

Course Description Form

Course Description

This course description a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities. It must be linked to the program description.

1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Principles of Environmental Engineering
4. Available Attendance Forms	Theoretical + Practical
5. Course / Year	Course
6. Number of credit hours (total)	60 hrs
7. Date of Preparation of this Description	1/6/2023
8. Course Objectives	<p>The objectives of this course is to ensure that societal development and the use of water, land and air resources are sustainable. This goal is achieved by managing these resources so that environmental pollution and degradation is minimized.</p> <p>The principles of Environmental engineers study water, soil and air pollution problems, and develop technical solutions needed to solve, attenuate or control these problems in a manner that is compatible with legislative, economic, social and political concerns. Civil engineers are particularly involved in such activities as water supply and sewerage, management of surface water and groundwater quality, remediation of contaminated sites and solid waste management.</p> <p>The activities of such engineers include, but are not limited to, the planning, design, construction and operation of water and wastewater treatment facilities in municipalities and industries, modelling and analysis of surface water and groundwater quality, design of soil and remediation systems, planning for the disposal and reuse of wastewaters and sludges, and the collection, transport, processing, recovery and disposal of solid wastes according to accepted engineering practices.</p>
9. Course outcomes and methods of teaching, learning and assessment	
A. Knowledge and Understanding	<p>A1. It aims to know the course concepts of Principles of Environmental Engineering.</p> <p>A2. It aims to learn the knowledge in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice.</p>

A3. It aims to learn how to An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.

A4. It aims to learn how to an ability to apply engineering design to produce solutions that meet specific needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

B. Skills Objectives of the course

B1. It aims to learn skills in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice.

B2. It aims to use modern and advanced tools to deliver largest amount of knowledge to the student.

B3. It aims to make the student aware of course capabilities and the extent of their compatibility with the level of the required from him.

B4. It aims to make the student to learn the blended learning course (face to face and electronic), scientific films and learning videos, laboratories, training at summer and graduation projects.

C. Thinking Skills

C1. Creating educational staff that can be relied upon in state institutions within the specialization

C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.

C3. Work to create the requirements of the labor market and raise the economic capacity.

C4. The ability to make decisions.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication and conversation skills such as English language and presentation skill.

D2. Teamwork skills.

D3. Leadership skills and responsibility.

D4. Self-education skills and self-reliance.

<p>10. Learning and teaching methods</p> <ul style="list-style-type: none"> • Theoretical and practical lectures • Operation of laboratories and workshops • Reports and assignments • Daily and monthly exams • Summer training during the summer vacation period.
<p>11. Assessment methods</p> <ul style="list-style-type: none"> • Daily tests (Quizzes) • Midterm Exams (theory + practical) • Discussing periodic reports • Discussing graduation research projects • Final exams

12. Course Structure					
Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	4	Dimensions, Units, and Their Conversion.	Introduction to Engineering Calculations	Theoretical	Exam + report
2-6	20	Mass and weight. Volume, flow rate and rotation time. Moles, Density, And Concentration, Choosing a Basis, Mole fraction and Mass fraction.	Introduction to Engineering Calculations (process and Process variables).	Theoretical	Exam + report

		Temperature, and Pressure.			
7-9	12	Process data representation and analysis	Process data representation and analysis	Theoretical	Exam + report
10-13	16	Interpolation and Extrapolation	Interpolation and Extrapolation	Theoretical	Exam + report
14	4	Curve fitting	Curve fitting	Theoretical	Exam + report
15	4	Fitting line. Information Analysis.	Fitting line. Information Analysis.	Theoretical	Exam + report

13. Infrastructure

1. The department of environment and pollution engineering has five advanced laboratories.
2. The department of environment and pollution engineering has four lectures classrooms.
3. The department of environment and pollution engineering has different instruments for testing.

14. Course development plan

- The department strives to be a forerunner in the field of preparing engineers specializing in environmental and pollution engineering, who take upon themselves to provide a suitable environment for humans by adopting modern technologies and participating in building and developing infrastructure, providing consultancy and technical support for planning and implementation programs, and have the ability to design, implement and operate projects of a nature health and social benefit.
- The department seeks to achieve an appropriate knowledge content for students that will make them able to assume the responsibilities of Iraq's needs of engineers in the future so that they will be able and efficiently to serve Iraq in sectors that need the specializations of environmental engineering and pollution.
- Organizing courses within the college or courses within institutions of higher education and scientific research.

