MATRIX of existing Master course (State Engineering University of Armenia)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name of compulsory chair | Year | Semester | Number of ECTS | Number of elective chairs | List of available elective chairs | short description | | relation between the contents and RETHINK’s theme |
| Environmental Protection (in chemical engineering ) | | | | | | | | |
| Science history and methodology | 1st year | 1 semester | 2 | 1 per every semester | See in below table | During this course the students will study history of the science at all and especially the history of natural science. | History of science and methodology, which can have a positive impact upon the development of outlook of the future master | |
| Foreign language (english, franch, german) | 4 | During this course the students will develop the foreign language in professional area. | Foreign languages (English, German, French)-it is very important course for communication of the specialist, in case of exchanging of the scientific information and working jointly. | |
| Information technology | 5 | During this course students can study one of this programs : C++,Visual Basic,Java,MatLab, AutoCad | This section includes different parts of IT technologies and mathematics, which is chosen by the master according to the needs of students paper’s direction. | |
| The elected subject courses by the mathematics | 5 | During this course students will study how they can use the mathematical methods for solving research and technical problems. |
| Scientific seminar-1 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | The modern  problems of science- investigating observed problems within different countries, the course will allow student imagine current problems, get combined, and jointly solve the raised problems | |
| The ecological legislation and law problems of environmental engineering protection | 5 | The course purpose is acquaintance of masters with scientific bases of the ecological law, the regulation of nature-society environmental relation and ensuring of legality of natural resources rational use taking into consideration ecological possibilities, reproduction of natural resources and exception of irreversible changes for environment and people.The primary goal of this course is studying of ecological laws and codes and аpplication of the got theoretical knowledge for the decision of problems of environmental protection and nature management. | Environmental legislation and engineering-the subject’s program should be reviewed, investigation of the environmental legislation of different countries should be included, which will enrich masters’ knowledge recourses and ease the joint work | |
| Research physical methods I | 5 | Physical methods of research are being discussed, which are based on the nature and composition of systems under consideration, due to measurement of any physical parameter in some cases, spectrum analysis. Theoretical basics of each physical method and their application in a variety of research works are being discussed. | Environmental expertise – it is very important subject for each master, who in future will deal with both international and local design, and also activities of the processed enterprise. | |
| Any elective courses\* | 5 | - |  | |
| Total |  |  | 33 |  |  |  |  | |
| Foregn language (english, franch, german) | 1st year | 2 semester | 4 | 1 per every semester | See in below table | During this course the students will develop the foreign language in professional area. |  | |
| The modern major tasks of science | 2 | During this course students study modern major tasks of science |  | |
| The elected subject courses by the information technology+ course paper | 7 | During this course students can study one of this programs : C++,Visual Basic,Java,MatLab, AutoCad |  | |
| Scientific seminar-2 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | The master, during the two-year study, takes part in the scientific seminars, where the scientific problems are discussed and considered according to his/her paper’s theme. For making this process efficient, time by time this should be done online over the internet, in order to include the masters from the different universities. Concerning the masters’ papers, with the negotiation of the different universities’ masters, scientific problems will be possibly solved. | |
| Basic principles of Meteorology | 5 | The discipline studies the structure of the atmosphere, heat balance of the Earth, general and secondary circulations, air masses, fronts and cyclones, atmospheric condensation. | Problems of Meteorology- studying the environmental conditions and climate change, master can have a chance to properly orientate himself/herself either in solving environmental problems or urban development process. | |
| Research physical methods II  ( with course paper) | 7 | Physical methods of research are being discussed, which are based on the nature and composition of systems under consideration, due to measurement of any physical parameter in some cases, spectrum analysis. Theoretical basics of each physical method and their application in a variety of research works are being discussed. The course paper about physical methods of research made by student according their master thesis. |  | |
| Any elective course | 5 | - |  | |
| Total |  |  | 32 |  |  |  |  | |
