Module Handbook

The BSc: 60813100 – Land Cadastre and Land Managment degree program

Module designation	XT1114-Foreign language
Semester(s) in which the module is taught	1,2 semesters
Person responsible for the module	English teacher: Ergashev Doniyor
Language	Uzbek, Russian, English
Relation to curriculum	Compulsory
Teaching methods	Practical lesson, self-learning
Workload (incl. contact hours, self-study hours)	Total workload: 420 Contact hours: Practical lessons – 180, self-learning – 90 hours
Credit points	14 credits
Required and recommended prerequisites for joining the module	English (school program)
Module objectives/intended learning outcomes	**To know and understand**: - student-centred approach where main focus of the educational environment placed on a student. - to participate in team work, especially cooperative learning, in order to develop social and affective skills; - grammar structure and vocabulary during the lesson by giving pictures to describe and sentence completion tasks. - normal speech patterns while presenting grammar. - structure of given handouts for their completing exercise; **To be able to:** - creates interesting learning environment; - students comprehend and be able to share information; - to express their opinions, improve their language skills, and gain confidence.; - focusing on specific areas of a text and better comprehending it; - students can comprehend words and commonly used terminology in areas of urgent importance (e.g. very basic personal and family information, shopping, local geography, employment); - can communicate in easy and routine tasks that need a direct and straightforward flow of information on common and routine topics **To form competences in:** Using of jurisprudence terminology related to transboundary water relations Comprehend the text about transboundary water corporation
Content	Teaching non-philological education students the important aspects of language: grammar, lexicon and discourse analysis, and developing the skills of their correct use in communication.
Exams and assessment formats	One oral Midterm assessments (20 minutes each) and one final oral exam (40 minutes), short computer-based quizzes, take-home written assignments

Study and examination requirements	Students of successful transition from science The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.
Reading list	1.“English vocabulary in use” Elementary (third edition) 2. Oxford word skills (Basic) 3. Oxford English grammar course basis 4. Practical grammar Level 1. 5. Tactics for listening Second edition

Module designation	***MAT1114 Advance Mathematics***
Semester(s) in which the module is taught	*1,2 semestrs*
Person responsible for the module	*Associate Professor Turaev Foziljon*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training , independent education*
Workload (incl. contact hours, self-study hours)	*Total workload: 420* *Contact hours: lecture – 60, practical lessons – 100, self-learning – 260, hours*
Credit points	*14 credits*
Required and recommended prerequisites for joining the module	*Basic Algebra, Geometry, Informatics*
Module objectives/intended learning outcomes	***To know and understand:*** - *elements of linear algebra;* - *analytic geometry;* - *mathematic analysis;* - *theory of complex numbers;* - *derivative of functions, indefinite and definite integrals, multivariable functions and series in solving practical problems related to land resources* ***To be able to:*** *- to choose convenient methods of solving differential equations and use them in process analysis, to know solutions to problems;* *- using mathematical symbols to express quantitative and qualitative relations of objects;* *- derivative of a function, indefinite and definite integral, use of multivariable functions and series in solving practical problems.* **To form competences in:** *- deep practical and theoretical knowledge , application of mathematical concepts in practice;* *- able to mathematically analyze statistical data;* *- to be able to build a mathematical model of a problem and find its solution using mathematical research methods;* *- solving optimization problems of land resources.*

Content	*Matrices and operations on them, determinants and their main properties. Methods of solving the system of linear algebraic equations. Level of difficulty: 2* *Elementary problems of analytic geometry in plane and space. Level of difficulty: 3* *Algebra of vectors. A straight line in space and their equations in different forms. Level of difficulty: 2* *Mathematical analysis. Differential calculus. Concept of indefinite integral. The main methods of integration. Definite integral and its applications. Calculating the definite integral. Applications of the definite integral to geometric and mechanical problems.* *Level of difficulty: 4* *Theory of multivariable functions. Partial derivative, full differential. Application of full differentials in approximate calculations. Determining the extreme of a multivariable function. Determining tangent plane and normal to a curve in space. Directional derivative. Gradient.* *Level of difficulty: 4* *Ordinary differential equations and methods of solving. Higher order differential equations. System of linear differential equations. Level of difficulty: 5* *Number and functional series. Power series. Taylor and Maclauren series and their applications. Expanding a function to a Fourier series. Level of difficulty: 5*
Exams and assessment formats	*One Midterm assessment and one final control exam in the form of written work (80 minutes each) .*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	1. *PETER W. O'NEIL. Advanced engineering mathematics. 2010.* 2. *Claudio Canuto, Anita Tabacco. Mathematical Analysis I, (II) . Springer-Verlag, Italia, Milan, 2015.* 3. *B.Xudayarov "Matematika" Part I. Chiziqli algebra va analitik geometriya. Tashkent, "Fan and technology", 2018. -284 p. (in Uzbek)* 4. *B.Xudayarov "Matematikadan misollar va masalalar to'plami" Tashkent "Uzbekistan" 2018. 304 p. (in Uzbek)* 5. *T. Ergashev "Differensial tenglamalar" Tashkent " Uzbekistan " 2023 years. 320 p .(in Uzbek)*

Module designation	***FIZ 1106 -Physics***
Semester(s) in which the module is taught	*1- semester*
Person responsible for the module	*Sapaev Ibrokhim. B., Ph.D., Associate professor*
Language	*Uzbek, Russian*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture, practical lesson, lab work, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 180 hours* *Auditorium Hours: 80 hours* *Lecture - 30 hours;* *Practical training - 30 hours* *Laboratory - 20 hours* *Independent education - 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Mathematical analysis, analytical geometry,*

Module objectives/intended learning outcomes	**To know and understand:** - Distinguishing natural phenomena in physics, studying the properties of matter and space, their laws, and seeing the main fundamental laws in practice. General physics course to acquire knowledge from departments of mechanics, molecular physics, electricity and magnetism, optics, atomic and nuclear physics; -terminology in the field of physics and equipment (instruments) used in physics research, to know the difference between one-, two- and three-atom molecules and degrees of freedom; - the basic phenomena of physics and sections of physics, The fundamental concept of mechanics is that of motion of a body with respect to other bodies; - the subfield of physics, developed in classical mechanics, which describes the motion of points, bodies (objects), and systems of bodies; - Mechanical Phenomenon, Electromagnetic Phenomenon, Optical and Atom nuclear, to see changes in the characteristics of processes in different environments; - the to develop students' ability to apply physical formulas in the problems of specialization and general professional sciences in the curriculum of physics.; - the basics of physics knowledge, the patterns, and principles of physics, the dynamics and statics, formation, and interaction, and evolutionary development; - the basics of math knowledge, and theoretical and practical analysis of physical problems. **To be able to:** - to know the formulas for uniform motion and nonuniform motion, apply the rule of vectors in dynamics problems, and be able to apply Newton's laws and their problems.; - Knowledge of magnetic fields created by permanent and artificial magnets in electromagnetic problems, forces in magnetic fields; - Understand the different and similar aspects of variable and constant current sources, and use them in problems; - To understand optical phenomena, to be able to distinguish optical devices, and to understand the principle of operation, to understand the working mechanism of lenses, and telescopes. - To know the location of active and passive devices in electric circuits, to be able to apply the laws Krieghoff's laws to electric circuits, to understand the mechanism of electric current passing in different environments, ability to apply formulas and physical laws of capacitors and resistors in series and parallel. - Know the different and similar aspects of metals, semiconductors, and dielectrics, and understand the current flow mechanisms in them, Graphical explanation of changes in electrical conductivity of metals, semiconductors, and dielectrics with temperature; - to teach students basic physical solution methods necessary for the reasonable analysis of experimental results, various natural processes, phenomena, the search for optimal solutions to technical and economic issues, and the selection of the best ways of their implementation; is to develop students' ability to apply physical formulas in the problems of specialization and general professional sciences

Content	Topic1.Physical foundations of classical mechanics. Progress and kinematics of rotational motion, Newton's laws. Dimensions of physical quantities. Space and time. Kinematic definitions of movement. Equation of motion. Mass and momentum. Newton's 1st law and the concept of inertial calculus. Newton's 2nd law. The fundamental equation of forward motion dynamics. Newton's 3rd law. The law of conservation of momentum. Elastic properties of solids. Elastic deformation. Work and energy. The law of conservation of energy in mechanics. L*evel of difficulty*: 2. 2nd topic. Dynamics of rotational motion of a solid body, Fluid mechanics, Vibrations Moment of force and moment of inertia of a rigid body. Steiner's theorem. Impulse moment. The law of conservation of angular momentum. Hydrostatics of an incompressible fluid. Viscous fluid hydrodynamics. Harmonic vibrations. Equation of mechanical harmonic vibrations. Vibration is the energy of a moving body. Mathematical and physical pendulum. Damping and forced vibrations. L*evel of difficulty*: 3. 3rd topic. Fundamentals of molecular - kinetic theory, Thermodynamics. laws. Heat capacity of gases, Real gases.Ideal gas law. Molecular-kinetic theory of gases. The basic equation of the molecular-kinetic theory. Molecular-kinetic meaning of temperature. The average kinetic energy of a molecule. Heat action. Macroscopic parameters. Equation of state. Internal energy. Amount of substance and its unit of measure. Equilibrium states and processes. Concept of ideal gas. Explanations. Ideal gas equation of state. Gas constant. Work performed on the change in gas volume. Laws of thermodynamics. Real gases. Van der Waals equation. Topic 4. Electric charge and electrostatic field, Static electricity so, the magnetic field. Electric charge. law of conservation of electric charge. Coulomb's law. Electric field. Electrical capacity. Capacitors. Electric field energy.L*evel of difficulty*: 4. The electric current in space. Superposition principle for magnetic fields. Bio-Savar-Laplace law. The magnetic field for DC and AC conductors, solenoids, and toroids. Full current law. The phenomenon of electromagnetic induction. Faraday's law. Lens rule. Inductance. Self-induction. Magnetic energy of current. Magnetic field energy density. Topic 5. Geometrical and interpretive optics, the structure of the atom and an atomic nucleus. Concept of optical medium. Calculation of the interference landscape. Interferometers. The phenomenon of light diffraction. Huygens-Fresnel rule. Simple examples of Fresnel diffraction. The principle of holography. Natural and polarized light. Internal and external photo effect. Einstein's equation. Methods of measuring radiation doses. Biological effects of radioactive radiation. L*evel of difficulty*: 5.

Exams and assessment formats	To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control. One intermediate control (20 minutes) and final oral exam (40 minutes), a short computerized test is provided.
Study and examination requirements	Students who successfully pass the science The total maximum points will be the sum of the points allocated to the final exam (60%), Midterm control (20%), homework (10%), and activity in classroom activities (10%). To pass the subject, the student will be allocated 60% of points and above. must collect the amount.
Reading list	1. Douglas S.G. "Processes a General Source"-USA: 2010. 712 p. 2. Abdurakhmanov A. "Physics Course" T.: 2011. Part 1-237 p, Part 2,-316 p 3. O. Kadirov "Physics course" T.: Publishing House of the National Library of Uzbekistan. 2006. 1st part 210 pages, 2nd part 260 pages, 3rd part 230 p. 4. Volkenstein V. S. "A collection of problems from the course of general physics" T.: Teacher. 2008. -437 p. 5. F. Rajabov and others. "Higher Mathematics". 2007 Tashkent, "Uzbekistan". 400 b. 6. YO. Tashmurodov, Z.F. Beknazarova "Physics science laboratory work" study guide, (Uzbek) TIKXMMI, 2020, 234 p.

Module designation	**O'YT 1105-** ***The modern history of Uzbekistan***
Semester(s) in which the module is taught	*1 semester*
Person responsible for the module	*Mamadaminova Bakhtigul Abdupattaevna - doctor of philosophy in historical sciences, PhD, associate professor;* *Botirova Halima Eshmamatovna - Doctor of Philosophy in historical sciences, PhD, associate professor.*
Language	*Uzbek, Russian, English*
Relation to curriculum	*Basic*
Teaching methods	*lecture, seminar, private study*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Auditorium Hours:* *Lecture - 40 hours;* *Practical training - 20 hours* *Private study - 90 hours*
Credit points	5 *credits*
Required and recommended prerequisites for joining the module	*History of Uzbekistan*
Module objectives/intended learning outcomes	***Knowing and Understanding:*** *- the causes of the political, social, economic crisis situation in the former union,* *- Gaining the independence of the state on the works carried out on the road,* *- that a new period has begun in the history of Uzbekistan since the years of independence, the specific aspects of this period,* *- about today's politics, place in the world community, heroes of the era, especially about the fact that he is also a participant in this process.* *Having the skills to:* *- Analysis of historical processes;* *that social, economic, political processes are important in the new history of Uzbekistan;* *- To study the latest historical problems of Uzbekistan;* *- to be able to apply the idea of national independence in strengthening the worldview, to be able to express one's reaction to the processes taking place around them;* *- to understand the place of history science in the development of society and human outlook and to know the connection of the events happening today with important events in history.* *Formation of competences:* *- The essence of the historical path traveled by our country during the years of independence,* *- the importance of the changes made in the latest history of Uzbekistan;* *- integration of Uzbekistan with the world community in modern processes, ensuring security, interethnic harmony and religious tolerance,* *-Knowing processes such as the increasing position and influence of the Republic of Uzbekistan in international rankings and indexes from the point of view of historicity and objectivity.*
Content	*Theoretical and methodological principles of the modern history of Uzbekistan. Theoretical and methodological bases of learning science. Opinions of Sh.M.Mirziyoyev, The President of the*

	Republic of Uzbekistan on the role and lessons of historical memory in educating a spiritually mature person. *Level of difficulty: 2* *Formation and development stages of Uzbek statehood. The concept of statehood. Social, political and economic dependence of Uzbekistan on the center and its consequences. The policy of repression and violence of the Soviets and its essence.* *Level of difficulty: 3* *Socio-political processes in Uzbekistan on the eve of independence. The establishment of the independent Republic of Uzbekistan and its historical significance. Changes in the political system.* *Level of difficulty: 2* *Uzbekistan's unique path of independence and development. Uzbekistan's choice of a unique development path. "Uzbek model" of development and its specific features. Parliamentary system and reforms in Uzbekistan.* *Level of difficulty: 2* *The development of the Constitution of the Republic of Uzbekistan and the additional changes introduced. The purpose, tasks and methods of studying the Constitution of the Republic of Uzbekistan, the concept of the constitution. Economic reforms, formation of private ownership. Development of market relations in Uzbekistan. Social changes in the Republic of Uzbekistan.* *Level of difficulty: 4* *Reforms implemented in the field of education in the Republic of Uzbekistan. Development of science in the years of independence. The concept of development of the higher education system of the Republic of Uzbekistan until 2030.* *Level of difficulty: 3* *Reforms implemented in the field of irrigation in Uzbekistan during the years of independence.* *Quality changes in irrigation systems in Uzbekistan. Priorities identified in the concept of water management development of the Republic of Uzbekistan for 2020-2030.* *Level of difficulty: 4* *Spiritual and cultural development in Uzbekistan during the years of independence. Revival of national customs, values and traditions. State policy on ensuring stability in inter-ethnic and inter-religious relations in Uzbekistan.* *Level of difficulty: 3* *Reforms implemented in the socio-economic and political life of the Republic of Karakalpakstan during the years of independence. Changes in the field of agriculture in Karakalpakstan. To study the solution of ecological problem processes at the international level.* *Level of difficulty: 2* *Uzbekistan's international relations and its place in the world community. Uzbekistan's policy of ensuring peace and stability in the region.* *Level of difficulty: 5* *Reforms implemented in new Uzbekistan. Development strategy of new Uzbekistan for 2022-2026.* *Level of difficulty: 4* *Increasing the position and influence of the Republic of Uzbekistan in international rankings and indexes.*

	Adoption of state policy, legal-normative documents on "Improving the position of the Republic of Uzbekistan in international rankings and indexes and introducing a new mechanism of systematic work with them in state bodies and organizations." *Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of analysis, to independently monitor the studied topics and to complete the tasks given in the intermediate control forms, to pass the final control in the form of oral question and answer.*
Study and examination requirements	*Requirements for successfully passing the module* *the final grade in the module is composed of 40% performance on exams, midterm control (60%), Students should have a final grade of 60% or higher to pass.*
Reading list	1. Новейшая история Узбекистана. Руководитель проекта и редактор. М.А.Рахимов. - Toshkent: Adabiyot uchqunlari, 2018. 2. Rasulova N. O‘zbekistonning eng yangi tarixi. 1-qism. - Toshkent, 2021. - 186 bet. 3. O‘zbekistonning eng yangi tarixi. R.H.Murtazayeva, A.A.Ermetov, A.A.Odilov. - Toshkent, 2023. 4. Mirziyoyev Sh.M. Milliy taraqqiyot yo‘limizni qat’iyat bilan davom ettirib, yangi bosqichga ko‘taramiz. T. 1. - Toshkent: O‘zbekiston.. 2017. 5. Mirziyoyev Sh.M. Buyuk kelajagimizni mard va oliyjanob xalqimiz bilan birga quramiz. - Toshkent: O‘zbekiston. 2017. 6. Mirziyoyev Sh. Yangi O‘zbekiston taraqqiyot strategiyasi. To‘ldirilgan ikkinchi nashri. - Toshkent: “O‘zbekiston” nashriyoti, 2022. - 416 bet.

Module designation	***GEO1110-Geodesy***
Semester(s) in which the module is taught	*1,2 semesters*
Person responsible for the module	*Associate professor, Islamov O'tkir Pirmetovich,* *Senior teacher Abdiramanov Rashid Dustchanovich* *Assistant professor, Valieva Albina Robertovna*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training, self- learning.*
Workload (incl. contact hours, self-study hours)	*Total workload: 300* *Contact hours:* *Lecture – 50 hours* *Practical lessons – 70 hours* *Self- learning – 180 hours*
Credit points	*10 credits*
Required and recommended prerequisites for joining the module	*Geography, Mathematics (school subjects)*
Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- to practical and theoretical knowledge, to be able to visualize acquired geodetic concepts from a geodetic-cartographic and geo-information point of view, to know and explain the tasks of plan and height geodetic networks, analytical networks and density polygonometry and their construction, geodetic research methods;* *- can imagine from a geodetic-cartographic and geo-information point of view;* *- is able to practice the tasks of plan and elevation geodetic networks, analytical networks and density polygonometry and their construction;* *- know topographical maps, location elements, description of terrain on maps and plans, orientation measurement and error theory;* *- use of geodetic base networks, geodetic measuring instruments;* *- acquires the skills of applying the solutions in practice, mastering the methods of geodetic works and methods of design and construction;* *- general information about geodesy, topographic maps, determining their graphing and nomenclature, location elements, description of relief on maps and plans, will have the competencies to carry out geodetic surveys using geodetic base networks, geodetic measuring instruments and software.*

Content	*Understanding of the shape and dimensions of the Earth, the system of coordinates and heights used in Geodesy. State geodetic networks: plan and elevation networks. Methods of installing planned networks. Level of difficulty: 2* *Triangulation, trilateration and polygonometry, their classes. Accuracy required in their construction. Understanding of card, plan and profile. Scales, numerical and graphical. Numerical and linear scales of topographic maps. Understanding of line orientation. True azimuth and bearings. Level of difficulty: 2* *Geographical and magnetic meridians. Right and reverse azimuths. The main landforms. Ways of depicting the terrain on plans and maps. Depicting the terrain with horizontal. Horizontal transfer in analytical and graphical methods. Level of difficulty: 2* *Theodolite gauge and its essence,* *III, IV class and technical leveling networks* *Large-scale (1:5000-1:500) topographic maps elevation grids. Development of level networks in cities and settlements. Level of difficulty: 3* *Design and reconnaissance of class III, IV leveling networks. Design and accuracy assessment of level grids. Perform reconnaissance. Types of leveling underground signs and their installation. Level of difficulty: 3* *III, IV class and technical leveling. Types of levelers, inspection of level rails and their testing. Class III, IV and III, IV leveling errors. Leveling III, IV class and filling in the leveling log. Level of difficulty: 4* *Tacheometric surveying and its essence, GPS and GNSS surveying and its essence. Application of Modern geodetic tools in geodesy. Level of difficulty: 4*
Educational practice	*After mastering educational practice, the student:* *-geodetic surveying and cartographic materials will be acquired skills;* *-knows how to process geodetic measurement results using modern computer programs;* *-can use topographical materials to solve geodesy problems.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*

Reading list	*1.Хамидов М., З.Д.Охунов., А.С.Рўзийев.,Х.Хайитов., Ғ.З.Яқубов Геодезия дарслик. Тошкент: Янги аср авлоди, 2021 йил 512 бет.* *2. Нурматов Э.Х, Ўтанов Ў. Геодезия. Тошкент: Ўзбекистон, 2003. – 224 б.* *3. Гермак О.В., Калачева Н.А., Гугуева О.А. Геодезия. Москва 2020, 316 с.* *4. Киселев М.И., Михелев Д.Ш. Геодезия. Москва 2020, 384 с.* 5. *Zhiping Lu., Yunying Qu., Shubo Qiao, Geodesy. W.Schofield 2014. 534 p.* 6. *Мубораков Х., Охунов З.Д., Рузиев А.С., Хайитов Х.Ж., Якубов Г.З. Геодезия. Тошкент 2021, 551 бет.*

Name of the module/subject and password in the curriculum	**Physical education and sports - JTS1102**
Semester in which science is taught	*1-semester*
Responsible teacher of the module, degree and title S.N.P, degree and title	Norqobilov M.N. – *dosent*
In which language to be taught	*Uzbek, Russian*
Its place in the curriculum	*Not available*
Teaching methods	*practical training,*
Study load (by types of classroom hours and independent study hours)	*Total load: 60 hours* *Auditorium Hours: 60 hours* *Practical training - 30 hours* *Independent education - 30 hours*
Number of credits allocated to science	*2 credits*
This is a list of prerequisite subjects	*Not available*
Module objectives/intended learning outcomes	***To know and understand•*** • educating and sports, various types of competition and increasing participation are likely to be succesfull • *implementation og the latest achievements of the scientific and technical development in physical training* • a*chievements of students in sport* ***To able to*** • *to know and take advantage of that it is possible to increase the effectiveness of education by giving students physical conditioning and the formation of practical skills about physiological health;* • *the student must have the skills of continuous organization and implementation of labor activity with physical activity.*

Content	The purpose of physical education is to form a person's physical culture. Preparation of a person for social and professional activities. To follow a healthy lifestyle. Ensures regular physical fitness. To know the scientific and practical basis of physical culture and healthy lifestule. Self-discipline. Formation of the need to regularly engage in physical exercises. Maintenance and strengthening of health in the field of physical education. Spiritual perfection. Development and improvement student's abilities for the future profession. To gain experience in the creative use pof physical education and sports training to achieve and sports training to achieve life and professionalgoals. The goals and objectives of physical education of students are basic concepts in the field of physical education and sports, special theoretical knowledge, knowledge about physical development, training training, teaching the means and methods of helping to improve skills and abilities, self-physical perfection, Organization of mass wellness activities and their independent use. It is a science capable of initiatively and competently solving the issue of physical education of students in the comprehensive development of the main physical qualities of the movement (agility, strength, endurance, agility, agility) and promoting their physical maturation and growth.
Exams and assessment formats	*Educational results are evaluated in a 100-point rating system. One midterm (60 points) and final oral exam (40 points)*
Study and examination requirements	*Requirements for successfully passing the module* *To pass the subject successfully, the student must score 60% or more of the allotted points.*

Literature	1. Sh.M.Mirziyoev “Tanqidiy tahlil, qat’iy tartib-intizom va shaxsiy javobgarlik har bir rahbar faoliyatining kundalik qoidasi bo‘lishi kerak”. Toshkent, “O‘zbekiston”, 2017 yil. -104 b. 2. Sh.M.Mirziyoev “O‘zbekistonni rivojlantirishning beshta ustuvor yo‘nalishi bo‘yicha Harakatlar strategiyasi” Toshkent, “O‘zbekiston”, 2017 yil. “Gazeta.uz”. 2. Arne Güllich, Michael Krüger. /Sport: Das Lehrbuch für das Sportstudium (Bachelor) (German). edition. 26 Sept. 2013, (German). *3.* To’xtaboev N.T. Jismoniy tarbiya mutaxassislarining kasbiy mahoratini rivojlantirish. O’quv-uslubiy qo’llanma. – T.: 2010 y. – 71 b. *4.* Qudratov R., /Yengil atletika. darslik – T.: 2012 y. *5.* Rafiyev H.T., Yengil atletika va uni o’qitish metodikasi. Darslik – T.: 2012y. *6.* Geyger A.I., Po’latxo’jayeva M.I. Suzish nazariyasi va uslubiyati T-2015 *7.* Korbut V.M., Voljin V.I., Israilova R.G. Suzish O’zDJTI 2017 *8.* Normurodov A.N., /Yengil atletika va uni o’qitish metodikasi, -T.: 2011 y.

Module designation	***Uzbek (Russian) language*** ***TIL 1104***
Semester(s) in which the module is taught	*2 - semester*
Person responsible for the module	*Koshnazarova Malohat Alimovna*
Language	*In Uzbek*
Relation to curriculum	*Basic*
Teaching methods	*practical training*
Workload (incl. contact hours, self-study hours)	*Total load:120 hours* *Audience hours:* *Practical training - 60 hours* *Independent education - 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*No*

Module objectives/intended learning outcomes	***Scientifically:*** *Read and understand various conversations and complex texts and interpret the meaning and follow the spelling rules of the Uzbek language;* *to be able to react to various texts, to be able to explain, that is, to understand the main content of lectures, conversations, excellent instructions, academic and professional presentations, questions and answers, to understand the meanings of pure Uzbek words and words from other languages;* *to explain the meaning of various terms and to be able to compose free texts based on field terms;* *to understand the essence of literary language styles;* *development of oral speech; to be able to retell the information obtained from the Internet sites with purposeful use, to participate in various conversations and negotiations, to form an independent opinion and to be able to rationally use literary language styles;* *development of professional competence by understanding the mats of various professions;* *development of oral and written speech and observance of literary language standards by forming the culture and ethics of professional speech.* ***In terms of skills****:* *By observing the spelling rules of the Uzbek language, he can read and understand complex texts on various topics, and the skills of expressing a reaction are formed;* *understands the meanings of words in the Uzbek language and words introduced into it from other languages and can apply them in practice;* *can express his impressions through creative thinking, understanding the meaning of field terms and concepts;* *can use terms related to the field, relying on modern knowledge and reading skills;* *the ability to retell information using literary language methods develops;* *professional competence is formed through the purposeful use of terms used in the field;* *Oral and written speech of students is developed in compliance with the standards of literary language.*
Content	*The goal of teaching science is to develop the competence of applying the acquired knowledge and skills in the process of communication and work based on the communicative-speech principle of teaching for students to work in everyday, scientific and professional fields. Improving students' written speech in Uzbek and increasing literacy.* *The task of science is to develop students' speech competence; formation of skills of effective use of field terms in oral and written speech; creating the skills of writing, editing and analyzing text related to specialization; consists of forming the skills of creating field documents, including filling and formalizing electronic documents.*

Exams and assessment formats	*One midterm control (15 minutes each) and final oral exam (10 minutes)*
Study and examination requirements	*Students who successfully pass the science* *The total maximum points will be the sum of the points allocated to the final exam (60%), Midterm control (20%), homework (10%) and activity in classroom activities (10%). To pass the subject, the student will be allocated 60% of points and above. must collect the amount.*
Reading list	*1. M. Aminov, A. Madvaliyev, N. Mahkamov, N. Makhmudov, Y. Odilov. Doing business in the state language. Practical guide. "Publishing Office of Uzbekistan". - Tashkent, 2021.* *2. Azimova, K. Mavlonova, M. Jabborova, Sh. Tursunov. Uzbek literary language workbook. Study guide. -Tashkent, 2021.- 121 p.* *3. M.A. Koshnazarova The use of the Uzbek language in the field. Study guide. - Tashkent: MTU "TIQXMMI", 2023.*

Module designation	***KD1103 - Cartographic design***
Semester(s) in which the module is taught	*3-semestr*
Person responsible for the module	*Associate professor, PhD Rustam Oymatov* *Senior teacher Minashkina Natalya Alekseevna,* *Assistant teacher Shavazov Timur Karimjonovich*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 90* *Contact hours: lecture - 10, practical lessons – 20, self-learning – 60, hours*
Credit points	*3 credits*
Required and recommended prerequisites for joining the module	*Geography (school subject)*
Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- knows and can explain the use of cartographic symbols to express the quantitative and qualitative relations of events on the map and the creation of field, line, point and volumetric conditional symbols;* *- understands the features of expressing the characteristics of events with colors* *- can perfectly master the methods of placing the common elements of the card and apply the solutions in practice;* *- understands the principles of applying artistic methods and styles (rans, visual arts, fine art methods) in the design of thematic maps.* *- development of the design of the interior and exterior of cartographic images* *- works with reference literature;* *- is able to organize the implementation of a practical task using computer design technologies (GlobalMapper, AsrcGIS, Mapinfo, Surfer, Paint, CorelDRAW) in creating maps and atlases* *- performs an independent search for data for analysis and comparative descriptions of design elements;* *- acquires the skills of creating thematic maps using modern geographic information technology programs.* *- to be able to imagine cartographic design concepts and confirmations from a geodetic-cartographic and geo-informational point of view, to acquire the competencies of cartographic research methods in their unique and important place in modern science and technology.*

Content	*Development trend of cartographic design science. Visual aids. Design factors. Design at different stages of making cards. Purpose-built design of maps and atlases. Multimedia cartographic works. Field of cartography. The emergence and development of modern cartography. Level of difficulty: 1* *Card design. Card design and its importance. Design as a plan. Design (composition) of card elements. Level of difficulty: 2* *Text materials on the card and them. equipment Textual materials. Placing labels. Geographical names. Fonts. Edit entries on the card. Level of difficulty: 2* *Color in cartographic design. The nature of colors. Dimensions of colors. Color classification system. Choose colors. Level of difficulty: 3* *Scaling, compilation and generalization. Scale: Zoom out of the globe. Compilation: collection of data. Generalization. Level of difficulty: 3* *Basics of description of conditional signs. The essence of geographical conditional signs. Classification level of geographic data. Visualization of cartographic symbols. change. Selection of conditional symbols and their design. Level of difficulty: 4* *Description of geographic information. Equipping dotted conditional characters. Fitting the data by lines. Equipping field data. Equip volume data. Selection of conditional character types. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Oymatov R.Q. «Kartografik dizayn». Darslik. Toshkent. 2019. -315 bet.* *2. Oymatov R.Q. «Kartografik dizayn». O‘quv qo‘llanma. Toshkent. 2017. -234 bet.* *3. Mirzaliyev T., Safarov E.Yu., Egamberdiyev A., Qoraboyev J. Kartashunoslik. – Toshkent.: “Cho’lpon”, 2012. – 235 b.* *4. Mirzaliyev T., Safarov E. Yu., Egamberdiyev A., Qoraboyev J. S. Atlas kartografiyasi. – Toshkent.: “Universitet”, 2015. – 248 b.* *5. Cartography: thematic map design/Borden D. Dent, Jeffrey S. Torguson, Thomas W. Hodler.—6th ed.*

Module designation	***PR1102- Internship (Geodesy)***

Semester(s) in which the module is taught	*2-semestr*
Person responsible for the module	*Jumanov Azamat Norbutaevich (PhD), associate professor* *Abdiramanov Rashid Duschanovich, senior teacher* *Valieva Albina Robertovna, assistant* *Shavozov Temur Karimovich is a trainee teacher*
Language	*Uzbek and russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Field practice*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload: 60* *self-learning - 60 hours*
Credit points (*Field practice*)	*2 credits*
Required and recommended prerequisites for joining the module	To master the course, Master Students must have basic knowledge in “Higher mathematics”, ” Geography;”, “Informatics”,
Module objectives/intended learning outcomes	**know and understand:** *- Consolidation of the acquired theoretical knowledge on "Geodesy".* *- study of geodetic measurement methods in field conditions.* *- gaining experience in performing the main types of geodetic measurements and observations.* *- to have the ability to use modern geodetic tools and technical equipment.* *- can adjust geodetic measurements* *- can determine coordinates and elevations objects through geodetic measurements;* **be able to:** *- organization of geodetic measurements and observations.* *- learning to process and analyze the obtained results.* *- Able to process results field measurements and create topographic plans in specialized software provision.* *- has the skills of field work in urban areas;* *-perform some actions when executing tacheometric survey;* *-is able to perform some actions when performing technical leveling;* *-capable of reproducing some actions in processing field measurements;* *-is able to reproduce some actions when creating topographic plans;* **form competences in:** *- completing the stages of work determined by the individual assignment for the training* *geodetic practice (GPP), calendar plan, reporting form* *materials and ensuring the implementation of plans in a competency-based format* *results;* *- preparation of a report containing materials from the stages of work that reveal the level of* *mastering a given list of competencies;* *- preparation and presentation of the results obtained.*
Content	*To independently carry out geodetic measurements on the surface of the earth, to create plans and profiles of the place, as well as to study the theoretical foundations of geodetic measurements performed on the surface of the earth in solving engineering-geodesy issues in various fields; national economy, arming students with the necessary knowledge to perform independent measurement work using geodetic instruments, study the methods of drawing up plans and profiles of the place and develop measurement results aimed at systematic improvement, measurement results and teaching the effective use of graphics. drawings in solving engineering-geodesy problems in various sectors of the national economy.*

Exams and assessment formats	*The report and its drawing applications are created with the group team. Each member of the group writes a separate report chapter and participates in drawing applications.* *The completed report and drawing applications are reviewed and discussed together with the group members, each group member signs the report, and then submits it to the head of practice for verification.* *The defense of the report is carried out in front of the commission members. According to the instructions of the commission, each member of the group will give a report on some parts of the report, and will answer questions about the whole report. The student is evaluated according to the results of the defense and the quality of the report.*
Study and examination requirements	*Requirements for successfully passing the module:* The final grade in the module is composed of 40% defence of the internship report, 40 % participation in the internship, 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. H.J. Khaitov, A.N. Inamov. Engineering geodesy. "TIIAME" National Research University, 2022. 495 p 2. A. Suyunov Engineering geodesy. Tashkent. 2021.-359 p. 3. Abdullaev T.M., Inamov A. N., Lapasov J.O. Engineering geodesy geodetic works in the construction of hydrotechnical facilities. TIIAME, 2019. 152 p. 4. Germak O.V., Kalacheva N.A., Gugueva O.A. Geodesy. Tutorial. – M.: Phoenix, 2020. – 316 p. 5. Glukhikh M.A. Land management with the basics of geodesy. Workshop. Textbook for HE, 1st ed. – M.: Lan, 2020. – 136 p. 6. Dyakov B. N. Geodesy. Textbook. – M.: Lan, 2020. – 416 p. 7. Khodorov S.N. Geodesy is very simple. Introduction to the specialty. – M.: Infra-Engineering, 2020. – 176 p.