1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Analytical Chemistry
4. Available Attendance Forms	Theoretical + Practical
5. Course / Year	Course
6. Number of credit hours (total)	75 hrs
7. Date of Preparation of this Description	1/6/2023
8. Course Objectives	
<p>1) Giving general information about chemicals and methods of dealing with them.</p> <p>2) Explanation of methods of chemical analysis of chemical compounds.</p> <p>3) Calculations of reactant and product quantities in chemical reactions.</p> <p>4) Analysis and calculation of the number of substances constituting chemical compounds.</p> <p>5) Give detailed information about pH.</p>	
9. Course outcomes and methods of teaching, learning and assessment	
A. Knowledge and Understanding	
<p>A1. It aims to know the course concepts of Analytical Chemistry.</p> <p>A2. It aims to learn Using both techniques and concepts in calculations related to chemicals.</p> <p>A3. It aims to learn the Knowledge of quantitative and qualitative analysis methods.</p> <p>A4. Analyzing chemical compounds and rocks and knowing the quality and quantity of each element.</p>	
B. Skills Objectives of the course	
<p>B1. It aims to learn skills in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice.</p> <p>B2. It aims to use modern and advanced tools to deliver largest amount of knowledge to the student.</p> <p>B3. It aims to make the student aware of course capabilities and the extent of their compatibility with the level of the required from him.</p> <p>B4. It aims to make the student to learn the blended learning course (face to face and electronic), scientific films and learning videos, laboratories, training at summer and graduation projects.</p>	
C. Thinking Skills	
C1. Creating educational staff that can be relied upon in state institutions within the specialization	

<p>C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.</p> <p>C3. Work to create the requirements of the labor market and raise the economic capacity.</p> <p>C4. The ability to make decisions.</p>
<p>D. General and Transferable Skills (other skills relevant to employability and personal development)</p> <p>D1. Communication and conversation skills such as English language and presentation skill.</p> <p>D2. Teamwork skills.</p> <p>D3. Leadership skills and responsibility.</p> <p>D4. Self-education skills and self-reliance.</p>
<p>10. Learning and teaching methods</p> <ul style="list-style-type: none"> • Theoretical and practical lectures • Operation of laboratories and workshops • Reports and assignments • Daily and monthly exams • Summer training during the summer vacation period.
<p>11. Assessment methods</p> <ul style="list-style-type: none"> • Daily tests (Quizzes(• Midterm Exams (theory + practical) • Discussing periodic reports • Discussing graduation research projects • Final exams

12. Course Structure					
Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	5	Introduction of analytical chemistry, quantitative analysis, qualitative analysis	Introduction of analytical chemistry, quantitative analysis, qualitative analysis	Theoretical + Practical	Exam + report
2	5	Gravimetric calculations of chemical analysis	Gravimetric calculations of chemical analysis	Theoretical + Practical	Exam + report
3	5	Calculations involving concentrations of solutions, physical methods, Molar Methods, Equivalent Methods	Calculations involving concentrations of solutions, physical methods, Molar Methods, Equivalent Methods	Theoretical + Practical	Exam + report
4	5	Dilution of solutions	Dilution of solutions	Theoretical + Practical	Exam + report
5	5	Analysis of samples by titration with standard solution	Analysis of samples by titration with standard solution	Theoretical + Practical	Exam + report
6	5	Calculation of Oxidation – Reduction titration, Equilibrium reactions	Calculation of Oxidation – Reduction titration, Equilibrium reactions	Theoretical + Practical	Exam + report
7	5	Midterm Exam	Midterm Exam	Theoretical + Practical	Exam + report
8	5	Acid – base equilibrium and PH of solutions, Equilibrium constant	Acid – base equilibrium and PH of solutions, Equilibrium constant	Theoretical + Practical	Exam + report
9	5	Expression of equilibrium constant in	Expression of equilibrium constant in	Theoretical + Practical	Exam + report

		acidic medium	acidic medium		
10	5	Expression of equilibrium constant in basic medium	Expression of equilibrium constant in basic medium	Theoretical + Practical	Exam + report
11	5	Calculation of pH of aqueous solution, Weak acid plus its salt	Calculation of pH of aqueous solution, Weak acid plus its salt	Theoretical + Practical	Exam + report
12	5	Titration curves, Strong acid- strong base, Weak acid – strong base	Titration curves, Strong acid- strong base, Weak acid – strong base	Theoretical + Practical	Exam + report
13	5	Titration curves, strong acid – weak base, weak acid – weak base	Titration curves, strong acid – weak base, weak acid – weak base	Theoretical + Practical	Exam + report
14	5	Acid — Base indicator	Acid — Base indicator	Theoretical + Practical	Exam + report
15	5	pH dilution	pH dilution	Theoretical + Practical	Exam + report

