University directions, methodical materials (methodical instructions, program, diary, individual task) and consultations on registration of all necessary documents;

- arrive at the practice base on time;

- fully perform all tasks provided by the work program of practice and instructions of its leaders;

- study and strictly adhere to the rules of labor protection, safety, industrial sanitation and internal regulations, as well as fire safety;

- be responsible for the work performed;

- timely draw up reporting documentation and take a test of practice;

If there are vacancies, graduates of the University can be enrolled in full-time positions, if the work meets the requirements of the internship program. At the same time, at least 50 percent of the time is devoted to general training in the internship program.

7. RESPONSIBILITIES OF THE HEAD OF PRACTICE FROM THE UNIVERSITY

Supervision of undergraduate practice from the department is performed by the supervisor of the future bachelor.

Head of practice from the department:

- not later than two weeks before the beginning of practice, to coordinate with the enterprises, establishments and organizations the working programs of carrying out practice;
- not later than 7 days before the beginning of practice, to provide to the enterprises, establishments, the organizations lists of applicants of higher education - trainees for registration of the temporary pass to the enterprise;
- to warn applicants for higher education about the issuance of a medical certificate of health (if necessary) before the start of practice;
- to provide working programs of practice of heads of divisions of the enterprise, establishment, the organization where applicants of higher education pass practice;
- when sent to the enterprise, institution, organization for the internship of three or more applicants for higher education to appoint a senior group who is an assistant to the head of the internship;
- to hold meetings with applicants for higher education on issues of practice;
- to acquaint applicants for higher education with the work program of the internship;
- to issue diaries with individual tasks to applicants for higher education;
- agree with the student the topic of the final certification work of the bachelor;
- make a work schedule (plan) for practice;
- develop an individual task for the student, which he must perform during the internship;

The content of the individual task must meet both the objectives of the educational process and the needs of production, take into account the capabilities and proposals of the enterprise, organization, institution. In the case of undergraduate (research) practice, the content is consistent with the subject of the qualification work.

- to control the observance of the terms of the practice and compliance of its content with the established requirements;

- provide students with the necessary forms (practice diary, work program) in electronic form;
- provide methodological assistance to students in performing their individual tasks, as well as in collecting materials for the final qualification work during the undergraduate practice;
- evaluate the results of the student's internship;
- to assess the undergraduate practice of bachelors based on the results of the report;
- on the second day after the beginning of the internship to provide a report to the head of the department or the person in charge of the internship department about the beginning of the student's internship.

The head of practice from the University should also:

- draw up a journal of practice, as well as conduct safety briefings, if applicants for higher education are practicing at university departments;
- write a referral for practice to an enterprise, institution, organization for a higher education applicant or a group of higher education applicants;
- to ensure the timely arrival of applicants for higher education to places of practice and to control the passage of practice;
- systematically, at least once a week, to advise and monitor the stages of the individual task;
- to assist the head of practice from the enterprise in compiling the characteristics of each applicant for higher education;
- Participate in accepted tests in practice;
- inform about the end of the internship.
- check the return of all applicants for higher education passes, literature and property of the enterprise, institution, organization;
- submit to the dean's office a report on the results of the internship with proposals for its improvement;
- get information about the adaptation and quality of training of graduates in the presence of young professionals who graduated from KPI. Igor Sikorsky;
- provide (if necessary) the possibility of remote control of practice in accordance with the developed guidelines.

The results of the practice are discussed at meetings of the department and meetings of the Academic Council of the faculty, institute.

8. RESPONSIBILITIES OF THE PRACTICE MANAGER FROM THE ENTERPRISE

Head of practice from the enterprise, institution, organization:

- is personally responsible for the practice;
- organizes acquaintance of applicants for higher education with the rules of safety and labor protection;
- organizes internships in accordance with work programs of internships;
- determines the places of practice, provides the greatest efficiency of its passage;
- ensures the implementation of agreed with the curriculum schedules of practice in the structural units of the enterprise;
- gives applicants for higher education - trainees the opportunity to use the available literature, the necessary documentation;
- monitors the observance of internal regulations by applicants for higher education;