Module designation	***Philosophy– FAL 2105***
Semester(s) in which the module is taught	*3 semester*
Person responsible for the module	*Nazarov Qiyamiddin Normirzaevich -* *doctor of philosophy, professor;* *Alimukhamedova Nodira Yadgarovna –* *Doctor of Philosophy in philosophical sciences (PhD)*
Language	*Uzbek, Russian, English*
Relation to curriculum	*Basic*
Teaching methods	*lecture, seminar, private study*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Auditorium Hours:* *Lecture - 40 hours;* *Practical training - 20 hours* *Private study - 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*History of Uzbekistan*
Module objectives/intended learning outcomes	***Knowing and Understanding:*** *- to have a comprehensive idea of the processes and events occurring in nature and society,* *- interrelationship and difference between national cadres, culture and mass culture, interrelationship and difference between culture, mass culture and mass lack of culture,* *- logical forms and rules of correct thinking,* *- on the basis of the study of the history and rich spiritual heritage of views on morality, about the social and moral importance of modern manners - moral rules and their observance* *Having the skills to:* *- introduction of legal and ethical norms regulating the attitude of a person to a person, society, environment in professional activity;* *- making reasonable independent decisions in one's professional activity;* *- to have a scientific vision and belief about a healthy lifestyle;* *- to have the qualification of physical self-improvement;* *- to be aware of the global problems of the world;* *- to be able to distinguish fundamental globalization from other aspects of globalization;* *- independent analysis of social problems and processes;* *- to study private, national, regional problems, to be able to forecast social processes.* *Formation of competences:* *- Being loyal to the motherland, believing in universal and national values,* *- to feel connected to events, events and processes happening in the society and to actively participate in them,* *- social adaptability, continuous self-development physically, spiritually, mentally, intellectually and creatively,* *- striving for perfection, independent study and learning throughout life, regularly improving cognitive skills and life experience independently,* *- refers to acquiring the skills of alternative assessment of one's own behavior and ability to make independent decisions.*

Content	*Philosophy and its role in society. Basic issues, structure, functions of philosophy. The emergence of philosophy and its importance in the development of society. Stages of development of philosophical thinking: Eastern philosophy. The emergence of mystical ideas and philosophical knowledge in the ancient East. Western philosophy. The role of ancient Western philosophy in human life. Difficulty level: 3* *Being (Ontology). Existence, existence and reality. The dialectic of existence and nonexistence. Classification of forms of existence. Development philosophy. The concept of law. Types of laws. Basic laws of philosophy. Difficulty level: 5* *Philosophy of knowledge (epistemology). The essence and main criteria of the cognitive process. Classification of approaches to the process of knowledge: essence of utopiamism, skepticism and agnosticism. Philosophy of society. The essence of the concept of society and the stages of its development. Views on the emergence of society. Difficulty level: 3* *Logic. Logical forms and laws of thought. Subject and structure of formal logic. Forms of thought: understanding, judgment and conclusion. A general logical description of inference. Structure of conclusion. Types of conclusions. A simple strict syllogism, its structure, axioms and general rules. Difficulty level: 5* *Proportion of culture and civilization. Importance of cultural communication. Human philosophy (Philosophical anthropology). Classification of views on the essence of man in the history of philosophy. Philosophy of values (axiology). The meaning of the concept of value and its general description. The history of the formation of the theory of value. Types of values. Difficulty level: 2* *Moral philosophy (Ethics). The essence and importance of ethics. The main areas of modern ethics. Professional ethics. Problems of professional ethics. Professional ethics and work ethics. Philosophy of sophistication (Esthetics). The essence of aesthetic perception of the world. Evolution of aesthetic views in the history of philosophy. Effect of aesthetic taste and aesthetic perception of the world on personality development. Philosophy of globalization and sustainable development. The essence of processes of globalization, globalism and sustainable development. Criteria and levels of global problems. Global crime and the need for international cooperation in its prevention. Level of difficulty: 3* *World experience of fight against corruption. The meaning of the concept of corruption and its historical roots. Classification of the state of corruption in the world. Anti-corruption policy of Uzbekistan. The need for a systematic approach in the fight against corruption. Level of difficulty: 2*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of analysis, to independently monitor the studied topics and to complete the tasks given in the intermediate control forms, to pass the final control in the form of oral question and answer.*
Study and examination requirements	*Requirements for successfully passing the module* *the final grade in the module is composed of 40% performance on exams, midterm control (60%), Students should have a final grade of 60% or higher to pass.*
Reading list	1. Nazarov Q.N., Qalqonov E.T., Qandov B.M. va boshqalar. Falsafa asoslari. – T.: “O’zbekiston faylasuflari milliy jamiyati”

	nashriyoti, 2018. 2. Davronov Z., Shermuhamedova N, Qahharova M, Nurmatova M, Husanov B, Sultonova A. Falsafa. – Toshkent: TMU, 2019 3. Shermuxamedova N.A. Falsafa. – T.: Noshir, 2012. – 1207 b 4. Abdulla Sher. Axloqshunoslik. Darslik. –T.: O‘zbekiston faylasuflar milliy jamiyati, 2016. 5. Abdulla Sher. Estetika (Nafosat falsafasi). Darslik. – Toshkent: O’zbekiston, 2015.

Module designation	***KAR 2105 -Cartography***
Semester(s) in which the module is taught	*4-semestr*
Person responsible for the module	*Associate professor, PhD* I.*M. Musayev* *Assistant professor G.R. Aminova*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Contact hours:* *Lecture-30 hours* *Practical lesson-30 hours* *Self-learning - 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geography (school subjects) Geodesy, Mathematics*
Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- studies the research object, subject and principles of cartography, the concept of a map, its content and classification, the formation of socio-economic cartography and the processes of publishing socio-economic maps;* *-will have an idea and knowledge about the theoretical and practical foundations of map design and construction, as well as solving problems aimed at determining the location of the main factors of map acquisition.* *- is able to describe the main factors of mapping, natural and social economic events on maps in relation to a certain time and place, and update and compile maps and plans in the implementation of nature protection measures;* *- knows how to apply his knowledge of cartography and its networks, the mathematical basis of the map, cartographic projections, projections used in making world maps, determining and orienting projections based on map grids;* *-can apply the knowledge of cartographic signs and their use, methods of describing the terrain in practice;* *- knows how to apply knowledge of cartographic generalization and its properties, pictures taken from space and their properties* *- creates the ability to use the most important map, atlasing view and information about cartographic geoinformatics and cartography and telecommunications, which summarizes the knowledge about the world obtained with modern techniques and technologies;* *- will have the skills to modernize cartographic processes, to apply methods of rapid mapping and planning for agriculture and water management with the help of space images.*

Content	*Cartography and geographic maps. Cartography and geographic maps. The connection of cartography with events and events. Parts, branches of cartography. Elements of geographic maps. Level of difficulty: 3* *Geographical globe. Geographical globe. A globe is a miniature model of the earth's surface. Positions of meridian and parallel. Features of the globe. Determination of orthodromia and loxodromia. Level of difficulty: 4* *History of cartography. History of cartography. Studying the history of cartography mainly on the basis of historical sources, determining the periods of development of the science. In the history of cartography, there are many scientists of this field in Central Asia and information about their contributions to cartography. Level of difficulty: 3* *Mathematical basis of maps. Mathematical basis of maps. Cartographic projections have two independent characteristics: error characteristics and division according to cartographic types. Change the scale, area and distance on the map. Level of difficulty: 4* *Cartographic symbols and their use. Cartographic symbols and their use Importance of cartographic symbols on the map. Cartographic symbols are the language of the map. Character method. The importance of the method of describing events and phenomena with symbols. Method of related diagrams. Level of difficulty: 3* *Features of geographic maps and their classification. Characteristics of geographic maps and their classification Conditional division of geographic maps into general geographic and thematic maps. Classification of geographical maps according to the area covered, scale, purpose Level of difficulty: 4* *Types of geographic maps. Division of maps into analytical and synthetic types according to the method of research of the depicted events. Understanding complex mapss. Importance of depicting related features on custom maps. Level of difficulty: 3* *Cartographic generalization and its features. The importance of sorting, selecting and summarizing some of the main and necessary ones when describing events and events on a map. In the process of generalization, taking into account the specific features of the scale, content, purpose, territory. Level of difficulty:4* *Geographical atlases and their classification. Definition of geographic atlas. Information about atlases published in our republic and abroad. Preparation and publication of maps. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. A.S. Suyunov, Sh.A. Suyunov, M.B. Aminjanova, D.D. Obidova - Kartografiya. Tashkent-2021* *2. E.Y. Safarov, I.M. Musayev, S.S. Salakhitdionov, R.Q. Oymatov – Umumgeografik xaritalarni loyihalash va tuzish, Tashkent-2022* *3. SH.M.Mirziyoyev "Tanqidiy tahlil, qat'iy tartib-intizom va shaxsiy javobgarlik har bir rahbar faoliyatining kundalik qoidasi bo'lishi kerak". Toshkent, "O'zbekiston", 2017 yil. -104 b.* *4. SH.M.Mirziyoyev "O'zbekistonni rivojlantirishning beshta ustuvor yo'nalishi bo'yicha Harakatlar strategiyasi" Toshkent, "O'zbekiston", 2017 yil. "Gazeta.uz".* *5. Antoni Moore and Igor Drecki, Geospatial Vision, New Dimensions in Cartography, 2008. Pages 253. Springer - Verlag Berlin Heidelberg.*

Module designation	***DKA 2105 Introduction to state cadastres***
Semester(s) in which the module is taught	*3- semester*
Person responsible for the module	*Associate professor, PhD Mukhtorov Uzbekkhan*
Language	*Uzbek, Russian*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Contact hours: lecture - 30 hours, practical lessons – 30 hours, self-learning – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, cartography, cartographic design*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– knows and can explain the procedure for creating and maintaining state cadastres, the procedure for dividing the territories of the Republic of Uzbekistan into cadastral units and forming cadastral numbers, creating and maintaining the unified system of state cadastres (USSC);* *– understands the creation and maintenance of state cadastres belonging to the group of real estates, that is, state land cadastre, buildings and structures, state urban planning, objects of cultural heritage, hydrotechnical facilities;* *– understands state cadastres belonging to the series of linear state cadastres, i.e. highways, railways, communication facilities, energy facilities, supply pipelines, cartography-geodesy, and the features of their management;* *– knows the state registers belonging to the group of natural resources, i.e. mines, mineral deposits and man-made products, state water cadastre, forest, flora and fauna, waste burial and disposal sites and their management features;* *– knows state cadastres belonging to the group of natural areas, that is, regions, protected natural areas, zones with high natural risk, zones with high man-made risk, state cadastres and the features of their management;* *– the content of information related to the unified system of state cadastres, their formation, can use GIS programs in the formation of data in the unified system of state cadastres based on geoinformation technologies.*

Content	*Cadastre concept, content and tasks. Political, economic and social importance of state cadastres. The nature, function and general system of state cadastres. Legal basis of transfer of the unified system of state cadastres. The role of "Land Code", "On State Cadastres", "On State Land Cadastre" and other relevant laws in maintaining state cadastres. Sources and principles of state cadastre management. Level of difficulty: 2* *Comprehensive study of existing natural resources and other objects in the territory of the Republic. Methods of collecting the necessary information about their legal status, amounts and characteristics based on a single methodology. The need to bring cadastres into a single system. Description of objects and entities. Level of difficulty: 2* *Issues of methodical and practical study of national, integrated and comprehensive consideration and assessment of scientific and economic potential of the country. State cadastre service. Service system and tasks. Quantity and quality indicators of objects. Cadastre directions, their interrelation and sequence. Contents of cadastral documents. Level of difficulty: 2* *Place of natural resources (land, water, forest, minerals, specially protected natural areas) in the State cadastre system. Description of natural resources. Territorial location of resources and methods of their study. Quantity and quality of natural resources. Collection, processing and use of data on types of natural resource cadastres. Level of difficulty: 3* *Stages in keeping cadastres. The role of the land cadastre in the general system and procedure. Nature and tasks of water cadastre. Tasks and procedures of the cadastre of mineral deposits and man-made products. Cadastre of specially protected natural areas. Cadastre of areas with high man-made risk. Level of difficulty: 3* *Cadastre of the animal world. Cadastre of the world of plants. Quantitative and qualitative assessment of fauna and flora cadastre objects. The uniqueness of their management. Level of difficulty: 3* *The essence and tasks of keeping state cadastres of linear type. Procedures for maintenance of road cadastre. Methodological approach to railway cadastre management. Peculiarities of keeping the state cadastre in the field of energy. The procedure for maintaining communication and telecommunication cadastres. Cadastre data on urban engineering communications. Qualitative and quantitative assessment of engineering communications in rural areas. Level of difficulty: 4* *Types of real estate. Keeping the cadastre of buildings and structures. Urban planning cadastre. Keeping production and consumption waste cadastre. Determining the volume and quality of production and consumption waste. Cadastre of historical and cultural monuments. Specificity of determining the area and quality of historical and cultural monuments in the territory of the Republic and maintaining the cadastre. Level of difficultyu:4* *Real estate objects in the territory of subjects, their types and composition. Tasks and features of their placement. Valuation of real estate. Data collection, processing and use. Composition of real estates and*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. И.Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *2.Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208b.;* *3. Д.Ярматова, А.Бобожонов, А.Рахимов. Давлат кадастри асослари. Чўлпон номидаги нашриёт матбаа уйи, 2014 й. 234 б.* *4. Ашуров А.Ф. Основы государственных кадастров. Учебное пособие.ТИИИМСХ. Т.: 2020 г.- 168 стр.;* *5. Velta Parsova, Virginija Gurskiene, Madis Kaing. "Real property cadastre in 33ortal countries" Textbook. Jelgava – 2012.;*

Module designation	***TD 2105 - Soil Science and Agriculture***
Semester(s) in which the module is taught	*3 semester*
Person responsible for the module	*Associate professor.PhD Jamila Khaitbaeva*
Language	*Uzbek, Russian*
Relation to curriculum	*Compulsory*
Teaching methods	*lecture, lesson, lab works, private study.*
Workload (incl. contact hours, self-study hours)	*Total workload:150 hours* *Contact hour: lecture-30 hours, practical lesson 20 hours, lab works-10, self-leaning-90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*General chemistry, higher mathematics, physics*
Module objectives/intended learning outcomes	***To know and understand:*** - the essence of the soil formation process, the general scheme, - the structure, morphology, biology, living conditions and farming laws of plants, - have ideas and knowledge about soil properties, cultivated types of crops, ***To be able to:*** - the main factors and conditions affecting soil formation, - the organic part of the soil, chemical composition, soil structure, soil properties, ways of their moderation, - soil fertility, soil classification, soil water regime, -scientific basis of crop rotation and organization procedure, - basic soil treatment, before and after planting, - to have skills about the main agricultural crops ***To form competences in*** - placement of plants, use of water-saving irrigation methods and techniques, - to be able to use the achievements of modern farming in all areas of agriculture, - use of modern resource-saving techniques and devices, taking into account the characteristics of the soil, to obtain a high and high-quality harvest from agricultural crops

Content	Morphological signs and structure of the soil. Soil layer structure, genetic layers and main morphological features. Soil color, inclusions and structure. Stages of soil profile development. Difficulty level: 2 Physical and chemical properties of soil. Soil density, solids density, chemical, radioactivity properties. Soil compaction, subsidence, viscosity, ductility, plasticity and hardness. Importance of physical and chemical properties of soil. Difficulty level: 2 Soil organic matter and fertility. The organic part of the soil, soil humus, chemical changes that occur outside the cells of living organisms, the processes of changing organic residues with the participation of soil animals, the functions of soil organic matter. Difficulty level: 3 Organic and mineral fertilizers. The importance of fertilization. Importance, composition, types of organic fertilizers, period of application to the soil, procedure and norms. Siderate fertilizers, their use. Importance, composition, types of mineral fertilizers, period of application to the soil, procedure and standards. Difficulty level: 4 Watering plants. Water requirements of plants. Biological basis of irrigation. Irrigation and seasonal irrigation norms. Irrigation procedures and methods. Modern irrigation methods. Difficulty level: 5
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. O. E.Khakberdiev, R.R.Egamberdiev, J.U.Khaitbaeva "Asas of Soil Science and Plant Science" Tashkent 2022.* *2. O. Ramazanov, S. Bouriev "Melioration soil science" Tashkent 2019.* *3. Sh.Kholikulov, P.Farov, I. Bobokhojaev "Soil Science" Tashkent 2011.* *4. Ramazanoa A.,. Bouriev S "Soil Science and farming" - harmonious Faiz media, T. 2018.* *5. Egamberdiev R.R. Educational guide" fundamentals of Crop Science " Tashkent 2022.* *6. O.E.Khakberdiev, Dadakhojaev A. Educational guide "soil science" Tashkent 2023.*

Module designation	***AJM2106 Information technologies and mathematical modeling of processes***
Semester(s) in which the module is taught	*3- semester*
Person responsible for the module	*Associate professor, Candidate of Technical Sciences Sayibdjan Mirzaev*
Language	*Uzbek, Russian, English*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture, practical lesson, laboratory lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 180* *Contact hours: lectures - 40, practical lessons – 30, laboratory lessons – 10, self-learning – 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Higher Mathematics*

Module objectives/intended learning outcomes	***To know and understand:*** *- information, methods of its storage, processing and transmission,* *- information processing technologies,* *- computer networks and network technologies,* *- methods of information security and information protection,* *- high-level programming languages,* *- databases,* *- software and programming technologies,* *- computer networks.* ***To be able to:*** *- use the capabilities of the software,* *- application of practical programs in solving issues of specialty,* *- search for data by specialty in the computer network,* *- building algorithms and drawing up a program for solving practical issues.* **To form competences in:** *- ability to solve practical issues in MS Office,* *- draw up algorithms for solving issues by specialty,* *- creation of a program in algorithmic language for solving issues by specialty,* *- use the means of information protection in computer networks,* *- Receive information from the Internet in the specialty*

Content	*Basic concepts of information technology. The subject, goals and objectives of science "Information Technologies." Concepts of information technology and information systems. Information culture and information society. The role of modern information technologies in their scientific and technical development and the development of society. Regulations in the field of informatization. Level of difficulty: 2* *Computer software. Types of software: system, practical and hardware. Operating systems, their types and meaning. Operating systems of computers and mobile devices. Tools and utilities. Information archiving programs. Tasks, composition and structure of application software. An application package and a series of issues with which they are solved. Tasks, composition and structure of hardware software. Hardware software package. Level of difficulty: 2* *Properties of algorithms. Methods for describing algorithms. Algorithm and algorithmization. Properties of algorithms. Methods and types of algorithm creation. Methods for describing algorithms. Stages of computer solving issues. Linear algorithms. Ordered algorithms. Repetitive algorithms. Algorithms in which the number of repetitions (arithmetic) is known. Algorithms with unknown number of repetitions. Algorithms for solving agricultural and water issues. Level of difficulty: 3* *Languages and programming systems. Main elements of programming languages. Working with standard functions. Programming language operators, arrays, variables, constant, procedures, and functions. Structural structure of programs. Running programs by computers. Translators and interpreters. Algorithms for working with matrices. Programming agriculture and water management issues. Level of difficulty: 3* *C++ programming algorithms in a programming language. C++ - syntactic construction and use of programming operators, conditional if (), if () and unconditional goto transition operators, switch (), continue and break operators in programs. Programming repetitive algorithms in the S++ programming language. C++ create programs in the programming language using duplicate statements for (), while (), do while ().Level of difficulty: 4* *Information security. Ensuring information security in computer networks. Threats to information security. Technical and software information security tools. Cryptographic methods of information protection. Caesar's method. Vigener Square. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Abdullaev Z.S., Mirzayev S.S. Mathematical modeling of information technologies and processes. Tashkent, TIIAME, 2019. -332 b.* *2. Abdullaev Z.S., Mirzaev S.S., Shodmonova G., Shamsiddinov N.B. Informatics and Information Technologies. - T.: Publishing house of the National Library of Uzbekistan named after A. Navoi, 2012. - 444 b.* *3. Shadmanova G., Karimova Kh. Kh., Kenzhaeva D. Information technologies and mathematical modeling of processes. T., TIIAME, 2020.*

Module designation	***KGE2203 Space Geodesy ES (1)***
Semester(s) in which the module is taught	*3 -semestr*
Person responsible for the module	*Associate professor, Islomov Utkir*
Language	*Uzbek*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training, Self- education*
Workload (incl. contact hours, self-study hours)	*Total workload: 90 hours* *Contact hours: Lecture – 20 hours, Practical lessons – 20 hours, Self- learning – 50 hours*
Credit points	*3 credits*
Required and recommended prerequisites for joining the module	*Mathematics, Physics, Informatics, Astronomy, Geography(school subjects) and Geodesy.*

Module objectives/intended learning outcomes	*After mastering the subject, the student:* *- knows and can explain the shape of the earth, the basic formulas of the earth's ellipsoid and their interconnections, coordinate systems and transition from one coordinate system to another coordinate system, determine the mutual locations of points on the earth's surface through an internationally accepted program;* *- understands the shape of the earth accepted at the international level with modern programs;* *- identifies the main formulas of the ellipsoid of the earth and their interconnections;* *- can use the transfer from one coordinate system to another coordinate system in practice;* *- learn the main tasks of space geodesy;* *- can apply in practice to determine mutual locations of points on the surface of the earth through an internationally accepted program;* *- will have the skills to organize the implementation of a practical task using geodetic tools used in space geodesy;* *- they know how to find the absolute coordinates of points relative to the center of gravity of the earth and create a single global coordinate system, the principles of operation of space geodetic instruments, measurement methods and methods of mathematical processing of measurement results, and the design of space geodetic grids.*
Content	*Application of space geodesy science and its prospects, the role of the science in the preparation of bachelors and its connection with other sciences, its role in increasing the efficiency of production in the national economy, areas of use and future prospects. Level of difficulty: 2* *Krasovsky reference-ellipsoid, astrogeodetic methods, determination of the external gravity field of the earth and the shape of the earth; to continuously define some fundamental constants of geodesy. Level of difficulty: 2* *Determination of mutual locations of points on the surface of the earth through an internationally accepted program; space vehicles, determination of the center of the reference ellipsoid relative to the center of gravity of the earth; finding the absolute coordinates of points relative to the center of gravity of the earth and creating a single global coordinate system; ensuring the connection between all geodetic systems. Level of difficulty: 3* *Observation of the shape of the earth and gravity field by satellites, spaceships, space velocity, beam and arrow, base stations for differential JPS, methods and technologies of development of geodetic networks using satellites. Level of difficulty: 4* *Space methods of development of geodetic reference networks, methods and technologies of development of satellite geodetic networks, JPS and local coordinate systems, kinematic basis of satellite measurements. Level of difficulty: 5*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	1. *S.A.Toshpo'latov., O'.P.Islomov., A.N. Inamov., Kosmik geodeziya 2018 yil 88 bet TIQXMMI* 2. *Muborakov H., Axmedov S. Geodeziya va kartografiya. Toshkent: O'qituvchi, 2012. – 304 bet.* 3. *Xamidov M., Z.D.Oxunov., A.S.Ro'ziyev.,X.Xayitov., G'.Z.Yaqubov Geodeziya darslik. Toshkent: Yangi asr avlodi, 2021 yil 512 bet.* 4. *Куприенко Н.О. Геодезические инструменты. Минск, 2016, 76 с.* 5. *Елисеев С.В. Геодезические инструменты и устройства. Основы расчета, конструкции и особенности изготовления. Эд. 3-й, переработанный и Дон. М., «Недра», 2017. – 645 с.*

Semester(s) in which the module is taught	***FG2203 - Photogrammmetrie***
Person responsible for the module	*3 - semestr*
Language	*Associate professor, Khamidova Maknona Bakhtiyarovna,.* *Assistant Professor, Teshaev Nasim Nusratovich*
Relation to curriculum	*Uzbek*
Teaching methods	*Mandatory*
Workload (incl. contact hours, self-study hours)	*Lecture, practical training, self-learning*
Credit points	*Total workload: 90 hours* *Contact hours:* *Lecture – 40 hours* *Practical training – 40 hours* *Self-learning – 50 hours*
Required and recommended prerequisites for joining the module	*3 credits*
Module objectives/intended learning outcomes	*Geodesy, cartography, GIS.*

Semester(s) in which the module is taught	***After mastering the subject, the student:*** *-has an understanding of photogrammetric processes and can explain them;* *-can perfectly master the processes of creating digital cards and apply their solutions in practice;* *-spatial phototriangulation can perfectly master the methods of creating a series and apply its solutions in practice;* *-can apply the methods of introducing geometric and radiometric corrections of satellite images into practice, the unique important solutions of modern science and technology;* *-perfectly masters the use of IDRISI and Cognetion software to study the object according to its characteristics, classify images, control the state of vegetation and water resources;* *-can create various thematic maps as a result of digital processing of aerial photographs;* *- can perform the sequence of creating digital maps based on the data of remote sensing of areas;* *-can organize the implementation of a practical task using data using the radiolocation method;* *-creates orthophotoplans and can apply them in practice.*

Content	*Understanding the science of photogrammetry. Relationship of photogrammetry with other sciences.* *Understanding aerial photography. Concept of aerial photography. Level of difficulty: 1* *Calculation of aerial photography parameters. An understanding of the aircraft used in aerial photography. Level of difficulty: 2* *Principles of flying aircraft. Requirements for the flight apparatus selected for aerial photography. Level of difficulty: 2* *Camera work of aerial photography. Negative process. Evaluation of quality of aerial photography.* *Understanding of aerial photography. Types and characteristics of aerial photography objects. Understanding of photographic materials used in aerial photography. Level of difficulty: 2* *Understanding of space photography. Classification of space photos. Frame shooting system. Optical-electronic imaging system. Level of difficulty: 2* *Laser shooting system. Radiophysical imaging system. Laser imaging system. Level of difficulty: 3* *Coordinate systems used in photogrammetry. Concept of central projection. Central projection elements. Level of difficulty: 3* *Coordinate systems and orientation elements used in photogrammetry. Geocentric coordinate system. Level of difficulty: 3* *Gauss coordinate system. Aerosurtani coordinate system. Level of difficulty: 3* *Errors in aerial photographs.* *Errors caused by the influence of the slope angle. An understanding of digital photogrammetry. Understanding pixels. Level of difficulty: 3* *Elements of internal and external orientation of aerial photos. Elements of mutual orientation of photos.* *Level of difficulty: 2* *Monocular, binocular, stereoscopic vision. Stereo effect. Level of difficulty: 3* *The use of aerial photographs in agriculture. The technological scheme used in the delivery of contour and topographic maps Level of difficulty: 3*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*

Reading list	1. M S Akabarov M., Dj.K Muxitdinov. “Fotogrammetriya O’quv qo’llamna. T., Taffakkur Bo`stoni.2015,-160 b. 2. N.V. Kovalyov, Dj.K. Muxitdinov, O.G. Shukina, M.B. Xamidova. “Fotogrammetriya va yerni masofadan tadqiq etish “O’quv qo’llamna. T., TAQI-2015,- 160 b. 3. Oymatov R.K., Abduraxmonov S.N., Reymov M.P. Aerokosmik suratlarning internet-resurs ma’lumotlari. O’quv qo’llanma. 2021 yil. 4. Шокиров Ш., Мусаев И., Акбар М. Масофадан зондлаш. Т.: 2015.

