

## LASER PROGRAMME REVIEW FIRST YEAR

### COURSE SPECIFICATION

This Course Specification provides the main features of the Theory of Mathematics for the students of 1<sup>st</sup> year in Laser and Optoelectronics Engineering. Learning outcomes which gained by this course will help a typical student to achieve and demonstrate the learning opportunities that are provided during the course study and to comply with the optoelectronics engineering program specification.

<b>1. Teaching Institution</b>	University of Technology
<b>2. University Department/Centre</b>	College of Laser and optoelectronics Engineering
<b>3. Course title/code</b>	Mathematics(I) / LOPE1201
<b>4. Programme(s) to which it Contributes</b>	Laser and Optoelectronics Engineering Program
<b>5. Modes of Attendance offered</b>	Full Hours
<b>6. Semester/Year</b>	1 <sup>st</sup> & 2 <sup>nd</sup> Semester / year
<b>7. Number of hours tuition (total)</b>	Three Hours / Week (2hours theory ,1 hour tutorial) 3H X30W=90H/Year
<b>8. Date of production/revision of this specification</b>	2/7/2014
<b>9. Aims of the Course</b>	
The aims which can be achieved during teaching this course program are as follows: <ol style="list-style-type: none"><li>1- Aims of the course are to graduates a qualified engineer's who they have theoretical experience in advanced mathematics in optoelectronics field.</li><li>2- This unit of study aims to provide theoretical knowledge and principles of advanced Mathematics and the ability to analysis and solve the mathematical problems.</li><li>3- Illustration and discussion the Main Theoretical Principles of functions &amp; inverse functions with their graphs, limits &amp; continuity, determinates,</li></ol>	

matrices, polar coordinates, complex number , vectors , techniques of derivative, integration & differential equation with their applications in optoelectronics field.

4- Understanding of different methods to solve the same mathematical problem

## 10• Learning Outcomes, Teaching ,Learning and Assessment Method

### A- Knowledge and Understanding

- A1. Enabling student to get the knowledge and understanding of the theoretical principles of advanced mathematics for different optoelectronics systems.
- A2. Understanding of Ideological philosophy of advanced mathematics and their applications.
- A3. Understanding the knowledge of using mathematics for different methods of solution in optoelectronics applications.
- A4. At the end of the year the student should be able demonstrate knowledge and understanding of the concepts, theory and application of Advanced Engineering Mathematics.

### B. Subject-specific skills

- B1. An ability to analyze the mathematical problems in optoelectronics field.
- B2. An ability to identify, formulates, and solves engineering problems.
- B3. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

### Teaching and Learning Methods

- 1- Lecture notes and classroom discussions.
- 2- Theoretical examples and applications.
- 3- Solving problems, quizzes and assessments. .
- 4- Power point literatures by Data show Reviews.

### Assessment methods

- 1- First semester exam (15%).
- 2- Second semester exam (15%).
- 3- Home work and quizzes (10%).
- 4- Final exam (60%).

### C. Thinking Skills

- C1. An ability to apply knowledge of mathematics, science and engineering comparing then conclusion.
- C2. Investigation in engineering problems and find effective solutions for mathematics problem in optoelectronics field.
- C3. Ability to analysis and decision making for mathematics problem.
- C4. Arranging and classifying.
- C5. Ability to solving problems, survey, work collectively, leadership groups .

### Teaching and Learning Methods

The course in Mathematics is covered by classical lecture and after each topic , sample problem will be provide to the student , and during tutorial hours the

students will be able to apply the theories and principles for solving the mathematical problems in electromechanically field.

#### Assessment methods

- 1- Examinations and questions in the classroom.
- 2- Home works & Quizzes.
- 3- Tutorials and discussions.
- 4- The assessment of this element is by written examination which enables each student to demonstrate ability to analyses and solve new problems

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

- D1. Training on several mathematical methods to solve the same problem.
- D2. An ability for solving different mathematics problems in Engineering applications.
- D3. An ability to communicate effectively.
- D4. Recognition of the need for , and the ability to engage in life-long learning.

### 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Theory and discussion	Introduction, Quadratic Formula, Binomial Formula	White board ,Lecture & p.p Show.	Examinations ,Quizzes, and Homework .
2	=	=	Straight Line, Conic Sections (Circle, Parabola, Ellipse, Hyperbola)	=	=
3	=	=	Functions (Inequality, Intervals, Domain & Range )	=	=
4	=	=	Functions (Inverse Functions, Drawing Function, Absolute Value)	=	=
5	=	=	Functions (Trigonometric Functions, Inverse Trigonometric Functions, Logarithmic Function)	=	=
6	=	=	Function( Natural Logarithmic Function, Exponential Function, Hyperbolic Functions)	=	=
7	=	=	Functions (Inverse Hyperbolic Functions)	=	=
8	=	=	Limits & Continuity	=	=
9	=	=	Determinants (Properties, Grammer's	=	=