- creates the necessary conditions for the trainees to master new equipment, advanced technologies, modern methods of work organization;
- monitors the implementation of the Labor Code of Ukraine, etc.
- gets acquainted with the program of undergraduate practice and agrees on the individual task, content and planned results of practice;
- provides safe conditions for the student's internship, which meet the sanitary norms and requirements of labor protection;
- instructs students on labor protection, safety, fire safety, as well as the rules of internal labor regulations;
- provides the student with a workplace with computer equipment;
- advises future bachelors on issues related to the selection of materials for the report on practice;
- creates the necessary conditions for deep mastering by future bachelors of the material provided by the program of practice;
- at the end of the internship checks the report of the future bachelor, provides in the diary an objective description and evaluation of the student's work during the internship on a five-point system, certifies the diary and report with his signature and seal of the organization.

The main normative and methodological document that regulates the work of the future bachelor in practice is the internship program. Each future bachelor should make the most of the time allotted for the internship to ensure the high quality of all tasks provided by the internship program.

9. CALENDAR PLAN OF PRACTICE

The duration of the internship is five weeks.

In the 2020-2021 academic year, undergraduate practice of bachelors takes place from 12.04.21 to 16.05.21.

Practice tasks should be completed during all five weeks.

Calendar plan of practice

№	Content	Deadline
1.	Arrival of the applicant for higher education for practice, registration and receipt of passes	
2.	Carrying out safety briefing and labor protection	
	Conducting tours of the company, acquaintance with the place of work	
4.	Implementation of the practice program and individual task (with weekly inspection)	During the practice period
5.	Diary, report and compilation	
	Defense of practice	

10. REQUIREMENTS FOR THE REPORT ON PRACTICE AND DIARY

Based on the results of the internship, a written report is drawn up, which is compiled individually on the basis of factual data obtained by the student during the undergraduate internship. Graphs, tables, diagrams, completed forms (forms) of documents are attached to the report.

All graphical elements of the report are numbered either through numbering or by sections, such as "Figure 2.4", "Table 3.1".

The formula number is located to the right of it in parentheses. Only those formulas to which the reference in the text is necessary have numbering.

The volume of the practice report is 20-30 typewritten pages (without appendices). The text should be printed at 1.5 intervals in Times New Roman font, size 14, with margins: left (binder field) - 2.5 cm, right - 1.5 cm, top - 2.0 cm, bottom - 2.0 cm.

All report headers are numbered. The number is placed before the name, a dot is placed after each group of digits. A full stop is not placed at the end of the title. The names of the content of the work on the text of the work are placed in the center, highlighted in bold capital letters.

All pages of the work are numbered, starting with the title page, but are affixed, starting from the third page, in the lower right corner of the sheet.

Abbreviations, except for the common ones, are not allowed.

The report must be certified on the title page by the student's signature and the signature of the head of practice from the university. Also on the title page the date is affixed.

Appendices to the report are numbered in Arabic numerals, each of which must begin on a new page with the word "Appendix" in the upper right corner, its serial number (without the sign №). The application should have a thematic

title that reflects its content.

The practice report should contain:

- title letter;
- tasks for undergraduate practice;
- content;
- introduction;
- the main part;
- conclusions;
- list of references;
- applications (if necessary).

The bibliographic list of sources used should contain a list of all sources that were used in compiling the report. The list is in the following sequence:

- normative materials, standards, instructions;
- monographs, educational literature articles from scientific journals;
- Internet resources.

In addition to the internship report, the student must submit an internship diary. The diary is filled in all the sections provided in it. Signatures of officials from the base of practice must be certified by the seals of the organization.

The calendar-thematic plan of the internship in the diary should contain a list of sections and topics provided by the internship program, as well as specific deadlines.

The third section of the diary records the practice. It reflects the daily work of the future bachelor on certain issues of the internship program, a summary of the work performed and the name of the department of the organization where it was performed.

These records are checked daily by the head of practice from the company and in terms of remote practice by the head of practice from the university. One entry for several days is not allowed. In case of deviation from the calendar-thematic plan in the diary it is necessary to make records that explain the reasons for the violation of the work schedule.