Module designation	***YRB2105 Land Resources Management***
Semester(s) in which the module is taught	*4 - semestr*
Person responsible for the module	*Sobir Roziboyev, Senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, seminar.*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium hours: 60 hours* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management, basics of land use, soil science and farming*
Module objectives/intended learning outcomes	✓ *Understand the land use and land management system and strategies of the Republic of Uzbekistan.* ✓ *Comprehend the purpose and essence of land management, its methods and principles, and the concept of land reform and land relations.* ✓ *Apply advanced methods and technologies of land management.* ✓ *Utilize techniques to enhance the efficiency of land use.* ✓ *Apply knowledge to create and maintain legal documents on land and understand the legal status of land.* ✓ *Analyze laws and regulatory documents relevant to the land management.* ✓ *Analyze the state and quality of land resources.* ✓ *Assess methods for distributing and redistributing the land fund.* ✓ *Evaluate and manage solutions for land protection and increasing productivity.* ✓ *Possess knowledge of technological features that have a technical impact on the earth.* ✓ *Understand the application of technology in land management and the connection between scientific*

	technology and the rational land use. ✓ *Recognize the characteristics of conducting land cadastre and land monitoring activities.* ✓ *Identify the use of organizational, legal, and economic systems in land use based on land management mechanisms.* ✓ *Apply knowledge related to the formation of land resources and their functions within land management.*
Content	*The goals and objectives of "Land Management". Interrelationship of "Land management" with other subjects. Object and subject of land management. The role and importance of land resources in economic sectors. Level of difficulty: 2.* *The concept of land use. The concept of land management, its description. Laws of formation of land management system. The role of land management in state administration. The nature, purpose and tasks of land management. Level of difficulty: 2.* *Land management system in the republic. Principles of land management. Legal basis of land management. Laws and regulatory documents related to the land management and regulation of land relations in Uzbekistan. The importance of land management in the regulation of land relations. Level of difficulty: 2.* *Description of the republic's land fund use. Distribution of the land fund by land categories and land types. General principles of land fund distribution. Formation of the ownership system in Uzbekistan and issues of land distribution in the national economic system. Peculiarities of land use in market economy. Social, economic and ecological relations in land allocation and land use for non-agricultural purposes Level of difficulty: 2.* *Land management mechanisms. Land cadastre and land monitoring as the main mechanisms of land management. Organizational and legal mechanisms of land management. Economic mechanisms of land management. Use of land cadastre data in land management. Level of difficulty: 3.* *Functions and aspects (aspects) of land use system management. Economic, ecological, technological, informational, technical, organizational-territorial (land formation), institutional and legal aspects of land use system management. Modernization of land use management aspects. Concept and essence of integrated management of land use system. Level of difficulty: 3.* *General management issues and application areas in land management. Land management methods in the Republic of Karakalpakstan and regions. Land management issues in administrative districts. Issues of effective land management in land-using entities in agricultural sectors. Level of difficulty: 4.* *Types and composition of agricultural land. Description of agricultural land use. Analysis irrigated and dry lands use in agriculture. Analysis of the quality and*

	changes of agricultural land. Pasture land use. Reform of ecological and economic relations in the pasture land use, including the introduction of innovative forms of management in order to eliminate the degradation of pastures and ensure its stability. Level of difficulty: 4. *Settlements Land structure and use of cities land fund. Characteristics of settlements and urban land use. Legal status of land plot in settlements. Level of difficulty: 4.* *Land relations. Land relations development laws. Land relations emergence forms. Land relations regulation aspects. State regulation functions of land relation. Level of difficulty: 4.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the tasks and assignments given in the forms of intermediate control, to submit a written work for the final control.*
Study and examination requirements	*Successful students of science* *The total maximum points will be the sum of the points allocated to the final exam (40%), and Midterm control (60%). In order to successfully pass the subject, the student must score 60% or more of the allocated points.*
Reading list	*1. Rakhmonov Q., Narbayev Sh.K., Mukimov Z.M. Land Management. Study guide. T.: TIIAME, 2019. – 154 p.* *2. Chertovitsky A.S., Bazarov A.K. Upravlenie zemlepolzovaniem. Uchebnoe posobie. Tashkent, TIIAME. 2010. – 327 p.* *3. Varlamov A.A., Galchenko S.A. Upravlenie zemelnimi resource. Uchebnoe posobie. M.: GUZ, 2005. – 240 p.* *4. Selim Kapor, Hari Eswaran, Winfried Blum. Sustainable Land Management. Springer-Verlag Berlin and Heidelberg GmbH & Co. KG. Germany 2016.*

Module designation	***YTA 2105 Introduction to Land Management***
Semester(s) in which the module is taught	*4-semestr*
Person responsible for the module	*Saifiddin Sharipov, senior teacher*
Language	*Uzbek*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours: 60* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*engineering geodetic works, land cadastre and land monitoring*
Module objectives/intended learning outcomes	✓ *Explain the measures of land management aimed at adapting the territory to modern production requirements.* ✓ *Describe the role of land as a natural resource in society and its significance as the primary means of production in agriculture.* ✓ *Understand the fundamental laws governing land management.* ✓ *Comprehend the objectives of land management.* ✓ *Grasp the principles underlying the creation and management of land management works.* ✓ *Apply knowledge of the organization of rational land use and protection.* ✓ *Utilize information on the implementation of these works through scientifically based land management projects.* ✓ *Apply basic methods of land management for developing land management projects under various natural and economic conditions.* ✓ *Conduct a thorough analysis of technical and economic issues related to land management.* ✓ *Evaluate and search for optimal solutions for land management projects.* ✓ *Choose the most suitable methods for implementing land management projects.* ✓ *Perform various land management works on territory, including those on agricultural and non-agricultural lands.* ✓ *Utilize modern technologies for executing land management works.*
Content	*The need for effective, rational and ecologically safe use of land and water resources. Specific characteristics of land use in economic sectors. Organization of territory. Land management in social production and its socio-economic concept. The purpose of land management is to achieve a clear economic result. Effective use of land and increase its productivity; carrying out special measures to improve the quality of land; intensive use of agricultural*

	land; development of new land for agriculture. Land protection. Fight against soil erosion; protection of land from improper use and deterioration of its quality. That the organization of rational use and protection of land is the main task of land management and that these works are carried out with the help of scientifically based land planning projects. Level of difficulty: 1. *Land zoning is an objectively developing process that organizes land use in accordance with the social needs of society and the constantly changing conditions of production and deals with zoning. Land management is a complex and diverse system of state activities. Tasks, nature, economic meaning, legal, ecological and technical basis and general structure of land management according to the laws on land. Using the results and data of land cadastre and other activities related to land use in land management. Level of difficulty: 2.* *Types of land management. Their differences and similarities. Purpose, tasks and content of inter-farm land management. Construction of inter-farm land in agriculture and other sectors of the economy. Peculiarities of the organization of farms located in different regions and with different specializations. The main principles of land management, their content and importance. Specific characteristics of the land as a means of production are taken into account in land management. Economic factors to be taken into account in land management. The composition of social conditions taken into account in land management and their influence on the organization of land use and production. Experiences of land management and efficient use of land in developed countries. Development and modern problems of land management. Level of difficulty: 2.* *Scientific-methodical issues of land management design. Techniques, technology and principles of land management. The process of development of land management projects and its main stages. Land management projects, their content and composition. Project organizations developing land management projects and their activities. Construction of inter-farm land. Organization and regulation of agricultural land tenants and land use. Organization of non-agricultural land uses, land and environment protection. Land management works aimed at land protection. Level of difficulty: 3.* *Determining and changing the boundaries of residential areas, organizing and using their land. Determination of boundaries of administrative territorial units. Restrictions and obligations on land use. Special issues of inter-farm land management. Establishment of new agricultural enterprises, farms and peasant farms, establishment of special land funds in districts; projects to identify and put into use land that is not used for designated purposes, has fallen out of use, or has deteriorated in quality; map of the redistributable land fund of the district and its composition. Level of difficulty: 4.*

	Tasks and content of internal land management in the farm. Preparation and field research work of the internal land management project. Placement of roads, engineering structures and objects. Level of difficulty: 4. *Organization of land types and crop rotation. Organization of the area of crop rotation. Level of difficulty: 4.* *Features of internal land management in farms. Environmental, economic and social effectiveness of the project of internal land management in the farm. The procedure for drawing up working projects and the development of working projects and their implementation. Level of difficulty: 4.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of analysis, to independently observe the studied processes and to perform the tasks and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). To pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. Avezbayev S., Sharipov S.R. Theoretical foundations of land formation. T.: TIQXMMI, 2021. -160 p* *2. Avezbaev S., Sharipov S.R. Landscaping design. Study guide - T.: TIQXMMI, 2021. - 168b.* *3. Avezbaev S., Volkov S.N., Sharipov S.R. Landscaping design. Study guide - T.: "TIIAME" NRU, 2022. - 170p.* *4. Land planning. Textbook. Pod. ed. prof. S.N. Volkova. - M.: GUZ, 2020. – 628 p.* *5. Selim Kapor, Hari Eswaran, Winfried Blum "Sustainable Land Management" Springer-Verlag Berlin and Heidelberg GmbH & Co. KG, Germany 2016*

Module designation	***GTT 2105 - Geoinformation system and technologies***
Semester(s) in which the module is taught	*4- semester*

Person responsible for the module	*Associate professor, PhD Mukhtorov Uzbekkhan*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150* *Contact hours: lecture - 30, practical lessons – 30, self-learning – 90, hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Cartography, Information technologies and process modeling*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– knows and can explain information systems and technologies, their basic components, software, database, hardware platforms, raster and vector formats;* *– knows and can create shape files in GIS software, gnospatial linking of rasters, work with gnographic world coordinate systems;* *– knows and is able to convert text coordinates of points in files of different formats into vector format, vectorization of rasters;* *– can independently perform the tasks of creating thematic layers, placing data in attribute tables, and at the same time combining tables into attributes;* *– knows and can perform geographic database formation, database management and data visualization methods;* *– can perform the tasks of displaying data in the geographic information system, geo-imaging, classification and re-classification, comparing maps, developing a map composition and preparing it for publication, and placing a map.*

Content	*Introduction to Geoinformation Technologies. Development history of GIS. Basic concepts and terms. Evolution of GIS. Fields of application of GIS. Basic components of GIS. Geographical and attributive data. GIS and digital cartography. GIS hardware platform. GIS typology. Level of difficulty: 2* *Land shape and dimensions, used models. Understanding the card. Geodetic basis of cards. Geographic coordinate systems. Geodetic coordinate system. Rectangular coordinate system. Polar coordinate system. Zonal coordinate system. Errors in cartographic projections. Classification of cartographic projections. Gauss-Kruger equiangular cross-cylindrical projection. Decoding of topographic maps and plans and their nomenclature. Level of difficulty: 2* *Types of spatial objects in GATs. Understanding of spatial data models. Raster models of data. Regular-cell representation of data. Quadrotomic model of data. Vector models of data. "Vector-to-raster" and "raster-to-vector" transformations. Models of surfaces (geofields). Level of difficulty: 2* *Special GIS programs. Digitization. Raster. Vector. Generalization of cartographic data. Buffering. Topology. Data collection methods. Stages of data collection. Types of basic geographic information. Get raster information. Get vector information. Obtaining auxiliary or secondary geographic information. Obtaining information through digital photogrammetry. Getting information through a GPS device. Getting information from external sources. Geographic information formats. Level of difficulty: 3* *Stages in keeping cadastres. The role of the land cadastre in the general system and procedure. Nature and tasks of water cadastre. Tasks and procedures of the cadastre of mineral deposits and man-made products. Cadastre of specially protected natural areas. Cadastre of areas with high man-made risk. Level of difficulty: 3* *General principles of spatial data visualization. Vector data visualization. Thematic cards. Raster data visualization. The question of generalization. Visualization of geofields. Measurement operations. Analysis of spatial object relations. Spatial queries. Overlay operations. Cutting and shearing operations. Aggregation and disaggregation of object attributes. Buffer zones. Proximity zones. Analysis of engineering fields. Analysis of geofields. Restore geofields. Level of difficulty: 3* *Digital relief models. Creation of digital relief model (DRM). Application of digital relief model (DRM). Database Management System. Database management programs. Designing DB. Understanding of SQL. Indexing. Geodescription. Classify. Compare card. Three-dimensional imaging. Electronic cards. Plotter or graphing device. Getting digital cards over basic paper cards. Acquisition of maps based on remote sensing data. Obtaining maps based on data from ground measurements and data from satellite systems. Level of difficulty: 4* *Requirements for installing GIS programs. Management of GIS. Companies producing GIS programs. Expert systems. Level of difficultyu:4* *Software of universal vector GIS. Software of universal raster GIS. Internet- GIS systems. Cartographic software*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. O'.Mukhtorov, A. Inamov - "Geoinformation system and technologies". - Tashkent, TIIAME NRU, 2022 year* *2. O'.Mukhtorov, A. Inamov, J. Lapasov. Instructional manual for practical training in "Geoinformation systems and technologies". T. TIIM, 2017.* *3.B.Markus, O'. Mukhtorov, Z. Mamatkulov, Z. Abdurakhmonov, Sh. Sattorov - "Three-dimensional modeling in geoinformation systems". - Tashkent: TIIAME printing, 2021*

Module designation	***YEK 2110 - Land cadastre***
Semester(s) in which the module is taught	*4,5- semester*
Person responsible for the module	*Rakhmonov Kasimdjon - doctor of technical sciences, associate professor, M. Abdurakhimova - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 300 hours* *Auditorium Hours:* *Lecture - 60 hours;* *Practical training - 60 hours* *Independent education - 180 hours*
Credit points	*10 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Cartography, Soil Science and Agriculture*
Module objectives/intended learning outcomes	*After mastering the discipline, the student* – *knows and can explain the components of the state land cadastre, the ministries and agencies that implement them, their rights and obligations regarding the management of the land cadastre;* – *knows the normative legal documents that are the basis for maintaining the state land cadastre and has the skills to use them;* – *acquires qualifications and skills for state registration of rights to land plots, their collection of documents and their issuance;* – *can form cadastral numbers in the registration of land plots and prepare their plan graphic data;* – *is able to classify land plots into attribute tables of objects based on their legal status and maintain land accounts;* – *can calculate the economic value of cultivated fields based on the quality assessment of land;* – *will be able to keep a land account for changes in land types in the territory of the land user subject and have the skills to prepare an explanation of land types.*

Content	*The essence, purpose and tasks of land cadastre. The role, function and importance of the land cadastre in the unified system of state cadastres. Types, principles and documents of state land cadastres. The land fund of the Republic of Uzbekistan - as an object of the land cadastre. Level of difficulty: 2* *Ways to obtain land cadastral data. Statistical methods of obtaining and processing land cadastre data. Methods of analysis of land cadastre data. Use of modern information technologies in land cadastre management. Level of difficulty: 2* *Registration of rights to land plots. Land accounting, its content, types and method of transfer. Land valuation, its importance in economic sectors. Soil inspection and the method of conducting it. Methodology of economic assessment of land and its transfer. Level of difficulty: 2* *Tasks and importance of land cadastre in enterprises, institutions and organizations. Organization of land cadastre in enterprises, institutions and organizations. Description of land ownership, land use and land properties in enterprises, institutions and organizations. Land accounting in enterprises, institutions and organizations. Description of the quality of land types. Level of difficulty: 3* *Contents of the land cadastre in the administrative district. Organization of land cadastre and state control of land use in the district. Land cadastral documents in the district. Procedure for registration of rights to land plots in the district. State land accounting and land quality accounting in the district. Land balance in the district. Level of difficulty: 3* *Content and importance of the land cadastre maintained in the region. Procedure for accepting land balance of administrative district and city. The content of the land balance in the region and the conditions for its preparation. Organization of land cadastre and state control of land use in the province. Level of difficulty: 3* *Tasks of organizing land cadastre and state control of land use in the republic. National land report of the country's land balance. Description of land areas of the Republic of Uzbekistan within the World Land Fund. Level of difficulty: 4* *Use of land cadastre data in economic sectors. Use of land cadastre data in the analysis of production activity of an agricultural enterprise. Use of land cadastre data in land planning. Level of difficultyu:4* *Peculiarities of land cadastre management in the Commonwealth of Independent States (CIS). Land cadastre in developed countries. Level of difficulty:5* *The importance of using geoinformation systems and technologies (GAT) in solving land cadastral issues. Level of difficulty:5*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Bobojonov A.R., Raxmonov Q.R, Gofirov A. Yer kadastri. T.TIMI, 2008. -220 b.* *2. Kurbonov E.Q., Bobojonov A.R., Raxmonov Q.R, Yer kadastri asoslari. T.TTESI, 1999. -75 b.* *3. Чертовицкий А.С., Бозоров А.К. "Земелный кадастр. Т. "Фан ва технология" 2013 г. 296 с* *4. Қ.Рахмонов, А.Бобожонов, А.Ж.Гофиров. Ер кадастри. Ўқув қўлланма. ТИМИ, 2012. 173 б.*

Module designation	***YFI 2205 - Economic of land resources use***
Semester(s) in which the module is taught	*10-semestr*
Person responsible for the module	*Zulfiya Khafizova, senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*elective course*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours:* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management design, land cadastre, land management*
Module objectives/intended learning outcomes	✓ *Analyze the role of land use economy and management as an integral component of a national economic system.* ✓ *Examine the development of a country, particularly its socio-economic development through reform implementation.* ✓ *Investigate specific issues related to land use economy.* ✓ *Explain the organizational and legal forms, various institutions, and organizations serving the land use economy, such as the land code and legal documents on environmental protection and land use procedures.* ✓ *Elaborate on the legal basis for creating a comprehensive framework for regulating the land use economy in the Republic, including the Land*

	Code and the law on the circulation of agricultural land. ✓ *Understand that full land use rights will emerge in the Republic.* ✓ *Grasp the principles of territorial zoning and permitted land use, as well as the economic aspects of land use.* ✓ *Know the role, functions, and features of land use economy and management.* ✓ *Recognize the importance of implementing measures to enhance the legal framework of land reform and the relationships among market economy participants.* ✓ *Identify land use and management as one of the primary economic factors of production.* ✓ *Recognize the factors that influence the characteristics of land use and management, including limitations and trends in decreasing agricultural areas due to urban economic development and infrastructure expansion.*
Content	*The nature, function and general system of land use economics and management. Organizational-legal foundations of transfer of land use economy and management system. The role of "Land Code", "On State Cadastre", "On State Land Cadastre" and other related laws in land use. Level of difficulty: 2.* *There are also a number of specific manifestations of existing land resources on the territory of the republic, and forms of land relations regulation can be included in them. The forms of land relations regulation cover aspects such as socio-political, organizational-legal, socio-economic, ecological, natural-territorial, technological, financial, investment-infrastructural, market, business and production. Studying other courses in a complex way. Level of difficulty: 2.* *Issues of nationwide, holistic and comprehensive consideration of the country's scientific and economic potential, as well as methodical and practical study of land use and management. Service system and tasks. Quantity and quality indicators of objects. Directions of land cadastre and land management, their interrelationship and sequence. Contents of land use documents. Level of difficulty: 2.* *Land use is inextricably linked with the provision of socio-economic needs and interests of the society within the framework of economic reforms aimed at establishing a socially oriented market economy implemented in the country. Land use should be organized within the framework of ecological requirements and standards, and should be in accordance with the natural and territorial characteristics and be focused on their rational and effective use, should be carried out by paying attention and importance to the issues of determining the economic and technological advantages of land, processing and using them. Level of difficulty: 3.*

	The subject, tasks and theoretical and methodological problems of land use economics and management, as well as sustainable development of land use, economic principles, mechanism and multi-purpose character, cycle of reproduction and land rent, land valuation and privatization, land market, land as an investment object , land rent, land tax features and other similar directions, issues related to identification of problems, as well as specific methodological and practical bases for their solutions are highlighted place in the general system and procedure. Nature and functions of land market infrastructure. Ensuring continuous functioning of economic relations and mutual relations between subjects of the market economy; regulating the flow of goods and money. Level of difficulty: 3.
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the assignments and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). In order to pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. Altiev A.S. Land Use Economics and Management. T.: 2023 y.392 p.* *2. Altiev A.S. Problems of regulation of land resources use system. Monograph. - T.: "Science", 2018. - 274 p.* *3. Yarmatova D., Bobojonov A., Rakhimov A. Basics of the state cadastre. Cholpon publishing house, 2014. 234 p.* *4. Decree of the President of the Republic of Uzbekistan "On measures to protect the rights and legal interests of farmers, farmers and homestead land owners, and to fundamentally improve the system of effective use of agricultural arable land" //PF-5199, 09.10.2017.* *5. Law of the Republic of Uzbekistan. "On privatization of non-agricultural land plots". 24.09.2021*

Module designation	***TDE2205 - Soil Degradation***
Semester(s) in which the module is taught	*4- semester*
Person responsible for the module	*associate professor, Egamberdiyev Ramish Rabbimovich.*
Language	*Uzbek*
Relation to curriculum	*elective*
Teaching methods	*lecture, lesson, self-learning*

Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Auditorium hours: 60 hours* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Soil science and agriculture, plant science, ecology, land cadastre.*

Module objectives/intended learning outcomes	***To know and understand:*** *- factors of desertification, deforestation, secondary salinization and irrigation, water and irrigation erosion in mountain and sub-mountain areas; - deflation, as well as degression of pastures in areas where cattle breeding is intensively developed,* *- causes of man-made desertification as a result of land development in agriculture and industry;* *- excessive use of agrochemicals, disposal of industrial and household waste, reduction of soil fertility and pollution as a result of planting the same crops;* *- about factors of degradation processes, such as soil salinization as a result of drying up of the Aral sea and deposition of salty dust aerosols on the soil surface* ***To be able to:*** *- Current state of soils and land resources of the Republic of Uzbekistan,* *- about soil degradation factors and types;* *physical, chemical and microbiological factors and processes of soil degradation;* *- their evaluation methods;* *- ways to protect soils from degradation;* ***To from competences in:*** *- student soil agronomic zoning and soil inspection and evaluation methods;* *- procedures for using land cadastre data;* *- use of soil maps;* *- soil protection and their efficient use,* *- assessment of state land cadastre landscapes,* *- methods of monitoring degradation processes.* *- consequences of irregular grazing of livestock and changes in soil cover,* *- Effects of soil erosion processes on its properties,* *- Regional climate change of Uzbekistan and its consequences,* *- Study of saline soils and measures for their reclamation.*

Content	*- Soils and land resources of Uzbekistan. Classification of soils of Uzbekistan. Mechanical degradation of soils. Physical and chemical degradation of soils. Soil pollution and detoxification and their biological activity. Climate change and soil degradation. Soil protection. Regional distribution and description of soils of the Republic of Uzbekistan. Types and factors of soil degradation. Types of soil degradation and factors affecting it. The main causes of soil degradation. Level of difficulty: 2* *Soil salinization, desertification processes and soil degradation. Saline soils and brines. The main factors of soil salinity. Effects of soil salts on soil properties, plant growth and productivity. Reclamation of saline soils, brines and brines. Secondary salinization of irrigated soils and its prevention. The main types of the desertification process and the indicators determining it. Factors causing the process of desertification. Effects of land desertification on soil properties and measures to prevent it.* *Identification, monitoring and creation of electronic maps of degraded lands based on GAT technologies. Methods of monitoring degradation processes. Method of monitoring soil salinity level and type. Ground observations. Remote monitoring of soil salinity. Monitoring of plant cover. Remote monitoring. Periodicity of monitoring. Difficulty level: 3* *Soil protection. Areas of soil erosion spread abroad and in our republic. Soil erosion and land reclamation. Soils contaminated with technogenic products. Difficulty level: 3* *Factors causing soil erosion and measures to combat them. Problems of land degradation as a result of erosion processes. Soil formation processes of a certain region. Specific regional characteristics of soils. Unreasonable use of land without accounting. Change of natural soil cover due to destruction of forests, irregular grazing of livestock. Difficulty level: 3* *Reclamation of saline soils, brines and brines. Secondary salinization of irrigated soils and its prevention. Preparing the soil for washing. Duration and methods of saline washing. Development of salt marshes. Improvement of waterlogged soils. Secondary salinization of irrigated soils and its prevention. Saline soils. Difficulty level: 4*

Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfill the assignments and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%),the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allotted points and collect a score in it..*
Reading list	*1. Overview of the state of the environment - Uzbekistan. Second comment. UN, Economic Commission for Europe. Committee on Environmental Policy. UN. New York and Geneva, 2010. 253 p.* *2. Atlas of soil covers of the Republic of Uzbekistan. State Committee for Land Resources, Geodesy, Cartography and State Cadastre of the Republic of Uzbekistan. T.: 2010. - 44 p.* *3. National Report on the State of Land Resources of the Republic of Uzbekistan. T.: 2020. – 105 p.* *4. Laws and regulations on land use in the Republic of Uzbekistan. Initiative of Central Asian countries on land resources management (ERBMOMT). Collection of the United Nations Development Program. T.: 2012. – 131 p.* *5. Egamberdiev R.R. Fundamentals of agriculture and plant science study guide Tashkent 2022.*

Module designation	***HMJ 2205 - Engineering equipment of territories***
Semester(s) in which the module is taught	*4- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, land cadastre, remote sensing, fundamentals of state cadastres, Geoinformation systems and technologies, Land resources management*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– Knows and can explain the theoretical knowledge, practical skills on the engineering equipment of territories, how important and urgent issue is the maintenance of this state cadastre today, and the tasks of organizing these works;* *– He got an idea about the importance of highways and engineering structures in the country's economy;* *– Knows engineering structures, their features and territorial features of engineering equipment in the operation of state cadastres and can use them in engineering works;* *– knows and is able to evaluate the role and importance of science in the design of local roads, its application in national economic enterprises, determining the optimal sizes of land ownership and land users' land of agricultural enterprises, and delivering cultivated products to destinations;* *– acquires the skills to assess their economic efficiency by determining the importance of maps and plans and land cadastral projects in the placement of engineering objects of general economic importance.*

Content	*Local roads and their types. Calculation of road connections and cargo volumes in the district. Determination of road category. Road category and their standards. Level of difficulty: 2* *Importance of highways in the national economy. Traffic - use indicators of the road. Motorway. Level of difficulty: 2* *Relief forms. Describe the terrain. Determining the direction of the slope along the road route with the greatest slope. Determining the boundary of cyv catchment areas for a given point of water flow. Level of difficulty: 2* *Determining the boundary of water catchment areas for a given point of water flow. Determining the characteristic points of bending of the place in the given direction. Level of difficulty: 3* *Flow methods of construction. Determining the volume of earthworks in road construction. Selection of machines for earthworks. Level of difficulty: 3* *Calculation of the radius of the curve in the plan bend. View on the road. Longitudinal section of the road. Project line. View in longitudinal section. Basing the maximum value of the longitudinal slope. Cross section. Level of difficulty: 3* *Side slope of road bed. Ensuring the priority and durability of the road base. Fundamentals of road design. Level of difficulty: 3* *Understanding the design of watercourse crossings. Specific characteristics of the rivers of Uzbekistan. Level of difficulty: 4* *Search types. Anticipate the direction of the road axis. Design of road plan, longitudinal section and cross section. Defining the scope of work. Level of difficulty:*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Мусаев И.М. Худудни мухандислик жихозлаш. Маъруза тўплами Тошкент, ТИКХММИ, 2000 й.* *2. Артёменко В.В., Лойко П.В., ОгарковА.П.,Севостьянов А.В., Кадастр земель населённкх пунктов, Москва "КОЛОС" 1997г. 132 с.* *3. Designing Land Registration Sustims for Developing Countries. OUP Oxford, 2012 .* *4. Raxmonov Q. Ahsurov A.F. Hududlar davlat kadastri., O'quv qo'llanma. Tashkent 2018 y.* *5. Ashurov A.F. Davlat kadastrlari ma'lumotlari bazasi. O'quv qo'llanma. Tashkent 2021 y.* *6. Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208 b.*

Module designation	***YAT 2204 - Land information system***
Semester(s) in which the module is taught	*4 - semester*
Person responsible for the module	*Rakhmanov Kosimdjon, DSc*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 120* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Introduction to state cadastres, Information technologies and mathematical modeling of processes, Geoinformation system and technologies, Land Use Economics and Management*

Module objectives/intended learning outcomes	– After mastering the discipline, the student: – knows and can explain actions related to the collection, storage and processing of all information and data related to land; – can widely use special programs, aerial and space images, information on geoportals in the Internet system; – knows and can perform the methods of determining the area of agricultural land in an automated way with the help of special programs and entering data, periodically updating them; – can independently use special GIS programs, CAD, MAPPING, ArcView, AtlasGIS program, MapInfo, ArcCAD System, Panorama programs to form a land information system; – can perform operations such as digital image processing, data vectorization, generalization, buffering, and topology; – database, database management system (DBMS). Knows the types of database management software, DBMS and can use it to form a land information system; – knows and can perform operations such as geospatial analysis, geospatial analysis methods (database query, vector data query, raster data query), geospatial measurements, Overlay operation; – knows and can explain geodescription methods, classification, reclassification, map comparison, graphic and report views, map representation, three-dimensional representation methods; – knows and can use management in the land information system, software and its types, requirements for installing geographic information programs, computer technologies used in the system and their management, expert systems.

Content	Concept and tasks of land information systems science. General information on GIS ball. The main used terms and terms. Areas of application of the system. The concept of geomatics and its place in the system. Geographic and attribute data. Geocoding. Level of difficulty 2 Information and understanding of information. Data collection methods. Stages of data collection. Types of basic geographic information. Get Raster and Vector information. Obtaining auxiliary or secondary geographic information. Obtaining information through digital photogrammetry. Getting information through a GPS device. Obtaining information from external sources. Geographic information formats. Level of difficulty 2 Information and tasks of special GIS programs. (CAD, MAPPING, ArcView, AtlasGIS software, MapInfo, ArcCAD System, Panorama) Understanding of digitization. Rules of digital imaging Special scanners. Raster and rasterization. Digital image processing. Vector and vectorization. Data generalization. Buffering. Topology. Level of difficulty 2 Understanding of database. Database Management System (MBBT). Database management programs. Types of MBBT. Advantages of MBBT. Tasks of MBBT. Placing information in MBBT tables. Database design. Understanding of SQL. The importance of indexing in the query process. Level of difficulty 3 A concept in a geodatabase. Photogrammetric data analysis. Modeling and models. Spatial modeling in GAT. Spatial data formats. Level of difficulty 3 Role and tasks of management in land information system. Software and its types. Study of requirements for installation of geographic information programs. Computer technologies used in the system and their management. Concepts of expert systems. Level of difficulty 3 The role of multimedia tools in using the land information system. Studying land information system programs and data through the Internet. The role of three-dimensional models. Study of the mobilized geographic information system. Level of difficulty 4 Methods of obtaining space velocities. Problems with remote access. Information on the characteristics of various space images (IKONOS, Quickbird, WorldView, EROS V, IRS satellites). Global Positioning System and its application. Information on GRS-receivers hub. Level of difficulty 5
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1.Сафаров Э., Мусаев И., Абдураҳманов Х. География ахборот тизимлари ва технологиялари. –Тошкент, 2008. ТИМИ, -160 б.* *2.Чертовицкий А.С., Базаров А.К. Ердан фойдаланишни бошқариш. Тошкент, 2009.* *3.Бабажанов А.Р., Рахмонов Қ., Ғофуров А.Ж. Ер кадастри. Дарслик, Т.: 2008. – 211 б.* *4.Чертовиский А.С., Земелние кадастр. Учебное пособие.-Т.ТИИМ типография, 2012 г.-296 с.* *5.Рахмонов Қ., Успанкулов Б.М. Давлат кадастрлар асослари Дарслик. "ТИҚХММИ" МТУ Т.: Т.:2023.-216 б.*

Module designation	***YMZ3104 – Remote Sensing of Land***
Semester(s) in which the module is taught	*9-semestr*
Person responsible for the module	*Assistant professor, Ilhomjon Aslanov* *Assistant professor, Nozimjon Teshaev*
Language	*Uzbek, Russian, English*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, Laboratory*
Workload (incl. contact hours, self-study hours)	*Total workload: 120 hours* *Contact hours: lecture – 60 hours, practical lessons – 30 hours, Laboratory- 30 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Geography, Astronomy, Informatics (school subjects) Geodesy*

Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- general principles of remote sensing,* *- existing methods and classification of remote sensing,* *- scientific and technological bases of remote sensing,* *- use remote sensing of the earth to monitor land areas,* *- monitor, and evaluate agricultural crops,* *- The student should be able to download, process and analyze spatial images;* *- To have the skills to notice changes based on the analysis of spatial images, to evaluate the dynamics of change;* *- The student will have the ability to monitor the processes taking place on the surface of the Earth based on the analysis of land cover changes;* *- An ability to independently carry out investigation and development work to solve real life geospatial problems.* *- the technique comprises assessing ground data acquired from remote sensing data and then producing maps based on the results of this analysis,* *- the main directions and methods of scientific and technical development in the field of remote sensing technologies,* *- to study the existing methods analyzing of remote sensing data,* *- to have an idea about the main directions of scientific and research work on the development of methods of using remote sensing data;* *- methods of calculating remote sensing images,*

Content	*Understanding the content and principles of remote sensing, familiarizing oneself with the remote sensing processes and methodologies, gaining insights into energy sources and electromagnetic waves, and developing proficiency in computational techniques are essential components of this field. Level of difficulty: 2* *The topics encompassed in the study of remote sensing include passive and active sensors, atmospheric correlation, spatial remote sensing, land cover, land use, land cover change, the production of land cover maps, agriculture, and the mapping of various crop types. Level of difficulty: 2* *Analyzing images involves several key components, including the interpretation of the image, understanding the elements of visual interpretation, utilizing interpretation keys, and generating thematic maps. Image classification is a crucial process within this domain, driven by principles guiding image classification, the step-by-step image classification process, controlled and uncontrolled grading, the application of classification algorithms, the verification of results, and addressing challenges encountered during image classification. Level of difficulty: 3* *Examining agricultural land parcels through the utilization of remote sensing data and land area surveillance, and assessing forested regions based on remote sensing resources, incorporating tree condition monitoring techniques, are key components of this study. Level of difficulty: 3* *The various types of remote sensing materials and their respective applications across diverse fields, along with the associated application technologies, constitute the focal points of investigation in this study. Level of difficulty: 4* The research involves an analysis of forested regions using remote sensing data, with a focus on the technology employed for monitoring tree conditions within these forested areas. *Level of difficulty: 5*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it*

Reading list	*1. Ш.Шокиров, И.М.Мусаэв, М.С.Акбаров. Масофадан зондлаш. Тошкент, Иқтисод-молийа, 2015.* *2. J. Guo and P. J. Mason, Image processing and GIS for remote Sensing. John Wiley & Sons, Ltd., 2016.* *3. Rafael C. Gonzalez, Richard E. Woods. Digital Image Processing. 4th Edition, 2017.* *4. Берлянт А.М. Геоиконика-М.: МГУ, АЭН РФ, «Астрея», 2011 г.*