1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Derivatives and Integral
4. Available Attendance Forms	Theoretical
5. Course / Year	Course
6. Number of credit hours (total)	60 hrs
7. Date of Preparation of this Description	1/6/2023
8. Course Objectives	<p>1-Understanding Fundamental Concepts: Develop a conceptual understanding of key principles and concepts in mathematics.</p> <p>2- recognize that mathematics permeates the world around us</p> <p>3-appreciate the usefulness, power and beauty of mathematics</p> <p>4- enjoy mathematics and develop patience and persistence when solving problems</p> <p>5- understand and be able to use the language, symbols and notation of mathematics</p> <p>6- develop mathematical curiosity and use inductive and deductive reasoning when solving problems</p> <p>7- become confident in using mathematics to analyse and solve problems both in school and in real-life situations</p> <p>8- develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics</p> <p>9- develop abstract, logical and critical thinking and the ability to reflect critically upon their work and the work of others</p> <p>10-develop a critical appreciation of the use of information and communication technology in mathematics</p> <p>11- Appreciate the international dimension of mathematics and its multicultural and historical perspectives.</p> <p>12- Applying Mathematical Techniques: Gain proficiency in using mathematical tools and techniques, such as vector algebra, trigonometry, calculus, and differential equations, to analyze and solve problems in mathematics.</p>
9. Course outcomes and methods of teaching, learning and assessment	
A. Knowledge and Understanding	
A1. It aims to know the course concepts of Derivatives and Integral.	
A2. It aims to learn to Describe the elementary special functions (e.g. exponential, log and trigonometric functions) which arise in engineering	

A3. It aims to learn the Practice the skills obtained from differential and integral calculus to deal with models in engineering.

A4. Mathematical Proficiency: Apply mathematical techniques, including vector algebra, calculus, and differential equations, to analyze and solve problems in engineering

B. Skills Objectives of the course

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B2. It aims to use modern and advanced tools to deliver largest amount of knowledge to the student.

B3. It aims to make the student aware of course capabilities and the extent of their compatibility with the level of the required from him.

B4. It aims to make the student to learn the blended learning course (face to face and electronic), scientific films and learning videos, laboratories, training at summer and graduation projects.

C. Thinking Skills

C1. Creating educational staff that can be relied upon in state institutions within the specialization

C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.

C3. Work to create the requirements of the labor market and raise the economic capacity.

C4. The ability to make decisions.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication and conversation skills such as English language and presentation skill.

D2. Teamwork skills.

D3. Leadership skills and responsibility.

D4. Self-education skills and self-reliance.

10. Learning and teaching methods

- Theoretical and practical lectures
- Operation of laboratories and workshops
- Reports and assignments
- Daily and monthly exams
- Summer training during the summer vacation period.

11. Assessment methods

- Daily tests (Quizzes)
- Midterm Exams (theory + practical)
- Discussing periodic reports
- Discussing graduation research projects
- Final exams

12. Course Structure

Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	4	Module 1: Functions, Domain, range	Module 1: Functions, Domain, range	Theoretical	Exam + report
2 - 4	4	<ul style="list-style-type: none"> ● Equation of the straight line, Trigonometric functions and their sketches, Domain, ● Range, Inverse of functions, Absolute value, limits, Limits, applications, Polar ● Coordinates (general definition) Conic sections (general definition). 	<ul style="list-style-type: none"> ● Equation of the straight line, Trigonometric functions and their sketches, Domain, ● Range, Inverse of functions, Absolute value, limits, Limits, applications, Polar ● Coordinates (general definition) Conic sections (general definition). 	Theoretical	Exam + report
5	4	<ul style="list-style-type: none"> ● Module 2: Differentiatioal Calculus ● Methods of differentiation 	<ul style="list-style-type: none"> ● Module 2: Differentiatioal Calculus ● Methods of differentiation 	Theoretical	Exam + report
6 - 8	4	<ul style="list-style-type: none"> ● Some applications of differentiation. 	<ul style="list-style-type: none"> ● Some applications of differentiation. 	Theoretical	Exam + report