			Rule, Applications)		
10	=	=	Matrices ( Operations, Inverse of Square Matrix, Eigen Values & Eigen Vectors)	=	=
11	=	=	Polar Coordinates	=	=
12	=	=	Complex Numbers	=	=
13	=	=	Applications of Complex Numbers	=	=
14	=	=	Vectors, Properties of Vectors, Vectors in Free Space	=	=
15	=	=	Applications of Vectors	=	=
16	=	=	Differentiation (Derivative Definition, Techniques of Derivative, Applications)	=	=
17	=	=	Differentiation (Derivative of Trigonometric Functions, Derivative of Inverse Trigonometric Functions ,Chain Rule,)	=	=
18	=	=	Differentiation ( Parametric Equations, Implicit Differentiation)	=	=
19	=	=	Differentiation ( Derivative of Some Functions, Derivative of Hyperbolic Functions, Derivative of Inverse Hyperbolic Functions)	=	=
20	=	=	Integration (Indefinite Integrals & Substitution Rule )	=	=
21	=	=	Integration (Definite Integrals, Properties, Relation Between Indefinite & definite Integrals)	=	=
22	=	=	Forms of Integration (Substitution Methods, By Part, By Tabulate)	=	=
23	=	=	Integration (Partial Fractions For 2nd Equation Degree in Denominator)	=	=
24	=	=	Integration ( Product between Trigonometric Functions, Product Between Hyperbolic Functions)	=	=
25	=	=	Integration (Simple Square Root, Trigonometric Substitutions, Hyperbolic Substitutions)	=	=
26	=	=	Integration of (Irrational Functions, Rational Functions)	=	=
27	=	=	Applications of Definite Integral(Area, Area Under the Curve, Area Between Curve and y-axis, Area Between Two Curves)	=	=
28	=	=	Differential Equations D.E, 1st degree equation: 1-Direct Integration , 2- Variable Separable )	=	=
29	=	=	Differential Equations D.E.(3- Linear Equations,4- Homogeneous,5- Exact )	=	=

30	=	=	Applications of D.E. in Electrical & Mechanical Engineering	=	=
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<b>12. Infrastructure</b>	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Theory of advanced mathematics with application by Thomas Calculus. 2-Books and Literatures in different kinds of Advanced Mathematics
Special requirements (include for example workshops, periodicals, IT software, websites)	Internet web sites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	N/A
<b>13. Admissions</b>	
Pre-requisites	Pass from last stage (secondary school).
Minimum number of students	No limit.
Maximum number of students	No limit.

## COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and Optoelectronics Eng . College
3. Course title/code	University physics /LOPE 1202
4. Programme(s) to which it contributes	Laser and Optoelectronics Engineering Program
5. Modes of Attendance offered	Full Time
6. Semester/Year	Annual /Year
7. Number of hours tuition (total)	4 Hours / Week (2hours theory ,2 hour Application) 4H X30W=120H/Year
8. Date of production/revision of this specification	26-6-2014
9. Aims of the Course	
	- Introduction to University physics for students of the first year/Laser and optoelectronic engineering Programs
	-Enable the student to work in the different field.
	- The application of the basic principles of light and material.
10. Learning Outcomes, Teaching ,Learning and Assessment Methode	

#### A- Knowledge and Understanding

- A1. Know the properties of mirrors and lenses and how form the images.
- A2. Know the meaning of inversion population.
- A3. Know the student what the photoelectric effect.
- A4. Enable the student to study the Bohr Model, the hydrogen atom.
- A5. Enable the student to study the interference and diffraction phenomena.

#### B. Subject-specific skills

- B1. Find solutions to the problems of the images in mirrors and lenses.
- B2 Calculate the wavelength and index of refraction and the intensity distributed for interference and diffraction pattern.
- B3. Explain the concept of the physical equation and how derivation.
- B4. Know

#### Teaching and Learning Methods

The development of the student's ability to apply the knowledge in order to be able to correct analysis of the question and thus put the appropriate assumptions and interpretation to reach a solution. Through textbooks and lectures, in addition to the (Unvi. physics).

#### Assessment methods

- Classroom discussions and to identify the potential of the student to analyze problems.
- Homework.
- Sudden exams.
- Quarterly examinations.
- Lab. Examinations.

#### C. Thinking Skills

- C1.
- C2.
- C3.
- C4.

#### Teaching and Learning Methods

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

- D1. Employing all due respect to the course such as software, tables and diagrams to solve engineering problems.

## 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-4	8	The nature of light and propagation	Light sources Wave, wavefront, rays Speed of light Reflection and refraction laws Index of refraction	Motivate students to develop its capabilities in the analysis of data question and diagnose the problem and describe the solution.	Discussions. Homework. Sudden exams. Quarterly examinations. Projects and seminars. Laboratories.
5-8	8	Reflection and refraction in plane surface	Huygens's principle Derive refraction law from Huygens's principle Reflection internal total Refraction in prism dispersion	=	=
9-13	10	Image Formation by a Plane Mirror	Reflection in plane mirror reflection in spherical mirror  graphical method refraction in plane surface	=	=
14-17	8	Lenses and optical instrument	Thin lenses Divergence lenses Graphical method Image formation in lenses Thick lenses Lenses aberration The eye The amplifier The camera The microscope The telescope	=	=
18-22	10	Interference and diffraction	Interference principle Young's experimental Interference in thin film Thin coating on glass Mickelson interference Frenal diffraction faranhofer diffraction in single slit X-ray diffraction Resolving power	=	=
23-26	8	polarization	Polarization Polarization by reflection	=	=