A description of the future bachelor in the diary is provided by the head of the practice base from the organization. It must contain an assessment of the future bachelor's ability to use the theoretical knowledge obtained at the university in performing practical tasks. In the description, the supervisor must evaluate the student's work on a five-point scale. The description is signed by the head of the practice base and certified by the seal of the organization.

11. FORMS AND METHODS OF CONTROL OF UNDERGRADUATE PRACTICE

The internship is under the constant control of practice leaders from the company and the university. Duration of practice 5 weeks. Before the beginning of undergraduate practice the task for work which is the main task for undergraduate practice is developed.

The head of the bachelor's thesis is at the same time the head of practice from the university and performs general management. In terms of remote management of practice, which can take place at the Department of Electromechanics NTUU "KPI", the head of practice from the university is also the head of practice from the company. His responsibilities include:

- together with the head of the company to develop a student work schedule;
- to advise students on the issues of practice and preparation of a report on practice;
- check the quality of student work.

The head of practice from the enterprise - the specialist appointed by the management of the base enterprise - should:

- to take part in drawing up of the calendar plan of passing of practice by the student;
- to provide the student with a workplace and to acquaint with rules internal regulations of the enterprise and their implementation;
- provide the opportunity to collect and process the necessary data on the topic of the final work;
- at the end of the internship to provide a written description of the work trainee, to check and certify the report made by the student.

The current control over the student's work is performed by the head of the enterprise and makes notes in the diary.

A student who has not completed the internship program cannot be admitted to the defense of the thesis.

12. SUMMARY OF PRACTICE

12.1. At the end of the internship, higher education students report on the implementation of the program and the individual task. The internship reporting form is a submission of a written report, signed and evaluated directly by the supervisor from the internship database. The written report together with other documents established by the University and specified in the work program of practice, are submitted for review to the head of practice from the University. The report should contain information on the applicant's performance of all sections of the internship program and individual task, conclusions and suggestions, list of references, etc. The report on the requirements defined in the program of practice is made out.

12.2. The report is defended by the applicant for higher education before a commission appointed by the head of the department. The commission consists of teachers-heads of practice from the department and (if possible) the head from the base of practice. The commission takes credit from the applicant for higher education on the basis of practice in the last

days of its passage or at the University during the first seven days after the end of practice. The report on practice is stored at the department for three years.

12.3. An applicant for higher education who has not completed the internship program without good reason may be granted the right to repeat the internship under the conditions specified by the University. The applicant for higher education, who last received a negative assessment in practice in the commission, is expelled from the University.

12.4. The result of the internship is entered in the test report and in the record book of the applicant under the signature of the chairman of the commission and is taken into account by the scholarship commission when determining the amount of the scholarship together with its estimates based on the final control.

12.5. The results of each practice are discussed at a meeting of the department, and the general results of the practice are summed up at a meeting of the Academic Council of the educational unit at least once during the academic year.

13. PROCEDURE OF PROTECTION OF THE REPORT ON PRACTICE

Differentiated credit for practice is held no later than one week after the end of undergraduate practice (until May 22, 2021). On credit the student represents:

- practice report signed by the head of the enterprise;
- diary with notes on the internship;
- collected materials for diploma design.

The report on undergraduate practice in essence represents the first variant of final qualifying work (bachelor's work).

After verification, the report may be recommended for defense or may be returned for revision. In case of return for revision, future bachelors must make appropriate corrections and additions to the comments made by the supervisor and re-submit the report for review and obtain permission to defend the report.

The defense of the report on undergraduate practice is carried out at the Department of Electromechanics in the form of pre-defense of the main provisions of the final qualification work not later than one week after the end of undergraduate practice (until May 22, 2021).

The future bachelor must prepare a report for the presentation (not more than 5 minutes), which highlight the main provisions of the study. The report is defended by a commission consisting of the head of the Department of Electromechanics and the head of the bachelor's thesis, scientific supervisors of other bachelor's theses. Members of the commission ask questions to future bachelors on the results they received during the final qualification work during the undergraduate practice, as well as make comments. The specific list of questions is individual for each future bachelor and depends on the topic of work and the results of scientific research.