		<p>Rates of change, Velocity and acceleration.</p> <ul style="list-style-type: none"> • Differentiation of parametric equations, implicit functions, Logarithmic, hyperloic • functions, inverse trigonometric, and hyperbolic functions. • Partial differentiation • Total differential, rates of change and small changes. • Maxima, minima and saddle points for functions of two variables 	<p>Rates of change, Velocity and acceleration.</p> <ul style="list-style-type: none"> • Differentiation of parametric equations, implicit functions, Logarithmic, hyperloic • functions, inverse trigonometric, and hyperbolic functions. • Partial differentiation • Total differential, rates of change and small changes. • Maxima, minima and saddle points for functions of two variables 		
9	4	<p>Mean and rms values</p> <p>Volumes of solids of revolution</p>	<p>Mean and rms values</p> <p>Volumes of solids of revolution</p>	Theoretical	Exam + report

10-11	4	<ul style="list-style-type: none"> • Integral Calculus • Standard integration 	<ul style="list-style-type: none"> • Integral Calculus • Standard integration 	Theoretical	Exam + report
12-13	4	Some application of integration: area under and between curves.	Some application of integration: area under and between curves.	Theoretical	Exam + report
15	4	<ul style="list-style-type: none"> •Integration using algebraic substitutions, trigonometric substitutions, hyperbolic substitutions, and partial fractions. Integration by parts, Reduction formula, Double and triple integrals	<ul style="list-style-type: none"> •Integration using algebraic substitutions, trigonometric substitutions, hyperbolic substitutions, and partial fractions. Integration by parts, Reduction formula, Double and triple integrals	Theoretical	Exam + report

1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Engineering drawing
4. Available Attendance Forms	Theoretical + Practical
5. Course / Year	Course
6. Number of credit hours (total)	45 hrs
7. Date of Preparation of this Description	1/6/2023
<p>8. Course Objectives</p> <ol style="list-style-type: none"> 1. Introducing the student to the importance of engineering drawing and its relationship to other engineering subjects. 2. Develop the student's mental abilities in drawing simple and complex shapes. 3. Expanding the horizons of the student's imagination of geometric shapes and identifying their components, parts, mechanics and their working principle 4. Understanding Technical Drawings: Familiarize students with the principles and standards of technical drawings used in engineering. Develop the ability to interpret and analyze engineering drawings. 5. Proficiency in Drawing Techniques: Develop skills in creating accurate and precise engineering drawings computer-aided design (CAD) software. 6. Standardization and Design Guidelines: Familiarize students with industry standards and design guidelines for engineering drawings. 7. Collaboration and Communication Skills: Promote effective communication through engineering drawings among team members, clients, and manufacturers. Enhance students' ability to interpret and contribute to technical documentation, such as design specifications and project proposals. <p>Overall, the aim of the course is to equip students with the foundational knowledge and practical skills necessary to produce clear, accurate, and professional engineering drawings that facilitate effective communication and collaboration within the field of the engineering.</p>	
<p>9. Course outcomes and methods of teaching, learning and assessment</p> <p>A. Knowledge and Understanding</p> <p>A1. It aims to know the course concepts of Engineering drawing.</p> <p>A2. It aims to learn Using AutoCAD software: Students should gain practical experience with computer-aided design (CAD) software tools commonly used in drawing. They should be able to create, modify, and annotate engineering drawings digitally.</p> <p>A3. It aims to learn the Knowledge Knowledge of Geometric Construction: Ability to create precise geometric shapes and constructions using AutoCAD tools. Understanding of concepts like points, lines, angles, and circles in a digital</p>	

environment. Capability to apply geometric principles to create accurate drawings and designs.

A4. Competence in generating and understanding diagrams: Students should be able to create and interpret diagrams that illustrate the physical connections between the components, devices, and systems. They should understand how to document the configurations and communicate them effectively.

B. Skills Objectives of the course

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C. Thinking Skills

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D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication and conversation skills such as English language and presentation skill.

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D3. Leadership skills and responsibility.