			Double refraction Polarization by double refraction Scattering of light Circular and elliptical polarization Formation colors in light polarized Study of crystals convergent to light polarized		
27-30	8	Atoms, electrons and photons	Condition in gases Thermionic emission Photoelectric effect Line spectra Bohr atom Wave mechanism Absorption spectra The laser x-ray tube x-ray spectra	=	=

## 12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	University physics/ Code LOPE 1202
Special requirements (include for example workshops, periodicals, IT software, websites)	Lectures are available on the <a href="http://www.uotechnology.edu.iq/dep-MechanicsandEquipment/index.htm">http://www.uotechnology.edu.iq/dep-MechanicsandEquipment/index.htm</a>
Community-based facilities (include for example, guest Lectures, internship, field studies)	- Conducting seminars.

## 13. Admissions

Pre-requisites	
Minimum number of students	No identification.
Maximum number of students	No identification.

## PROGRAMME REVIEW English language for 1<sup>st</sup> year

### COURSE SPECIFICATION

This course will improve the ability of the students to understand, speak, read and write English as a second language with some technical texts. It is also intended to teach them, how to use technical English effectively as a language of instruction, Lab. Experiments and Exercises, examples, using Technical Terminologies as close as possible to the lectures they receive during their study.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and optoelectronics Engineering College
3. Course title/code	English Language/LOPE1103
4. Programme(s) to which it contributes	Laser and Optoelectronics Engineering Programs
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1 <sup>st</sup> & 2 <sup>nd</sup> semesters/Year
7. Number of hours tuition (total)	Two Hours / Week 2H X30W=60H/Year
8. Date of production/revision of this specification	4/7/2014
9. Aims of the Course	
<p>The aims which can be achieved during teaching this course program are as follows:</p> <ol style="list-style-type: none"><li>1. Proceeding to the Student the benefits of studying English Language as Second language.</li><li>2. Giving Knowledge about using the Technical Terminologies in their studies.</li><li>3. Understanding of using the scientific English language in the Academic Program.</li><li>4. Giving Knowledge of how to write ,describe , typing the reports in English.</li></ol>	

10. Learning Outcomes, Teaching ,Learning and Assessment Method

B- Knowledge and Understanding

- A1.Enabling student to get the knowledge and understanding of the theoretical principles of using Scientific English language.
- A2. Proceeding the understanding the and Ideological philosophy of learning a second language besides the native language .
- A3. Proceeding knowledge and understanding of English applications in writing technical reports ,descriptions .

B. Subject-specific skills

- B1.Literatures
- B2. Tutorials
- B3. Conversation

Teaching and Learning Methods

- 5- Tutorials
- 6- Power point literatures by Data show Reviews.

Assessment methods

- 5- Examinations.
- 6- Quizzes.
- 7- Home works.
- 8- Tutorials and discussions.

C. Thinking Skills

- C1. Ability of speaking.
- C2. Certain discussion and conversation .
- C3. General information collection for different sources relating to the language teaching methods.
- C4. collection of data

Teaching and Learning Methods

- 1- Literatures.
- 2- Tutorials.

Assessment methods

- 1- Test 1
- 2- Test 2.
- 3- Quizzes and Assignments.
- 4- Final Examination

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

- D1. Different group conversations.
- D2. new learning methods.
- D3.
- D4.

## 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	2	Literature	Introduction to English language as second language	Lecture & p.p Show.	Examinations ,Quizzes,.
3-7	=	=	English study and learning skills	=	=
8-12	=	=	The seven habits of highly effective readers.	=	=
13-20	=	=	7 Rules to learn excellent real English language .	=	=
21-24	=	=	How to improve your English conversation ability.	=	=
25-27	=	=	How to Write an outline of Technical English report.	=	=
28-30	=	=	What is the TOEFL. (Important steps to know).	=	=

## 12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Literatures in different learning skills for English language.
Special requirements (include for example workshops, periodicals, IT software, websites)	Internet web sites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	N/A

## 13. Admissions

Pre-requisites	Pass from last stage (secondary school).
Minimum number of students	No limit.
Maximum number of students	No limit.

**PROGRAMME REVIEW Electrical circuit analysis 1<sup>st</sup> year**

This Course Specification provides the main features of the Theory of Fundamental of Electric Engineering for the students of first year in laser & optoelectronic engineering Learning outcomes which gained by this program will help a typical student to achieve and demonstrate the learning opportunities that are provided during the course study and to comply with the programme specification as laser & optoelectronic engineering systems Engineering.