| Economics and prediction of nature management  (with course paper) | 2ndyear | 1 semester | 7 | 1 per every semester | See in below table | The course purpose is acquaintance of masters with еconomic mechanisms of environmental protection and natural resources rational use and also with questions of ecological and economic efficiency estimation of the power and chemical enterprises activities. This course gives to masters theoretical and practical knowledge for acceptance of scientifically proved decisions in sphere of natural resources rational use for planning, management, financings and ensuring of legal specifications. | Use of natural resources and forecast-the discussions and investigations of the use of natural resources from the economical point of view, will enrich masters’ skill building process | |
| Scientific seminar-3 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. |  | |
| Chemistry of surface effects and dispersion systems | 5 | In the scope of the course are investigated the theory of surface occurrences and their practical use during different chemical and environmental problems solving. Also observed the properties of colloidal solute and the structural and mechanical properties of dispersion systems. |  | |
| Basic of coagulation and flocculation | 5 | The course focuses on the obtaining of regularities of organic and inorganic flocculants, the project of coagulants-flocculation local installation |  | |
| Any elective course | 5 | - |  | |
| Total |  |  | 24 |  |  |  |  | |
| Еnvironmental impact assessment | 2ndyear | 2 semester | 5 |  |  | The course is intended for preparation of masters for professional work by the connected with organisation, carrying out and acceptance of corresponding decisions in process of governmental and public environmental and also energy impact assessment of planned or realised to economic activities.  The main objective of this course is deepening of theoretical knowledge got by masters in the field of environmental (ecological) and energy (power engineering) impact assessment, and рesearch of possibilities for practical application of this knowledge, which are necessary for the estimation of environmental influence of the industrial enterprises, including Nuclear power plants, and for the organisation environmental impact assessment and direct participation. |  | |
| Scientific seminar-4 | 2 |  |  | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. |  | |
| Special units of environmental engineering  ( with course paper) | 7 |  |  | In the scope of this course are investigated the cleaning processes of industrial waste water and gas emissions, which are containing a specific contaminants. Basically observed leaks and emissions caused by chemical industry |  | |
| Any elective course | 5 |  |  | - |  | |
| Master thesis | 12 |  |  | Presentation. |  | |
| Total | 31 |  |  |  |  | |
| Total for Master course: | 2 years | 4semesters | 120 |  |  |  |  | |
| Name of compulsory chair | Year | Semester | Number of ECTS | Number of elective chairs | List of available elective chairs |  | relation between the contents  and RETHINK’s theme | |
| Environmental Protection (in energetics ) | | | | | | | | |
| Science history and methodology | 1st year | 1 semester | 2 | 1 per every semester | See in below table | During this course the students will study history of the science at all and especially the history of natural science. | |  |
| Foreign language (english, franch, german) | 4 | During this course the students will develop the foreign language in professional area. | |  |
| The elected subject courses by the information technology | 5 | During this course students can study one of this programs : C++,Visual Basic,Java,MatLab, AutoCad | |  |
| The elected subject courses by the mathematics | 5 | During this course students will study how they can use the mathematical methods for solving research and technical problems. | |  |
| Scientific seminar-1 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | |  |
| The ecological legislation and law problems of environmental engineering protection | 5 | The course purpose is acquaintance of masters with scientific bases of the ecological law, the regulation of nature-society environmental relation and ensuring of legality of natural resources rational use taking into consideration ecological possibilities, reproduction of natural resources and exception of irreversible changes for environment and people.The primary goal of this course is studying of ecological laws and codes and аpplication of the got theoretical knowledge for the decision of problems of environmental protection and nature management. | |  |
| Influence of technical water supply systems of TPP and NPP on environment | 7 | The discipline purpose is deepening of knowledge of masters in the direction of research of influence features of TPP and NPP technical water supply systems on environment with maximum concentrating the attention to application low water discharge and non-waste technologies. During this course masters get a profound knowledge about ecologically safe foreign technologies and they should use theoretical knowledge for decision-making for reduction and cleaning of TPP and NPP technical water supply systems sewage water and choice of the rational scheme. | |  |
| Any elective courses | 5 | - | |  |
| Total |  |  | 35 |  |  |  | |  |
| Foregn language (english, franch, german) | 1st year | 2 semester | 4 | 1 per every semester | See in below table | During this course the students will develop the foreign language in professional area. | |  |