Module designation	***TRK 2204 - Cadastre of natural resources***
Semester(s) in which the module is taught	*4-semester*
Person responsible for the module	*Narbayev Sh.K. - Associate Professor, Doctor of Philosophy in Economics (PhD).* *Akhmadaliyev VA - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 120 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Fundamentals of state cadastres, land cadastre, soil science and agriculture, land monitoring, geodesy, cartography*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* – *knows and can explain the concepts of the unified system of the state cadastre (DKYaT), the main parts of the cadastre of natural resources, the concepts of information infrastructure for the purpose of cadastre, the legal basis of the cadastre and the technologies of maintaining the cadastre of natural resources;* – *knows and can use the law on state cadastres, the Regulation on the maintenance of DKYaT, the economic basis of natural resources cadastre management, the system of infrastructures providing the natural resources cadastre, the methods of collecting the necessary information about the objects of the natural resources cadastre;* – *skills in organizing natural resources cadastre, maintaining it on the basis of a single methodology, bringing cadastral data into a single system, being able to perform the service system and tasks of state cadastres, cadastre lines, ensuring their interdependence and sequence in their maintenance, maintaining natural resources and linear type cadastres will have;* – *will have the ability to register natural resources, perform their accounting and evaluation, and use laws and regulatory documents in maintaining the cadastre of natural resources.*

Content	*Cadastre concept, content and tasks. Unified system of state cadastres. The nature, function and general system of state cadastres. Object and subject of state cadastres. Legal basis of state cadastre management. Principles and documents of state cadastre management. Organization of state cadastre maintenance. Level of difficulty: 2* *Content of the state land cadastre. The procedure for maintaining the state land cadastre. Purpose and tasks of land cadastre. Types and principles of state land cadastre management. Components of the state land cadastre. Importance of state land cadastre in national economy. The role of the land cadastre in the unified system of state cadastres. Organization of state land cadastre management. Level of difficulty: 2* *Content of development of the state water cadastre and general rules of its maintenance. Organization and maintenance of the state water cadastre. Functions and powers of the Hydrometeorological Service Center, the State Committee for Geology and Mineral Resources, and the Ministry of Agriculture and Water Management in maintaining the state water cadastre. Level of difficulty: 3* *General rules for maintaining the state forest cadastre. Organization of state forest cadastre management. The procedure for maintaining the state forest cadastre. Procedure for using state forest cadastre data. Level of difficulty: 3* *Content and essence of the state cadastre of mines, mineral deposits and man-made products. The main information content of the cadastre and the procedure for their use. The procedure for maintaining the state cadastre of mines, mineral deposits and man-made products of the Republic of Uzbekistan. Level of difficulty: 3* *General rules and content of maintaining the state cadastre of flora objects. The procedure for maintaining the state cadastre of flora objects. General rules and content of the state cadastre of the animal world. Procedure for maintaining the state cadastre of the animal world. The procedure for collecting and presenting information on objects of the state cadastre of flora and fauna. Level of difficulty: 4* *Protected areas in the republic, their categories. General rules for maintaining the state cadastre of protected natural areas. Structure of the state cadastre of protected natural areas. Organization and management of cadastre development. Level of difficulty: 4* *The procedure for maintaining the state cadastre of natural and man-made high risk zones. The composition of the data of the state cadastre of zones with high natural risk. Procedure for preparation of state cadastral documents of zones with high natural risk. Organization of maintenance of the state cadastre of zones with high man-made risk. Level of difficulty: 5*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. И.Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *2. Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208b.;* *3. Ашуров А.Ф. Давлат кадастрлари маълумотлар базаси. Ўқув қўлланма. Тошкент 2021 й.* *4. Рахмонов Қ.Р. Давлат кадастрлари. Ўқув қўлланма. Т.,ТИМИ, 2008 - 160 б.* *5. Нишонбоев Н. Давлат кадастри асослари. Ўқув қўлланма. Т.ТАҚИ, 2007 – 126 б.*

Module designation	***PR2106- Internship (Geodezic works in Land Development)***
Semester(s) in which the module is taught	*4- semestr*
Person responsible for the module	*Jumanov Azamat Norbutaevich (PhD), associate professor* *Abdiramanov Rashid Duschanovich, senior teacher* *Valieva Albina Robertovna, assistant* *Shavozov Temur Karimovich is a trainee teacher*
Language	*Uzbek and russian*
Relation to curriculum	*Compulsory*
Teaching methods	*Field practice*
Workload	*(Estimated) Total workload: 120* *self-learning – 120, hours*
Credit points (*Field practice*)	*4 credits*
Required and recommended prerequisites for joining the module	To master the course, Master Students must have basic knowledge in “Higher mathematics”, ” Geography;”, “Informatics”,
Module objectives/intended learning outcomes	*Formation of the necessary practical skills for carrying out studies on engineering geodesy of qualified specialists in the field of "land cadastre and land management ".* **As a result of Master's research practice the Master student must:** **know and understand:** *- Consolidation of the acquired theoretical knowledge on "Geodesy".* *- study of geodetic measurement methods in field conditions.* *- gaining experience in performing the main types of geodetic measurements and observations.* *- to have the ability to use modern geodetic tools and technical equipment.* *- can adjust geodetic measurements* *- can determine coordinates and elevations objects through geodetic measurements;* *-knows the design of instruments for performing topographic, geodetic and surveying work;* **be able to:** *- organization of geodetic measurements and observations.* *- learning to process and analyze the obtained results.* *- Able to process results field measurements and create topographic plans in specialized software provision.* *- has the skills of field work in urban areas;* *-perform some actions when executing tacheometric survey;* *-is able to perform some actions when performing technical leveling;* *-capable of reproducing some actions in processing field measurements;* *-is able to reproduce some actions when creating topographic plans;* *- able to perform certain actions production of linear-angular measurements in theodolite traverse;* *- able to perform some actions during technical leveling;* **form competences in:** *- completing the stages of work determined by the individual assignment for the training geodetic practice (GPP), calendar plan, reporting form materials and ensuring the implementation of plans in a competency-based format results;* *- preparation of a report containing materials from the stages of work that reveal the level of mastering a given list of competencies;* *- preparation and presentation of the results obtained.*

Content	*To independently carry out geodetic measurements on the surface of the earth, to create plans and profiles of the place, as well as to study the theoretical foundations of geodetic measurements performed on the surface of the earth in solving engineering-geodesy issues in various fields; national economy, arming students with the necessary knowledge to perform independent measurement work using geodetic instruments, study the methods of drawing up plans and profiles of the place and develop measurement results aimed at systematic improvement, measurement results and teaching the effective use of graphics. drawings in solving engineering-geodesy problems in various sectors of the national economy.*
Exams and assessment formats	*The report and its drawing applications are created with the group team. Each member of the group writes a separate report chapter and participates in drawing applications.* *The completed report and drawing applications are reviewed and discussed together with the group members, each group member signs the report, and then submits it to the head of practice for verification.* *The defense of the report is carried out in front of the commission members. According to the instructions of the commission, each member of the group will give a report on some parts of the report, and will answer questions about the whole report. The student is evaluated according to the results of the defense and the quality of the report.*
Study and examination requirements	*Requirements for successfully passing the module:* The final grade in the module is composed of 40% defence of the internship report, 40 % participation in the internship, 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. H.J. Khaitov, A.N. Inamov. Engineering geodesy. "TIIAME" National Research University, 2022. 495 p 2. A. Suyunov Engineering geodesy. Tashkent. 2021.-359 p. 3. Abdullaev T.M., Inamov A. N., Lapasov J.O. Engineering geodesy geodetic works in the construction of hydrotechnical facilities. TIIAME, 2019. 152 p. 4. Germak O.V., Kalacheva N.A., Gugueva O.A. Geodesy. Tutorial. – M.: Phoenix, 2020. – 316 p. 5. Glukhikh M.A. Land management with the basics of geodesy. Workshop. Textbook for HE, 1st ed. – M.: Lan, 2020. – 136 p. 6. Dyakov B. N. Geodesy. Textbook. – M.: Lan, 2020. – 416 p. 7. Khodorov S.N. Geodesy is very simple. Introduction to the specialty. – M.: Infra-Engineering, 2020. – 176 p. .

Name of the module/subject and cypher in the curriculum	***APK 3105- Human settelement land cadastre***
Semester in which science is taught	*5 semester*
Responsible teacher of the module/subject full name, degree and title	*Babajanov Allabergan Ph.D., associate professor*
In which language to be taught	*Uzbek, Russian*
Where in the curriculum	*Mandatory*
Teaching methods	*Lecture, practical training, independent education*

Study load (auditorium hours by types and independent study hours)	*Total load : 150 hours* *Auditorium Hours:* *Lecture - 20 hours;* *Practical training 40 hours* *Independent education 90 hours*
Number of credits allocated to science	*5 credits*
The list of prerequisite subjects	*Geodesy, basics of land use, basics of land formation, management of land resources*

Expected Learning Objectives	*Having mastered the subject, the student:* *- will have an idea of the settlements of different nature located in different regions of the republic and the distribution of land by their territorial regions;* *- knows and can use the basic principles of accounting and valuation of real estates of various natures located in settlements and the land under them ;* *– acquires the skills to sell land plots in settlements through auctions in accordance with market conditions, to apply the methods of forming the secondary market* *– can use GIS programs for the composition of data related to the land cadastre system of settlements, their formation, data formation on the basis of geoinformation technologies.*

The content of science	*Settlements , concept , types and main features . Peculiarities of land use in settlements . Placement and development of settlements / Real estates in settlements, their nature and types / Complexity level-3.* *Principles of land cadastre management in settlements, specific features and concepts and terms used in it. Automated systems for maintaining the cadastre of residential areas. Features and procedure of multi-purpose land cadastre maintained in settlements. Difficulty level-4* *land cadastre work in residential areas . State accounting of real estate objects in settlements. Content and procedure of state registration of rights to real estate objects. Content and procedure of primary registration of real estate objects . Difficulty level-4* *Concepts and approaches to the evaluation of settlements land . Principles and methods of real estate valuation in settlements . Principles and procedure for assessing the value of land plots in settlements . Difficulty level-5*
The format of exams and assessment	*To complete master theoretical and methodical concepts about science, reflect the results of the analysis properly, observe being studied processes independently, complete mid-term control work in forms given as assignment and tasks , submit written work according to final control*

Students allowed to study and sit exams	*Requirements for passing the course* *The total maximum marks will be the sum of the final exam (40%), Midterm (60%), and allotment points. To successfully pass the subject, the student must score 60% or more of the allotted points.*
Literature	*1. Babajanov A.R., Roziboev S.B. Land cadastre of settlements. Study guide. Tashkent, Tafakkur, 2011, 212b.* *2. Babajanov A.R., Roziboev S.B., Kamalova D. Land cadastre. Textbook . Part 1-2, Tashkent , TAQI, 2014, 236b.* *3 . Babajanov A. R. Muqumov A. M. , Khafizova Z. X. Integrated management in the use of land resources. Tashkent, TIMI, 2017, 370p.* *4. Babajanov A.R., Turaev R.A., Ruziboev S.B. Osnovy zemlepolzovaniya. Uchebnoe posobie. Tashkent, Akademnashr, 2020, 128 str.* *5 . National land report of the Republic of Uzbekistan. T. , State Committee of Land Resources of the Republic of Uzbekistan. , 2012-2020*

Module designation	***YTL 3105 - Land tenure development***
Semester(s) in which the module is taught	*5 semestr*
Person responsible for the module	*Allabergan Babajanov, associate professor*
Language	*Uzbek/Russian*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land cadastre, land monitoring, basics of land management, geodesy*
Module objectives/intended learning outcomes	✓ *Recall the content and essence of land development planning.* ✓ *Remember the interdependence of organizational, legal, and economic systems in land development planning.* ✓ *Memorize the laws governing land distribution in the categories of the Republican Land Fund.* ✓ *Retain knowledge about the development of land development projects, methods, and procedures for their implementation.* ✓ *Apply skills to collect, analyse, and utilize methods related to land use planning.* ✓ *Implement legal, organizational, technical, economic, and ecological mechanisms relevant to land use planning.* ✓ *Understand the distinctive features of conducting various land construction works on land areas within the country's borders, including agricultural*

	and non-agricultural land. ✓ *Grasp the processes and procedures related to the establishment of boundaries for administrative territorial units, including cities, rural settlements, administrative districts, and regions.* ✓ *Interpret the features of transferring and marking these boundaries in place.* ✓ *Acquire knowledge about the content of information related to the land structuring system.* ✓ *Identify the methods for forming data in the land structuring system using GIS programs based on geoinformation technologies.*
Content	*Scientific-methodical issues of land management design. The general content of land management design. Emergence and development of land management design. The object of the science of land management design. The subject of land management design. Concepts of land management design methods and methods used in design. Level of difficulty: 2.* *Techniques, technologies and principles of land management. Land management design system and stages. The process of Land management projects and its main stages. Land management projects, their content and structure. Project organizations that develop land management projects and their activities. Level of difficulty: 2.* *The concept, tasks and content of inter-farm land management. Organization and regulation of agricultural land tenants and land use. Organization of non-agricultural land uses, land and environment protection. The main content and essence of land protection. Land management works aimed at land protection. Level of difficulty: 3.* *Determining and changing the boundaries of residential areas, organizing and using their land. Determination of boundaries of administrative territorial divisions. Restrictions and obligations on land use. Special issues of inter-farm land management. Establishment of new agricultural enterprises, farmers and peasant farms. Organization of special land funds in districts; projects to identify and put into use land that is not used for designated purposes, has fallen out of use, or has deteriorated in quality; map of the redistributable land fund of the district and its composition. Level of difficulty: 4.* *Tasks and content of internal land management in the farm. Preparation and field research work of the internal land management project. Placement of production departments and economic centers. Placement of internal main (highway) roads, engineering structures and facilities in the farm. Level of difficulty: 4.* *Issues of organizing land types and crop rotation. Organization of the territory of the crop rotation massif. Organization of the areas of tree groves and forage land types. Level of difficulty: 5.* *Features of internal land management in farms. Environmental, economic and social effectiveness of the*

	project of internal land management in the farm. Level of difficulty: 5.
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of the analysis, to independently monitor the studied processes and to fulfil the assignments and tasks given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum points will be the sum of the final exam (40%), and Midterm (60%). To successfully pass the subject, the student must score 60% or more of the allotted points.*
Reading list	*1. John Randolph. Environmental Land Use Planning and Management. Island Press, Washington, Cavelo, London, 2003, 664p* *2. Avezbaev S, Volkov S.N. Landscaping design. Textbook. - T.: "Generation of the New Age", 2004. - 786 p.* *3. Avezbaev S., Volkov S.N. Landscaping design. Textbook - T.: "National Society of Philosophers", 2007. - 470 p.* *4. Avezbaev S., Sharipov S.R. Landscaping design. Study guide - T.: TIIAME, 2021, 168b.* *5. Zemleustroitelnoe proektirovanie. Textbook. Pod. ed. prof. S.N. Volkova. - M.: GUZ, 2020. – 628 pages.*

Module designation	***LH 3105 - Land lagistion***
Semester(s) in which the module is taught	*5 –semestr*
Person responsible for the module	*Shokhnazar Bobokulov, associate professor*
Language	*Uzbek/Russian*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium hours: 60 hours* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*basics of land use, land management, land cadastre*
Module objectives/intended learning outcomes	✓ *Understand the fundamentals of land relations, including land ownership rights, land ownership and use rights, lease relations, and payment for land.* ✓ *Grasp the methods employed in the state management of the land fund.* ✓ *Apply methods for state control over land use and protection.* ✓ *Utilize techniques for resolving land disputes and ensuring legal protection of land.* ✓ *Implement measures of responsibility for violations of legal documents related to land.* ✓ *Apply knowledge of the legal status of land based on the categories of the land fund.* ✓ *Demonstrate the ability to formalize documents that confirm the rights of legal entities and individuals to land plots.* ✓ *Display proficiency in determining the legal status of land by land fund categories, ownership rights to land, land rent, land distribution, redistribution, land use, and land protection.*
Content	*The subject and methods of land law. Principles of land law. Land law system. The role of land rights in the legal system. The relationship of land rights with water, forest, mountain rights and nature protection rights. Level of difficulty: 2.* *The concept of sources of land rights and their general description. The Constitution of the Republic of Uzbekistan, the Land Code of the Republic of Uzbekistan, Decrees of the President of the Republic of Uzbekistan, decisions of the Cabinet of Ministers, decisions of the Republic of Karakalpakstan and regional authorities as sources of land rights. Level of difficulty: 3.* *The concept of state ownership of land. Land use right and its types. Basis for the creation and revocation of rights to land plots. Level of difficulty: 3.* *The essence of land management. Classification of land management activities. Legal coordination of inter-farm land management. Legal coordination of land*

	management in the farm. Level of difficulty: 2. *The concept of land cadastre and its principles. Components of land cadastre. Land cadastre management bodies and their legal powers. Level of difficulty: 2.* *The main tasks of control over land use and their protection. Bodies exercising control over land use and their protection. The procedure for state control over land use and protection. Level of difficulty: 4.* *The concept of legal protection of lands. The concept of legal liability for violations of land law. Types of liability for violation of land legislation. Content of administrative liability for violation of land legislation. Level of difficulty: 5.* *General description of the legal status of agricultural lands. Ensuring rational use of agricultural lands in the market economy. Land use rights of agricultural enterprises, organizations, institutions. Level of difficulty: 4.* *Understanding of settlement lands and a general description of their legal status. Land management of rural settlements. The main features of land management of cities and settlements. Legal status of urban construction land. Legal status of common land. Level of difficulty: 4.* *Understanding and classification of lands intended for industry, transport, communication, defence and other purposes. General features of the legal status of lands intended for industry, transport, communications, defence and other purposes. Level of difficulty: 4* *Understanding of the legal status of the lands of the separately protected area and its specific features. Legal status of lands designated for nature protection purposes. Legal status of lands intended for rehabilitation purposes. Legal status of lands of recreation and historical and cultural significance. Level of difficulty: 5.* *Understanding of forest fund land and general description of its legal status. The right to use forest fund lands and its types. Level of difficulty: 3.* *Understanding of water fund land and description of its legal status. Features of water fund land management. The right to use water and its main types. Level of difficulty: 3.* *Understanding of reserved lands. Management of reserved lands. The right to use reserved lands. Level of difficulty: 2.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the tasks and assignments given in the forms of intermediate control, to submit a written work for the final control.*
Study and examination requirements	*The total maximum points will be the sum of the points allocated to the final exam (40%) and Midterm control (60%). In order to successfully pass the subject, the student must score 60% or more of the allocated points.*
Reading list	*1. Mirzaabdullaeva M.R., Muqumov A.M., Hamidov F.R.,*

	G. Uzokova. Land rights. Textbook. - T.: TIIAME, 2020, - 204 p. *2. Altiev A.S. Problems of regulation of land resources use system. Monograph. Tashkent, Science, 2018.* *3. Uzakova G.Sh. Legal regulation of land privatization process in the Republic of Uzbekistan. Monograph. - Tashkent: TSUL. 2020. – 119 pages.* *4. Usmanov M. Yu. i dr. Zemelnoe pravo Respubliki Uchebnik. Uzbekistan. T.:TSUL, 2008. 278 str.* *5. Kholmo'minov J.T., Joraev Y.O., Usmanov M.B., Fayziev Sh.Kh. and others. Land rights. Textbook // Responsible editor, Ph.D., prof. J.T. Kholmo'minov.-T: TSUL, 2018. p. 11-36.*

Module designation	***YGI3205- Geodezic works in land development***
Semester(s) in which the module is taught	*5- semestr*
Person responsible for the module	*Senior teacher, Abdiramanov Rashid Dustchanovich* *Assistant professor, Valieva Albina Robertovna*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training, self- learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150* *Contact hours: Lecture – 30, Practical lessons – 30, Self-learning – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Cadaster*
Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- should know the methods of land surveying and land cadastre, design of land areas, relocation of the project.* *- presentation of information from various sources and databases in the required format using information, computer and network technologies;* *- using knowledge of modern technologies to conduct land surveying and cadastral works;* *- methods of implementation, techniques and modern technical tools, project-research works in land preparation;* *- to choose appropriate methods for defining project boundaries;* *- it is necessary to know the principles of occurrence of errors occurring at different stages of geodetic work and accounting methods;* *- it is necessary to know the methods of processing the results of geodetic measurements;* *- application of information technologies for information processing and design, preparation of cadastral documents for registration of the state cadastre, practice support is necessary;* *- knows how to restore and survey land use boundaries, prepare project plans;* *-understands survey methods used in the preparation of land use plans;* *-land use knows the essence of the methods of calculating the surfaces of land areas;* *-he knows the geodetic works and methods used in the design of fields, their relocation.*

Content	*The purpose and function of the science of geodetic works in land formation. The role and importance of geodetic works in the design of land formation, land cadastre and land reclamation works. The content of geodetic works performed in land preparation. Level of difficulty: 2* *Cadastre is currently maintained in all countries of the world. It is inextricably linked with accounting, assessment, condition and use of various natural resources, engineering activities, and concepts of ecology. Purpose and technology of geodetic work in determining (restoring) land boundaries. Level of difficulty: 4* *Survey methods used in the correction of land use plans. Alignment of plans using contour points as a reference. Surveying by the polar method using an electronic theodolite. Level of difficulty: 3* *Survey methods used in the correction of land use plans. Alignment of plans using contour points as a reference. Correction and updating of planning and cartographic material. Level of difficulty: 3* *When performing corrective actions, the task is to select adjustment methods that practically ensure the correctness of corrected plans. Surface determination methods used in land formation and land cadastre. Level of difficulty: 2* *Description of methods for determining land use land surfaces. Analytical surface determination. Graphical surface detection. Surface detection using palettes. Design of land areas. Level of difficulty: 3* *The nature and methods of project relocation. Preparatory work for the relocation of the project. Application of global navigation satellite systems. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*

Reading list	*1. Oxunov Z.D. Yer tuzishda geodezik ishlar. T.: "Yangi asr avlodi", 2002. – 254 b.* *2. Абдираманов Р.Д., Успанкулов В.М. Геодезические работы при землеустройстве (учебное пособие) Ташкент, ТИИИМСХ, 2020. – 132 с.* *3. Ципинова Б.С. Геодезические работы при землеустройстве. Учебно-методическое пособие. – Майкоп, 2016. стр. 87.* *4. Денисова Е.С. Геодезические работы при землеустройстве: метод. указания по вып. лаб. работ / Е.С. Денисова. – Пенза: ПГУАС, 2016.* *5. Денисова Е.С. Геодезические работы при землеустройстве: метод. указания для сам. работы / Е.С. Денисова. – Пенза: ПГУАС, 2016.* *6. http://consultant.ru (Консультант плюс – правовая поддержка).* *7. http://dic.academic.ru (Словари и энциклопедии).* *8. http://elibrary.ru (Научная электронная библиотека).*

Module designation	**MYR3205 - Land reclamation and land reclamation**
Semester(s) in which the module is taught	*5-semestr*
Person responsible for the module	Isabaev Kasimbek, candidate of agricultural sciences, associate professor. Botirov Shavkat Chorievich, candidate of agricultural sciences, associate professor.
Language	Uzbek and Russian language
Relation to curriculum	Elective
Teaching methods	Lecture, practice
Workload (incl. contact hours, self-study hours)	Total load: 150 hours Lecture - 30 hours; Practice - 30 hours; Independent education - 90 hours.
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	Physics, Geodesy, Soil Science and Agriculture
Module objectives/intended learning outcomes	The tasks of land reclamation and land reclamation, the effects of irrigation on soil and vegetation, irrigation methods, their advantages and disadvantages, the conditions of choosing and using irrigation methods, geodetic works performed in the implementation of the system of land recultivation and anti-erosion measures, geodetic works used in the construction and design of irrigation and land reclamation facilities, various assessment of the condition of the soil in the regions, providing knowledge to students about irrigation sources. Deciphering images in the preparation of cadastral and agricultural maps, creating and updating information databases, determining water catchment areas according to maps, the directions of movement of underground water, the depth and consumption of underground water, determining the appropriate type of land reclamation, designing and reorganizing irrigation and drainage networks, is to create practical skills for recultivation of disturbed lands.

Content	The tasks of land reclamation and melioration, the effects of irrigation on soil and plants, irrigation methods, their advantages and disadvantages, the conditions for choosing and using irrigation methods, carrying out geodetic work in the implementation of a system of land recultivation and anti-erosion measures, in the construction and design of irrigation and land reclamation facilities, in land demarcation, project planning it is necessary to have the skills to perform geodetic works in determining the area of plots, to move the project to the place, and to form the qualification requirements, to have the knowledge competencies.
Exams and assessment formats	*e.g. two oral Midterm assessments (20 minutes each) and one final oral exam (40 minutes), short computer-based quizzes, take-home written assignments*
Study and examination requirements	*Requirements for successfully passing the module* *e.g. the final grade in the module is composed of 60% performance on exams, 10% quizzes, 10% take-home assignments, 10% in-class participation. Students must have a final grade of 60% or higher to pass*
Reading list	1.Khamidov M.Kh., Urazktlidiev A.B., Botrov Sh.Ch. Metlioration and land reclamation. Textbook. —Tashkent: 2012. –195 pages. 2.Shukurlayev K.I., Mamataliyev A.B., Shukurlayeva R.T. Land reclamation and protection. Tashkent-2008. 128 pages. 3.Arifjanov A.M., Rakhimov Q.T., Khodjiev A.K. "Hydraulics". Tashkent. TIMI, 2016. -307 p. 4.G. U. Yusupov, B. M. Holbayev "Fundamentals of Geology and Hydrogeology" Tashkent "Yangi Asr Avlodi"-2003.

Module designation	***ZGA3205 - Modern geodezic tools***
Semester(s) in which the module is taught	*5 - semestr*
Person responsible for the module	*Associate professor, PhD Inamov Aziz* *Senior teacher, Abdiramanov Rashid*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical training, self- learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Contact hours:* *Lecture – 30 hours* *Practical lessons – 30 hours* *Self- learning – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Geodesic works in Land Development*
Module objectives/intended learning outcomes	***After mastering the subject, the student:*** *- Knows and can explain issues related to instrument error of electronic tachometers and their modelling;* *- can perform topographical surveying on the South 360 R electronic total station, can perform topographical surveying on the Trimble S3 electronic total station;* *- can process the results of the tachometric survey using the ArcGIS program, can perform the tasks of processing the results of the tachometric survey using the ArcGIS program;* *- Has the ability to process digital level values in the AutoCAD program, draw the longitudinal and transverse profile of the level results in the AutoCAD program;* *- Determining coordinate values using GPS, processing GPS values using Global Mapper software;* *- able to determine coordinate values using GNSS, conduct field and camera research work on processing GNSS values using Trimble Business Centre software;* *- can perform three-dimensional survey work on the Trimble TX-5 laser scanner, conduct field and camera survey work on processing Trimble TX-5 values using the Trimble Business Centre software;* *- Able to carry out field and camera research work on drone surveying, processing drone values in software.*

Content	*Theoretical foundations of electronic tachometers. Design features of electronic tachometers. Modern charging devices. Instrument error of electronic tachometers and issues related to their modelling. Level of difficulty: 2* *Conducting field research on an electronic tachometer and processing results in software. Carrying out topographical survey work on Leica TS 06 Plus electronic tachometer. Carrying out topographic survey work on the Trimble S3 electronic total station. Processing of tachometric survey results using ArcGIS software. Level of difficulty: 4* *Digital and laser levels. Construction and calculation principle of Leica Geosystems AG digital levels. Construction and counting principles of Trimble digital levels. The principles of calculation on the rail introduced at the levels of the TOPCON company. Level of difficulty: 3* *Digital level rulers. Methods and means of research and verification of digital levels and rulers. Checking the status of individual barcodes. Research and inspection of digital levels. Study of the influence of magnetic fields on the accuracy of geometric levelling. Level of difficulty: 1* *Satellite devices. Antennas. Radio frequency blocks. Measure by codes. Keeping time in Sputnik technology. Satellite geodetic devices. Receiver errors. Antenna error. Level of difficulty: 5* *Satellite receivers. Software for GPS/GLONASS measurements. Use of GNSS system and satellite geodetic networks in our republic. Level of difficulty: 4* *The principle of operation of the ground laser scanner. The principle of operation of the ground laser scanner dalnomer block. Methods of measuring angles in ground-based laser scanning. Overview and classification of ground laser scanning scanners. Sources of errors in terrestrial laser scanning. Influence of the atmosphere on the accuracy of distance and angle measurements with terrestrial laser scanners. Influence on the accuracy of data acquisition and the description of scanners. Level of difficulty: 3* *Conducting field research on ground laser scanners. Ground laser scanners from Trimble. Laser scanners and modelling of hydro technical structures in them. Perform surface scanning. Level of difficulty: 3* *Remote controlled devices or drones. The history of the creation of drones. Types of drones and their classification. Carrying out filming with the help of a drone. Processing drone values in software. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Tashpolatov S.A., Islamov O'.P., Inamov A.N., Pardaboyev A.P. Zamonaviy geodezik asboblar. Darslik. "TIQXMMI" MTU 2022, 253-b.* *2. Tashpolatov S.A., Nazarov B.R., Shavkatova N.J. "Zamonaviy geodezik asboblar". Study guide. Tashkent, 2019. 300-b.* *3. Куприенко Н.О. Геодезические инструменты. Минск, 2016, 76 с.* *4. Елисеев С.В. Геодезические инструменты и устройства. Основы расчета, конструкции и особенности изготовления. Эд. 3-й, переработанный и Дон. М., «Недра», 2017. – 645 с.* *5. Захаров А.И. Геодезические инструменты: Справочник. – М.: Недра, 2017. – 314 с.*

Module designation	***BIK 3204 - State cadastre of buildings***
Semester(s) in which the module is taught	*5- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD;* *Uspankulov Bekzhan Musabekovich - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 120 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Basics of geodesy, land cadastre, geodetic works in land preparation, remote sensing, state cadastres*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– knows and can explain the value of buildings and constructions, their usage characteristics, whether these objects are for domestic or production purposes, their use for specified purposes, the tax zone where they are located and other information;* *– understands the compliance of buildings and constructions to land development schemes, master plans of cities, settlement projects, as well as architectural and urban planning requirements, building parameters (floors, common, living, production areas), modern technologies used in creating cadastral data base about them;* *– Understands information about the objects and subjects of the state cadastre of buildings and structures, the competent bodies for its maintenance;* *– Theoretical and practical knowledge of cadastre of buildings and structures, knows how to work with mastered land structure and land cadastre drawings, maps, plans, topographic maps;* *– knows how to create a cadastral folder for residential objects;* *– Buildings and structures can use electronic programs used in the formation of text and graphic data of the state cadastre.*

Content	*Procedure for maintaining the state cadastre of buildings and structures. Structure and content of the cadastre of buildings and structures. Organization of cadastre of buildings and structures. The procedure for dividing the territories of the Republic of Uzbekistan by cadastre and forming and issuing cadastral numbers of land plots, buildings and structures. Level of difficulty: 2* *Procedure for state registration of rights to buildings and structures. The procedure for state registration of rights to real estate using the information system complex according to the "One window" principle. Level of difficulty: 2* *Basic principles of state registration of buildings and structures. Documents confirming rights to buildings and structures and other private property. Organization of state registration of buildings and structures. Terms of state registration and inventory of buildings and structures. Record of internal measurement and external measurement of buildings. Level of difficulty: 3*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1.3D Cadastre in an international Context, Jonatien E. Stoter and Peter van Oosterom 2006. CRC Press Taylor& Francis Group, New York.* *2.Ашуров А.Ф., Усмонов М., Успанкулов Б.М. "Бино ва иншоотлар давлат кадастри", Ўқув қўлланма, Тошкент 2019 й.* *3. Г.А. Калабухов, В.Н. Баринов, Н.И. Трухина, А.А. Харитонов. Основы кадастра недвижимости. учебное пособие. Воронеж 2014 г.- 171 с.* *4.И. Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *5.Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208 b.*

Module designation	***YKT3205 - Organization of land development and land cadastre works***
Semester(s) in which the module is taught	*5-6 semestrs*
Person responsible for the module	*Sobir Roziboyev, senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*elective course*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 270 hours;* *Auditorium hours: 120 hours* *Lecture – 60 hours* *Practical works – 60 hours* *SAW (Student autonomous work) – 150 hours*
Credit points	*9 credits*
Required and recommended prerequisites for joining the module	*land management design, land cadastre, land monitoring*
Module objectives/intended learning outcomes	✓ *Explain the concepts of land cadastre and land management system in Uzbekistan.* ✓ *Describe the purpose and essence of land cadastre and land management.* ✓ *Elaborate on the management methods and principles, land reform, and land relations in the context of Uzbekistan.* ✓ *Understand the theoretical and legal foundations of land cadastre and land management.* ✓ *Comprehend the management mechanisms and advanced methods and technologies for land management.* ✓ *Grasp techniques for improving the efficiency of land resource utilization.* ✓ *Understand the creation and maintenance of legal documents on land and the legal status of land.* ✓ *Apply knowledge of laws and regulatory documents related to land cadastre and land management.* ✓ *Utilize methods to analyse the condition and quality of land resources.* ✓ *Apply strategies for distributing and redistributing land funds.* ✓ *Implement solutions for land protection and productivity enhancement.* ✓ *Apply knowledge of the features of land management in practice.*
Content	*The role of land cadastre and the organization of land management work. Objectives of the course "Organization of land cadastre and land management work". Interrelationship of the course "Organization of land cadastre and land management work" with other courses. Object and subject of the course "Organization of land cadastre and land management work". Level of difficulty: 2.* *Structure and tasks of the cadastral agency. Structure and functions of the Chamber of State Cadastres. Management system. The role of the cadastral agency and*

	the state cadastral chamber in state administration. Level of difficulty: 2 *System of regional, city and district land management services in the republic. Legal basis of land management and organization of land cadastral work. Principles of land management. Legal basis of land management. Laws and normative documents related to the regulation of land management and organization of land cadastral works in Uzbekistan. Level of difficulty: 2.* *Description of the use of the republic's land fund. Distribution of the land fund by land categories and land types. General principles of land fund distribution. Formation of the ownership system in Uzbekistan and issues of land distribution in the national economic system. Level of difficulty: 3.* *The content and essence of labor regulation. Development and improvement of labor standardization in land management. Features of labor standards in earthworks. Classification of work time expenditure and methods of its study. Methods of determining work standards. The content and procedure of the development of labor and time standards Level of difficulty: 4.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the tasks and assignments given in the forms of intermediate control, to submit a written work for the final control.*
Study and examination requirements	*The total maximum points will be the sum of the points allocated to the final exam (40%), and Midterm control (60%). In order to successfully pass the subject, the student must score 60% or more of the allocated points.*
Reading list	*1. Sulaymanova M. Organization and planning of lanad management works. Study guide. T: TIIAME, 2013, 105 pages.* *2. Avezbayev S., Volkov S.N. Landscaping design. Textbook. - T., "Generation of the New Age", 2007.- 470 p.* *3. Varlamov A.A., Galchenko S.A. Upravlenie zemelnimi resource. Uchebnoe posobie. M.: GUZ, 2005. – 240 p.* *4. Selim Kapor, Hari Eswaran, Winfried Blum. Sustainable Land Management. Springer-Verlag Berlin and Heidelberg GmbH & Co. KG. Germany 2016.*

Module designation	***YBA3204 - Information supply in land development***
Semester(s) in which the module is taught	*5 - semester*
Person responsible for the module	*Rakhmanov Kosimdjon, DSc*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 120 hour* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Geodesy, Introduction to state cadastres, Information technologies and mathematical modeling of processes, Geoinformation system and technologies, Land Use Economics and Management*

Module objectives/intended learning outcomes	– After mastering the discipline, the student: – knows and can explain actions related to the collection, storage and processing of all information and data related to land; – can widely use special programs, aerial and space images, information on geoportals in the Internet system; – knows and can perform the methods of determining the area of agricultural land in an automated way with the help of special programs and entering data, periodically updating them; – can independently use special GIS programs, CAD, MAPPING, ArcView, AtlasGIS program, MapInfo, ArcCAD System, Panorama programs to form a land information system; – can perform operations such as digital image processing, data vectorization, generalization, buffering, and topology; – database, database management system (DBMS). Knows the types of database management software, DBMS and can use it to form a land information system; – knows and can perform operations such as geospatial analysis, geospatial analysis methods (database query, vector data query, raster data query), geospatial measurements, Overlay operation; – knows and can explain geodescription methods, classification, reclassification, map comparison, graphic and report views, map representation, three-dimensional representation methods; – knows and can use management in the land information system, software and its types, requirements for installing geographic information programs, computer technologies used in the system and their management, expert systems.