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10. Learning and teaching methods

- Theoretical and practical lectures
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11. Assessment methods

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- Midterm Exams (theory + practical)
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- Discussing graduation research projects
- Final exams

12. Course Structure

Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	4	Module 1: Functions, Domain, range	Module 1: Functions, Domain, range	Theoretical	Exam + report
2 - 4	4	<ul style="list-style-type: none"> • Equation of the straight line, Trigonometric functions and their sketches, Domain, • Range, Inverse of functions, Absolute value, limits, Limits, applications, Polar • Coordinates (general definition) Conic sections (general definition). 	<ul style="list-style-type: none"> • Equation of the straight line, Trigonometric functions and their sketches, Domain, • Range, Inverse of functions, Absolute value, limits, Limits, applications, Polar • Coordinates (general definition) Conic sections (general definition). 	Theoretical	Exam + report
5	4	<ul style="list-style-type: none"> • Module Differentiation Calculus • Methods of differentiation 	<ul style="list-style-type: none"> • Module differentiatinal Calculus • Methods of differentiation 	Theoretical	Exam + report
6 - 8	4	<ul style="list-style-type: none"> • Some applications of differentiation. 	<ul style="list-style-type: none"> • Some applications of differentiation. 	Theoretical	Exam + report

		<p>Rates of change, Velocity and acceleration.</p> <ul style="list-style-type: none"> • Differentiation of parametric equations, implicit functions, Logarithmic, hyperloic • functions, inverse trigonometric, and hyperbolic functions. • Partial differentiation • Total differential, rates of change and small changes. • Maxima, minima and saddle points for functions of two variables 	<p>Rates of change, Velocity and acceleration.</p> <ul style="list-style-type: none"> • Differentiation of parametric equations, implicit functions, Logarithmic, hyperloic • functions, inverse trigonometric, and hyperbolic functions. • Partial differentiation • Total differential, rates of change and small changes. • Maxima, minima and saddle points for functions of two variables 		
9	4	<p>Mean and rms values</p> <p>Volumes of solids of revolution</p>	<p>Mean and rms values</p> <p>Volumes of solids of revolution</p>	Theoretical	Exam + report

10-11	4	<ul style="list-style-type: none"> • Integral Calculus • Standard integration 	<ul style="list-style-type: none"> • Integral Calculus • Standard integration 	Theoretical	Exam + report
12-13	4	Some application of integration: area under and between curves.	Some application of integration: area under and between curves.	Theoretical	Exam + report
15	4	<ul style="list-style-type: none"> •Integration using algebraic substitutions, trigonometric substitutions, hyperbolic substitutions, and partial fractions. Integration by parts, Reduction formula, Double and triple integrals	<ul style="list-style-type: none"> •Integration using algebraic substitutions, trigonometric substitutions, hyperbolic substitutions, and partial fractions. Integration by parts, Reduction formula, Double and triple integrals	Theoretical	Exam + report