| The modern major tasks of science | 2 | During this course students study modern major tasks of science | |  |
| The elected subject courses by the information technology+ course paper | 7 | During this course students can study one of this programs : C++,Visual Basic,Java,MatLab, AutoCad | |  |
| Scientific seminar-2 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | |  |
| Basic principles of Meteorology | 5 | The discipline studies the structure of the atmosphere, heat balance of the Earth, general and secondary circulations, air masses, fronts and cyclones, atmospheric condensation. | |  |
| Estimation of water resources use in power engineering | 5 | The course purpose is acquaintance of masters with rational methodologies of the estimation of water resources demand (needs) in thermal and nuclear power plants and their possible developments, that gives the chance to consider indicators of water consumption concerning specific manufacture of thermal and electric energy. The main objective of this course is deepening of theoretical knowledge for the comparative analysis of modern schemes of water inflow and water drain systems, therefore on the foreground the effective use of water resources is deduced. | |  |
| Any elective course | 5 | - | |  |
| Total |  |  | 30 |  |  |  | |  |
| Economics and prediction of nature management  (with course paper) | 2ndyear | 1 semester | 7 | 1 per every semester | See in below table | The course purpose is acquaintance of masters with еconomic mechanisms of environmental protection and natural resources rational use and also with questions of ecological and economic efficiency estimation of the power and chemical enterprises activities. This course gives to masters theoretical and practical knowledge for acceptance of scientifically proved decisions in sphere of natural resources rational use for planning, management, financings and ensuring of legal specifications. | |  |
| Scientific seminar-3 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | |  |
| Actual problems of nuclear power plants radioactive waste storage | 7 | The discipline purpose is deepening of theoretical and practical knowledge of masters in the direction of radioactive waste kinds and structures generated as a result of nuclear power plants operation, and modern technologies of treatment, deactivation, conditioning, wrapping, transportation and storage of radioactive waste.  The primary goal of course is studying of components, stages and steps on waste management. Masters also receive the information on radioactive waste of industrial, medical and research installations, waste treatment, maintenance service and storage. | |  |
| Any elective course | 5 | - | |  |
| Total | 21 |  | |  |
| Еnvironmental impact assessment | 2ndyear | 2 semester | 5 | 1 per every semester | See in below table | The course is intended for preparation of masters for professional work by the connected with organisation, carrying out and acceptance of corresponding decisions in process of governmental and public environmental and also energy impact assessment of planned or realised to economic activities.  The main objective of this course is deepening of theoretical knowledge got by masters in the field of environmental (ecological) and energy (power engineering) impact assessment, and рesearch of possibilities for practical application of this knowledge, which are necessary for the estimation of environmental influence of the industrial enterprises, including Nuclear power plants, and for the organisation environmental impact assessment and direct participation. | |  |
| Scientific seminar-4 | 2 | During this course students will study research methods, will make critical review of the abstracts and will discuss their final work. | |  |
| Еnergy saving and power management | 5 | The course purpose give to masters knowledge оf energy saving and power management principles, methodology of the complex technical and economic analysis of energy production, transport and consumption. The primary goal of this course is studying of the basic problems of energy saving on requirements macroeconomics and mikrоeconomics. | |  |
| Radiation Safety Basics | 5 | The discipline purpose is deepening of knowledge of masters in the direction of the complex problems of environmental protection and public radiation safety at operating nuclear power station. This course considers doses of irradiation the population at direct and indirect influence of radioactive emissions.The main objective of this course is deepening of theoretical knowledge got by masters for estimation of of expected individual and collective effective doses, risk of irradiation and protection means for radiation safeguarding. | |  |
| Any elective course | 5 | - | |  |
| Master thesis | 12 | Presentation. | |  |
| Total | 34 |  |  |  | |  |
| Total for Master course: | 2 years | 4  semesters | 120 |  |  |  | |  |

In the matrix are presented courses for two speciality in State Engineering University of Armenia (environmental protection in chemical engineering and environmental protection in energetics). Some of this courses is the same for both specialities. All courses can have relation between the contents and RETHINK theme, but specialy the courses which depend on environmental science.

\* Per every semester master student can choose any elective course from list of elective course.