Content	Concept and tasks of land information systems science. General information on GIS ball. The main used terms and terms. Areas of application of the system. The concept of geomatics and its place in the system. Geographic and attribute data. Geocoding. Level of difficulty 2 Information and understanding of information. Data collection methods. Stages of data collection. Types of basic geographic information. Get Raster and Vector information. Obtaining auxiliary or secondary geographic information. Obtaining information through digital photogrammetry. Getting information through a GPS device. Obtaining information from external sources. Geographic information formats. Level of difficulty 2 Information and tasks of special GIS programs. (CAD, MAPPING, ArcView, AtlasGIS software, MapInfo, ArcCAD System, Panorama) Understanding of digitization. Rules of digital imaging Special scanners. Raster and rasterization. Digital image processing. Vector and vectorization. Data generalization. Buffering. Topology. Level of difficulty 2 Understanding of database. Database Management System (MBBT). Database management programs. Types of MBBT. Advantages of MBBT. Tasks of MBBT. Placing information in MBBT tables. Database design. Understanding of SQL. The importance of indexing in the query process. Level of difficulty 3 A concept in a geodatabase. Photogrammetric data analysis. Modeling and models. Spatial modeling in GAT. Spatial data formats. Level of difficulty 3 Role and tasks of management in land information system. Software and its types. Study of requirements for installation of geographic information programs. Computer technologies used in the system and their management. Concepts of expert systems. Level of difficulty 3 The role of multimedia tools in using the land information system. Studying land information system programs and data through the Internet. The role of three-dimensional models. Study of the mobilized geographic information system. Level of difficulty 4 Methods of obtaining space velocities. Problems with remote access. Information on the characteristics of various space images (IKONOS, Quickbird, WorldView, EROS V, IRS satellites). Global Positioning System and its application. Information on GRS-receivers hub. Level of difficulty 5
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1.Сафаров Э., Мусаев И., Абдураҳманов Х. География ахборот тизимлари ва технологиялари. –Тошкент, 2008. ТИМИ, -160 б.* *2.Чертовицкий А.С., Базаров А.К. Ердан фойдаланишни бошқариш. Тошкент, 2009.* *3.Бабажанов А.Р., Рахмонов Қ., Гофуров А.Ж. Ер кадастри. Дарслик, Т.: 2008. – 211 б.* *4.Чертовиский А.С., Земелние кадастр. Учебное пособие.-Т.ТИИМ типография, 2012 г.-296 с.* *5.Рахмонов Қ., Успанкулов Б.М. Давлат кадастрлар асослари Дарслик. "ТИҚХММИ" МТУ Т.: Т.:2023.-216 б.*

Module designation	***YFP 3106 Prognosis of land tenure***
Semester(s) in which the module is taught	*6-semestr*
Person responsible for the module	*Babajanov Allabergan associate professor*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training, independent education*
Workload (incl. contact hours, self-study hours)	*Total load : 180* *Auditorium 80 Hours:* *Lecture - 40 hours;* *Practical training 40 hours* *Independent education 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Geodesy, basics of land use, basics of land formation, management of land resources*

Module objectives/intended learning outcomes	*After mastering the subject, the student:* *– has an idea about the republican General scheme, which teaches the basic essence of planning the use of different categories of land in perspective, land zoning schemes, their content, types, the procedure and stages of their development, the components of the General scheme and land zoning schemes be adi ;* *– knows and can use the theoretical foundations and methodological issues, content and principles, stages and organization of land resource use forecasting, methods of development and implementation of land planning schemes and other documents, economic and ecological justification*

	of forecasting activities, methods of automating forecasting work; *– knows the features of processing and implementation of land use planning documents in various administrative territorial units, including administrative districts, regions;* *– is able to use GIS programs in the composition of data related to the land use forecasting system, their formation, data formation on the basis of geoinformation technologies.*

content	*Forecasting and forecasting. Classification of forecasts and their interdependence . Theoretical foundations of forecasting. The function and main tasks of forecasting . Difficulty level: 2* *The role of forecasts in planning and management of economic sectors. E r resources - forecasting object as . Forecasting and planning the use of earth resources, their content, methods and tasks . Difficulty level: 3* *Functions of land resource use forecasting and planning . The General scheme for the use and protection of land and water resources is the basis for the distribution and use of the republic's land fund and the main forecasting document . Difficulty level: 4* *Regional and administrative district land formation schemes, their content, essence and development procedure. Forecast background, its content and importance . Difficulty level: 5*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Requirements for successfully passing the module:* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. John Randolph/ Environmental Land Use Planning and Management/ Island Press, Washington, Cavelo , London, 2003, 664p* *2. Avezbaev S, Volkov S.N. Land formation design . Textbook . - T.: "New century generation ", 2004. - 786 p.* *3. Avezbaev S., Volkov S.N. Land formation design . Textbook - T.: " Philosophers national society ", 2007. - 470 p.* *4. Avezbaev S., Sharipov S.R. Landscaping design . Study guide - T.: TIQXMMI, 2021, 168b.* *5 . Babajanov A.R., Usmanov Yu.A., Sadullaev S.N. From E r resources to use forecasting . Tashkent , TIKXMMI, 2021 .*

Module designation	**QYK 3106 - Cadastre of agricultural land**
Semester(s) in which the module is taught	*6 semestr*
Person responsible for the module	Cadastre of agricultural lands Roziboyev Sabir Doctor of Philosophy in Technical Sciences, (PhD)
Language	*Uzbek, Russian*
Relation to curriculum	*Basic*
Teaching methods	*Lecture, practical training, seminar.*
Workload (incl. contact hours, self-study hours)	*Total load : 180 hours* *Auditorium hours: 80 hours* *Lecture - 40 hours;* *Practical training 40 hours* *Independent education 100 hour*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Land cadastre,Basics of land use,Earth monitoring*
Module objectives/intended learning outcomes	***A student*** -Content and essence of agricultural land cadastre ; interdependence of organizational, legal, economic systems of agricultural land types; distribution of agricultural land in the categories of the republic's land fund; ***to have an idea*** about the distribution of land by administrative territorial units ; -Theoretical and methodological bases of agricultural land cadastre; to improve the organizational and economic mechanisms of calculating the standard value of agricultural land in the market economy; ***know and be able to use*** the basic principles of the process of maintaining the agricultural land cadastre ; - To the agricultural land cadastre application of techniques related to data collection, analysis and use; ***must have the skills*** to implement legal and organizational mechanisms related to management of agricultural land use;

content	Agricultural land cadastre theoretical knowledge, practical skills, methodical and practical approach to social, economic and ecological aspects and formation of a scientific worldview, knowledge of the essence of laws and regulations related to land resources management, formation of social relations in relation to land types in the economy of agricultural land types It is to reveal the meaning and significance
Exams and assessment formats	Two intermediate controls (20 minutes each and q t. It is given in the form of FSMU) and the final written exam is taken in the form of ASSESSMENT (4-level assessment) (40 minutes are given),
Study and examination requirements	The total maximum points will be the sum of the points allocated to the final exam (40%), Midterm (40%), homework (10%) and classroom activity (10%). For teeth, a student must score 60% or more of the allotted points.
Reading list	1. John Randolph/ Environmental Land Use Planning and Management/ Island Press, Washington, Cavelo, London, 2013 , 664p 2. Babajanov AR Management of the use of land resources (textbook). Tashkent, TIQXMMI MTU, 2022, 424b. 3. Babajanov AR, Muqumov AM, Khafizova ZX Integrated management in the use of land resources. Tashkent, TIMI, 2017, 370p. 4. Chertovitsky A. S. , Bazarov A. K. Upravlenie zemlepolzovaniem. Tashkent, 2010, 376p. 5. National land report of the Republic of Uzbekistan. T., State Committee of Land Resources of the Republic of Uzbekistan. , 2012-2020

Module designation	***YKG 3204 - Computer graphics in land planning***
Semester(s) in which the module is taught	*6- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD;*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Basics of geodesy, land cadastre, geodetic works in land preparation, remote sensing, state cadastres? Geoinformation system and technologies*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– Draw topographic drawings of real estate cadastre objects in modern programs, acquire and explain practical and theoretical knowledge on the subject, knowledge of mastered land construction and work with land cadastre drawings, maps, plans, topographic maps;* *– perfectly mastering the computer programs AutoSAD, Corel Draw graphic programs, knows how to apply their solutions in practice and can use them;* *– acquires the skills of formalizing topographic-cartographic, land surveying, land cadastre maps and plans, drawings and projects using automated tools.*

Content	*It is considered a component of the unified system of state cadastres, and it consists of a system of updated information and documents about the geographical location, legal status, quantity, quality descriptions and value of a certain type of natural, economic object or other object maintained by the state cadastre. It is maintained as a multi-purpose information system designed to provide a unified national calculation and evaluation of the natural and economic well-being of the Republic of Uzbekistan and some of its regions.. Level of difficulty: 2* *One of the new directions of computer graphics is dedicated to the development of methods and principles of creating real images. According to these principles, it should be possible to directly observe images or record them with the help of optical devices. The need for such images appeared in the fields of design, architecture, state cadastre management. The expansion of the functional capabilities of computers laid the foundation for the development of computer graphics and led to the creation of systems providing animation of images. Applying these possibilities to the field of cadastre, in turn, allows to achieve speed and high accuracy. Level of difficulty: 2* *Computer graphics is understood as the issue of creating, storing, processing volume models of graphic or geometric objects and depicting them with the help of modern computers. The progress of science and technology has turned our society into an information society. Most of the people working in this society are engaged in scientific work on the production, storage, processing and implementation of information. It is impossible to do such work without modern computer technologies. Data processing processes in them are carried out with the help of computer graphics, which creates great convenience for the user. Computer graphics refers to the concepts of creating, storing, and processing dimensional models of objects and their depiction and processing using computers.. Level of difficulty: 3* *Due to the fact that the head of our state has set specific tasks for the wider implementation of computer graphics in all aspects of our life and increasing the efficiency of their use, a number of positive results are being achieved in this field in our country. For this reason, there is a growing demand and need for a wider acquaintance with concepts (glossary) in the field of computer graphics. Level of difficulty: 4* *The use of computer graphics is of great importance in the maintenance of the state cadastre of buildings and structures, the state registration of rights to them, and the creation of the cadastral volume of buildings and structures. This is the location of new constructions. Cadastral plans and maps with their dimensions are created. Computer graphics provides a wide range of opportunities in performing these tasks. Level of difficulty: 4*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	6. *Kadastr ishlarida kompьyuter grafikasi. R.Q.Oymatov, Q.Raxmonova J.Oymatov. Toshkent 2021y.* 7. *W. Schofield, M. Breach. Engineering Surveying., Published by Elsevier Ltd. All rights reserved. Copyright © 2007.-637 r* 8. *Bakanova V.V. Geodeziya. M., Nedra. 2000. – 277 s.* 9.*Nurmatov E.X, O'tanov O'. Geodeziya. Toshkent: O'zbekiston, 2003. – 224 b..* 10. *И. Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.*

Module designation	***HK 3205 Cadastre of territories***
Semester(s) in which the module is taught	*6- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD;* *Akhmadaliev Vakhobjon Abdurakhmonovich - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, land cadastre, remote sensing, fundamentals of state cadastres, Geoinformation systems and technologies*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– Knows and can explain the structure of the territory cadastre, its organization and management, formation of information resources of the territory cadastre system;* *– Understands the legal bases of the cadastre of territories, the role and function of the state cadastre of territories in the unified system of state cadastres, the methods of collecting information provided to it;* *– Realizes the need to organize the cadastre of territories on the basis of a single methodology;* *– Knows how to form cadastral information in regions for all cadastral types available in state cadastres;* *– Knows the structure of the state cadastre of territories and the organization and management of its creation;* *– Can use the technical complexes of the state cadastre information system and geoportals of the regions.*

Content	*Cadastre concept, content and tasks. The political, economic and social importance of territorial cadastres. The nature, function and general system of zonal cadastres. Legal basis of the territory cadastre. The role of the "Land Code", "On State Cadastres" and other related laws, the Regulation "On the procedure for creating and maintaining a unified system of state cadastres" and other normative legal documents in maintaining the cadastre of territories. Level of difficulty: 2* *Principles of maintaining the state cadastre of territories. Compilation and maintenance of the territory cadastre. Competent bodies for creating and maintaining the cadastre of territories. Organizational structure of the territory cadastre. Technical and software tools of the territory cadastre system. The main issues of creating a cadastre of territories. The main stages of creating the state cadastre of territories. Level of difficulty: 2* *The scheme of maintaining the territory cadastre. Ways of maintaining the cadastre of territories. Territory cadastre systems at the republican level. Regional cadastral systems. Territory cadastre systems at the district level. Territorial cadastre systems at the city level. Level of difficulty: 2* *Information stored in the territory cadastre and the procedure for using it. Protection of information stored in the territory cadastre. Information that is stored in the territory cadastre and has no restrictions on use. Information that is stored in the territory cadastre and has no restrictions on use. Level of difficulty: 3* *Formation and use of state information resources of the territory cadastre. Procedure for documenting information and organizing the use of state information resources. Software and technical tools, with the help of them, the use of regional cadastre data and implementation of their processing operations. Level of difficulty: 3* *Ways of maintaining the cadastre of territories. Territory cadastre systems at the republican level. Regional cadastral systems. Territory cadastre systems at the district level. Territorial cadastre systems at the city level. The composition, content, formats, periodicity and procedure of presentation of the information necessary for maintaining the territory cadastre. Protection of information stored in the territory cadastre. Information that is stored in the territory cadastre and has no restrictions on use. Information that is stored in the territory cadastre and has no restrictions on use. Level of difficulty: 3*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1.3D Cadastre in an international Context, Jonatien E. Stoter and Peter van Oosterom 2006. CRC Press Taylor& Francis Group, New York.* *2. Raxmonov Q. Ahsurov A.F. Hududlar davlat kadastri., O'quv qo'llanma. Tashkent 2018 y.* *3. Ashurov A.F. Davlat kadastrlari ma'lumotlari bazasi. O'quv qo'llanma. Tashkent 2021 y.* *4.И. Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *5.Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208 b.*

Module designation	***DSK 3205 - State urban planning cadaster***
Semester(s) in which the module is taught	*6- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD;* *Abdurakhimova Mohigul Oybek's daughter - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Fundamentals of geodesy, land cadastre, building and construction cadastre, state cadastre*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– knows and can explain how to divide residential areas according to cadastre, form and issue cadastral numbers;* *– understands real estate, precise address registers of engineering, transport and social infrastructure objects, approved urban planning documents on the development and construction of territories, urban planning regulations on the construction of territories and the use of objects of urban planning activities;* *– understands information about objects and subjects of urban planning activity;* *– knows the method of registration of objects of the state urban planning cadastre, the normative-legal basis for maintaining the urban planning cadastre, the technology of creating state urban planning geoportals;* *– knows electronic programs for creating information on the state urban planning cadastre;* *– can use electronic programs to create thematic layers related to the state urban planning cadastre, describe the spatial location of vector objects (point, line and area).*

Content	*role The purpose and tasks of the science of state urban planning cadastre. Development history of cadastral works. Placement and development of residential areas. State registration of rights to land and immovable property in residential areas. The procedure for dividing the territories of the Republic of Uzbekistan by cadastre. Procedure for forming and issuing cadastral numbers of land plots, buildings and structures. Level of difficulty: 2* *State registration of rights to immovable property and transactions concluded on it. Keeping the city (district) land cadastre book. Quantitative accounting of land areas in cities and towns. Division of city territories into taxation zones. Level of difficulty: 2* *Determining the valuable social factors of residential areas. Monitoring the quality of lands. Economic evaluation of land in urban development cadastre. Accounting for land valuation. Urban planning development factors. Use of modern information technologies in maintaining the state urban planning cadastre. Level of difficulty: 3* *Creation of an automated system for maintaining the state urban planning cadastre. Studying the experiences of the countries of the world in maintaining the state urban planning cadastre. The system of basic regulatory documents on the maintenance of the state urban planning cadastre. Organizational and legal foundations of the state urban planning cadastre. The of the state Urban Development Cadastre in the management of land resources. Level of difficulty: 3* *To study the experiences of urban development cadastre in neighboring Commonwealth countries. Powers of the state and authorities to maintain the state urban planning cadastre. Level of difficulty: 3*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*

Reading list	*1. И.Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *2. Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208b.;* *3. Ашуров А.Ф. Давлат шаҳарсозлик кадатсри,Ўқув қўлланма. Тошкент 2014 й.* *4. Ашуров А.Ф. Давлат кадастрлари маълумотлар базаси. Ўқув қўлланма. Тошкент 2021 й.* *5. И.В. Лесных, В.Б. Жарников, В.Н. Клюшниченко, С.Н. Ушаков. Городской кадастр, Новосибирск: СГГА. Институт кадастра и геоинформационных систем, 2000.- 120 с.*

Module designation	***LYT 3205 - Landshaft land development***
Semester(s) in which the module is taught	*6-semestr*
Person responsible for the module	*associate professor Babajanov A.R.*
Language	*Uzbek, Russian*
Relation to curriculum	*Optional*
Teaching methods	*Lecture, practical training,*
Workload (includes class and self-study hours)	*Total workload - 150 hours* *Class hours - 60 hours* *Lecture - 30 hours* *Practical training - 30 hours* *Self-study - 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, land management,land cadastre, land monitoring*
Module objectives/intended learning outcomes	Student should attain the following learning outcomes: to have an idea about the landscapes of the regions, complex landscapes and possible soil erosions, landslides, ways to prevent or eliminate them, the negative consequences of soil erosion, a set of countermeasures and land preparation measures; land development projects in complex landscape areas know and be able to use methods of development and economic-ecological justification based on anti-erosion measures; - prevention of soil erosion processes, study and analysis of the causes of their occurrence, application of a set of measures against soil erosion in the development of domestic land development projects must have skills;
Content	to study the issues of landscaping, carrying out land preparation works in accordance with the landscapes of the regions, studying the processes of erosion in places with complex landscapes, developing land preparation projects based on measures against soil erosion, teaching knowledge on determining their economic and ecological effectiveness, and the skills of applying them in practice is to create.
Exams and assessment formats	*Two midterms (20 minutes each) and final oral exam (40 minutes), short computer-based quiz and written homework assignments.*
Study and examination requirements	*Final grade is distributed as follows: final exam (60%), midterms (20%), homework (10%) and in-class participation (10%). Students must have a final grade of 60% or higher to pass the module.*
Reading list	1. Babajanov A.R., Sulaymanova M.Kh., Khakberdiev O. Landscaping with landscape. Tashkent, TIQXMMI, 2020, 120p. 2. Avezbaev S., Volkov S.N., Sharipov S.R. Landscaping design. Study guide - T.: TIQXMMI, 2021. - 168b.

Module designation	***DSK 3205- Cadastr in urban development***
Semester(s) in which the module is taught	*6- semester*
Person responsible for the module	*Ashurov Abdullo Faizullaevich - doctor of philosophy in technical sciences, PhD;* *Abdurakhimova Mohigul Oybek's daughter - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent education 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Fundamentals of geodesy, land cadastre, building and construction cadastre, state cadastre*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* – *knows and can explain how to divide residential areas according to cadastre, form and issue cadastral numbers;* – *understands real estate, precise address registers of engineering, transport and social infrastructure objects, approved urban planning documents on the development and construction of territories, urban planning regulations on the construction of territories and the use of objects of urban planning activities;* – *understands information about objects and subjects of urban planning activity;* – *knows the method of registration of objects of the state urban planning cadastre, the normative-legal basis for maintaining the urban planning cadastre, the technology of creating state urban planning geoportals;* – *knows electronic programs for creating information on the state urban planning cadastre;* – *can use electronic programs to create thematic layers related to the state urban planning cadastre, describe the spatial location of vector objects (point, line and area).*

Content	*The purpose and tasks of the science of state urban planning cadastre. Development history of cadastral works. Placement and development of residential areas. State registration of rights to land and immovable property in residential areas. The procedure for dividing the territories of the Republic of Uzbekistan by cadastre. Procedure for forming and issuing cadastral numbers of land plots, buildings and structures. Level of difficulty: 2* *State registration of rights to immovable property and transactions concluded on it. Keeping the city (district) land cadastre book. Quantitative accounting of land areas in cities and towns. Division of city territories into taxation zones. Level of difficulty: 2* *Determining the valuable social factors of residential areas. Monitoring the quality of lands. Economic evaluation of land in urban development cadastre. Accounting for land valuation. Urban planning development factors. Use of modern information technologies in maintaining the state urban planning cadastre. Level of difficulty: 3* *Creation of an automated system for maintaining the state urban planning cadastre. Studying the experiences of the countries of the world in maintaining the state urban planning cadastre. The system of basic regulatory documents on the maintenance of the state urban planning cadastre. Organizational and legal foundations of the state urban planning cadastre. The role of the state Urban Development Cadastre in the management of land resources. Level of difficulty: 3* *To study the experiences of urban development cadastre in neighboring Commonwealth countries. Powers of the state and authorities to maintain the state urban planning cadastre. Level of difficulty: 3*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*

Reading list	*1. И.Ихлосов, Д.Ризаева. Давлат кадастри асослари. Ўқув қўлланма. NOSHIR, 2019 y. 225 b.* *2. Raxmonov Q., Uspankulov B. Davlat kadastri asoslari. O'quv qo'llanma. TIQXMMI nashryoti, 2018 y. 208b.;* *3. Ашуров А.Ф. Давлат шаҳарсозлик кадатсри,Ўқув қўлланма. Тошкент 2014 й.* *4. Ашуров А.Ф. Давлат кадастрлари маълумотлар базаси. Ўқув қўлланма. Тошкент 2021 й.* *5. И.В. Лесных, В.Б. Жарников, В.Н. Клюшниченко, С.Н. Ушаков. Городской кадастр, Новосибирск: СГГА. Институт кадастра и геоинформационных систем, 2000.- 120 с.*

Module designation	***PR-3108*** - ***Qualifying Internship***
Semester(s) in which the module is taught	*6- semestr*
Person responsible for the module	*Associate professor (PhD) Boboqulov Shohnazar*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Practice of qualification in specialization*
Workload (incl. contact hours, self-study hours)	*Total workload: 240 hours* *self- learning – 240 hours*
Credit points	*8 credits*
Required and recommended prerequisites for joining the module	*To complete the qualification practice, students must have basic knowledge of land planning and land cadastre.*

Module objectives/intended learning outcomes	The main purpose of qualification practice is to master the theoretical knowledge acquired during the hunting process with practical skills As a result of qualification practice, the student: must: **know and understand:** **-** information sources on the subject being developed for use in the educational process; - methods of modeling and research of socio-economic processes; - static data analysis and processing methods; - information technologies used in production organizations, professional software products; - requirements for the design of land registration and land cadastral documents; **be able to:** **-** analysis, systematization and summarization of information on the subject of practice; - independent planning and observation; - comparison of the work results of the production facility with domestic and foreign analogues; **form competences in:** **-** formation and verification of scientific hypotheses; - analysing the scientific and practical significance of the conducted research; - processing of the obtained experimental data; - registration of research results in the form of scientific manuscripts.. **form competences in:** - to analyze the scientific and practical significance of the research carried out in the production enterprise or organization in the field; - processing of received production data; - formalization of practice results in the form of a report..
Content: The discipline includes the following topics.	Instructions on searching for information in accordance with the goals and objectives of the qualification practice in the organization (cadastral agency, cadastral chamber, etc.). Creating an action plan. Getting to know the organizational structure and content of the activity of the practice facility. Collecting, synthesizing and systematizing the main indicators necessary for the performance of an individual task. Internship stage. Comprehensive study and analysis of information technologies, software and information provision in the organization in accordance with the individual assignment. Data processing and analysis. The final stage. Preparation of a draft report. Formalization of the scientific internship report, preparation for its defense.

Exams and assessment formats	Following the results of the internship, students are required to: • provide an internship diary • prepare and defend reports based on the collected data. The final Internship Report is defended at a meeting in the presence of a commission appointed by the head of the graduating department (20 minutes).
Study and examination requirements	Requirements for successfully passing the module: The final grade in the module is composed of 40% defence of the internship report, 40 % participation in the internship, 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. Kadastr Agentligi va kadastr palatalari Nizomi. Toshkent. 2021. 2.Avezbayev S., Volkov S.N. Yer tuzishni loyihalash. – Toshkent.: “Yangi asr avlodi”, 2004. – 784 b. 3. Avezbayev S., Karabayeva T. Yer tuzish. T.: “TDAU”, 2005. – 305 b. 4.Волков С.Н. Землеустроительное проектирование. М.: Т 2.Землеустроительное проектирование. Колос. 2007, 648 с. 5. Чертовицкий А.С., Базаров А.К. Земельный кадастр.- Т.: ТИИИМСХ, 2012,302 с.. 6. Babajanov A.,Raxmonov Q., G’ofirov A. Yer kadastri, TIMI, 2012- 242b. 7. Yer kadastri va yerdan foydalanish” bakalavriat ta’lim yo’nalishi bo’yicha malakaviy ishlab chiqarish amaliyoti Dasturi. –T.: MTU “TIIIMSX”.2022. 15 b.