After discussing the content of the report and the answers of future bachelors, the commission either recommends the final qualifying work, taking into account the comments made to the defense for the bachelor's degree in the educational professional program (OPP) "Electrical Machines and Apparatus", or rejects. If the final qualifying work is recommended for defense, the future bachelor receives a test and a corresponding assessment in undergraduate practice, otherwise - the practice is not credited.

14. RATING SYSTEM FOR EVALUATION OF RESULTS OF IMPLEMENTATION OF THE PRACTICE PROGRAM BY STUDENTS IN THE PERIOD FROM 12.04.21 to 16.05.21.

The rating system of assessment (RSO) of student learning outcomes involves determining the number of points obtained by a student in the process of studying a particular credit module. The evaluation of results takes into account the student's work discipline, timely implementation of the student's internship program, the degree of independence of tasks and creative approach to solving scientific problems, as well as the quality and completeness of the materials presented in the report and diary. A student who does not complete the internship program, receives an unsatisfactory performance or a poor grade on the test, is expelled from the university.

Credit evaluation criteria

Grade "passed" - 95 - 100 points - the maximum rating of the test - the future bachelor has fully completed all the work provided for in the plan of practice, timely draw up and submit a report on the practice and a diary. In defending the report competently and logically consistently set out the main provisions of the report in the form of a report, in the process of answering the questions demonstrated the presence of deep comprehensive knowledge, or solid and sufficiently complete knowledge;

Protection rating $R_3 = 85 - 94$ points - answering questions, the student makes some mistakes, but can correct them with the help of the teacher, knows the definitions of basic concepts and quantities, generally understands the physical essence of electromagnetic processes in objects studied, timely and submitted an internship report and diary;

Protection rating $R_3 = 75 - 84$ points - the student answers almost all questions during the defense of the report, shows knowledge and understands the physical essence of electromagnetic processes on the topic of the bachelor's thesis. The answers are sometimes inconsistent and vague. Timely issued and submitted a report on the internship and a diary;

Protection rating $R_3 = 65 - 74$ points - the student partially answers all questions during the defense of the report, shows knowledge, but does not sufficiently understand the physical essence of electromagnetic processes on the topic of the bachelor's thesis. The answers are inconsistent and unclear. Did not timely prepare and submit a report on the internship or a diary;

Defense rating $R_3 = 60 - 64$ points - the student partially answers some questions during the defense of the report, shows mediocre knowledge and insufficient understanding of the physical essence of electromagnetic processes on the

topic of the bachelor's thesis. The answers are inconsistent and unclear. He did not draw up and submit a report on the internship or a diary in time. During the practice he violated discipline, did not perform his tasks in time;

Defense rating Rz □ 60 points - in response, the student makes significant mistakes, shows a lack of understanding of the physical nature of electromagnetic processes on the topic of the bachelor's thesis, can not correct mistakes with the help of the teacher. The answers are incorrect, and in some cases do not correspond to the essence of the question. He did not draw up and submit a report on the internship or a diary in time. During the internship he grossly violated discipline and did not perform his tasks with great delay.

Students who do not submit a report on the internship and a diary in a timely manner and those who have not received credit for the internship are considered to have academic debts and must be expelled from the university in the manner prescribed by applicable law.

Practice supervisor from

Igor Sikorsky KPI

(position, surname, signature)

Practice supervisor from

the company

(position, name, signature)

Annex B

NATIONAL TECHNICAL UNIVERSITY OF UKRAINE **«IGOR SIKORSKY KYIV POLITECHNIC INSTITUTE»**

PRACTICE DIARY

Pre-diploma practice “Bachelor”

Student _____
(First name, name)

Faculty of Electrical Power Engineering and Automation

Department of Electromechanics

Aducational and professional level Bachelor

Specialty "141 Power Engineering, Electrical Engineering and
Electromechanics", specialization "Electrical Machines and Apparatus"

4th year of study, group EM-_____

_____ 4 курс, группа EM-_____.

Student _____
(First name, name)

arrived at the enterprise, organization, institution

Stamp of

enterprise, organization, institution “ _____ ” _____ 20 _____

(signature)

(position, surname of practice supervisor)