2. Educational Institution	Northern Technical University
3. Scientific Department	Environment and Pollution Department
4. Course Name / Code	حقوق الانسان والديمقراطية
5. Available Attendance Forms	Theoretical
6. Course / Year	Course
7. Number of credit hours (total)	30 hrs
7. Date of Preparation of this Description	1/6/2023
8. Course Objectives	
<ul style="list-style-type: none"> التعرف على حقوق الإنسان: تهدف دراسة مادة حقوق الإنسان إلى تعريف الطلاب بالمفاهيم الأساسية لحقوق الإنسان والتعرف على الوثائق والمعاهدات الدولية ذات الصلة. يتم استكشاف مبادئ الحقوق الإنسان وأهميتها في المجتمعات المختلفة. فهم قضايا الحقوق الإنسان: تهدف دراسة مادة حقوق الإنسان إلى تطوير فهم عميق لقضايا حقوق الإنسان التي تواجهها المجتمعات المعاصرة. يتم مناقشة التحديات والانتهاكات المتعلقة بحقوق الإنسان مثل التمييز، والعنف، والتعذيب، والعدالة الاجتماعية. لقدرة على التحليل النقدي: تعزز دراسة حقوق الإنسان قدرة الطلاب على تحليل وتقييم القضايا ذات الصلة بحقوق الإنسان من منظور نقدي. يُشجع الطلاب على فهم وتقييم السياسات والقوانين المتعلقة بحقوق الإنسان وتأثيرها على المجتمعات والأفراد. تعزيز الوعي الثقافي: تشمل دراسة حقوق الإنسان فهم وتقدير التنوع الثقافي واحترام الحقوق والحريات للأفراد من خلفيات ثقافية مختلفة. تتعامل المادة مع قضايا مثل التسامح، والاحترام، والتعايش السلمي بين الثقافات المختلفة. تعزيز الوعي الاجتماعي والمشاركة المدنية: يعزز دراسة حقوق الإنسان الوعي الاجتماعي للطلاب ويشجعهم على المشاركة المدنية في قضايا حقوق الإنسان. يتعلم الطلاب كيفية المساهمة في تعزيز وحماية حقوق الإنسان وتعزيز العدالة والمساواة في المجتمع. لتفكير النقدي وحل المشكلات: يعزز دراسة حقوق الإنسان التفكير النقدي وقدرات حل المشكلات للطلاب. يتعلم الطلاب كيفية التعامل مع قضايا حقوق الإنسان المعقدة ويطوّرون قدراتهم على اقتراح حلول مبتكرة وفعالة. عزيز القيم والأخلاق: تساهم دراسة حقوق الإنسان في تعزيز القيم والأخلاق ذات الصلة بالاحترام المتبادل والعدالة والمساواة. يشجع الطلاب على تبني قيم العدل والمساواة والتعاطف واحترام حقوق الآخرين. 	
9. Course outcomes and methods of teaching, learning and assessment	
A. Knowledge and Understanding	
<p>1- فهم عميق لحقوق الإنسان: يكتسب الطلاب فهماً عميقاً لمفهوم حقوق الإنسان والمبادئ والقوانين المتعلقة بها. يكتسبون المعرفة بالمعاهدات والوثائق الدولية ذات الصلة ويفهمون أهمية حقوق الإنسان في المجتمعات المعاصرة.</p> <p>2- قدرة على تحليل القضايا الحقوقية: يكتسب الطلاب قدرة على تحليل القضايا الحقوقية وفهم التحديات والانتهاكات التي تواجه حقوق الإنسان. يتمكنون من تحليل الوضع القانوني والسياسي والاجتماعي لقضايا حقوق الإنسان وتقييمها بناءً على المبادئ والمعايير الدولية.</p> <p>3- الوعي الثقافي واحترام التنوع: يتعرف الطلاب على التنوع الثقافي ويطورون القدرة على احترام الثقافات المختلفة وحقوق الأفراد بغض النظر عن خلفياتهم. يتعلمون أهمية التعايش السلمي والتسامح والاحترام المتبادل بين الثقافات المختلفة.</p>	

-المشاركة المدنية والعمل الاجتماعي: يتعلم الطلاب أهمية المشاركة المدنية والعمل الاجتماعي في مجال حقوق.

B. Skills Objectives of the course

- 1- خلق روح المنافسة بين الطالب وأقرانه بشكل يعكس إيجابيا على رفع المستوى العلمي.
- 2- تنمية القدرات العلمية والفكرية للطلبة المتميزين وزرع فكرة استمرار التعلم للجميع.
- 3- المحاولة قدر الإمكان بإيجاد صيغ تعاون بين المؤسسة التعليمية والمجتمع.

C. Thinking Skills

C1. Creating educational staff that can be relied upon in state institutions within the specialization

C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.

C3. Work to create the requirements of the labor market and raise the economic capacity.

C4. The ability to make decisions.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication and conversation skills such as English language and presentation skill.

D2. Teamwork skills.

D3. Leadership skills and responsibility.

D4. Self-education skills and self-reliance.

10. Learning and teaching methods

- Theoretical and practical lectures
- Operation of laboratories and workshops
- Reports and assignments
- Daily and monthly exams
- Summer training during the summer vacation period.

11. Assessment methods

- Daily tests (Quizzes)
- Midterm Exams (theory + practical)
- Discussing periodic reports
- Discussing graduation research projects
- Final exams

١٢. Course Structure

Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	2	تعريف الحق	تعريف الحق	Theoretical	Exam + report
2	2	اقسام الحقوق في القانون والفقہ الاسلامي	اقسام الحقوق في القانون والفقہ الاسلامي	Theoretical	Exam + report
3	2	حقوق الفرد على المجتمع	حقوق الفرد على المجتمع	Theoretical	Exam + report
4	2	حقوق المجتمع على الفرد	حقوق المجتمع على الفرد	Theoretical	Exam + report
5	2	حقوق الفرد على الفرد	حقوق الفرد على الفرد	Theoretical	Exam + report
2	2	حقوق المجتمع على المجتمع	حقوق المجتمع على المجتمع	Theoretical	Exam + report
7	2	التعريف بالحرية والديمقراطية	التعريف بالحرية والديمقراطية	Theoretical	Exam + report
8	2	انواع الحريات	انواع الحريات	Theoretical	Exam + report
9	2	الحريات المدنية	الحريات المدنية	Theoretical	Exam + report
10	2	الحوار واثره في تطبيق الحريات	الحوار واثره في تطبيق الحريات	Theoretical	Exam + report
11	2	الشرعة الدولية لحقوق الانسان	الشرعة الدولية لحقوق الانسان	Theoretical	Exam + report