Module designation	***YE 4105 - Land monitoring-***
Semester(s) in which the module is taught	*7 -semestr*
Person responsible for the module	*Narbayev Sh.K. - Associate Professor, Doctor of Philosophy in Economics (PhD).* *Akhmadaliyev VA - assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Main*
Teaching methods	*Lecture, practical training*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 20 hours;* *Practical training - 40 hours* *Independent education - 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Basics of state cadastres, planning of land formation, land cadastre*

Module objectives/intended learning outcomes	***As a result of mastering the subject, the student:*** • *to have an idea about the nature of land monitoring, the system and principles of its management, components and types of land monitoring, information and indicators system of land monitoring, organizational structure, land fund and land types; (knowledge)* • *to provide land monitoring with information, allowable dimensions of assessment of negative processes, comparison of observation results, creation and maintenance of land monitoring base, rapid land monitoring, practical use of land monitoring results in sectors of the national economy know and be able to use them; (skill)* • *should have the skills to use land monitoring and evaluation methods, determine land fund categories, and adopt solutions for land protection and productivity improvement in land monitoring. (qualification)*
Content	
Exams and assessment formats	*One mid-term control (20 minutes) and a final oral exam (40 minutes), a short computerized test is provided*
Study and examination requirements	*Requirements for passing the course* *The total maximum points will be the sum of the points allocated to the final exam (60%), Midterm control (20%), homework (10%) and activity in classroom activities (10%). To pass the subject, the student will be allocated 60% of points and above. must collect the amount.*
Reading list	*1. Prasad S. Thenkabail. Land Resources Monitoring, Modeling, and Mapping with Remote Sensing. CRC Press Taylor and Francis group. France. 2015.* *2. Raxmonov Q. Yer monitoringi. O'quv qo'llanma. Toshkent: TIMI, 2008. – 155 b.* *3. Chertovitskiy A.S., Narbayev Sh.K., Bazarov A.K. Monitoring zemel. Uchebnoe posobie. T.: TIQXMMI, 2021. 172 str.*

Module designation	***NXYK 4106- Cadastre of Non-agricultural land***
Semester(s) in which the module is taught	*7 semester*
Person responsible for the module	*PhD , associate professor Babajanov A.R.* *PhD, associate professor Roziboev S.B.*
Language	*Uzbek, Russian*
Relation to curriculum	*Main*
Teaching methods	*Lecture, practical training*
Workload (incl. contact hours, self-study hours)	*Total load: 180 hours* *Auditorium hours: 80 hours* *Lecture - 40 hours;* *Practical training is 40 hours* *Independent education 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Theory of land cadastre* *Basics of land use* *Management of land resources*
Module objectives/intended learning outcomes	*Student:* *-to have an idea about the content, essence, components, management principles and documents of the land cadastre maintained in various non-agricultural lands;* *-know and be able to use the basic principles of state registration of rights to non-agricultural land, land accounting in various enterprises and the process of land valuation of settlements;* *- must have the skills to conduct land cadastral work on non-agricultural lands and apply the results to practice;*

Content. Science includes the following topics. *Difficulty level: (1-low, 5-high)*	*Concepts about the cadastre of non-agricultural lands. The subject, purpose and methods of land cadastre science. Components of the non-agricultural land cadastre, their content and characteristics. Types, basic principles and documents of non-agricultural land cadastre. Difficulty level-3* *Object and subjects of the cadastre of non-agricultural land. Methods and ways of obtaining, processing and analyzing data for maintaining the cadastre of non-agricultural land. Content and procedure of state registration of land and other immovable property in non-agricultural enterprises. Difficulty level-4* *Land accounting in non-agricultural enterprises, its content, types and procedure. Valuation of non-agricultural land, its importance in regulation of market relations. Organization and maintenance of state land cadastre in the city. Procedure for registration of rights to land plots and other real estate in the city. Difficulty level-4* *State land account in the city, its content and procedure. Assessment of urban land, content, importance and procedure. The content of the urban land balance (report) and the procedure for its preparation. Difficulty level-5*
Exams and assessment formats	There is one mid-term examination (80 minutes) and a final written exam (80 minutes) based on pre-made options with 3 questions each.
Study and examination requirements	The total maximum score will be the sum of the points allocated to the final exam (40%), Midterm (40%), homework (10%) and classroom activity (10%). For teeth, a student must score 60% or more of the allotted points.
Reading list	1.John Randolph/ Enveronmental Land Use Planning and Management/ Island Press, Washington, Cavelo, London, 2013, 664p 2. Babajanov A.R. Yer kadastri nazariyasi/ Darslik, TIQXMMI MTU, 2023, 447b. 3. Бабажанов А.Р., Тураев Р.А., Рузибоев С.Б. Основы землепользования. Учебное пособие. Tashkent, Akademnashr, 2020, 128стр. 4. Babajanov A.R., Ro‘ziboev S.B., Majitov B.X. Erdan foydalanish asoslari. O‘quv qo‘llanma, Toshkent, 2018, 132b. 5. O‘zbekiston Respublikasi Milliy yer hisoboti. T. , O‘zbekiston Respublikasi er resurslari davlat qo‘mitasi. , 2012- 2020 y

Name of the module/subject and password in the curriculum	***DYN 4105 - Government land regulation***
Semester in which science is taught	*7- semester*
Responsible teacher of the module/subject FISh, degree and title	*Bobokulov Shokhnazar Ochilovich , yu.fn. _*

In which language to be taught	*Uzbek*
Its place in the curriculum	*selection*
Teaching methods	*Lecture, practical training, independent education*
Study load (auditory hours by types and independent study hours)	*Total load : 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training 30 hours* *Independent training 90 hours*
Number of credits allocated to science	*5 credits*
This is a list of prerequisite subjects	*Earth the right ecology the right*
Expected Learning Objectives	*From mastering science after student* *of teaching the subject - land to students - specific features of state land control in the conditions of the market economy. Concept and subject of state land control. State cadastral control system. "E-YERNAZORAT" automated information system. The main directions of state land control are education .* *– Content and essence of the legal basis of state land control ; should have knowledge about the interdependence of organizational, legal, and economic systems .*
The content of science	*Science of state land control It is to gain knowledge about the theory and legal basis of its management, to get acquainted with the legislation of the Republic of Uzbekistan on land resources management, and to have the skills to apply them in practice.* *Difficulty level : 5*
Exams and assessment format	*To science about theoretical and methodical concepts complete _ mastering , analysis the results right reflection seven getting , being studied processes independent respectively observation and intermediate control in forms given assignment and assignments completion , final control according to written the work submit _*
Students who will study and take the exam	*Students who successfully pass the science* *The total maximum marks will be the sum of the final exam (40%), Midterm (60%), and allotment points. To pass the subject successfully, the student must score 60% or more of the allotted points.*

Books	*1. Land rights. Textbook // Kholmo'minov JT, Jorayev YO, Usmanov MB, Fayziyev Sh.Kh. and others. Responsible editor Yu.Fd, prof. JTXolmo'minov. – T: TDU, 2018. p. 148-162.* *2. Uzakova G.Sh. Legal issues of use of natural resources and their protection in settlements. Monograph. - T.:TDYuU, 2021. -268 p.* *3. M. Usmanov. M. Mirzaabdullaeva. G. Uzakova. Theoretical problems of land law. Monograph. - Tashkent.: LLC "Geo polygraph", 2011. p. 186-240.* *4. Uzakova G.Sh. Ecological and legal requirements for zoning of settlement areas in the Republic of Uzbekistan // Analysis of the legislation of Uzbekistan. - No. 3. 2020. -B. 33-39. (12.00.00; #9).* *5. Kholmo'minov JT The role and tasks of the prosecutor's office in ensuring the enforcement of environmental laws. // Bulletin of the General Prosecutor's Office of Higher Education Courses. 2015.*

Module designation	***SI 3205 - Artificial intellegence***
Semester(s) in which the module is taught	*7-semestr*
Person responsible for the module	*Bekmuratov Dilshod Kasimovich, PhD, senior teacher*
Language	*In Uzbek and Russian languages*
Relation to curriculum	*Main*
Teaching methods	*Lecture, practical training*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Practical training: 30 hours* *Lecture: 30 hours* *Independent education: 90 hours*
Credit points	*5credits*
Required and recommended prerequisites for joining the module	*Information technologies, higher mathematics, English, Russian*
Module objectives/intended learning outcomes	*Science is designed to acquaint students with the directions of development of artificial intelligence systems, the features of artificial intelligence problems, application tools, conclusions in application and methods of practical application.*
Content	*The subject of "Artificial Intelligence" is designed to teach students the technologies for developing artificial intelligence systems - methods, models and algorithmic - software tools and to form the skills of their practical application.*
Exams and assessment formats	*50% of the points allocated for assessing students' knowledge of intermediate control are allocated to assess students' independent work (out of a total of 60 points for IC, 30 points are given for theoretical and practical knowledge, 30 points for independent work).* *In addition, the tasks of the final control also include questions related to the subjects indicated in the subject program for self-study of students.*
Study and examination requirements	*In order to successfully pass the subject, the student must score 60% or more of the allotted points.*

Reading list	1. Stuart Russell and Peter Norvig, (2002), Artificial Intelligence: A Modern Approach//Prentice Hall, Chapter 1-27, page 1-1057. 2. Nilsson, N.J. (2009). The Quest for Artificial Intelligence: A History of Ideas and Achievements. Cambridge University Press, Cambridge, England. 3. Bashmakov A.I., Bashmakov I.A. Intelligent Information Technologies: Proc. allowance. - M.: Publishing house of MSTU im. N.E. Bauman, 2005. - 304 p.: ill. - (Informatics at the Technical University). ISBN 5-7038-2544-X. 4. Artificial intelligence: in 3 books. / ed. D. A. Popova. -M.: Radio and communication, 1990. -Kn. 1: Communication systems and expert systems. -461 p. 5. Pavlov S. N. Systems of artificial intelligence: textbook. In 2 parts. / S. N. Pavlov. - Tomsk: El Content, 2011. - Part 1. - 176 p. ISBN 978-5-4332-0013-5. 6. Bekmuratov Q.A. Artificial intelligence and neural networks. Study guide for graduate students of a higher educational institution. - Samarkand.: "Published in the editorial-publishing department of SamDU, 2021.-352 p. UDK: 004.8. ISBN 978-9943-7276-0-1. 7. Bekmuratov Q.A. Artificial intelligence. Study guide. -T.: "Alokachi, 2019.-312 p. UOK:004.8. KBK:32.973.2. ISBN 978-9943-5804-8-0. 8. Bessmertny I.A. Artificial intelligence - St. Petersburg: St. Petersburg State University ITMO, 2010. -132 p. 9. Potapov A.S. Technologies of artificial intelligence - St. Petersburg: St. Petersburg State University ITMO, 2010. - 218 p. 10. Bekmuratov Q.A., Mamaraufov O.A., Bekmuratov D.Q. Artificial intelligence. Methodological guide for higher education institutions. Tashkent. "Navroz" publishing house DUK. 2015. 366 pages. (UDK 004.8. ISBN:978-9943-381-08-7)

Module designation	***RYK 4205 - Digital Land cadastre***
Semester(s) in which the module is taught	*7- semester*
Person responsible for the module	*Rakhmonov Kasimdjon - doctor of technical sciences*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training - 30 hours* *Independent education - 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Fundamentals of state cadastres, land cadastre, land monitoring*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* *– knows and can explain the state policies and reforms being carried out on digitalization of the land cadastre;* *– knows and understands the goals and tasks of the state organizations that maintain the state land cadastre and the work they are doing on digitization of the land cadastre;* *– will acquire qualifications and skills in digitalization of land cadastre, modern geo-information systems, their software, hardware platforms and database formation;* *– knows the methods of obtaining data from primary and secondary sources for the digital land cadastre and can use devices for entering the database;* *– understands and knows the content of the laws and regulations adopted by the government on digitization of the land cadastre at the national level;* *– practical aspect can enter land cadastral data into attribute tables in ArcGIS software and perform analytical problems.*

Content	*The content and essence of land accounting. Tasks of land accounting. Types of land accounting. Digital technologies in land accounting. Features of the land account maintained by the enterprise. Features of the land account maintained at the institution. Land accounting procedure in the territory of the organization. Prospects of digital land accounting in the territory of the land user entity. Level of difficulty: 2* *Concepts of the land user entity. Types of entities using land. Land accounting procedure for land user entities. Features of digital land accounting in the territory of the land user entity. General concepts about the contour of the earth. The procedure for creating a register of fields. Creative approaches to field registration. Level of difficulty: 2* *The concept of land explication. The procedure for creating a land explication in an array. Peculiarities of land explication in the territory of the community assembly. Land accounting documents. Basic land account. Current land account. Digitization of land accounting documents. Level of difficulty: 2* *The content of the district land account, types of maintenance, digital technologies. Grouping of district land fund by quality. Calculation of the area of district agricultural land by productivity. Grouping of agricultural lands of the district according to their normative value and keeping land records. Level of difficulty: 3* *The procedure for accepting the land balance developed in the administrative district. The procedure for development and adoption of urban land balance. Digitization of district land balance documents. Registration of district and city land balance documents. The content of the land balance of the Republic of Karakalpakstan, regions and the city of Tashkent. Conditions for drawing up the land balance of the Republic of Karakalpakstan, regions and the city of Tashkent. The scope of using modern technologies in the preparation of the land balance of the Republic of Karakalpakstan, regions and the city of Tashkent. Level of difficulty: 3* *Organization of land cadastre management in the region. Control of land cadastre management in the region. Digitization of regional land cadastre documents. The procedure for formation of the republican land balance. Conditions for drawing up the republican land balance. Use of digital technologies in the land balance of the republic. Level of difficulty: 3* *The content of the national land account of the Republic. The scope of preparation and use of the national land account of the Republic. Use of electronic programs in the preparation of the national land account. Land valuation types and description. Scope of use of land assessment data. Digital technologies in the use of land assessment data in economic sectors. Level of difficulty: 4* *Use of land cadastre data in economic sectors. Use of land cadastre data in the analysis of production activity of an agricultural enterprise. Use of land cadastre data in land planning. Level of difficultyu:4* *Soil inspection and the method of conducting it. Planning the productivity of agricultural crops based on the data of soil inspection. Methods of determining the average*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1.Velta Parsova, Virginija Gurskiene, Madis Kaing. "Real property cadastre in 126ortal countries" Textbook. Jelgava – 2012.;* *2. Babajonov A.R., Raxmonov Q.R, G'ofirov A. Yer kadastri. Darslik.- T.,TIMI nashryoti, 2008y.- 210b.* *3. Чертовицкий А.С., Земельный кадастр. Учебное пособие.-Т.ТИИМ типографияси, 2012 г.-296 с.*

Module designation	***YBI 4205 Land Market and its Infrastructure***
Semester(s) in which the module is taught	*7-semestr*
Person responsible for the module	*Zulfiya Khafizova, senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*elective course*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours:* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management design, land cadastre, land management*
Module objectives/intended learning outcomes	✓ *Analyze the creation and management of land market infrastructure, including the organizational and legal forms that support the land market.* ✓ *Examine the role of various institutions and organizations, such as the land code and legal documents on environmental protection and land use, in the operation of the land market.* ✓ *Understand the legal basis for the establishment of a fully functional real estate market in Uzbekistan, including the Land Code and the law on the circulation of agricultural land.* ✓ *Recognize that full private ownership rights to land are yet to fully materialize in the Republic.* ✓ *Apply knowledge of territorial zoning and the principles of permitted land use in practical contexts.* ✓ *Utilize an understanding of the economic aspects of the land market.* ✓ *Possess knowledge of the role, functions, and features of land market infrastructure.* ✓ *Be aware of the importance of enhancing the legal framework of land reform and the economic relations among market economy participants.* ✓ *Identify the land market as one of the primary economic factors of production.* ✓ *Recognize the factors that influence the characteristics of the land market.* ✓ *Explain the uniqueness of land as an economic resource, particularly its immovable nature and limited availability.* ✓ *Describe the global trend of decreasing agricultural areas due to urban economic development and infrastructure expansion.*
Content	*Land market concept, content and tasks. Political, economic and social importance of land market infrastructure. The essence, function and general system of land market infrastructure. Organizational-legal basis of transfer of land market infrastructure system. The role of*

	"Land Code", "On State Cadastre", "On State Land Cadastre", on privatization of non-agricultural land plots and other relevant laws in the land market management. Land market infrastructure sources and principles of operation Level of difficulty: 2. *Comprehensive study of existing real estate objects and other objects on the territory of the republic. Methods of collecting the necessary information about their legal status, amounts and characteristics based on a single methodology. The need to bring the electronic online auction into a single system. Description of objects and entities. Level of difficulty: 2.* *Issues of nationwide, holistic and comprehensive consideration of the country's scientific and economic potential, as well as methodical and practical study of land market infrastructure. Service system and tasks. Quantity and quality indicators of objects. Directions of land cadastre and land formation, their interrelationship and sequence. Contents of land market documents. Level of difficulty: 2.* *The role of the land market in the privatization of land plots (private enterprises, population centers). Description of privatized lands. Territorial location of privatized lands and methods of their study. Their quantity and quality. Collection, processing and use of data on types of land market infrastructure. Level of difficulty: 3.* *Stages in conducting the land market. Land market infrastructure is a set of organizational and legal forms, various institutions and organizations that serve the land market and ensure its operation. Methods of studying how diverse the conditions of transactions are in the market infrastructure and institutions, as well as in the land market. Due to the availability of infrastructure, business relations between land market entities are carried out on a purposeful basis and their use. Place in the general system and procedure. Nature and functions of land market infrastructure. Ensuring uninterrupted operation of economic relations and mutual relations between subjects of the market economy; regulating the flow of goods and money. Level of difficulty: 3.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the assignments and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). To pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. Altiev A.S., Ubaydov M. I. "Land market and its infrastructure" (study guide) TIQXMMI publishing house, 2023. 116b.;* *3. Yarmatova D., Bobojonov A., Rakhimov A. Basics of the state cadastre. Cholpon publishing house, 2014. 234 p.*

	4. Resolution No. 71 of the Cabinet of Ministers of the Republic of Uzbekistan dated 14.02.2022 "On measures to implement the law of the Republic of Uzbekistan on the privatization of non-agricultural land plots". *5. Law of the Republic of Uzbekistan. "On privatization of non-agricultural land plots". 24.09.2021* *6. SuslovaYu.Yu., VoloshinA.V.: Market infrastructure. Organizational-practical aspect. INFRA-M.2019*

Module designation	***YFI4205 - Land use economics***
Semester(s) in which the module is taught	*8-semestr*
Person responsible for the module	*Abdurashid Altiyev, Professor*
Language	*Uzbek/Russian*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium hours: 60 hours* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management, land law, land management design, basics of land use.*
Module objectives/intended learning outcomes	✓ *Develop the ability to plan and predict the improvement of land use efficiency in various economic sectors.* ✓ *Acquire relevant skills in addressing economic issues related to land use.*
Content	*The course "Land use economics" studies deepening innovative structural, institutional and investment changes in the system of land use in order to ensure the processes of further development of the economy of our country; consistent development of production through effective and balanced distribution and redistribution of land resources among economic sectors, and regions; issues such as continuous supply of food products to the population, raw materials to the processing industry, expansion of the production of ecologically clean products, and further strengthening of the food security of our country.*
Exams and assessment formats	*One midterm control (80 minutes each) and final oral exam (80 minutes), a short computerized test and written homework are provided.*
Study and examination requirements	*The total maximum score will be the sum of the points allocated to the final exam (60%), Midterm (20%), homework (10%) and classroom activity (10%). To successfully pass the subject, a student must score 60% or more of the allotted points.*
Reading list	1. *Altiyev A.S. "Land Use Economics". Date: 2019.* 2. *Altiyev A.S. "Land Use Economics and Management". T.: 2022.* 3. *Altiyev A.S. "Problems of land resource use system regulation" (monograph). - T.: "Science", 2018.* 4. *Babajanov A.R., Rakhmanov Q.R., Gofirov A.J. "Land Cadastre" (textbook). T.:, TIIAME, 2012.*

Module designation	***DKMB 4205 - Database for state cadastres***
Semester(s) in which the module is taught	*8- semester*
Person responsible for the module	*Associate professor, PhD Ashurov Abdullo*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Contact hours: lecture – 30 hours, practical lessons – 30 hours, self-learning – 90, hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, land cadastre, building and construction cadastre, territory cadastre, fundamentals of state cadastres, geoinformation systems and technologies*

Module objectives/intended learning outcomes	*After mastering the discipline, the student* – *knows and can explain the procedure for creating and maintaining a single system of state cadastres, the structure of its database, and the regulatory and legal basis for creating and maintaining it;* – *will have an idea about the technologies used for the maintenance and digitalization of local state cadastres, their technical capabilities, and the formation of the database of the unified system of state cadastres on a national scale;* – *knows and can understand the software used in the creation of the database of state cadastres and the geospatial data and their requirements;* – *knows how to use various technical tools and methods in the formation of primary and secondary data in the formation of the state cadastre database;* – *will have the ability to create geographic and attribute tables of objects in special software during the formation of the state cadastre database;* – *can develop a mechanism for forming and maintaining a database for each type of state cadastre.*

Content	*The procedure for forming thematic layers related to the geoinformation system of the State Cadastre Unified Database and submitting them to the State Cadastre Unified System. Provision of state cadastral information related to the unified system of state cadastres. The structure and content of the information provided to the geoinformation system of the unified system of state cadastres. Maintaining the state cadastre of regions while creating a database of state cadastres. Objectives and tasks of the state cadastre of territories. Organization and maintenance of the structure of the database of the state cadastre of regions and its creation. Procedure for providing users with state cadastre information of regions. Level of difficulty: 2* *Use of geospatial data in the creation of a database of state cadastres. Concept of geospatial object. State and local systems of geospatial data coordinates. Level of difficulty: 2* *Maintaining a database of state cadastres in foreign countries. Digital structure of state cadastre management in the Russian Federation. Peculiarities of database formation in the cadastral system of Western European countries. Digitization system of state cadastres of Southern European countries. Level of difficulty: 3* *Changes, priorities, achievements and plans in the era of modern technologies in the new and digital economy. Creation of modern IT infrastructure. Complete cadastral online services. Collection, processing and use of data on types of natural resource cadastres. Level of difficulty: 3* *Improvement of state cadastre maintenance based on the development of the database use system. Specific aspects of the formation of the state cadastre database of fauna and flora objects. The composition of the database of the state cadastre of objects of the animal world. Integration of cadastral information of wildlife objects with other cadastres by relevant state agencies. Cadastre data reporting forms. Level of difficulty: 4* *Specific aspects of the formation of the cadastral database at the regional level. The composition of the database of the state cadastre of flora objects. The procedure for state accounting of flora objects and the volume of their use. Formation of cadastral information in graphic form about objects of the flora. Formation of cadastral data on flora objects at the regional level. Level of difficulty: 5*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. А.Ашуров. Давлат кадастрлари маълумотлар базаси. Ўқув қўлланма. ТИҚХММИ Т., 2021.- 135 б.* *2. O'. Mukhtorov, A. Inamov, J. Lapasov. Instructional manual for practical training in "Geoinformation systems and technologies". T.: TIIAME, 2017.* *3. Mukhtorov O'.B., Inamov A.N., Islamov O'.P., Geoinformation system and technologies. (For lecture) T., TIIAME, 2019. 220 pages;*

Module designation	***State forest cadastre - DOK 4205***
Semester(s) in which the module is taught	*8-semestr*
Person responsible for the module	*Rakhmonov Kosimdzhonov, Doctor of Engineering, DSc, Associate Professor;* *Kubaev Djasur Abdumuminovich – assistant*
Language	*Uzbek, Russian*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical training*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Auditorium Hours:* *Lecture – 30 hours;* *Practical training – 30 hours* *Independent education – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Geodesy, land cadastre, building and construction cadastre*
Module objectives/intended learning outcomes	***As a result of mastering the subject, the student:*** *• To have an idea about the procedure, goals and tasks, principles, objects of the state forest cadastre management;* *• state forest cadastre automated geo-information system and know how to manage forest cadastre using this technology, form related information and methods of recording forest land and be able to use them;* *• should have the skills to create thematic layers related to the state forest cadastre, describe the spatial location of vector objects (point, line and area), prepare state forest cadastre documents.*
Content	*The state forest cadastre is a science that focuses on the main issues such as determining the protection category of forests, organizing the rational use, protection, protection and restoration of forests, keeping records of changes in the structure of the state forest fund land, and determining a uniform control procedure.*
Exams and assessment formats	*One mid-term control (20 minutes) and final oral exam (40 minutes), a short computerized test is provided*
Study and examination requirements	*Students who successfully pass the science* *The total maximum points will be the sum of the points allocated to the final exam (60%), Midterm control (20%), homework (10%) and activity in classroom activities (10%). To pass the subject, the student will be allocated 60% of points and above. must collect the amount.*
Reading list	*1. Rakhmanov Q.R. State cadastres. Study guide. T., TIMI, 2008 - 160 p.* *2. Nishonboev N. Basics of the state cadastre. Study guide. T. TAQI, 2007 – 126 p.*

Module designation	***HFX4205 - Life safety***
Semester(s) in which the module is taught	*8-semestr*
Person responsible for the module	*Khojiev Aliakbar Abdumannopovich – doctor of philosophy (PhD) in technical sciences, associate professor.* *Mirkhosilova Zulfiya Kuchkarovna – doctor of philosophy (PhD) in technical sciences, associate professor.*
Language	*In Uzbek, Russian languages*
Relation to curriculum	*Elective*
Teaching methods	*Lecture, practical training*
Workload (incl. contact hours, self-study hours)	*Total load – 150 hours;* *Auditorium hours – 60 hours;* *Lecture – 30 hours;* *Practical training – 30 hours;* *Self-study – 90 hours.*
Credit points	*5credits*
Required and recommended prerequisites for joining the module	*Chemistry, physics, mechanics, geography*
Module objectives/intended learning outcomes	***To know and understand:*** *- the system of regulatory legal acts in the field of life safety;* *- general principles and methods of security;* *- security tools;* *- requirements of industrial sanitation and hygiene.* ***To be able to:*** *- analysis of occupational injuries and occupational diseases,* *- safety requirements during geodetic and topographic works,* *- types of emergency situations;* *- technical means of fire prevention.* ***To form competences in:*** *- dangerous and harmful production factors during geodetic and topographic works;* *- use of personal protective equipment;* *- organizational and technical means of fire prevention and elimination;* *- quick decision-making in emergency situations;* *- rules for providing primary medical care to victims.*
Content	*The concept of life safety. Goals and objectives of life safety science. Legal bases of life safety. Industrial accidents and occupational diseases. Level of difficulty: 5* *The norm of sanitation and hygiene at work. Ventilation and lighting systems of enterprises. Safety at geodetic and topographic works. Safety precautions when using hydro-reclamation systems. Electrical safety at work. Level of difficulty: 5* *Types and classification of emergency situations. Measures of protection against emergencies of various kinds. Measures to ensure fire safety. Fundamentals of primary health care. Level of difficulty: 5*

Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. T. Haydarov, A. Khojiyev, N. Saidhojayeva. Life safety. – "Fidokor yosh avlod", Textbook, 2022.– 322 p.* *2. E.I.Ibragimov, S.Gazinazarova, O.R.Yuldashev. Labor protection special course. Textbook.-T.: TIIM, 2014.-536 p.* *3. H.Goyipov. Life safety. –T.: "Yangi asr avlodi", 2007. – 264 p.* *4. Belov A.V. Life safety. M.:2007.-616 p.*

Module designation	**BMI4110 - Practice before the graduation qualification work**
Semester(s) in which the module is taught	*8-semestr*
Person responsible for the module	Practice before the graduation qualification work *Karomatov V.*
Language	*Uzbek, Russian*
Relation to curriculum	*Main*
Teaching methods	*Experience, project,*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Independent education - 150 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*GTH received In order to complete the internship, students must have basic knowledge of land planning and land cadastre.*

Module objectives/intended learning outcomes	*the* practice before the graduation qualification work *is to collect the necessary written and drawing materials on the subject for writing the graduation thesis.* *During the* practice before the graduation qualification work *, the student* : **know and understand:** - sources of information on the topic being developed for use in the process of preparing a graduation thesis; - methods of modeling and research of socio-economic processes; - static data analysis and processing methods; - information technologies used in production organizations, professional software products; - requirements for the design of land registration and land cadastral documents; **to be able to:** **-** Analyzing, systematizing and summarizing data on BMI; - independent planning and observation; - comparison of the work results of the production facility with domestic and foreign analogues; **formation of competences:** - analysis of the scientific and practical significance of the research carried out in the production enterprise or organization in the field; - processing of received production data; - formalization of practice results in the form of a report...
Content: The discipline includes the following topics	Instructions on searching for information in accordance with the goals and objectives of the qualification practice in the organization (cadastral agency, cadastral chamber, etc.). Creating an action plan. Getting to know the organizational structure and content of the activity of the practice facility. Collecting, synthesizing and systematizing the main indicators necessary for the performance of an individual task. Practice phase. Comprehensive study and analysis of information technologies, software and information provision in the organization in accordance with the individual assignment. Data processing and analysis. The final stage. Preparation of a draft report. Formalization of the scientific internship report, preparation for its defense.

Exams and assessment formats	According to the results of the practice, the students are: are obliged to: • providing practice diary • preparation and protection of reports based on collected data. The final report of the internship will be defended at the meeting with the participation of the commission appointed by the head of the graduate department (20 minutes).
Study and examination requirements	Requirements for successful completion of the module: The final grade for the module consists of 40% defense of the internship report, 40% participation in the internship, and 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. Kadastr Agentligi va kadastr palatalari Nizomi. Toshkent. 2021. 2.Avezbayev S., Volkov S.N. Yer tuzishni loyihalash. – Toshkent.: "Yangi asr avlodi", 2004. – 784 b. 3. Avezbayev S., Karabayeva T. Yer tuzish. T.: "TDAU", 2005. – 305 b. 4.Волков С.Н. Землеустроительное проектирование. М.: Т 2.Землеустроительное проектирование. Колос. 2007, 648 с. 5. Чертовицкий А.С., Базаров А.К. Земельный кадастр.- Т.: ТИИИМСХ, 2012,302 с.. 6. Babajanov A.,Raxmonov Q., G'ofirov A. Yer kadastri, TIMI, 2012- 242b. 7. Yer kadastri va yerdan foydalanish" bakalavriat ta'lim yo'nalishi bo'yicha bitiruv malakaviy amaliyoti Dasturi. – T.: MTU "TIIIMSX".2022. 15 b.