The list of elective courses for PhD (Doctorate) and Masters

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| --- | --- | --- | --- | --- |
| Number of elective chairs | List of available elective chairs | short description | Number of ECTS | relation between the contents  and RETHINK’s theme |
| 20 | Technological processes of cleaning and reuse municipal stream water | The urban stream formation, composition and characteristics. The basics of biological cleaning of streams. The types of micro-orgasms, their growth kinetic regularities. Aerobic and non-aerobic processes in suspended of active sludge, aerate local installations with fixed active sludge and rotary character. An aerobic and non-aerobic technological processes. The microbial deprivation of obtained stream waters of and the re-use it. | 5 | Concerning the professional courses the importance and enrichment of the each subject will be jointly done by the professionals from the universities’ who are involved into this project  Elective course the list will be expanded during the realization of the project |
| Cleaning and reuse of industrial stream water | The course allow to learn about maintenance of water resources, their cleaning problems and technologies. Modern ways of cleaning process of the industrial waste water are discussed. | 5 |
| Ecological mapping | The course is focused to the analysis of the environmental situation and it's dynamics, assessment of the stress situation, a complex processing of tasks of region Complex Ecological-geographical mapping. | 5 |
| Environmental catalysis | The course gives to magistrate an overview of catalysis, its application in environmental engineering. The prospects of modeling of environmental catalysis. | 5 |
| Basics of biotechnology | The base problem of this course is investigation of the biotechnological processes, equipment and the waste generated in production and their neutralization and assimilation. Attention is paid to the organization of production without waste. | 5 |
| Information technologies and the automation systems in environmental engineering | The information technologies and automation systems, used in environmental activities and in ecological research are observed in the scope of the course. | 5 |
| Prediction of ecological catastrophes and the solutions problems | In the scope of the course are observed the cause of origin of possible natural and technogenic disasters  and their paths of forecast. Solving problems of ecological disasters are discussed. | 5 |
| Ecological chemistry of the elements | The course studies the chemical conversion of elements in biosphere. A number of issues related to ecological situation are being discussed, which are directly derives from the elements change: | 5 |
| Ecological chemistry of mineral waters | The course examines the role of mineral water in ecosystems, their physicochemical properties, and ongoing chemical and biochemical processes. | 5 |
| The chemical Eco Toxicology | In the scope of the course are investigating distribution of xenobiotics and their biological products, and influence on the biosystems, as well as accumulation of the selected materials in nutritional chain. | 5 |
| Electrochemical method cleaning of streaming water | The course is dedicated to the electrochemical methods of the effluent cleaning and disinfection. The course teaches the theoretical foundations of electrode reactions, its mechanisms and the kinetic regularities. Electroflotations, electrocoagulation, electrodestructions, electrodialysis and other processes are highly effective in treatment of waster water. | 5 |
| Ecological bases of optimum development of power systems | This course includes features of power systems development considering environmental problems, power system еlements of energy prodaction, transport and distribution, their basic functions and interconnectivity, the most influential factors influencing a choice of optimum decisions at system consideration of the problem. The primary goal of course is deepening of the knowledge for modelling of optimum development of power systems and choice of decision application of ecologically proved ways and technologies. | 5 |
| Special questions of heat-mass exchange | The discipline purpose is deepening of theoretical knowledge of masters in the direction of directly connected with their speciality heat-mass exchange processes, вhich purpose is on the one hand creation of more favorable conditions for people, and on the other hand power efficient use of energy resources. The main objective of course is deepening of theoretical knowledge got by masters for possibilities of practical application for correct organisation of thermal modes of the industrial enterprises and household installations and reduction of thermal energy losses and relating to it reduction of harmful ecological influence on environment. | 5 |
| Environmental problems of fuel combustion | The course purpose is to give to masters necessary theoretical and practical knowledge about influence of combustion products dispersion to the atmosphere from thermal power station boilers and methods of decrease in that influence. The course objectives are developments of knowledge and skills at masters about estimation of harmful consequences of issue of combustion products dispersion to the atmosphere and ecologically more safe and reliable operation of boilers by application of technological and regime methods. | 5 |
| Automatic systems of the ecological information in power engineering | The main objective of automatic systems of the ecological information in power engineering course is to give to masters theoretical and practical knowledge about such as problems, which are automatic systems of environmenr control, necessary conditions for their creation and the principal stages, electronic devices, communication facilities and aslo the problems involved with necessity of creation of ecological information centres. | 5 |
| The mаnаgеment problems of engineering protection of environment | The course purposes are developments of knowledge to masters about problems, such as pollution of air and water ponds and ground, еstimation of economic damage from influence on bioresources, system of payments for environmental contamination, control methods of rational nature management. | 5 |