1. Teaching Institution	University of Technology
2. University Department/Centre	laser & optoelectronic Engineering Dept.
3. Course title/code	Electrical D.C circuits
4. Programmers(s) to which it contributes	Optoelectronics Engineering
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1 <sup>st</sup> & 2 <sup>nd</sup> Semester / Year
7. Number of hours tuition (total)	Theoretical : 2hrs/w Practical : 2 hr/w 4H X30W=120H/Year
8. Date of production/revision of this specification	20/6/2014

**9. Aims of the Course**

The aims which can be achieved during teaching this course program are as follows:

- 1- Illustration and discussion the fundamental of Electrical DC circuit and definition.
- 2- Proceeding to the Student the DC Electrical Circuits ,series, parallel, series-parallel.
- 3- Identify the equations voltages & current for circuits above.
- 4- illustration and discussion the analysis methods of the above Circuits, delta-star, Branch, loop, nodal.
- 5- Illustrations and discussion the Network theorems super position, Thévenin's theorem, Norton theorem & "maximum power transfer; millman, reciprocity, substitution" theorems.
- 6- Illustration and discussion the Magnetic Circuits.
- 7- Illustration and discussion the fundamental of capacitor and inductor.

## 10- Learning Outcomes, Teaching ,Learning and Assessment Method

### A- Knowledge and Understanding

- A1. Enabling student to get the knowledge and understanding the fundamental of DC Electrical Circuits for different circuits.
- A2. Enabling student to analysis different DC electrical circuits by analysis methods.
- A3. Enabling student to get the knowledge and understanding the network methods for different DC electrical circuits.
- A4. Enabling student to get the knowledge and understanding the fundamental of Magnetic Circuits
- A5. Enabling student to get the knowledge and understanding the fundamental of capacitor and inductor operation
- A6. Enabling student to get the knowledge and understanding the connection Of capacitor & conductor in the electric circuit.

### B. Subject-specific skills

- B1. Literatures
- B3. Laboratory and performing some Experiments.

#### Teaching and Learning Methods

- 1- Practical experiments.
- 2- Simulation and Innovation.
- 3- pdf literatures by Data show Reviews.

#### Assessment methods

- 1- Examinations.
- 2- Quizzes.
- 3- Home works.
- 4- Tutorials and discussions.

### C. Thinking Skills

- C1. Reports.
- C2. Certain DC Electrical Circuits problem analysis.
- C3. Technical information collection for DC Electrical Circuits problem.
- C4. Research and collection data.

#### Teaching and Learning Methods

- 1- Literatures.
- 2- Tutorials.
- 3- Experiments.

#### Assessment methods

- 1- Test 1
- 2- Test 2.
- 3- Quizzes and Assignments.

- 4- Laboratory.
- 5-Final Examination

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

- D1. Solution of different circuits of DC Electrical circuit.
- D2. Analysis of different circuits of DC Electrical circuit by analysis methods.
- D3. Solution of different circuits of DC Electrical circuit by network theorems.
- D4. Simulation of different system of DC Electrical circuit methods.
- D5. Analysis of magnetic circuit
- D6. Solution of different circuits of inductor and capacitor

**11. Course Structure(first semester)**

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-5	2+2	Literature , Experimental, Tutorial	Basics of Electrical Ohm's Circuits Law, Resistance in series ,KVL, Voltage divider Rule,... Resistance in parallel ,KCL, current divider Rule , Series parallel Circuits ,	Lecture & pdf Show.	Examinations ,Quizzes, and Reports.
6-10	=	=	Current Sources, Star and delta analysis , branch analysis, Loop current method ,nodal voltage	=	=
11-15	=	=	Network theorems, super position, Thévenin's theorem, Norton theorem .maximum power transfer.	=	=

11. Course Structure(second semester)					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
15-20	2+2	Literature , Experimental , Tutorial	“millman,resprocity,substitution” theorems	Lecture & pdf Show.	Examinati ons ,Quizzes, and Reports.
20-25	=	=	MAGNETIC FIELDS FLUX DENSITY PERMEABILITY RELUCTANCE OHM’S LAW FOR MAGNETIC CIRCUITS MAGNETIZING FORCE AMPÈRE’S CIRCUITAL LAW THE FLUX $\Phi$	=	=
25-30	=	=	THE ELECTRIC FIELD CAPACITOR CHARGING OF CAPACITANCE CAPACITORS IN SERIES CAPACITORS IN PARALLEL Series and parallel combinations INDUCTOR (L) SELF-INDUCTANCE INDUCED VOLTAGE INDUCTOR IN SERIES INDUCTORS IN PARALLEL POWER & ENERGY STORED BY AN INDUCTOR	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Literatures in different kinds of DC Electrical circuit 2.Introductory circuit Analysis; by Robert L. Boylestad . 3-Basic Electrical Engineering science; by Mckenzie smith and K.T. Hosie
Special requirements (include for example workshops, periodicals, IT software, websites)	-
Community-based facilities (include for example, guest Lectures , internship , field studies)	-

13. Admissions	
Pre-requisites	Pass from last stage (secondary school).
Minimum number of students	No limit.
Maximum number of students	No limit.

## TEMPLATE FOR COURSE SPECIFICATION

### HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

#### COURSE SPECIFICATION

This Course Specification provides the main features of the statics , dynamics, thermodynamics & fluid mechanics for the students of 1<sup>st</sup> year in Laser & Optoelectronics Engineering. Learning outcomes which gained by this program will help a typical student to achieve and demonstrate the learning opportunities that are provided during the course study and to comply with the programme specification as Laser & Optoelectronics Engineering .