Left the enterprise, organization, institution Печатка

Stamp of

enterprise, organization, institution “ _____ ” _____ 20 _____

(signature)

(position, surname of practice supervisor)

INDIVIDUAL TASK FOR PRACTICE

Topic_____

Content_____

Calendar schedule of practice

[illegible]

Practice supervisor from
Igor Sikorsky KPI

(position, surname, signature)

Practice supervisor from
the company

(position, name, signature)

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Feedback and evaluation of student work in practice

(name of enterprise, organization, institution)

Practice supervisor from
the company

(position, name, signature)

Stamp

« _____ » _____ 20 ____

Feedback from persones who checked the practice

The conclusion of the practice supervisor from the higher educational institution about passing of practice

Date of test „____” _____ 20 ____

Point:

National scale _____

Quantity of balls _____

(numbers and letters)

ECTS scale _____

Practice supervisor from
Igor Sikorsky KPI

(position, surname, signature)

Annex C

To the Regulations on the procedure for conducting the practice of applicants for higher education
Igor Sikorsky KPI

AGREEMENT №
about the organization and carrying out of practice of applicants of higher education on manufacture, in establishments and the
organizations

Kyiv “ ” ____ 20 p.

National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”
represented by the dean (director)
(position, surname, name, patronymic) acting on behalf of the rector № and
(full name of the enterprise, institution, etc.)
in a person acting on the basis
(position, surname, patronymic) concluded an agreement:

1. 1. THE ENTERPRISE UNDERTAKES :

1.1. To accept applicants for higher education in practice according to the calendar plan:

Speciality		Year	Variety of practice	Quantity of students		Practice duration	
number	title						
				formally	really	start	end
1	2	3	4	5	6	7	8

- 1.2. Appoint by order of qualified specialists for direct management of the practice.
- 1.3. Create the necessary conditions for higher education students to complete the internship program, prevent their use in positions and jobs that do not correspond to the internship program and future specialty.
- 1.4. To create conditions for applicants for higher education to study new technology, advanced technology, etc.
- 1.5. Provide higher education students with safe working conditions at every workplace. Conduct mandatory occupational safety training: introductory in the workplace. If necessary, train applicants for higher education-interns in safe work methods. Provide overalls, safety equipment, treatment and prevention services according to the norms established for full-time employees.
- 1.6. Provide interns and supervisors of higher education with the opportunity to use laboratories, offices, workshops, library, technical and other documentation necessary for the implementation of the internship program.
- 1.7. At the end of the internship, provide a description of each higher education trainee, in which to reflect the implementation of the internship program, the quality of the report prepared by him, and so on.
- 1.8. To provide graduates with the opportunity to collect information for term papers and dissertations on the results of the activities of the enterprise, which is not a trade secret, on the basis of the directions of the departments.

ADDITIONAL CONDITIONS

2. NATIONAL TECHNICAL UNIVERSITY OF UKRAINE “ IGOR SIKORSKY KYIV POLYTECHNICAL INSTITUTE”

UNDERTAKES:

2.1. Send applicants for higher education to the company within the time specified in the calendar plan.

2.2. Two months before the start of the internship, submit for approval the internship program and no later than a week-lists of applicants for higher education - interns.

2.3. Appoint qualified teachers as practice leaders.

2.4. Provide educational and methodological guidance and control over the practice of higher education.

ADDITIONAL CONDITIONS

3. GENERAL PROVISIONS

3.1. Conduct a joint investigation into accidents involving higher education students during practice.

3.2. All disputes arising between the parties to the contract shall be resolved in the prescribed manner.

3.3. The contract enters into force after its signing by the parties and is valid until the end of the practice according to the calendar plan. Changes and additions are made by the parties by an additional agreement.

3.4. The contract is made in two copies: one for each party.

3.5. Legal addresses of the parties and current accounts:

Igor Sikorsky KPI, 37 Peremohy Ave., Kyiv, 03056, tel. _____

Enterprise:

The contract was signed by:

From Igor Sikorsky KPI

Dean (Director)

Stamp

«__» _____ 20__

From the enterprise Head

Stamp

«__» _____ 20__