| Human ecology | The course purpose is acquaintance of masters with influence of environment on people, which is directed ​​ on understanding of interaction of the public and surrounding natural, social, industrial and household factors including culture, customs, religion and national traditions. Human ecology from narrowly professional disciplines differs all-around inclusion of problem, disclosing necessary for ability to human live ecological, economic, social, political and technological conditions. | 5 |
| Estimation methods of ecological damage from power facilities | The mean of course are the creation of material assets on the one hand and the satisfaction of necessary ecological requirements on the other hand, with which it is defined the ecological economic efficiency. Information on balance condition change of ecological system is a basis for construction of practical methods of economic damage calculation. | 5 |
| Ecological management | The purpose - to give the representation about approaches to realisation of initiative activity of the economic subjects directed on consecutive improvement in achievement of their own ecological purposes and problems, developed on the basis of accepted ecological policy under ecological management system.  The goals of course are to study set of main principles, obligations and intentions of activity of the enterprise in the field of environmental protection, to show the place of ecological management in the general system of management, to give representation about the international standards in the field of systems of ecological management and to impart practical skills of work with an actual material, statistical data, ability them to analyze with reference to ecological consequences of enterprises functioning. | 5 |
| The Modern methods of NPP waste processing | The discipline purpose is deepening of theoretical and practical knowledge in the direction of radioactive waste kinds and structures generated as a result of nuclear power plants operation, and modern technologies of treatment, deactivation, conditioning and solidification of NPP radioactive waste.  The main objective of this course is deepening of theoretical knowledge in the field of NPP waste processing for designing of the systems of gaseous, liquid and solid radioactive waste processing, also for analysis of work of waste treatment systems аnd estimations of decrease or prevention of influence on environment. | 5 |
| Total credits for elective courses: | | | 100 |  |

MATRIX of existing PhD (Doctorate) course (State Engineering University of Armenia)

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Name of compulsory chairs | Year | Semester | Number of ECTS | Number of elective chairs | List of available elective chairs | short description | relation between the contents and RETHINK’s theme |
| Geoecology | | | | | | | |
| Foreign language (english, franch, german) | 1st year | 1 semester | 2 |  |  | During this course the students will develop the foreign language in professional area. | In this section foreign language, philosophy and methodology pedagogy and psychology, academic writing in foreign language (2 credits) and scientific writing (2 credits) are taught. Taking into consideration, that research engineer is planned to do also lecturing, it is very important teaching of “pedagogy and phycology” and philosophy and methodology in this section, which expand the future researchers’ outlook. Concerning to the last two subjects, in their plans aditional amendments are needed, taking under the consideration the approaches of the cooperating universities. |
| Pedagogy and Psychology | 2 |  |  | The goal of the course is to acquaint the engineer-researchers who are acting or future lecturers with the laws of a person's inner world, teaching, introducing information on the subject, complicated and contradictory processes, the role of the teacher's psychological culture for the lecturing efficiency |
| An elective course from the Information Technologies courses list | 2 |  |  | In the general system of training an engineer-researcher, the present course is to solve the following tasks:   * to ensure the mastery of the programming language C++, * to acquaint the student with the main facilities of the object-oriented regulation for developing programs in C++, * to realize the object-oriented programming principles, * to acquaint the student with the classes of the .Net framework library and the facilities of visual programming. |  |
| Elective course in specialty -1 | 2 | 2 | 1. Ecotoxicology of technical pollution  2. Hydro ecology | 1. In the scope of the course are investigating distribution of xenobiotics and their biological products, and influence on the biosystems, as well as accumulation of the selected materials in nutritional chain.  2.In course of learning is created opportunity to identify common characteristics and ecological value of hydrosphere.  Observe the issues relate to physical and chemical parameters of the global ocean, of freshwater and sea water. |  |
| Research projects and dissertation performance | 18 |  |  |  |  |
| Total |  |  | 26 |  |  |  |  |
| Methodology and Philosophy of Science | 1st year | 2 semester | 2 |  |  | The goal of the course is to acquaint the engineer-researchers who are, in essence, acting lecturers and scientific researchers with the history of human cognition, the logic of its development, the laws of science origin and development, and the system of scientific-research methods. | From this section the below mentioned subjects are important, and it would be better to include those subjects in the course-list of the cooperating universities: Intellectual property rights and patents  Processing and managing of the designs  Methodology and tools of scientific research . |
| Scientific writing and formulating works | 2 |  |  | The goal of the course is to develop designing of scientific texts among students, by applying in them scientific style and facts of professional terminology, also to develop possibilities and skills of editing scientific texts. The course consists of two modules -"Terminology" and "Designing and editing of scientific texts". |