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser & Optoelectronics Eng. Dept.
3. Course title/code	Engineering Mechanics, LOPE 1205
4. Programme(s) to which it contributes	Applied Mechanical Engineering
5. Modes of Attendance offered	Full time- 2hr/week
6. Semester/Year	1 <sup>st</sup> & 2 <sup>nd</sup> semester/ 1 <sup>st</sup> year
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	26-6-2014
9. Aims of the Course	
<ul style="list-style-type: none"> <li>-Aims of the course are to graduates a qualified engineer's who they have theoretical experience in statics and Dynamics in engineering mechanics field.</li> <li>- This unit of study aims to provide theoretical knowledge and principles of statics and Dynamics and the ability to analysis and solve the Engineering mechanics problems.</li> <li>- Illustration and discussion the Main Theoretical Principles and improve the ability for team work.</li> <li>- Understanding of using different methods to solve the same problem</li> <li>- assure the accuracy in solving problems with out any approximation.</li> </ul>	

10. Learning Outcomes, Teaching ,Learning and Assessment Methode
<p>A- Knowledge and Understanding</p> <p>A1.Enabling student to get the knowledge and understanding of the theoretical principles of Engineering Mechanics.</p> <p>A2. Understanding of Ideological philosophy of Engineering Mechanics and their applications.</p> <p>A3. Understanding the knowledge of using Engineering Mechanics for different methods of solution in engineering applications.</p> <p>A4. At the end of the year the student should be able demonstrate knowledge and understanding of the concepts, theory and application of Engineering Mechanics.</p>
<p>B. Subject-specific skills</p> <p>B1.An ability to analyze the Engineering Mechanics problems in engineering field.</p> <p>B2. An ability to identify, formulates, and solve Engineering Mechanics problems.</p>

B3. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Teaching and Learning Methods

1-Lecture notes and classroom discussions.

2-Theoretical examples and applications.

3-Solving problems, quizzes and assessments.

Assessment methods

C. Thinking Skills

C1. An ability to apply knowledge of Engineering Mechanics.

C2. Investigation in engineering problems and find effective solutions for Engineering Mechanics problem.

C3. Ability to analysis and decision making for Engineering Mechanics problem.

C4. Arranging and classifying.

C5. Ability to solving problems, survey, work collectively, leadership groups.

Teaching and Learning Methods

1-Examinations and questions in the classroom.

2- Home works & Quizzes.

3-Tutorials and discussions.

4- The assessment of this element is by written examination which enables each student to demonstrate ability to analyses and solve new problems

Assessment methods

Test

Quizzes

Home work

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

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

D1. Training on several Engineering Mechanics methods to solve the same problem.

D2. An ability for solving different Engineering Mechanics problems in work field.

D3. An ability to communicate effectively.

D4. Recognition of the need for , and the ability to engage in life-long learning.

## 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2hr	Theory ,Tutorial & discussion.	Introduction to Static	lecture	Feed back ,quizzes homework
2	2hr	=	Scalar & vector quantities	lecture	=
3	2hr	=	resolution of force into components.	lecture	=
4	2hr	=	Moment of a force about point	lecture	=
5	2hr	=	Location of a resultant	lecture	=
6	2hr	=	Couples	lecture	=
7	2hr	=	Centroid & center of area	lecture	=
8	2hr	=	Center of gravity	lecture	=
9	2hr	=	Equilibrium	lecture	=
10	2hr	=	Free body diagram	lecture	=
11	2hr	=	Moment of inertia	lecture	=
12	2hr	=	friction	lecture	=
13	2hr	=	Introduction to dynamics	lecture	=
14	2hr	=	equations of linear motion	lecture	=
15	2hr	=	Displacement ,velocity & acceleration	lecture	=
16	2hr	=	Motion of projectile	lecture	=
17	2hr	=	Introduction to thermodynamics	lecture	=
18	2hr	=	1 <sup>st</sup> law of thermodynamics	lecture	=
19	2hr	=	2 <sup>nd</sup> law of thermodynamics	lecture	=
20	2hr	=	Types of processes	lecture	=
21	2hr	=	Types of processes	lecture	=
22	2hr	=	Types of energy	lecture	=
23	2hr	=	Heat balance	lecture	=
24	2hr	=	Introduction to fluid mechanics	lecture	=
25	2hr	=	Ideal gas	lecture	=
26	2hr	=	Euler equation	lecture	=
27	2hr	=	Bernoulli equation	lecture	=
28	2hr	=	Momentum equation	lecture	=

29	2hr	=	Force exerted by flowing fluid on a pipe-bend.	lecture	=
30	2hr	=	Exam.	-	

## 12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Engineering Mechanics, Volume 1, Statics & Dynamics , Fifth Edition by J.L. Meriam & L.G. Kraige 2-Engineering Mechanics, Singer. 3-Lecture notes.
Special requirements (include for example workshops, periodicals, IT software, websites)	Internet web sites
Community-based facilities (include for example, guest Lectures , internship , field studies)	N/A

## 13. Admissions

Pre-requisites	Pass from last stage (secondary school).
Minimum number of students	No limit
Maximum number of students	No limit

## TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

### COURSE SPECIFICATION

This Course provides a basic principle of engineering drawing including word and numbering drawing, dimensions, sections, projections and isometric drawing

1. Teaching Institution	University of Technology
2. University Department/Centre	Dep. of Laser and optoelectronics Engineering
3. Course title/code	Engineering drawing /LEOP1206
4. Programme(s) to which it contributes	Laser and optoelectronics Eng. Programs
5. Modes of Attendance offered	Full Time
6. Semester/Year	1 <sup>st</sup> & 2 <sup>nd</sup> semesters/ year
7. Number of hours tuition (total)	3hours/week 3H*30W=90H/Year
8. Date of production/revision of this specification	4-7-2014
9. Aims of the Course	
- Introduction of Engineering drawing for students of the First	
- Use of drawing tools, starting engineering drawing learning students the basic principles.	
- The application of the basic principles of engineering drawing	

## 10. Learning Outcomes, Teaching ,Learning and Assessment Methods

### A- Knowledge and Understanding

A1. Know the methodology of engineering drawing.

A2. Enable the student to draw A3. Enable the student to learn and understand the basic for drawing word and numbering drawing, dimensions, sections, projections and isometric drawing

### B. Subject-specific skills

B1. Learn student how to have skill to draw word and numbering , dimensions, sections, projections and isometric drawing

## Teaching and Learning Methods

Theoretical and experimental method

### Assessment methods

- Classroom discussions and to identify the potential of the student to draw.
- Homework.
- Sudden exams.
- Quarterly examinations.
- Projects and seminars.
- The student's performance in the class .

### C. Thinking Skills

C1. Description of projections

C2. Description of writing and numbering on sheet.

C3. Description of Isometric drawing .

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

D1. Employing all due respect to the course such as software, tables and diagrams to draw in engineering drawing .

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-4	4 hours per week	Introduction in engineering drawing , using drawing tools, drawing letters and number	Introduction and discussing drawing tools	Theoretical and experimental .	Discussions. Homework. Sudden exams. Quarterly examinations. Projects and seminars. Laboratories.
5-9	4 hours per week	Obtaining Projection and sections	projections	=	=
10-13	4 hours per week	Hand drawing and dimensions	Hand drawing	=	=
14-17	4 hours per week	isometric drawing	Isometric drawing	=	=
18-21	4 hours per week	Engineering drawing using Autocad , setup, repare, basic operation tools.	Auto cad	=	=
22-25	3 hours per week	Tool definition , draw modify, layers, properties, utilities, block	Auto cad 2010	=	=
26-30	3 hours per week	Two and three dimensional drawings.	Autocad	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Engineering drawing Abdal Rasool Al khafaf. Auto cad 2010 tutorials
Special requirements (include for example workshops, periodicals, IT software, websites)	Autocad 2010 tutorial
Community-based facilities (include for example, guest Lectures , internship , field studies)	- Conducting seminars. - Visits to internet sites.

13. Admissions	
Pre-requisites	Pass the secondary school. In addition, students have the capacity to communicate in English.
Minimum number of students	No identification.
Maximum number of students	No identification.

## PROGRAMME REVIEW C++ Computer Programming for 1<sup>st</sup> Year

### COURSE SPECIFICATION

This course acquaints students of 1<sup>st</sup> Year with the design, development, testing and documentation of C++ programming language. Data structure (variables, arrays, structure, and pointer), conditional and repetition statements, functions, files, graphics, math, string, dos functions, and I/O interface.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and optoelectronics Eng. Dept.
3. Course title/code	C++ Computer Programming / LOPE1107
4. Programme(s) to which it contributes	Laser and optoelectronics Eng. programs
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	Annual (1 <sup>st</sup> & 2 <sup>nd</sup> Semester / Year)
7. Number of hours tuition (total)	Two Hours / Week (Theory) Two Hours / Week (Practical) 2H X30W=60H/Year theory +60H/Year practical
8. Date of production/revision of this specification	24/06/2014
9. Aims of the Course	
The aims which can be achieved during teaching this course program are as follows:	
-Giving knowledge about the computer hardware & software	
-Understanding of programming in C++ programming language	

## 10. Learning Outcomes, Teaching ,Learning and Assessment Method

### **A- Knowledge and Understanding**

- A1. Create a program using the C++ programming language
- A2. Use sequential looping, control logic and graphic in programs
- A3. Solving problems in different applications

### **B. Subject-specific skills**

- B1.Literatures
- B<sup>v</sup>. Computer Laboratory.

### **Teaching and Learning Methods**

- 1-Computer Laboratory.
- 2- Power point literatures by Data show Reviews.

### **Assessment methods**

- 1- Examinations.
- 2- Quizzes.
- 3- Home works.

### **C. Thinking Skills**

- C1. Reports.
- C2. Home works .
- C3. Research

### **Teaching and Learning Methods**

- 1- Literatures.
- 2- Applications in computer laboratory .

### **Assessment methods**

- 1-Test 1
- 2- Test 2.
- 3- Quizzes and Assignments.
- 4- Laboratory.
- 5-Final Examination

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

- D1. Apply Solution of different examples .
- D2. Training to write programs for different applications.
- D3. Training to draw football and Tanis playing ground using graphic statements.