Module designation	**TIL 1104-Uzbek language**
Semester(s) in which the module is taught	*2-semestr*
Person responsible for the module	*Koshnazarova Malokhat Alimovna, assistant* *Kodirova Rano Tukhtayevna, assistant*
Language	*Uzbek*
Relation to curriculum	*Compulsory*
Teaching methods	*practical lesson*
Workload (incl. contact hours, self-study hours)	*Total workload: 120 hours* *Contact hours:* *-Practical lessons - 60 hours* *-Self-learning - 60 hours*
Credit points	*4 credits*
Required and recommended prerequisites for joining the module	*Uzbek language (school program)*

Module objectives/intended learning outcomes	***To know and understand:*** *- to be able to read and understand various conversations and complex texts, to be able to react, to explain the meaning, to be able to explain, that is, to be able to understand the main content of lectures, conversations, excellent instructions, questions and answers, and to follow the spelling rules of the Uzbek language;* *- improving written speech and increasing literacy;* *- to explain the meaning of various terms and to be able to compose texts based on field terms;* *- to understand the essence of literary language styles and to develop oral and written speech;* *- creation of field documents, including filling of electronic documents* ***To be able to:*** *- following the spelling rules of the Uzbek language, he can read and understand complex texts on various topics and develop communication skills;* *- able to express his impressions through creative thinking, understanding the meaning of informal terms and concepts; - creates the ability to compose, edit and analyze a text related to the specialty;* *- will have the skills to issue documents;* ***Formation of competences*:** *- based on the communicative-speech principle of teaching, students will acquire the knowledge and skills acquired in the field of communication and practical competence in the process of work, so that students can carry out activities in everyday, scientific and professional fields;* *- students professional competence and oral and written expression will be developed by following the norms of the literary language and by understanding the texts related to different professions;* *- able to effectively use industry terms in oral and written speech;* *- can prepare working papers for the preparation of industry documents.*

Content: The discipline includes. The *level of difficulty*: (1 – low, 5 high):	*"Uzbekistan is the only Motherland". State symbols of the independent Republic of Uzbekistan. Uzbek alphabet based on Latin script. Spelling rules of the Uzbek Language. Level of difficulty: 2.* *The Uzbek language is the state language. Sections of spelling rules of the Uzbek language. Spelling of capital letters.* *A member of national values. The pride of the national traditions and customs of the Uzbek people. Word formation in Uzbek. Level of difficulty: 3* *History and our time. Historical cities of Uzbekistan. Lexical layers of the language.* *Our great ancestors. Terms and their origin. Economic invention of Abu Raykhan Beruni, Al Farghani Al Khorezmi.* *Motherland and patriotism. Defenders of the homeland. Armed Forces of Uzbekistan.Socio-political lexicon. Level of difficulty: 3* *Museums are a bridge between the past and the future. Historical museums of Uzbekistan. Field terms and their use.* *The future is in the hands of educated youth. Talented youth. Synonyms in Uzbek. Level of difficulty: 2.* *Education in the modern world. Education system in Uzbekistan. Educational systems in developed countries. Language and terminology.* *Level of difficulty: 4* *Book reading. The work I love. Phraseologisms.* *"Literature is a source that elevates spirituality." Speech styles. Official-departmental style and its features.* *Mass media. Journalistic style and its features.* *The Internet is in our lives. Oral-written style and its features. Level of difficulty:2* *Uzbekistan and the world. Artistic style and its features.* *Innovations in the 21st century. Scientific method and its features.* *Global problems of our time. Article and its types.* *Nature and man. Different aspects of oral and written communication.* *Man and health. "Your health is in your own hands." The order of writing official business papers.* *Legal culture. Official-departmental style and its features. Level of difficulty:5* *From the life of our center of science. Speech style and its features. Dialectic words. Level of difficulty: 3* *My future profession. Text and its views. Level of difficulty: 4* *Life is in my imagination. Types of dialogic text according to meaning.* *Talent and hard work. Choosing words and terms for the text.* *Yetuk mutaxassis. Matn tahlili va tahriri. Level of difficulty: 5* *Eastern academies. The text of the essay, its structure and features of the expression material.* *The road to science. The text of the review, its structure and features of the expression material.* *Professional ethics. Abstract text, its structure and features of expressive material.* *Speech etiquette. The concept of norm. Level of difficulty: 3* *Art and spirituality. Terms of art studies that have entered the national lexicon.* *The work I love. Art tools. Level of difficulty: 4*
Exams and assessment formats	*Educational results are evaluated in a 100-point rating system. One midterm (60 points) and final oral exam (40 points)*
Study and examination requirements	*Requirements for successfully passing the module* *To pass the subject successfully, the student must score 60% or more of the allotted points.*

Reading list	*1. M. Aminov, A. Madvaliyev, N. Mahkamov, N. Maxmudov, Y. Odilov. Davlat tilida ish yuritish. Amaliy qo'llanma. "O'zbekiston nashriyoti". – Toshkent, 2021. -527 b* *2. I. Azimova, K. Mavlonova, M. Jabborova, Sh. Tursunov. O'zbek adabiy tili ish daftari. O'quv qo'llanma. –Toshkent, 2021.- 121 b.* *3. M.A. Qo'shnazarova O'zbek tilining sohada qo'llanishi. O'quv qo'llanma. – Toshkent, "TIQXMMI" MTU, 2023.-98 b* *4.K.N. Raximova. O'zbek tili. O'quv qo'llanma.–Toshkent, "TIQXMMI", 2020.- 198 b.* 5. *G.A. Asilova. O'zbek tili. Darslik. "Yosh kuch"-Toshkent,2018.-436 b*

Module designation	***YTA 2105 -Introduction to Land Management***
Semester(s) in which the module is taught	*4-semestr*
Person responsible for the module	*Saifuddin Sharipov, senior teacher*
Language	*Uzbek*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours: 60 hours* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*engineering geodetic works, land cadastre and land monitoring*
Module objectives/intended learning outcomes	**To know and understand:** – the place of land as a natural resource in the life of society, its importance as the main means of production in agriculture; – land preparation activities aimed at adapting the territory to modern requirements of production; – about the essence and principles of conducting inter-farm and internal land development works based on the tasks of land development, the main laws and principles of development. **To be able to:** – organization of rational land use and protection; – features of implementation of earthworks through science-based earthworks projects; – collecting, analyzing and using methods of data on land formation; – experiences of land formation and land cadastre, effective use of land in developed countries. **To form competences in:** – large complex interconnected activities, actions, project work at various levels, the main directions and methods of land use organization and protection in the national system of land management; – ability to draw up land use organization projects; – taking into account the features of the land and the natural conditions of the area when working on land development projects; – adherence to land laws, determination of legal issues; – use of geoinformation systems and modern land surveying methods in land surveying and scientific research.
Content	*The need for effective, rational and ecologically safe use of land and water resources. Specific characteristics of land use in economic sectors. Organization of territory.*

	Land management in social production and its socio-economic concept. The purpose of land management is to achieve a clear economic result. Effective use of land and increase its productivity; carrying out special measures to improve the quality of land; intensive use of agricultural land; development of new land for agriculture. Land protection. Fight against soil erosion; protection of land from improper use and deterioration of its quality. That the organization of rational use and protection of land is the main task of land management and that these works are carried out with the help of scientifically based land planning projects. Level of difficulty: 1. *Land zoning is an objectively developing process that organizes land use in accordance with the social needs of society and the constantly changing conditions of production and deals with zoning. Land management is a complex and diverse system of state activities. Tasks, nature, economic meaning, legal, ecological and technical basis and general structure of land management according to the laws on land. Using the results and data of land cadastre and other activities related to land use in land management. Level of difficulty: 2.* *Types of land management. Their differences and similarities. Purpose, tasks and content of inter-farm land management. Construction of inter-farm land in agriculture and other sectors of the economy. Peculiarities of the organization of farms located in different regions and with different specializations. The main principles of land management, their content and importance. Specific characteristics of the land as a means of production are taken into account in land management. Economic factors to be taken into account in land management. The composition of social conditions taken into account in land management and their influence on the organization of land use and production. Experiences of land management and efficient use of land in developed countries. Development and modern problems of land management. Level of difficulty: 2.* *Scientific-methodical issues of land management design. Techniques, technology and principles of land management. The process of development of land management projects and its main stages. Land management projects, their content and composition. Project organizations developing land management projects and their activities. Construction of inter-farm land. Organization and regulation of agricultural land tenants and land use. Organization of non-agricultural land uses, land and environment protection. Land management works aimed at land protection. Level of difficulty: 3.* *Determining and changing the boundaries of residential areas, organizing and using their land. Determination of boundaries of administrative territorial units. Restrictions and obligations on land use. Special issues of inter-farm land management. Establishment of new agricultural enterprises, farms and peasant farms,*

	establishment of special land funds in districts; projects to identify and put into use land that is not used for designated purposes, has fallen out of use, or has deteriorated in quality; map of the redistributable land fund of the district and its composition. Level of difficulty: 4. *Tasks and content of internal land management in the farm. Preparation and field research work of the internal land management project. Placement of roads, engineering structures and objects. Level of difficulty: 4.* *Organization of land types and crop rotation. Organization of the area of crop rotation. Level of difficulty: 4.* *Features of internal land management in farms. Environmental, economic and social effectiveness of the project of internal land management in the farm. The procedure for drawing up working projects and the development of working projects and their implementation. Level of difficulty: 4.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of analysis, to independently observe the studied processes and to perform the tasks and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). To pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. Avezbayev S., Sharipov S.R. Theoretical foundations of land formation. T.: TIQXMMI, 2021. -160 p* *2. Avezbaev S., Sharipov S.R. Landscaping design. Study guide - T.: TIQXMMI, 2021. - 168b.* *3. Avezbaev S., Volkov S.N., Sharipov S.R. Landscaping design. Study guide - T.: "TIIAME" NRU, 2022. - 170p.* *4. Land planning. Textbook. Pod. ed. prof. S.N. Volkova. - M.: GUZ, 2020. – 628 p.* *5. Selim Kapor, Hari Eswaran, Winfried Blum "Sustainable Land Management" Springer-Verlag Berlin and Heidelberg GmbH & Co. KG, Germany 2016*

Example form for Module Handbook

A **Module Handbook or collection of module descriptions that is also available for students to consult** should contain the following information about the individual modules:

Module designation	MYR3205 -Land reclamation and land reclamation
Semester(s) in which the module is taught	*5* semester
Person responsible for the module	Isabaev Kasimbek, candidate of agricultural sciences, associate professor. Botirov Shavkat Chorievich, candidate of agricultural sciences, associate professor.
Language	*Uzbek, Russian*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture, practical lesson*

Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours.* *Contact hours: 60 hours:* - *lecture – 20 hours;* - *practical lessons – 40 hours;* - *self-study - 90 hours.*
Credit points	*5* credits
Required and recommended prerequisites for joining the module	Physics, Geodesy, Soil Science and Agriculture
Module objectives/intended learning outcomes	**Know and understand:** -geodetic work performed during the implementation of the system of land recultivation and anti-erosion measures; -geodetic works used in the construction and design of irrigation and reclamation facilities; -assessment of soil conditions in different regions, understanding of irrigation sources **Having the skills to:** - to have the use of water resources in agriculture; - to have knowledge of the basic laws of hydrodynamics and hydrostatics, the movement of water in water pipes and open channels, irrigation and drainage melioration, water supply and methods of watering pastures; - to acquire knowledge about the use of water resources in agriculture, the application of hydrotechnical measures against erosion; - to be able to understand the methods of water resources and soil protection in land recultivation, melioration; -know and be able to use geodetic works in the construction and design of irrigation and land reclamation facilities, demarcation of land, determining the area of project plots, moving the project to the location **Formation of competences:** - on decoding of images when creating cadastral and agricultural maps; - on creating and updating the information database; - identification of water catchment areas according to maps, directions of movement of underground water, depth of location and consumption; - on determining the appropriate type of land reclamation, designing and reorganizing irrigation and drainage networks; - the ability to carry out recultivation in disturbed lands.

Content	Reclamation, its purpose and tasks. Types of agricultural reclamation. Requirements for agricultural reclamation. General concepts about land reclamation. The purpose of reclamation. Stages of land reclamation. Difficulty level: 2 General information on hydraulics and hydrogeology. Basic laws of hydro statistics and hydrodynamics. Types and laws of movement of fluids. Flow parts. Water flowing through a hole in the wall. Smooth movement of water in an open channel. General information about hydrogeology. Occurrence and quality of underground water. Water-physical properties of the soil and types of water in it. Types of groundwater. Determining the flow direction, speed and consumption of underground water. Difficulty level: 3 Irrigational melioration. General information about irrigation. Irrigation system. Irrigation mode of agricultural crops. Hydro module and hydro module zoning. Irrigation methods and techniques. Water-saving irrigation technologies. Irrigation networks. Their water consumption, ECE and ways to increase it. Water sources for irrigation. Reclamation of drainages. Water and salt balance equations of irrigated lands and their elements. Salt wash. Land reclamation measures against salinization. Ditches on irrigated land. Difficulty level: 4 General concepts about land reclamation. Classification of recultivation objects, degraded lands. Stages of reclamation. Restoration of agrosystems. Reclamation activities related to reclamation directions. Reclamation of contaminated land from various sources. Economic, ecological and social effectiveness of land reclamation. Difficulty level: 5
Exams and assessment formats	One written midterm assessments (30 minutes), take-home written assignments and one final oral exam (40 minutes).
Study and examination requirements	Requirements for successfully passing the module: The final grade in the module is composed of 40% performance on exams, 20 % independent work, 20 % practical work, 20 % mid-term control tests. Students must have a final grade of 60% or higher to pass
Reading list	1.Xamidov M.X., Urazktldiyev A.B., Botrov Sh.Ch. Metlioratsiya va yerlarni rekultivatsiyalash. Darslik. — Toshkent. ТИМИ босмохонаси 2012. –195 bet. 2. Xamidov M., Hamidov A., Botrov Sh. Melioratsiya va yerlarni rekultivatsiyalash. Darslik. —Toshkent. ТИҚХММИ босмахонаси. 2021. –290 bet. 3. Xamidov M., Hamidov A., Isabaev K. Мелиорация и рекультивация земель. Учебник. Toshkent. *“ТИИИМСХ”, 2022. –295 стр.* 4.Арифжанов А.М., Рахимов Қ.Т., Ходжиев А.К. “Гидравлика”. Тошкент. ТИМИ босмохонаси, 2016. -307 б. 5.G‘.U.Yusupov, B.M.Xolbayev “Geologiya va gidrogeologiya asoslari” Toshkent “Yangi asr avlodi”-2003 yil.

Module Handbook on the educational program
BSc 60813100-Land Cadastre and Land Management

Module designation	***MAT1114 Advance Mathematics***
Semester(s) in which the module is taught	*1,2 semestr*
Person responsible for the module	*Associate Professor Turaev Foziljon*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training , independent education*
Workload (incl. contact hours, self-study hours)	*Total workload: 420 hours* *Contact hours: lecture – 60 hours, practical lessons – 100 hours, self-learning – 260 hours*
Credit points	*14* credits
Required and recommended prerequisites for joining the module	*Basic Algebra, Geometry, Informatics*
Module objectives/intended learning outcomes	***To know and understand:*** - *elements of linear algebra;* - *analytic geometry;* - *mathematic analysis;* - *theory of complex numbers;* - *derivative of functions, indefinite and definite integrals, multivariable functions and series in solving practical problems related to land resources* ***To be able to:*** *- to choose convenient methods of solving differential equations and use them in process analysis, to know solutions to problems;* *- using mathematical symbols to express quantitative and qualitative relations of objects;* *- derivative of a function, indefinite and definite integral, use of multivariable functions and series in solving practical problems.* **To form competences in:** *- deep practical and theoretical knowledge , application of mathematical concepts in practice;* *- able to mathematically analyze statistical data;* *- to be able to build a mathematical model of a problem and find its solution using mathematical research methods;* *- solving optimization problems of land resources.*

Content	*Matrices and operations on them, determinants and their main properties. Methods of solving the system of linear algebraic equations. Level of difficulty: 2* *Elementary problems of analytic geometry in plane and space. Level of difficulty: 3* *Algebra of vectors. A straight line in space and their equations in different forms. Level of difficulty: 2* *Mathematical analysis. Differential calculus. Concept of indefinite integral. The main methods of integration. Definite integral and its applications. Calculating the definite integral. Applications of the definite integral to geometric and mechanical problems.* *Level of difficulty: 4* *Theory of multivariable functions. Partial derivative, full differential. Application of full differentials in approximate calculations. Determining the extreme of a multivariable function. Determining tangent plane and normal to a curve in space. Directional derivative. Gradient.* *Level of difficulty: 4* *Ordinary differential equations and methods of solving. Higher order differential equations. System of linear differential equations. Level of difficulty: 5* *Number and functional series. Power series. Taylor and Maclauren series and their applications. Expanding a function to a Fourier series. Level of difficulty: 5*
Exams and assessment formats	*One Midterm assessment and one final control exam in the form of written work (80 minutes each) .*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	11. *PETER W. O'NEIL. Advanced engineering mathematics. 2010.* 12. *Claudio Canuto, Anita Tabacco. Mathematical Analysis I, (II) . Springer-Verlag, Italia, Milan, 2015.* 13. *B.Xudayarov "Matematika" Part I. Chiziqli algebra va analitik geometriya. Tashkent, "Fan and technology", 2018. -284 p. (in Uzbek)* 14. *B.Xudayarov "Matematikadan misollar va masalalar to'plami" Tashkent "Uzbekistan" 2018. 304 p. (in Uzbek)* 15. *T. Ergashev "Differensial tenglamalar" Tashkent " Uzbekistan " 2023 years. 320 p .(in Uzbek)*

Module designation	***TD 2105 Soil Science and Agriculture***
Semester(s) in which the module is taught	*3- semester*
Person responsible for the module	*Associate professor.PhD Jamila Khaitbaeva*
Language	*Uzbek, Russian*
Relation to curriculum	*Compulsory*
Teaching methods	*lecture, lesson, lab works, private study.*
Workload (incl. contact hours, self-study hours)	*Total workload:150* *Contact hour: lecture-30, practical lesson 20, lab works-10, self-leaning-90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*General chemistry, higher mathematics, physics*
Module objectives/intended learning outcomes	***To know and understand:*** - the essence of the soil formation process, the general scheme, - the structure, morphology, biology, living conditions and farming laws of plants, - have ideas and knowledge about soil properties, cultivated types of crops, ***To be able to:*** - the main factors and conditions affecting soil formation, - the organic part of the soil, chemical composition, soil structure, soil properties, ways of their moderation, - soil fertility, soil classification, soil water regime, -scientific basis of crop rotation and organization procedure, - basic soil treatment, before and after planting, - to have skills about the main agricultural crops ***To form competences in*** - placement of plants, use of water-saving irrigation methods and techniques, - to be able to use the achievements of modern farming in all areas of agriculture, - use of modern resource-saving techniques and devices, taking into account the characteristics of the soil, to obtain a high and high-quality harvest from agricultural crops

Content	Morphological signs and structure of the soil. Soil layer structure, genetic layers and main morphological features. Soil color, inclusions and structure. Stages of soil profile development. Difficulty level: 2 Physical and chemical properties of soil. Soil density, solids density, chemical, radioactivity properties. Soil compaction, subsidence, viscosity, ductility, plasticity and hardness. Importance of physical and chemical properties of soil. Difficulty level: 2 Soil organic matter and fertility. The organic part of the soil, soil humus, chemical changes that occur outside the cells of living organisms, the processes of changing organic residues with the participation of soil animals, the functions of soil organic matter. Difficulty level: 3 Organic and mineral fertilizers. The importance of fertilization. Importance, composition, types of organic fertilizers, period of application to the soil, procedure and norms. Siderate fertilizers, their use. Importance, composition, types of mineral fertilizers, period of application to the soil, procedure and standards. Difficulty level: 4 Watering plants. Water requirements of plants. Biological basis of irrigation. Irrigation and seasonal irrigation norms. Irrigation procedures and methods. Modern irrigation methods. Difficulty level: 5
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*
Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. O. E.Khakberdiev, R.R.Egamberdiev, J.U.Khaitbaeva "Asas of Soil Science and Plant Science" Tashkent 2022.* *2. O. Ramazanov, S. Bouriev "Melioration soil science" Tashkent 2019.* *3. Sh.Kholikulov, P.Farov, I. Bobokhojaev "Soil Science" Tashkent 2011.* *4. Ramazanoa A.,. Bouriev S "Soil Science and farming" - harmonious Faiz media, T. 2018.* *5. Egamberdiev R.R. Educational guide" fundamentals of Crop Science " Tashkent 2022.* *6. O.E.Khakberdiev, Dadakhojaev A. Educational guide "soil science" Tashkent 2023.*

Module designation	***AJM2106 - Information technologies and mathematical modeling of processes***
Semester(s) in which the module is taught	*3- semester*
Person responsible for the module	*Associate professor, Candidate of Technical Sciences Sayibdjan Mirzaev*
Language	*Uzbek, Russian, English*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture, practical lesson, laboratory lesson, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 180* *Contact hours: lectures - 40, practical lessons – 30, laboratory lessons – 10, self-learning – 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*Higher Mathematics*

Module objectives/intended learning outcomes	***To know and understand:*** *- information, methods of its storage, processing and transmission,* *- information processing technologies,* *- computer networks and network technologies,* *- methods of information security and information protection,* *- high-level programming languages,* *- databases,* *- software and programming technologies,* *- computer networks.* ***To be able to:*** *- use the capabilities of the software,* *- application of practical programs in solving issues of specialty,* *- search for data by specialty in the computer network,* *- building algorithms and drawing up a program for solving practical issues.* **To form competences in:** *- ability to solve practical issues in MS Office,* *- draw up algorithms for solving issues by specialty,* *- creation of a program in algorithmic language for solving issues by specialty,* *- use the means of information protection in computer networks,* *- Receive information from the Internet in the specialty*

Content	*Basic concepts of information technology. The subject, goals and objectives of science "Information Technologies." Concepts of information technology and information systems. Information culture and information society. The role of modern information technologies in their scientific and technical development and the development of society. Regulations in the field of informatization. Level of difficulty: 2* *Computer software. Types of software: system, practical and hardware. Operating systems, their types and meaning. Operating systems of computers and mobile devices. Tools and utilities. Information archiving programs. Tasks, composition and structure of application software. An application package and a series of issues with which they are solved. Tasks, composition and structure of hardware software. Hardware software package. Level of difficulty: 2* *Properties of algorithms. Methods for describing algorithms. Algorithm and algorithmization. Properties of algorithms. Methods and types of algorithm creation. Methods for describing algorithms. Stages of computer solving issues. Linear algorithms. Ordered algorithms. Repetitive algorithms. Algorithms in which the number of repetitions (arithmetic) is known. Algorithms with unknown number of repetitions. Algorithms for solving agricultural and water issues. Level of difficulty: 3* *Languages and programming systems. Main elements of programming languages. Working with standard functions. Programming language operators, arrays, variables, constant, procedures, and functions. Structural structure of programs. Running programs by computers. Translators and interpreters. Algorithms for working with matrices. Programming agriculture and water management issues. Level of difficulty: 3* *C++ programming algorithms in a programming language. C++ - syntactic construction and use of programming operators, conditional if (), if () and unconditional goto transition operators, switch (), continue and break operators in programs. Programming repetitive algorithms in the S++ programming language. C++ create programs in the programming language using duplicate statements for (), while (), do while ().Level of difficulty: 4* *Information security. Ensuring information security in computer networks. Threats to information security. Technical and software information security tools. Cryptographic methods of information protection. Caesar's method. Vigener Square. Level of difficulty: 4*
Exams and assessment formats	*To fully master the theoretical and methodological concepts related to science, be able to correctly reflect the results of the analysis, independently observe about the processes being studied and carry out tasks and tasks assigned in intermediate forms of control, submit a written work on final control.*

Study and examination requirements	*Students of successful transition from science* *The maximum points to be summed will consist of the final exam (40%), the interval control (60%), the sum of the points to be separated. In order to successfully pass the subject, the student must score 60% of the allocated points and collect a high score in it.*
Reading list	*1. Abdullaev Z.S., Mirzayev S.S. Mathematical modeling of information technologies and processes. Tashkent, TIIAME, 2019. -332 b.* *2. Abdullaev Z.S., Mirzaev S.S., Shodmonova G., Shamsiddinov N.B. Informatics and Information Technologies. - T.: Publishing house of the National Library of Uzbekistan named after A. Navoi, 2012. - 444 b.* *3. Shadmanova G., Karimova Kh. Kh., Kenzhaeva D. Information technologies and mathematical modeling of processes. T., TIIAME, 2020.*

Module designation	***PR2106- Internship (Geodezic works in Land Development)***
Semester(s) in which the module is taught	*4 -semestr*
Person responsible for the module	*Jumanov Azamat Norbutaevich (PhD), associate professor* *Abdiramanov Rashid Duschanovich, senior teacher* *Valieva Albina Robertovna, assistant* *Shavozov Temur Karimovich is a trainee teacher*
Language	*Uzbek and russian*
Relation to curriculum	*Compulsory*
Teaching methods	*Field practice*
Workload	*(Estimated) Total workload: 120* *self-learning – 120, hours*
Credit points (*Field practice*)	*4 credits*
Required and recommended prerequisites for joining the module	To master the course, Master Students must have basic knowledge in “Higher mathematics”, ” Geography;”, “Informatics”,
Module objectives/intended learning outcomes	*Formation of the necessary practical skills for carrying out studies on engineering geodesy of qualified specialists in the field of "land cadastre and land management ".* **As a result of Master's research practice the Master student must:** **know and understand:** *- Consolidation of the acquired theoretical knowledge on "Geodesy".* *- study of geodetic measurement methods in field conditions.* *- gaining experience in performing the main types of geodetic measurements and observations.* *- to have the ability to use modern geodetic tools and technical equipment.* *- can adjust geodetic measurements* *- can determine coordinates and elevations objects through geodetic measurements;* *-knows the design of instruments for performing topographic, geodetic and surveying work;* **be able to:** *- organization of geodetic measurements and observations.* *- learning to process and analyze the obtained results.* *- Able to process results field measurements and create topographic plans in specialized software provision.* *- has the skills of field work in urban areas;* *-perform some actions when executing tacheometric survey;* *-is able to perform some actions when performing technical leveling;* *-capable of reproducing some actions in processing field measurements;* *-is able to reproduce some actions when creating topographic plans;* *- able to perform certain actions production of linear-angular measurements in theodolite traverse;* *- able to perform some actions during technical leveling;* **form competences in:** *- completing the stages of work determined by the individual assignment for the training* *geodetic practice (GPP), calendar plan, reporting form* *materials and ensuring the implementation of plans in a competency-based format* *results;* *- preparation of a report containing materials from the stages of work that reveal the level of* *mastering a given list of competencies;* *- preparation and presentation of the results obtained.*

Content	*To independently carry out geodetic measurements on the surface of the earth, to create plans and profiles of the place, as well as to study the theoretical foundations of geodetic measurements performed on the surface of the earth in solving engineering-geodesy issues in various fields; national economy, arming students with the necessary knowledge to perform independent measurement work using geodetic instruments, study the methods of drawing up plans and profiles of the place and develop measurement results aimed at systematic improvement, measurement results and teaching the effective use of graphics. drawings in solving engineering-geodesy problems in various sectors of the national economy.*
Exams and assessment formats	*The report and its drawing applications are created with the group team. Each member of the group writes a separate report chapter and participates in drawing applications.* *The completed report and drawing applications are reviewed and discussed together with the group members, each group member signs the report, and then submits it to the head of practice for verification.* *The defense of the report is carried out in front of the commission members. According to the instructions of the commission, each member of the group will give a report on some parts of the report, and will answer questions about the whole report. The student is evaluated according to the results of the defense and the quality of the report.*
Study and examination requirements	*Requirements for successfully passing the module:* The final grade in the module is composed of 40% defence of the internship report, 40 % participation in the internship, 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. H.J. Khaitov, A.N. Inamov. Engineering geodesy. "TIIAME" National Research University, 2022. 495 p 2. A. Suyunov Engineering geodesy. Tashkent. 2021.-359 p. 3. Abdullaev T.M., Inamov A. N., Lapasov J.O. Engineering geodesy geodetic works in the construction of hydrotechnical facilities. TIIAME, 2019. 152 p. 4. Germak O.V., Kalacheva N.A., Gugueva O.A. Geodesy. Tutorial. – M.: Phoenix, 2020. – 316 p. 5. Glukhikh M.A. Land management with the basics of geodesy. Workshop. Textbook for HE, 1st ed. – M.: Lan, 2020. – 136 p. 6. Dyakov B. N. Geodesy. Textbook. – M.: Lan, 2020. – 416 p. 7. Khodorov S.N. Geodesy is very simple. Introduction to the specialty. – M.: Infra-Engineering, 2020. – 176 p. .

Module designation	***YFE3106 – Land Use Ecology***
Semester(s) in which the module is taught	*6-semetr*
Person responsible for the module	*Abdugani Muqumov, Senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*Compulsory (Mandatory disciplines)*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 180 hours;* *Auditorium hours: 80 hours* *Lecture – 40 hours* *Practical works – 40 hours* *SAW (Student autonomous work) – 100 hours*
Credit points	*6 credits*
Required and recommended prerequisites for joining the module	*soil science, land cadastre, land management design, land monitoring*
Module objectives/intended learning outcomes	***To know and understand:*** *Understand the concept of land use.* *Comprehend the concept of ecological systems.* *Grasp the living environment of organisms.* *Recognize the main characteristics of natural systems.* *Understand the structure of the biosphere and its evolution, including the concept of the noosphere.* *Comprehend socio-economic and legal aspects of nature protection.* *Understand technologies for growing environmentally friendly products and land preparation.* ***To be able to:*** *Identify important environmental problems specific to Uzbekistan.* *Recognize the interactions between the environment and organisms.* *Identify methods for protecting people and the environment from the harmful effects of physical, chemical, and biological phenomena.* *Identify key environmental factors influencing ecosystems.* ***To form competences in:*** *Analyze the environmental condition of the agricultural agrolandscape.* *Evaluate the resistance of plants and animals to environmental factors.* *Create action plans for the rational use of nature and environmental protection.* *Perform land surveying and land cadastral works in the context of modern ecological science.*
Content	*The concept of land and land use ecology. Ecosystems: composition, factors and stability. Global environmental problems and ways to solve them. Level of difficulty: 3.* *Environment, understanding and conditions of existence. Environmental protection. The main land-ecological legislation of the Republic of Uzbekistan.*

	Agroecosystems development laws. Level of difficulty: 3. *Environmental characteristics of the earth, its importance in economic sectors. Land resources and their status. Soil protection and its rational use. Level of difficulty: 5.* *Concept of pollution and classification of pollutants. Major polluters of the environment and land. Environmental risk and its occurrence sources. Methods of damage assessment from the effects of polluted environment. Level of difficulty: 4.* *The concept of ecological security. Basic requirements for environmental safety. Environmental security system. The main problems of land resources use ecology at the current stage. Level of difficulty: 4.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of the analysis, to independently observe the studied processes and to complete the tasks and assignments given in the forms of intermediate control, to submit a written work for the final control*
Study and examination requirements	*Successful students of science* *Full mastery of theoretical and methodological concepts related to science, ability to correctly reflect the results of analysis, independent observation of the studied processes and intermediate control (max. points 60, according to the protocol of the department 15 points in practical training, It consists of a 40-point FSMU in the form of answers to control questions and a 5-point presentation in the form of a presentation). And the final control (max 40 points) is given in the form of an oral or written assessment (4-level assessment).*
Reading list	*1. Polishchuk O.N. Osnovy ekologii i prirodopolzovaniya: uchebn. Allowance. O.N. Polishchuk. - SPb.: Prospekt Nauki, 2011. – 144 copies* *2. Drozdov V.V. General ecology. Uchebnoe posobie. - SPb.: RGGMU, 2011. - 412 p.* *3. Akhmadaliev Yu.I. Geoecology of land resource use.-T.: 2014,-340 p.* *4. Naumova T.V., Kudryavtseva T.L. Ecology of land use: uchebnoe posobie dlya obuchayushchixsya po napravleniyu podgotovki Zemleustroystvo i cadastry FGBOU VO Primorskaya GSXA / FGBOU VO Primorskaya GSXA; - Ussuriysk, 2015. – 104 p.* *5. Muqumov A.M. Yerdan foydalanish ekologiyasi.O'quv qo'llanma T.: TIIAME, 2022. 140 p.*

Internship

Module designation	**PR-3108** - **Qualifying Internship**
Semester(s) in which the module is taught	6-semestr
Person responsible for the module	*Associate professor (PhD) Boboqulov Shohnazar*
Language	Uzbek, Russian
Relation to curriculum	Mandatory
Teaching methods	Practice of qualification in specialization
Workload (incl. contact hours, self-study hours)	*Total workload: 240 hours* *self- learning – 240 hours*
Credit points	8 credits
Required and recommended prerequisites for joining the module	To complete the qualification practice, students must have basic knowledge of land planning and land cadastre.

Module objectives/intended learning outcomes	The main purpose of qualification practice is to master the theoretical knowledge acquired during the hunting process with practical skills As a result of qualification practice, the student: must: **know and understand:** **-** information sources on the subject being developed for use in the educational process; - methods of modeling and research of socio-economic processes; - static data analysis and processing methods; - information technologies used in production organizations, professional software products; - requirements for the design of land registration and land cadastral documents; **be able to:** **-** analysis, systematization and summarization of information on the subject of practice; - independent planning and observation; - comparison of the work results of the production facility with domestic and foreign analogues; **form competences in:** **-** formation and verification of scientific hypotheses; - analysing the scientific and practical significance of the conducted research; - processing of the obtained experimental data; - registration of research results in the form of scientific manuscripts.. **form competences in:** - to analyze the scientific and practical significance of the research carried out in the production enterprise or organization in the field; - processing of received production data; - formalization of practice results in the form of a report..
Content: The discipline includes the following topics.	Instructions on searching for information in accordance with the goals and objectives of the qualification practice in the organization (cadastral agency, cadastral chamber, etc.). Creating an action plan. Getting to know the organizational structure and content of the activity of the practice facility. Collecting, synthesizing and systematizing the main indicators necessary for the performance of an individual task. Internship stage. Comprehensive study and analysis of information technologies, software and information provision in the organization in accordance with the individual assignment. Data processing and analysis. The final stage. Preparation of a draft report. Formalization of the scientific internship report, preparation for its defense.

Exams and assessment formats	Following the results of the internship, students are required to: • provide an internship diary • prepare and defend reports based on the collected data. The final Internship Report is defended at a meeting in the presence of a commission appointed by the head of the graduating department (20 minutes).
Study and examination requirements	Requirements for successfully passing the module: The final grade in the module is composed of 40% defence of the internship report, 40 % participation in the internship, 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass
Reading list	1. Kadastr Agentligi va kadastr palatalari Nizomi. Toshkent. 2021. 2.Avezbayev S., Volkov S.N. Yer tuzishni loyihalash. – Toshkent.: “Yangi asr avlodi”, 2004. – 784 b. 3. Avezbayev S., Karabayeva T. Yer tuzish. T.: “TDAU”, 2005. – 305 b. 4.Волков С.Н. Землеустроительное проектирование. М.: Т 2.Землеустроительное проектирование. Колос. 2007, 648 с. 5. Чертовицкий А.С., Базаров А.К. Земельный кадастр.- Т.: ТИИИМСХ, 2012,302 с.. 6. Babajanov A.,Raxmonov Q., G’ofirov A. Yer kadastri, TIMI, 2012- 242b. 7. Yer kadastri va yerdan foydalanish” bakalavriat ta’lim yo’nalishi bo’yicha malakaviy ishlab chiqarish amaliyoti Dasturi. –T.: MTU “TIIIMSX”.2022. 15 b.