12	2	العراق والمعاهدات الدولية	العراق والمعاهدات الدولية	Theoretical	Exam + report
13	2	اهم المنظمات التي تعنى بحقوق الانسان والحريات	اهم المنظمات التي تعنى بحقوق الانسان والحريات	Theoretical	Exam + report
14	2	العراق والامم المتحدة	العراق والامم المتحدة	Theoretical	Exam + report
15	2	الاعلان العالمي لحقوق الانسان	الاعلان العالمي لحقوق الانسان	Theoretical	Exam + report

1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Principles of Computer
4. Available Attendance Forms	Theoretical + Practical
5. Course / Year	Course
6. Number of credit hours (total)	75hrs
7. Date of Preparation of this Description	1/6/2023
<p>8. Course Objectives</p> <p>The aim of this module is to provide students with a comprehensive understanding of the key concepts and principles of computer science. Through the study of topics such as history, data representation, computer components, algorithms, programming languages, operating systems, applications, internet and networking, and cyber security, students will gain a broad understanding of the field of computer science and how it has evolved over time.</p>	
<p>9. Course outcomes and methods of teaching, learning and assessment</p> <p>A. Knowledge and Understanding</p> <p>A1. It aims to know the course concepts of Principles of Computer.</p> <p>A2. Describe the historical development of computer science and its impact on society.</p> <p>A3. Understand the various methods of data representation and manipulation.</p> <p>A4. Identify the components of a computer and their functions.</p> <p>B. Skills Objectives of the course</p> <p>B1. It aims to learn skills in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice.</p> <p>B2. It aims to use modern and advanced tools to deliver largest amount of knowledge to the student.</p> <p>B3. It aims to make the student aware of course capabilities and the extent of their compatibility with the level of the required from him.</p> <p>B4. It aims to make the student to learn the blended learning course (face to face and electronic), scientific films and learning videos, laboratories, training at summer and graduation projects.</p> <p>C. Thinking Skills</p> <p>C1. Creating educational staff that can be relied upon in state institutions within the specialization</p>	

<p>C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.</p> <p>C3. Work to create the requirements of the labor market and raise the economic capacity.</p> <p>C4. The ability to make decisions.</p>
<p>D. General and Transferable Skills (other skills relevant to employability and personal development)</p> <p>D1. Communication and conversation skills such as English language and presentation skill.</p> <p>D2. Teamwork skills.</p> <p>D3. Leadership skills and responsibility.</p> <p>D4. Self-education skills and self-reliance.</p>
<p>10. Learning and teaching methods</p> <ul style="list-style-type: none"> • Theoretical and practical lectures • Operation of laboratories and workshops • Reports and assignments • Daily and monthly exams • Summer training during the summer vacation period.
<p>11. Assessment methods</p> <ul style="list-style-type: none"> • Daily tests (Quizzes(• Midterm Exams (theory + practical) • Discussing periodic reports • Discussing graduation research projects • Final exams

1. Course Structure					
Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	5	Introduction	Introduction	Theoretical + Practical	Exam + report
2 - 4	15	Method of operation, simple diagram of the components and units of the computer. Phase” computers and the development of computers and the data and information, Fields use of computers, Computer components, Types of Computers, Computer software, Devices of input and output.	Module 1: Fundamentals of Computer	Theoretical + Practical	Exam + report
5-7	15	Desktop, Mouse, my computer icons, close window, stand by. Folders Size and cascade, windows folder construction, choose file or folder find, file	Module 2: Window Operating System:	Theoretical + Practical	Exam + report

		or folder copy-paste			
8-10	15	<p>Introduction, create new file, setup new page, save the files. Coordinating the cells and the worksheet window, Editing the cells, Columns and table borders and shading. Inserting graphic, text and entering formulas inside the program window. Printing and printing setup.</p>	Module 3: Microsoft word	Theoretical + Practical	Exam + report
11	5	<p>Introduction, Menu and Toolbars, Coordinating the cells and</p>	Module 4: Microsoft Excel	Theoretical + Practical	Exam + report

