TEMPLATE FOR COURSE SPECIFICATION

Second stage

PROGRAMME REVIEW	Laser Eng. 2nd year

COURSE SPECIFICATION: Mathematics(II)

This Course Specification provides the main features of the Theory of Mathematics for the students of 2nd year in Laser 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 programme specification as Laser Engineering.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and Optoelectronics Engineering Dept
3. Course title/code	Mathematics (II) / LOPE2201
4. Programme(s) to which it contributes	Laser and Optoelectronics programs
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1st &2nd Semester / Year
7. Number of hours tuition (total)	Three Hours / Week 3H X30W=90H/Year
8. Date of production/revision of this specification	15/7/2014
9. Aims of the Course	
The aims which can be achieved during teaching this course program are : 1- Giving knowledge about using the mathematical theories in their studies.	
2- Provides the mathematical methods which can be used in laser and optoelectronics theory and applications.	
3- Provide students with experiences that will assist them in solving the scientific problems.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding A1. Enabling student to get the knowledge and understanding of the theoretical principles of mathematics. A2. Proceeding the understanding to how solve the mathematical problems of the laser or optoelectronic concepts.
B. Subject-specific skills B1.Literatures B2. Tutorials B3. Conversation
Teaching and Learning Methods
1- Tutorials 2- Literatures.
Assessment methods
1- Examinations. 2- Quizzes. 3- Home works.
C. Thinking Skills C1. Ability of understanding mathematics concepts. C2. Certain discussion and conversation. C3. General information collection for different sources relating to the mathematical problems.
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.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Literature	Partial derivative of function of two or more independent variable	Lecture	Examinations, Quizzes.
2	=	=	The Chain rule - Directional derivative and Gradient vectors	=	=
3	=	=	Tangent planes and norma lines	=	=
4	=	=	Maxima; Minima; and saddle points for function with two variables	=	=
5	=	=	Vectors in the plane - Cartesian coordinate and vector in space	=	=
6	=	=	Dot product and Cross product of two vectors	=	=
7	=	=	Line and planes in space	=	=
8	=	=	Applications	=	=
9	=	=	Polar coordinates and graphing in polar coordinate	=	=
10	=	=	Arc length, Area, and surface area	=	=
11	=	=	Double Integral - Area, moment, and centers of mass	=	=
12	=	=	Double integral in polar form	=	=
13	=	=	Applications	=	=
14	=	=	Triple integral	=	=
15	=	=	Triple integral in cylindrical and spherical coordinate	=	=
16	=	=	Preview of differential equations - Separable first order equation	=	=
17	=	=	Homogeneous differentia equation - Linear first order differential equation	=	=
18	=	=	Second order homogeneous linear equation	=	=
19	=	=	Second order non homogeneous linear equation	=	=
20	=	=	Infinite Series.	=	=
21	=	=	Ratio test. - Root test of the series.	=	=

22	=	=	Power series. - Taylor series and Maclaurin Series.	=	=
23	=	=	Solving differential equation by power series	=	=
24	=	=	Special Function Gama and Beta function	=	=
25	=	=	Applications	=	=
26	=	=	Fourier series.	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Literatures in mathematics for engineering students.
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.
Minimum number of students	No limit.
Maximum number of students	No limit.

COURSE REVIEW: Laser Principles

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, Dept.
3. Course title/code	Laser Principles
4. Programme(s) to which it contributes	Laser and Optoelectronics Programs
5. Modes of Attendance offered	Full Time
6. Semester/Year	1st & 2nd semesters /Year
7. Number of hours tuition (total)	2hours (Theory)/Week+2 hours (Practical)/Week 2H*30Weeks=(60H+60H) / Year
8. Date of production/revision of this specification	26 / 10 /2014
9. Aims of the Course	
1-Demonstrating concepts and principles of the laser for students of the second Year for both of laser and optoelectronics Engineering programs	
2- Describing the physical properties of laser and specifications as well as addressing all kinds of lasers	
3- Preparing the students theoretically and practically in the field of competence of the planned public sector companies and private sector	

10· Learning Outcomes, Teaching ,Learning and Assessment Methods
A- Knowledge and Understanding A1. Understanding the laser theory A2. To get knowledge about the laser generating and application. A3. Acquiring information about laser radiation properties. A4. Design different types of laser systems A5. Classification of Laser types and operation concepts.
B. Subject-specific skills B1. B2. B3.
Teaching and Learning Methods
Assessment methods
C. Thinking Skills C1. C2. C3. C4.
Teaching and Learning Methods
Assessment methods