| Refinement and management of the projects | 2 |  |  | The goal of the course is to teach projects execution phases, the structure and construction of management staff, discovering and clarifying goals and requirements of the projects, also the value of the human factor in the projects management process. |
| Methodology and Tools of Scientific Research | 2 |  |  | The course considers the methodology of scientific-research works, the stages of their organization and realization - from the choice of the subject to its final result envisaged by the engineer-researchers educational program .The tasks of the course are:  to get acquainted with the inductive and deductive approaches of scientific methodology,  to form the objective description, the goal and the tasks of scientific research,  to consider the stages of carrying out the work,  to master the methods of the experimental result development. |
| Elective course in specialty - 1 | 3 | 1 | Assessment of ecology risk | The subject of study is designed to observe the risk assessment methodology of impact of the anthropogenic factors, the risk evaluation system, and the mathematical definition. |  |
| Scientific seminars and workshops | 2 |  |  | During this course students will make critical review of the abstracts and will discuss their final work. |  |
| Research projects and dissertation performance | 18 |  |  | The goal is take credits for research. |  |
| Qualification test from Informatics | 2 |  |  | Students pass qualification test from Informatics |  |
| Total |  |  | 33 |  |  |  |  |
| Total 1st year |  |  | 59 |  |  |  |  |
| Intellectual Property Rights and Patent Science | 2nd year | 1 semester | 2 |  |  | The goal of the course is to give the students information on intellectual property, the international structures and systems of the given sphere as well as the ways of transfer of legal protection and technologies of inventions and useful models. |  |
| Elective course in specialty -2 | 3 |  | The sociological ecology | The course aims to give a systematic understanding of environmental problems, interactions of community and environmental, and anthropogenic impacts on the environment, issues of natural resource and environmental , as well as the ecological crisis and the ways of further development of the community. |  |
| Elective course in specialty -2 | 2 |  | 1. The city ecology  2. Ecological mapping | 1. The course aim is to give listener knowledge about environmental issues related to urbanization and formation of ecological worldview for organization the rational and economic growth of cities.  2. The course is focused to the analysis of the environmental situation and it's dynamics, assessment of the stress situation, a complex processing of tasks of region Complex Ecological-geographical mapping. |  |
| Scientific seminars and workshops | 2 |  |  | During this course students will make critical review of the abstracts and will discuss their final work. |  |
| Research projects and dissertation performance | 18 |  |  | The goal is take credits for research. |  |
| Qualification examination of foreign language | 2 |  |  | Students pass qualification examination of foreign language |  |
| Total |  |  | 29 |  |  |  |  |
| Elective course in specialty -3 | 2nd year | 2 semester | 3 | 1 | Rational nature utilization of environmental aspects | It is investigating the economic fundamentals of interaction of nature and society, the rational use of natural resources of social-environmental and economic objectives.  The subject allows understanding basic regularities of economics and the environment in the case formation of the sectoral economic approach. |  |
| Elective course in specialty - 3 | 2 | 2 | 1. Operative management of control systems for emergency  2. Basic of climate change and desertification | 1.Course aims is to explore a variety of natural, techno genetic, environmental, meteorological, hydrological emergency situations that could turn into a catastrophes.  Observe the disasters by vulnerability reduction strategies and measures.  2.Consider desertification as a global environmental problem that involves unwanted and destructive processes which taking place in the environment and their effects unit.  Present the means and methods of combating desertification. |  |
| Pedagogical practice -2 | 2 |  |  | Students take credits for pedagogical practice (lecture, seminars and etc.) | The practical part and research are the most important parts of the researcher , it includes pedagogical experience, scientific seminars and research. Pedagogical experience is generally done in the appropriate subunits, with the control of the experienced professors. In this section, jointly cooperation of the universities’ is very important, in the result of that, the general approach of the analysing scientific research and realizing of the dissertation will be designed. Concerning professional and selective courses, the final decision can be designed after the investigation of the universities programs. |
| Scientific seminars and workshops | 2 |  |  | During this course students will make critical review of the abstracts and will discuss their final work. |
| Research projects and dissertation performance | 18 |  |  | The goal is take credits for research. |
| Qualification examination from philosophy | 2 |  |  |  |
| Qualification concluding certification | 5 |  |  |  |
| Total |  |  | 34 |  |  |  |  |
| Total 2nd year |  |  | 73 |  |  |  |  |
| Scientific seminars and workshops | 3rd year | 1 semester | 2 |  |  | During this course students will make critical review of the abstracts and will discuss their final work. |  |
| Research projects and dissertation performance | 18 |  |  | The goal is take credits for research. |  |
| Qualification examination of specialty | 4 |  |  | Students pass qualification examination from specialty. |  |
| Total: |  |  | 24 |  |  |  |  |
| Scientific seminars and workshops | 3rd year | 2 semester | 2 |  |  | Students take credits for pedagogical practice (lecture, seminars and etc.) |  |
| Research projects and dissertation performance | 23 |  |  | During this course students will make critical review of the abstracts and will discuss their final work. |  |
| Total: |  |  | 24 |  |  | The goal is take credits for research. |  |
| Total 3rd year |  |  | 48 |  |  |  |  |
| Total All: | 3years |  | 180 |  |  |  |  |