		<p>worksheet window. Editing the cells, Operations of the calculating by using Microsoft Excel program.</p> <p>Drawing the charts by using Microsoft Excel program.</p> <p>Printing and printing options.</p>			
12-15	20	<p>Introduction. The creating for Power point slides, Using and modifying the design templates, Editing of the Power point cells, Inserting pictures, text and tables in the presentation slides.</p>	<p>Module 5: Microsoft Power point</p>	<p>Theoretical + Practical</p>	<p>Exam + report</p>

		Printing and Printing setup to the power point slides.			
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1. Educational Institution	Northern Technical University
2. Scientific Department	Environment and Pollution Department
3. Course Name / Code	Physics Engineering
4. Available Attendance Forms	Theoretical
5. Course / Year	Course
6. Number of credit hours (total)	60 hrs
7. Date of Preparation of this Description	1/6/2023
8. Course Objectives	<p>Material balances are used widely in engineering and environmental analyses. For example, mass balance theory is used to design chemical reactors, to analyses alternative processes to produce chemicals, as well as to model pollution dispersion and other processes of physical systems. Closely related and complementary analysis techniques include the population balance, energy balance and the somewhat more complex entropy balance. These techniques are required for thorough design and analysis of systems such as the refrigeration cycle.</p> <p>In environmental monitoring, the term budget calculations is used to describe mass balance equations where they are used to evaluate the monitoring data (comparing input and output, etc.). In biology, the dynamic energy budget theory for metabolic organization makes explicit use of mass and energy balance.</p>
9. Course outcomes and methods of teaching, learning and assessment	<p>A. Knowledge and Understanding</p> <p>A1. upon completion of this subject, students acquire knowledge and skills in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice</p> <p>A2. express the differences in pressures given as a head of a fluid to the equivalent pressure as a force per unit area</p> <p>A3. apply material balances on nonreactive single-unit processes</p> <p>A4. Explain the meaning of batch, semibatch, continuous, transient and steady state processes.</p> <p>B. Skills Objectives of the course</p> <p>B1. It aims to learn skills in applying engineering and design solutions to an environmental problem and communicate in professionally varied ways relevant to professional engineering practice.</p> <p>B2. It aims to use modern and advanced tools to deliver largest amount of knowledge to the student.</p> <p>B3. It aims to make the student aware of course capabilities and the extent of their</p>

compatibility with the level of the required from him.
B4. It aims to make the student to learn the blended learning course (face to face and electronic), scientific films and learning videos, laboratories, training at summer and graduation projects.

C. Thinking Skills

C1. Creating educational staff that can be relied upon in state institutions within the specialization

C2. Develop solutions to the problems encountered by institutions and systems specialized in the field of the environment.

C3. Work to create the requirements of the labor market and raise the economic capacity.

C4. The ability to make decisions.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication and conversation skills such as English language and presentation skill.

D2. Teamwork skills.

D3. Leadership skills and responsibility.

D4. Self-education skills and self-reliance.

10. Learning and teaching methods

- Theoretical and practical lectures
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11. Assessment methods

- Daily tests (Quizzes)
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- Final exams

12. Course Structure

Week	Hours	Required Learning outcomes	Unit / Subject name	Method of Education	Evaluation Method
1	5	<ul style="list-style-type: none"> Material balance with a single material Splitting single material flow streams 	<ul style="list-style-type: none"> Material balance with a single material Splitting single material flow streams 	Theoretical	Exam + report
2 - 4	15	Complex processes with single material-flow stream	Complex processes with single material-flow stream	Theoretical	Exam + report
5-7	15	<ul style="list-style-type: none"> Material balance with multiple materials Mixing multiple-material flow stream 	<ul style="list-style-type: none"> Material balance with multiple materials Mixing multiple-material flow stream 	Theoretical	Exam + report
8-9	10	Separating multiple material flow stream	Separating multiple material flow stream	Theoretical	Exam + report
10-11	15	Material balance with reactor	Material balance with reactor	Theoretical	Exam + report
12-15	20	-Reactions Zero-order reaction, first order reaction Consecutive reaction -Reactor Mixing model(batch reactors, plug flow, completely mixed flow	-Reactions Zero-order reaction, first order reaction Consecutive reaction -Reactor Mixing model(batch reactors, plug flow, completely mixed flow	Theoretical	Exam + report