Module designation	***BIQ 4205 Bioeconomics***
Semester(s) in which the module is taught	*7- semester*
Person responsible for the module	*Associate professor PhD Madina Saidova,* *Associate professor PhD Orif Sattarov.*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, seminar, self-learning*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Contact hours: lecture - 30 hours, seminar – 30 hours, self-learning – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*Mathematics (school program), Geography (school program), History of Uzbekistan (school program)*

Module objectives/intended learning outcomes	***To know and understand:*** *- know ecobiopolitics, limiting factors for the development of bioeconomy; modern components of bioeconomy* *- be able to use innovative technologies in the agro-industrial complex using examples of specific situations; justify the conservation of the resource potential of territories* *- have the skills to develop (build) closed chains (cluster approach) built on the principles of recycling raw materials; skills in developing the formation of conceptual foundations for the development of the bioeconomy.* ***To be able to:*** *- the student will master economic thinking skills.* *- the student acquires practical skills in studying economic processes.* *- the student will expand his knowledge in the field of economic theory and form a scientific socio-economic worldview.* *- the student develops the ability to assess the effectiveness and socio-economic consequences of specific government measures used in the implementation of state economic policy.* *- the student will gain an understanding of the application of methods for analyzing the processes of economic development of the national economy and the economy of industrialized countries.* *- the student independently makes economic decisions on economic problems.* ***To form competences in:*** *- basic methods of quantitative analysis and modeling, theoretical and experimental research;* *-culture of thinking, ability to perceive, generalize and analyze information, setting a goal and choosing ways to achieve it;* *- analytical skills in the field of applied aspects of economic theories;* *- carry out professional communication and communication on issues of organization and managing one's own professional activities;* *- the student must have the skills to think economically, conduct research on economic phenomena, identify patterns, establish correlations between individual phenomena, justify their point of view, check the reliability of research findings, and make decisions.* *- apply the conceptual and categorical apparatus, basic economic laws in professional activities;* *- must have the skills of a holistic approach to the analysis of economic phenomena; use the acquired knowledge to express your own assessment of economic phenomena and processes.*

Content	*A bio based economy that integrates the full range of natural and renewable biological resources land and sea resources, biodiversity and biological materials (animal and microbial), through to theprocessing and the consumption of these bio resources. In order to ensure that the approach to implementing bio economic solutions are truly sustainable, it is necessary, instead of focusing only on the technological part, to take a broader look and consider the interconnections between industries and the whole life cycles of bio based goods produced Level of difficulty: 3.* *This chapter consists of three sections. The first section deals with the origin and evolution of the concept of the bioeconomy. It starts by tracing the first uses of the terms bioeconomics and bioeconomy and goes on to review the development of the concept of the "knowledge-based bioeconomy" in the European Union before discussing the rise of the bioeconomy as a global concept. A shift from a "resource substitution perspective" of the bioeconomy to a "biotechnology innovation perspective" is identified. Critical views of the bioeconomy are discussed, distinguishing a "fundamental critique" and a "greenwashing critique" of the bioeconomy. The first section of this chapter also reviews the relations between the concept of the bioeconomy and the concepts of "sustainable development", "green economy", "circular economy" and "societal transformation". The second section of the chapter discusses the bioeconomy strategies that an increasing number of countries around the world have adopted in recent years. This section uses a competitiveness framework to classify different elements of the bioeconomy strategies. The third section of the chapter is concerned with bioeconomy governance, focusing on the different actors in the bioeconomy, the ways in which they interact and the governance challenges that they are confronted with.d equilibrium quantity. The concept of general equilibrium. Level of difficulty: 4.* *The transition from a fossil fuel-dependent development paradigm towards a development path that takes advantage of bio-based resources and new innovations within biochemistry and the life sciences is prompting the formulation of new strategies and policies. With increased research and innovations on bio-based energy forms, chemicals and materials, the use of the terms bioeconomy (BE) and bio-based economy (BBE) has evolved. Interestingly, there is a slight difference between the meanings of these two terms and also in how they are used, although this difference is neither obvious nor outspoken, which is further explained in this article. The use of the two terms in this article will, as often as possible, be used stringently, but when mentioned as a general concept, the term bioeconomy also comprises the bio-based economy.* *Until now, many countries have published separate strategies and policies related to biotechnology and bio-based products and industries, but more and more countries are developing strategies that collect all these separate topics under the conceptual umbrella of the BE. A shift towards a larger and more advanced bioeconomy*

	Level of difficulty: 5. *Biological resources can be found in macro- and micro-ecosystems around the world. The main categories are terrestrial and aquatic, although they branch out into various other forms.Humans tend to enrich existing habitats with allochthonous (meaning it comes from outside the original environment) organic matter, for example, fertilization with nitrogen and phosphorous.The sustainable use of biological resources is essential to maintain the health and productivity of ecosystems and to ensure the continued provision of valuable services to humans. Biological resources are the biologically derived renewable and non-renewable resources that ecosystems provide. They include certain minerals, plants, animals and all of their derivatives such as genetic information. However, some minerals are not biological resources, for example, gold. Biological resources are essential for human survival and well-being, as they can provide food, shelter provisions, clothing, fuel, etc. level of difficulty: 3.* *There are manifold concepts and notions to describe the relationship and interdependencies among players within an industry sector. For instance, supply chain, (global) value chain, market chain, value web or global commodity chain. While most of these concepts have considerable overlapping meanings and/or can be used interchangeably, in bioeconomy most commonly the term "biobased value chain" is used (Nang'ole et al. 2011; Kaplinsky and Morris 2002).The first standardized approach to investigate the link between players in agricultural production systems and to visualize their relationship through a metaphorical chain was made by the French Institut National de la Recherche Agronomique (INRA) and the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) with their concept of filiére (French for thread) in the 1970s. The concept was developed as an analytical tool to study the organization of farmers and processors..In the 1980s Michael E. Porter established the term value chain. He conceptualized the organization of a firm as a system made up of subsystems, each with inputs, transformation processes and outputs. Each (sub)system involves the acquisition and consumption of resources, i.e. money, labour, materials, equipment, buildings, land, administration and management. Level of difficulty: 4.* *Although entrepreneurial activities are of key importance in a properly functioning innovation system, the micro level of actors is often neglected in the innovation systems' literature. The goal of this paper is to show how the configuration of innovation systems shapes entrepreneurs' perceptions and behaviors. The originality of the present article rests upon a novel framework that distinguishes between the willingness, capability, and perceived opportunities of entrepreneurs embedded in specific innovation systems. We explore the perceptions of 30 entrepreneurs from two European bioeconomy cluster regions who are engaged in R&D and collaborative experimentation in the chemical, plastics, and construction materials industries. Our findings show that with*

Exams and assessment formats	*Educational results are evaluated in a 100-point rating system. One midterm (60 points) and final oral exam (40 points)*
Study and examination requirements	*Requirements for successfully passing the module* *To pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. A.V. Vahabov, Sh.Kh. Khajibiyev, etc. Yashillar Darslik. / T .: "University", 2020. - 262 p.* *2. Adrian C. Newton. Introduction to the Green economics: 1st edition. Routledge, 2014. - 382 p.* *3. Greening the Global Economy (Boston Review Originals) Hardcover - 2015 November 13. - 176 r. 4. Sevil Acar, from Erinch Yale. Guide to Green economics: 1st edition 2019. - 250 r. . Vashchalova T.B. 5 ecological changes. Ustoychivoe razvitie: uchebnoe posobie. - M.: Yurayt, 2020. - 186 p.* *4. Bioeconomics in the agro-industrial complex Dmitry Sergeevich Linichenko* *International scientific review, 2410-275X, 1 (11) 51-52, Россия, Иваново.* *5Bioeconomics: problems of formation, Bobylev, Sergey, Mikhailova Stella* *6. Kiryushin Petr: Federal state educational budget institution of higher professional education "Financial University under the Government of the Russian Federation" (Financial University), 2014*

Module designation	**RI4205-Digital economics**
Semester(s) in which the module is taught	7-semester
Person responsible for the module	Sultanov Bahadir Fayzullayevych, Doctor of Economics, Senior Researcher.
Language	Uzbek
Relation to curriculum	*selection*
Teaching methods	Lecture, practical training, independent education
Workload (incl. contact hours, self-study hours)	*Total workload: - 150 hours* *Auditorium Hours:* *Lecture - 30 hours;* *Practical training- 30 hours* *Independent education - 90 hours*
Credit points	5 credits
Required and recommended prerequisites for joining the module	Informatics and information technologies, business management, economic theory, microeconomics, statistics, econometrics.

Module objectives/intended learning outcomes	**To know and understand:** - basic approaches to the analysis of various economic situations at the level of digital economy sectors and other sectors; - correct modeling of situations taking into account the technological, situational, organizational-legal and institutional characteristics of the digital economy; - understanding the essence of digital economy and modern information technologies, effective use of global information resource bases; - development of digital economy under the conditions of public-private partnership; - identification of information security problems, effective organization of electronic business processes; - making effective decisions regarding the effective use of e-commerce models. **To be able to:** - correct modeling of situations taking into account the technological state, organizational, legal and institutional characteristics of the digital economy; - organization of digital economy infrastructure; understand the essence of "blockchain" technologies; - to know and be able to use methods and ways of effective use of global information resource bases; - studying, evaluating, analyzing the organization of crypto-exchanges, implementing the most promising and strategically important projects; **To form competences in:** - to summarize the knowledge gained in the process of studying this subject; - analysis of digital economy and digital technologies; - draw correct conclusions from suggestions for problems and use them in practice in the future; - to determine the positive and negative consequences of digital transformation, the factors affecting them; - assessment of the impact of the digital economy on macro- and micro-level indicators; evaluation of the effectiveness of digital transformation; - creation of platforms for the development of the digital economy; - to identify and evaluate the factors hindering the effective organization of business processes, to apply e-commerce methods in practice; - development of international standard requirements for ensuring the quality of digital services.

Content	Introduction to the science of "Digital Economy". Information is the basis of the development of society. Features of the digital economy. The concept, purpose and tasks of the digital economy. Digital economy and economic growth. Digital Economy: Fundamentals of Electronic Business Management. The nature and development features of e-business. Features of creating a business on the Internet. Characteristics and legal basis of digital economy development in Uzbekistan. Level of difficulty 2. Characteristics of the development of electronic trade (internet trade). Electronic trade (e-commerce) and electronic trade (e-trade) special features and differences. Electronic business models. Social, economic and legal foundations of the formation and development of e-commerce service. Features of business management in the digital economy. Features of techniques and technologies in the digital economy, future technologies. Big data (Bigdata) and analytics, database organization. Cloud technologies: their features, opportunities and disadvantages. Level of difficulty 3. Mobile technologies. Mobile technologies in the digital economy. Introduction of mobile devices to the market of Uzbekistan and stages of development. Mobile technologies and digital transformation of business. Neurotechnologies and artificial intelligence. The history of the development of artificial intelligence. Properties of the neural network. Intellectual capital in socio-economic development of the country. Problems of formation and use of intellectual resources. Level of difficulty 3. Peculiarities of the legal status of foreign investors. Rights and obligations of foreign investors in the Republic of Uzbekistan. Regulatory and legal frameworks developed in our country for attracting foreign investments. Investment contracts. Provision of state guarantees to foreign investors. Legislation of the Republic of Uzbekistan and CIS countries on foreign investments. Level of difficulty 4. Design Thinking in Business. Features of design thinking in business process management. Design thinking is the development of user-oriented products, services and services. Stages of design thinking. Virtual and augmented reality technologies. Virtual and augmented reality technologies. Development problems of virtual and augmented reality technologies. Features of the world market of virtual and augmented reality technologies. Level of difficulty 4. Development of e-learning platforms. Development of e-learning market and types of educational platforms. Formation of the educational environment of the digital economy. Ways to develop distance education, the essence and development of the "Industry-4.0" concept. Blockchain technology Bitcoin payment system. Directions for effective use of blockchain technologies. Models of sustainable development of the banking system in the digital economy. Bank innovation development strategies. Development of banking infrastructure in the digital economy. Level of difficulty 5.

Exams and assessment formats	To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to complete the tasks and tasks given in the interim control forms, to submit a written work for the final control.
Study and examination requirements	Students who successfully pass the course: The total maximum points will be the sum of the points allocated to the final exam (40%), Midterm control (60%). To successfully pass the subject, a student must score 60% or more of the allotted points.
Reading list	1.Lapidus L.V. Digital economy. E-business and e-commerce management. Textbook. M.: Infra - M. 2020. - 479 pages 2. Khusanshin I.A., Kudryashov A.A., Kuzmin E.V., Kryukova A.A. Digital economy. Textbook for higher educational institutions. M.: Hotline-Telecom. 2020, - 288 pp. 3. Gulyamov S.S., Ergashev R.H., Khamrayeva S.N. Digital economy. Study guide. - T.: Economy, 2020. - 466 p 4. S.S. Gulomov, O.M. Abdullayev, R. Ayupov. Digital economy (cryptocurrency and blockchain). Study guide. T.: Finance, 2020. - 354 p. 5. Zubarev A.E. Digital economy as a form of manifestation of patterns. // Bulletin of Tomsk State University, 2017. No. 4.

Module designation	***Y TAT 4 105-Automated systems of land cadastre and land preparation***
Semester(s) in which the module is taught	*8 semestrs*
Person responsible for the module	*Prof. Avezbaev S.* *Senior teacher Muqumov A*
Language	*Uzbek, Russian*
Relation to curriculum	*Mandatory*
Teaching methods	*Lecture, practical training , compulsory study*
Workload (incl. contact hours, self-study hours)	*Total workload: 150 hours* *Auditorium hours: 60 hours* *Lecture - hour; 20 hours* *Practical training 40 hours* *Independent education 90 hours*
Credit points	*5 kredits*
Required and recommended prerequisites for joining the module	*Geodesy , land cadastre , land structure design , land monitoring*

Module objectives/intended learning outcomes	***To know and understand*** *- to have an idea about the functions, place and role of automated systems;* - management of data banks and models of automated systems of *land* cadastre *and land structure design*

	To be able to: *- entering initial data into the land cadastre automated system, storing and using the results in the land cadastre management* *- entering initial data into the automated system of earthworks design, storing and using the results in the execution of earthworks* ***To form competences in*** *- use of automated systems in land cadastral management* *- when working on land development projects using automated systems _ _* *use of data and results of automated land surveying and land cadastre systems ,*
Content	*The concept of automated systems in land cadastre and land planning , their purpose and object of automation. Importance, role and functions of automation of land cadastre and land preparation, problems of automation. Difficulty level 2.* *Geographical and land information systems and their use in conducting land construction work. Classification of software and hardware. Conceptual bases and principles of creating automation systems. Difficulty level 3.* *Graphical editor as a component of automation systems. Calculating the area of linear objects and contours. Forms for outputting initial and resulting data. Protection of information. Difficulty level 3.* *Generalized block diagram of land cadastre and land construction automation systems. Dialog system of management. Methodical assistance to the designer. Collection and input of graphic (drawing) and attribute information. Projecting subsystems. Automated data bank. Analytical processing system of graphs, drawings and indicators related to it. Inquiry reference service system. Modeling creative tasks. Difficulty level 4 .* *Graphical (drawing) technologies. Entering graphic (drawing) information. Graphics (drawing) dimensions. Software tools for hybrid editing and vectorization of scanned images. Output of graphic (drawing) information. Difficulty level 4.* *Systems and tools for automating land cadastre and land structure calculations. economic and social efficiency of introduction of automated systems in land cadastre and land structure. Difficulty level 4.* *Composition and capabilities of expert systems. The future of using expert systems in land cadastre and land management. Difficulty level 3 . _*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to correctly reflect the results of analysis, to independently observe the studied processes and to fulfill the tasks and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*Students who successfully pass the science* *Full mastery of theoretical and methodological concepts*

	related to science, ability to correctly reflect the results of analysis, independent observation of the studied processes and intermediate control (max. points 60, according to the protocol of the department 15 points in practical training, It consists of a 40-point FSMU in the form of answers to control questions and a 5-point presentation in the form of a presentation). And ***the*** *final control (max 40 points) is given in the form of* ***an*** *oral or written assessment (4-level assessment).*
Reading list	*1. Чертовицкий А.С., Базаров А.К.Земельный кадастр. Учебник. Т., 2012.- 302 с.* *2.Andreas C. Land Information systems.Germany, 2016* *3. S. Avezbayev,A.Muqumov. Yer muzishni loyihalashning avmotamlashgan mizimlari, O'quv qo'llanma. -T.: TIQXMMI, 2020-134 b* *4. Волков С.Н. Системы автоматизированного землеустроительного проектирования. Учебник, 6- том, Москва, ГУЗ, 2002,- 328 с.* *5.A.R.Babajanov.Yer kadastri nazariyasi. Darslik.-T.: "TIQXMMI"MTU , 2023,-448 b*

Module designation	**XI4205- Foreign investment**
Semester(s) in which the module is taught	8-semester
Person responsible for the module	Umarov Sukhrob Rustamovich, doctor of economics, professor
Language	Uzbek
Relation to curriculum	Selection
Teaching methods	Lecture, practical training, independent education
Workload (incl. contact hours, self-study hours)	Total workload: - 150 hours Auditorium Hours: Lecture - 30 hours; Practical training- 30 hours Independent education - 90 hours
Credit points	5 credits
Required and recommended prerequisites for joining the module	Economic theory, microeconomics, macroeconomics, statistics, project analysis

Module objectives/intended learning outcomes	**To know and understand:** - essence of the main categories of the investment process; - determining the influence of the world market on the investment process; - principles of foreign investment attraction, main stages, promotion of foreign investment attraction; - providing information on investment activities, the mechanism and main directions of attracting foreign investments; - insurance of foreign investments, leasing and franchising, determining the economic efficiency of foreign investments. **To be able to:** - the importance of foreign investments in economic development; theoretical and methodological bases and main principles of attracting foreign investments; knowledge of strategic and tactical methods of attracting foreign investments; - use of investment process development models; determining the economic efficiency of foreign investments; - determining the expected income from foreign investments; determining the legal status of participants in investment relations; assessment of the investment environment; - development of recommendations on increasing the flow of foreign investments; risk assessment in the direction of foreign investments, analysis of the state of attracting direct and portfolio investments. **To form competences in:** - the student can make an economic assessment of investments and foreign investments; analyze processes, collect data and study problems; - attracting foreign investments to the country's economy, analyzing the expansion of its economic opportunities; - to know the legal and normative legal basis of foreign economic activities and investments and to adopt solutions for their application; - use of internal capabilities and reserves in all areas, preparation of proposals for the acquisition of new equipment and technology, exportable goods.

Content	The concept of foreign investments and its essence. The subject, purpose, tasks, structural structure and inextricable connection of the subject of "Foreign Investments" with other disciplines. The concept of investment. Nature and content of foreign investments. State regulation of investment relations. The role of foreign investments in the development of the economy of Uzbekistan. Sources of investment financing. Prospects for the use of foreign investments in the context of the global financial and economic crisis. Factors influencing foreign investments. Level of difficulty2. Forms and types of foreign investments. Object and subject of legal relations related to investment activity. Direct and portfolio foreign investments. Concession agreements. Level of difficulty2. Investment processes in the strengthening of globalization and economic integration. The role of foreign investments in the globalization of the world economy. Investment processes in the context of the global financial and economic crisis. Classification of the main categories of the investment process and its economic nature. Processes of globalization and economic integration. Peculiarities of investment processes in different economic systems. Export and import of investments. Level of difficulty3. Peculiarities of the legal status of foreign investors. Rights and obligations of foreign investors in the Republic of Uzbekistan. Regulatory and legal frameworks developed in our country for attracting foreign investments. Investment contracts. Provision of state guarantees to foreign investors. Legislation of the Republic of Uzbekistan and CIS countries on foreign investments. Level of difficulty2. Scientific and methodological basis of attracting foreign investments. Investment policy of the Republic of Uzbekistan. Forms of attracting foreign investments to the national economy and the world experience of its regulation. Establishment of free economic zones. Issues of attracting foreign investments in the context of the global financial and economic crisis. Principles of foreign investment attraction. Investment programs. Forms of attraction of foreign investments. Foreign experience of attracting foreign investment. Favorable investment environment. Leasing and franchising. Level of difficulty4. Modern forms and methods of stimulating the attraction of foreign investments. Privileges for enterprises with foreign investments in the Republic of Uzbekistan. Analysis of the state of attraction of foreign investments. Joint ventures and foreign enterprises. Organization of enterprises with participation of foreign investments. The role of banks in promoting the attraction of foreign investments. Regulation of investment activities by the state. Investment resources. Directions of development of foreign economic activity. The essence of foreign investment insurance. Insurance protection and rights. Organizations engaged in insurance of foreign investments. Level of difficulty5.

Exams and assessment formats	To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to complete the tasks and tasks given in the interim control forms, to submit a written work for the final control.
Study and examination requirements	Students who successfully pass the course: The total maximum points will be the sum of the points allocated to the final exam (40%), Midterm control (60%). To successfully pass the subject, a student must score 60% or more of the allotted points.
Reading list	1. I.S. Zoirov, Sh.Sh. Asamkhodjaeva, S.B. Yunusova "Investition". Textbook. T/ TMI. "Economy-Finance" 2019. 2. Bekmurodov A.Sh., Qoriyeva Y.K. and others. Foreign investments. Tutorial. - T.: TDIU, 2011. - 196 p. 3. Karieva Y., Kamalova E., Ochilova N., Abdulakimov G. Foreign investments. Study guide. - T.: TƏУ, 2011. - 250 p 4. Bekmurodov A., Qoriyeva Y. and others. Foreign investments. Tutorial. - T.: TDIU, 2010. - 150 p. 5. A.U. Burkhanov, Sh.Kh. Muminov, Kh.Kh. Khudoykulov "Investment and innovations". Textbook. - T. TDIU., 2021.

Module designation	**BMI4110 Practice before the graduation qualification work**

Semester(s) in which the module is taught	*8-semestr*
Person responsible for the module	Practice before the graduation qualification work *Karomatov V.*
Language	*Uzbek, Russian*
Relation to curriculum	*Main*
Teaching methods	*Experience, project,*
Workload (incl. contact hours, self-study hours)	*Total load: 150 hours* *Independent education - 150 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*GTH received In order to complete the internship, students must have basic knowledge of land planning and land cadastre.*
Module objectives/intended learning outcomes	*the* practice before the graduation qualification work *is to collect the necessary written and drawing materials on the subject for writing the graduation thesis.* *During the* practice before the graduation qualification work *, the student* : **know and understand:** - sources of information on the topic being developed for use in the process of preparing a graduation thesis; - methods of modeling and research of socio-economic processes; - static data analysis and processing methods; - information technologies used in production organizations, professional software products; - requirements for the design of land registration and land cadastral documents; **to be able to:** **-** Analyzing, systematizing and summarizing data on BMI; - independent planning and observation; - comparison of the work results of the production facility with domestic and foreign analogues; **formation of competences:** - analysis of the scientific and practical significance of the research carried out in the production enterprise or organization in the field; - processing of received production data; - formalization of practice results in the form of a report...

Content: The discipline includes the following topics	Instructions on searching for information in accordance with the goals and objectives of the qualification practice in the organization (cadastral agency, cadastral chamber, etc.). Creating an action plan. Getting to know the organizational structure and content of the activity of the practice facility. Collecting, synthesizing and systematizing the main indicators necessary for the performance of an individual task. Practice phase. Comprehensive study and analysis of information technologies, software and information provision in the organization in accordance with the individual assignment. Data processing and analysis. The final stage. Preparation of a draft report. Formalization of the scientific internship report, preparation for its defense.
Exams and assessment formats	According to the results of the practice, the students are: are obliged to: • providing practice diary • preparation and protection of reports based on collected data. The final report of the internship will be defended at the meeting with the participation of the commission appointed by the head of the graduate department (20 minutes).
Study and examination requirements	Requirements for successful completion of the module: The final grade for the module consists of 40% defense of the internship report, 40% participation in the internship, and 20% completion of the internship diary and report. Students must have a final grade of 60% or higher to pass

Reading list	1. Kadastr Agentligi va kadastr palatalari Nizomi. Toshkent. 2021. 2.Avezbayev S., Volkov S.N. Yer tuzishni loyihalash. – Toshkent.: “Yangi asr avlodi”, 2004. – 784 b. 3. Avezbayev S., Karabayeva T. Yer tuzish. T.: “TDAU”, 2005. – 305 b. 4.Волков С.Н. Землеустроительное проектирование. М.: Т 2.Землеустроительное проектирование. Колос. 2007, 648 с. 5. Чертовицкий А.С., Базаров А.К. Земельный кадастр.- Т.: ТИИИМСХ, 2012,302 с.. 6. Babajanov A.,Raxmonov Q., G’ofirov A. Yer kadastri, TIMI, 2012- 242b. 7. Yer kadastri va yerdan foydalanish” bakalavriat ta’lim yo’nalishi bo’yicha bitiruv malakaviy amaliyoti Dasturi. – T.: MTU “TIIIMSX”.2022. 15 b.

Module designation	***YFI 2205 Economic of land resources use***
Semester(s) in which the module is taught	*10-semetr*
Person responsible for the module	*Zulfiya Khafizova, senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*elective course*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours:* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management design, land cadastre, land management*
Module objectives/intended learning outcomes	*know Economic of land resources use, limiting factors for the development of land uze economy; modern components of land uze economy* *- be able to use innovative technologies in the agro-industrial complex using examples of specific situations; justify the conservation of the resource potential of territories* ***To be able to:*** *- have the skills to develop (build) closed chains (cluster approach) built on the principles of recycling raw materials;* *-skills in developing the formation of conceptual foundations for the development of the land uze economy.* *-Explain the organizational and legal forms, various institutions, and organizations serving the land use economy, such as the land code and legal documents on environmental protection and land use procedures.* ***To form competences in:*** *-Elaborate on the legal basis for creating a comprehensive framework for regulating the land use economy in the Republic, including the Land Code and the law on the circulation of agricultural land.* *-Understand that full land use rights will emerge in the Republic.* *-Grasp the principles of territorial zoning and permitted land use, as well as the economic aspects of land use.* *-Know the role, functions, and features of land use economy and management.* *-- must have the skills of a holistic approach to the analysis of economic phenomena; use the acquired knowledge to express your own assessment of economic phenomena and processes.* *-Identify land use and management as one of the primary economic factors of production.*

	-Recognize the factors that influence the characteristics of land use and management, including limitations and trends in decreasing agricultural areas due to urban economic development and infrastructure expansion.
Content	*The nature, function and general system of land use economics and management. Organizational-legal foundations of transfer of land use economy and management system. The role of "Land Code", "On State Cadastre", "On State Land Cadastre" and other related laws in land use. Level of difficulty: 2.* *There are also a number of specific manifestations of existing land resources on the territory of the republic, and forms of land relations regulation can be included in them. The forms of land relations regulation cover aspects such as socio-political, organizational-legal, socio-economic, ecological, natural-territorial, technological, financial, investment-infrastructural, market, business and production. Studying other courses in a complex way. Level of difficulty: 2.* *Issues of nationwide, holistic and comprehensive consideration of the country's scientific and economic potential, as well as methodical and practical study of land use and management. Service system and tasks. Quantity and quality indicators of objects. Directions of land cadastre and land management, their interrelationship and sequence. Contents of land use documents. Level of difficulty: 2.* *Land use is inextricably linked with the provision of socio-economic needs and interests of the society within the framework of economic reforms aimed at establishing a socially oriented market economy implemented in the country. Land use should be organized within the framework of ecological requirements and standards, and should be in accordance with the natural and territorial characteristics and be focused on their rational and effective use, should be carried out by paying attention and importance to the issues of determining the economic and technological advantages of land, processing and using them. Level of difficulty: 3.* *The subject, tasks and theoretical and methodological problems of land use economics and management, as well as sustainable development of land use, economic principles, mechanism and multi-purpose character, cycle of reproduction and land rent, land valuation and privatization, land market, land as an investment object , land rent, land tax features and other similar directions, issues related to identification of problems, as well as specific methodological and practical bases for their solutions are highlighted place in the general system and procedure. Nature and functions of land market infrastructure. Ensuring continuous functioning of economic relations and mutual relations between subjects of the market economy; regulating the flow of goods and money. Level of difficulty: 3.*
Exams and assessment	*To fully master the theoretical and methodological concepts*

formats	*of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the assignments and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). In order to pass the subject successfully, the student must score 60% or more of the allotted points.*
Reading list	*1. Altiev A.S. Land Use Economics and Management. T.: 2023 y.392 p.* *2. Altiev A.S. Problems of regulation of land resources use system. Monograph. - T.: "Science", 2018. - 274 p.* *3. Yarmatova D., Bobojonov A., Rakhimov A. Basics of the state cadastre. Cholpon publishing house, 2014. 234 p.* *4. Decree of the President of the Republic of Uzbekistan "On measures to protect the rights and legal interests of farmers, farmers and homestead land owners, and to fundamentally improve the system of effective use of agricultural arable land" //PF-5199, 09.10.2017.* *5. Law of the Republic of Uzbekistan. "On privatization of non-agricultural land plots". 24.09.2021*

Module designation	***YBI 4205 Land Market and its Infrastructure***
Semester(s) in which the module is taught	*7-semestr*
Person responsible for the module	*Zulfiya Khafizova, senior teacher*
Language	*Uzbek/Russian*
Relation to curriculum	*elective course*
Teaching methods	*Lecture, practical works, SAW (Student autonomous work)*
Workload (incl. contact hours, self-study hours)	*Total workload – 150 hours;* *Auditorium Hours:* *Lecture – 30 hours* *Practical works – 30 hours* *SAW (Student autonomous work) – 90 hours*
Credit points	*5 credits*
Required and recommended prerequisites for joining the module	*land management design, land cadastre, land management*
Module objectives/intended learning outcomes	*-improvement and management of the land market infrastructure, including organizational and legal forms that ensure the land market in the future.. know the factors* *-To study the main principles of various enterprise organizations, such as the Land Code and legal documents on environmental protection and land use, in the functioning of the land market and improvement* *-Understand the legal basis for the establishment of a fully functional real estate market in Uzbekistan, including the Land Code and the law on the circulation of agricultural land.* *and be able to use it:* *-Acknowledging that full private ownership of land has not yet been fully realized in the republic and its improvement* *-Apply knowledge about zoning and principles of permitted land use* *-Use an understanding of the economic aspects of the land market infrastructure.* *-Analytical skills in the field of applied aspects and theory of land market infrastructure;* *-Have knowledge of the role, functions and features of the land market infrastructure.* *-the student must have his own skills and thinking, conduct research on agricultural phenomena, identify patterns, establish connections between individual phenomena, justify his point of view, check the reliability of research results, make decisions on the land market* *-apply the conceptual and categorical apparatus, the basic laws in force in professional activities;* *- must have the skills of a holistic approach to the analysis of economic phenomena; use the acquired knowledge to express your own assessment of economic phenomena when*

	studying the infrastructure of the land market.
Content	*Land market concept, content and tasks. Political, economic and social importance of land market infrastructure. The essence, function and general system of land market infrastructure. Organizational-legal basis of transfer of land market infrastructure system. The role of "Land Code", "On State Cadastre", "On State Land Cadastre", on privatization of non-agricultural land plots and other relevant laws in the land market management. Land market infrastructure sources and principles of operation Level of difficulty: 2.* *Comprehensive study of existing real estate objects and other objects on the territory of the republic. Methods of collecting the necessary information about their legal status, amounts and characteristics based on a single methodology. The need to bring the electronic online auction into a single system. Description of objects and entities. Level of difficulty: 2.* *Issues of nationwide, holistic and comprehensive consideration of the country's scientific and economic potential, as well as methodical and practical study of land market infrastructure. Service system and tasks. Quantity and quality indicators of objects. Directions of land cadastre and land formation, their interrelationship and sequence. Contents of land market documents. Level of difficulty: 2.* *The role of the land market in the privatization of land plots (private enterprises, population centers). Description of privatized lands. Territorial location of privatized lands and methods of their study. Their quantity and quality. Collection, processing and use of data on types of land market infrastructure. Level of difficulty: 3.* *Stages in conducting the land market. Land market infrastructure is a set of organizational and legal forms, various institutions and organizations that serve the land market and ensure its operation. Methods of studying how diverse the conditions of transactions are in the market infrastructure and institutions, as well as in the land market. Due to the availability of infrastructure, business relations between land market entities are carried out on a purposeful basis and their use. Place in the general system and procedure. Nature and functions of land market infrastructure. Ensuring uninterrupted operation of economic relations and mutual relations between subjects of the market economy; regulating the flow of goods and money. Level of difficulty: 3.*
Exams and assessment formats	*To fully master the theoretical and methodological concepts of science, to be able to accurately reflect the results of analysis, to independently observe the studied processes and to fulfil the assignments and assignments given in the interim control forms, to submit a written work for the final control.*
Study and examination requirements	*The total maximum marks will be the sum of the final exam (40%), and Midterm (60%). To pass the subject*

	successfully, the student must score 60% or more of the allotted points.
Reading list	*1. Altiev A.S., Ubaydov M. I. "Land market and its infrastructure" (study guide) TIQXMMI publishing house, 2023. 116b.;* *3. Yarmatova D., Bobojonov A., Rakhimov A. Basics of the state cadastre. Cholpon publishing house, 2014. 234 p.* *4. Resolution No. 71 of the Cabinet of Ministers of the Republic of Uzbekistan dated 14.02.2022 "On measures to implement the law of the Republic of Uzbekistan on the privatization of non-agricultural land plots".* *5. Law of the Republic of Uzbekistan. "On privatization of non-agricultural land plots". 24.09.2021* *6. SuslovaYu.Yu., VoloshinA.V.: Market infrastructure. Organizational-practical aspect. INFRA-M.2019*