### 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	2+2	Literature and Experiments	Introduction to C++ Programming Language, Constants and Variables	Lecture & p.p Show.	Examinations ,Quizzes, and Reports.
3-4	=	=	<b>Operators</b> :Arithmetic Operators, Bitwise Operators, Input/ Output technique, Relational operators ( < ><= and >= ) , Equality operators, Conditional operator ( ? : ), Comma punctuator and operator ( , )	=	=
5-8	=	=	<b>Conditional statements:</b> The if statement (keyword), If/else if/ else statement, The switch statement, Menu.	=	=
9-12	=	=	<b>The iteration (looping) statement :</b> (if with counter)For (keyword), While (keyword), Do...while loop, Break , Continue,	=	=
13-18	=	=	<b>Data structure:</b> Math. Functions, One Dimensional Arrays, Strings, Two dimensional array, Squared array, Structures, Pointers	=	=
19-25	=	=	<b>Functions:</b> Arrays, Pointers, Structures as function parameters, Local and Global Variables, Dynamic memory allocation	=	=
26-30	=	=	<b>Text Files and Graphics,</b> Applications on Graphics, I/O Interface	=	=

### 12. Infrastructure

#### Required reading:

- CORE TEXTS
- COURSE MATERIALS
- OTHER

C++ manual, Help, and lectures prepared by the teacher.

Special requirements (include for example workshops, periodicals, IT software, websites)	Internet web sites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	N/A

13. Admissions	
Pre-requisites	Pass from last stage (secondary school).
Minimum number of students	No limit.
Maximum number of students	No limit.

## PROGRAMME REVIEW : **Optoelectronics Eng.**

### **COURSE SPECIFICATION:** Human rights, 1<sup>st</sup> year

The course covers the concept of human rights and development, definition , classes , properties , and the most important human rights conventions and declarations and international conventions on human rights , and human rights in religions and the role of non-governmental organizations in this field and other human rights issues.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and Optoelectronics Engineering department
3. Course title/code	Human rights /
4. Programme(s) to which it contributes	General

5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1 <sup>st</sup> &2 <sup>nd</sup> Semester / Year
7. Number of hours tuition (total)	Thirty Hours 1H X 30Week =30h/year
8. Date of production/revision of this specification	4/7/2014

#### 9. Aims of the Course

The aims which can be achieved during teaching this course program are as follows:

1. Working to promote, disseminate and consolidate the culture of human rights , freedom and democracy among university students.
2. Promising d conscious generation and cultured human rights issues , freedom and democracy and believes in political pluralism and the peaceful transfer of medium- and freedom of expression and respect for and acceptance of the other opinion and respect for minority rights and peaceful coexistence in society .
3. Ability to diagnose human rights violations or restrict public freedoms or overtaking on the Constitution and the ability to propose realistic solutions to the problems of the community to achieve a peaceful coexistence in society .
4. Inform students on the experiences of past and contemporary Nations in the field of human rights , freedom and democracy of worldviews , humane and scientific , religious and objectively away from the effects of political, intellectual and religious .
5. Seeking to bring about a change in the student's behavior in line with the overall objective by directing attention to the implications of the real human rights and the dimensions of the legal and the study of international declarations and covenants , and the impact of the violations egregious to those rules , which affect the lives of people or their dignity , especially that human rights are inclusive and all human societies .

#### 10. Learning Outcomes, Teaching ,Learning and Assessment Method

##### A-Knowledge and Understanding

A 1 - to identify the concepts of human rights , freedom and democracy

A 2 - to know and understand the most important terms that relate to the subject of human rights , freedom and democracy.

A 3 - to know and understand the principles and theories on human rights , freedom and democracy.

A 4 - to know and understand the most important announcements and international charters and conventions on human rights , freedom and democracy.

A 5 - to identify the key role of human rights issues , freedom and democracy in the stability of human societies.

A 6 - to know and understand the importance of employing the concepts of human rights , freedom and democracy in public life , whether at home , school , university , work , street , factory .... etc. especially with the worldview of modern issues of human rights , freedom and democracy .

## B. Subject-specific skills

B 1 - the most important acquisition of the student terminology, principles and theories on human rights, freedom and democracy .

B-2 - the ability to debate and interpretation, analysis and comparison of the issues or the subjects on human rights, freedom and democracy, particularly in relation to the experiences of nations in this field .

B-3 Ability to summarize the issues and do rewrite the subject manner of its student .

B- 4 The ability to search and collection, arrangement and classification of information when conducting research and writing scientific reports and do activities and exercises and participation of various activities.

### Teaching and Learning Methods

Method of lecture and discussion , preparation and effective participation of tribal, stirring diverse Questions for discussion, arrangement and discuss ideas, individual and collective debates between students, cooperative learning, how to do household duties Research - Abstracts - Posters, film screenings and educational presentations.

### Assessment methods

Exam calendar, exam daily, monthly exam, attendance and active participation of students, providing research - summaries - Mural - Posters.

## C. Thinking Skills

C 1 - Critical Thinking

C 2 - problem solving, brainstorming

C 3 - Case Study

C 4 - study skills

### Teaching and Learning Methods

Way discussion, provoke questions and diverse ideas, research work and scientific reports, dialogue and debate between individual and collective student, individual and collective training to students, film screenings and educational presentations.

### Assessment methods

Exam sudden, daily and monthly examinations, oral examinations variety of questions, participate effectively in the classroom, Individual activities for students .

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

D 1 - the student should be able to connect and communicate written and oral communication, research and information gathering .

D 2 - the ability to throw and apply for different subjects .

D 3 - to doing the work of different reports - summaries - Posters - Mural in a particular subject .

D 4 - leadership team collectively to various activities

## 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	1	Lecture	concept of human rights and development of historic	Recognize the concept of human rights and development of historic	Exam and participation in the subject matter
2	1	Lecture	of the right to language and terminology and definition and characteristics of human right	Knowledge and understanding of the meaning of the right to language and terminology and definition and characteristics of human rights	Exam and participation in the subject matter
3	1	Lecture	type of human rights in the community	Knowledge and understanding of the importance of each type of human rights in the community	Exam and participation in the subject matter
4	1	Lecture	human rights in religions	Identify the implications of human rights in religions	Exam and participation in the subject matter
5	1	Lecture	human rights in religions	Identify the implications of human rights in religions	Exam and participation in the subject matter
6	1	Lecture	the regional human rights mechanisms and their application	Identify the terms of the agreements in the regional human rights mechanisms and their application	Exam and participation in the subject matter
7	1	Lecture	of human rights in international law and the extent to which	Identified on the basis of human rights in international law and the extent to which	Exam and participation in the subject matter
8	1	Lecture	human rights and public rights of persona	Comparison between human rights and public rights of persona	Exam and participation in the subject matter
9	1	Lecture	the stages of the international recognition of human rights	Identify the stages of the international recognition of human rights	Exam and participation in the subject matter
10	1	Lecture	non-governmental organizations and the defense of human rights	Identification of non-governmental organizations and the defense and diagnosis of human rights violations in the world and the mechanisms of action	Exam and participation in the subject matter
11	1	Lecture	non-governmental organizations and the defense of human rights	Identification of non-governmental organizations and the defense and diagnosis of human rights violations in the world and the mechanisms of action	Exam and participation in the subject matter
12	1	Lecture	content of the most important civil rights	Knowledge and understanding of the	Exam and participation in the subject matter

				content of the most important civil rights	
13	1	Lecture	content of the most important civil rights	Knowledge and understanding of the content of the most important civil rights	Exam and participation in the subject matter
14	1	Lecture	guarantees for the exercise of the rights and public freedoms in national legislation	Knowledge of the most important guarantees for the exercise of the rights and public freedoms in national legislation	Exam and participation in the subject matter
15	1	Lecture	the rights of the social strata, especially	Knowledge of the importance of the rights of the social strata, especially	Exam and participation in the subject matter

## 11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	1	Lecture	the term public freedoms	Knowledge and understanding of the term public freedoms	Exam and participation in the subject matter
2	1	Lecture	the historical development of the rights and freedoms	Knowledge and understanding of the historical development of the rights and freedoms	Exam and participation in the subject matter
3	1	Lecture	public freedoms kinds	Know the meaning of public freedoms kinds	Exam and participation in the subject matter
4	1	Lecture	democracy	Identify the meaning of democracy	Exam and participation in the subject matter
5	1	Lecture	types of democracy	Knowledge of the most important types of democracy and the comparison between the kinds of	Exam and participation in the subject matter
6	1	Lecture	advantages and characteristics and conditions of democracy	Identify the advantages and characteristics and conditions of democracy	Exam and participation in the subject matter
7	1	Lecture	of individual freedom and liberty coercive	Know the meaning of individual freedom and liberty coercive	Exam and participation in the subject matter
8	1	Lecture	the state and the rights of sovereignty, freedom	Knowledge about the state and the rights of sovereignty, freedom	Exam and participation in the subject matter
9	1	Lecture	reconcile the sovereignty and freedom	Knowledge of how to reconcile sovereignty and freedom	Exam and participation in the subject matter
10	1	Lecture	the historical dimension of democracy	Recognize the historical dimension of democracy	Exam and participation in the subject matter

11	1	Lecture	pressure groups	Identify the influence of pressure groups in society	Exam and participation in the subject matter
12	1	Lecture	pressure groups	Identify the influence of pressure groups in society	Exam and participation in the subject matter
13	1	Lecture	components of democracy	Identify the most important components of democracy	Exam and participation in the subject matter
14	1	Lecture	components of democracy	Identify the most important components of democracy	Exam and participation in the subject matter
15	1	Lecture	the minorities and their participation in democratic governance	Know the meaning of the minorities and their participation in democratic governance	Exam and participation in the subject matter

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Lectures relating to Article school
Special requirements (include for example workshops, periodicals, IT software, websites)	Internet web sites.
Community-based facilities (include for example, guest Lectures , internship , field studies)	N/A

13. Admissions	
Pre-requisites	Pass from last stage (year ).
Minimum number of students	No limit.
Maximum number of students	No limit.