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. D2. D3. D4.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-4	8 - hours per week (4 hours theoretical +4 hour practic (al	- Spontaneous emission + stimulated emission + absorption + relationship Einstein + feedbacl	laser concepts	Motivate the student to develop his abilities in data analysis question and diagnose the problem and describe the solution	.Discussions - .Homework .Sudden exams Quarterly .examinations Projects and .seminars Laboratory
5-9	hours per week (2 hours theoretical +4 hour practical (	Properties of - the laser beam items + + Laser stimulation operations + feedback + examples of the types of lasers	laser system -	Motivate the student to develop his abilities in data analysis question and diagnose the problem and describe the solution	.Discussions - .Homework .Sudden exams Quarterly .examinations Projects and .seminars Laboratory
10-13	hours per week (2 hours theoretical +4 hour practical (	Laser modes +standing wave +longitudinal mode + transvers	Laser modes	Motivate the student to develop his abilities in data analysis question and diagnose the problem and describe the solution	.Discussions - .Homework .Sudden exams Quarterly .examinations Projects and .seminars Laboratory
14-17	hours per week (2 hours theoretical +4 hour practical (	Coefficient of - profit threshold + control the number of laser modes + shapes own modes of electromagnetic transverse	Patterns of - transverse	Motivate the student to develop his abilities in data analysis question and diagnose the problem and describe the solution	.Discussions - .Homework .Sudden exams Quarterly .examinations Projects and .seminars Laboratory
18-28	hours per week (2 hours theoretical +4	The - distribution of the electric field pattern Browser + Stability, laser	Laser stability	Motivate the student to develop his abilities in data analysis question and	.Discussions - .Homework .Sudden exams Quarterly .examinations Projects and

	hour practical (	systems of its own terms + cavities		diagnose the problem and describe the solution	.seminars Laboratory

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	”Orazio svelto “principle of laser
Special requirements (include for example workshops, periodicals, IT software, websites)	Lectures are available on the - http://uotechnology.edu.iq/dep-laserandoptoelec-eng/branch/branch2.htm
Community-based facilities (include for example, guest Lectures , internship , field studies)	Conduct experiments in laboratories Hold seminars Summer Training

13. Admissions	
Pre-requisites	The success of the second first and good in English language
Minimum number of students	
Maximum number of students	

COURSE REVIEW: **Electrical A.C. Circuits 2nd year**

This Course Specification provides the main features of the Theory of Fundamental of Electric A.C. circuit for the students of second year in Laser and 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 programmed specification as electromechanical systems Engineering.

1. Teaching Institution	University of Technology
2. University Department/Centre	Optoelectronics and laser Engineering
3. Course title/code	Electrical A.C. Circuit /LOPE 2203
4. Programmers(s) to which it contributes	Bsc. Optoelectronic and Laser engineering
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1st &2nd Semester / Year
7. Number of hours tuition (total)	Theoretical / Branch : 2hrs / w Practical / Branch : 2 hrs / w Total: 2*30=60H/Year+60h/Year
8. Date of production/revision of this specification	5/7/2014

9. Aims of the Course

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

1-Ilustration and discussion the fundamental of A.C. electric engineering and definition.
2- Concentration on series, parallel, series-parallel, Resonance, Locus diagram circuits.
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, Thevenin's theorem, Norton theorem .maximum power transfer.
6- discussion the fundamental of the Electric Filters.
7- Illustration and discussion the Power in AC Electrical Circuits.
8- Illustration and discussion the Magnetic Circuits.

10· Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1.Enabling student to get the knowledge and understanding the fundamental of A.C. circuit engineering for different circuits. A2. Enabling student to analysis different electrical circuits by analysis methods. A3. Enabling student to get the knowledge and understanding the network methods for different electrical circuits.
B. Subject-specific skills B1.Literatures B2. Tutorials 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 Electric Engineering problem analysis. C3. Technical information collection for Electric Engineering problem. C4. Research and collection data.
Teaching and Learning Methods
1-Literatures. 2- Tutorials. 2- 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 Electric Engineering systems.
D2.Analaysis of different circuits of Electric Engineering by analysis methods.
D3. Solution of different circuits of Electric Engineering systems by network theorems.
D4. Simulation of different system of Electric Engineering methods.
D5. Training on some software package programs related to the program.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-5	2 Theoretical + 2 Practical	Literature , Experimental,	Complex Representation of voltage and current, Complex impedance and admittance. Complex power, Series parallel Circuits, phasor diagram	Lecture & pdf Show.	Examinations ,Quizzes, and Reports.
6-18	=	=	Series resonance, Parallel resonance, Locus diagrams, Solution of AC. Circuit, maximum power transfer,	=	=
19-30	=	=	Magnetically coupled circuit, Two port Network, Electric Filter.	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1-Literatures in different kinds of Electric Engineering circuits 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.

COURSE REVIEW: Electronics(I)

COURSE SPECIFICATION

This Course Specification provides the main features of the Theory of electronics for the students of 2nd year in 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 course specification as optoelectronics Engineering.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and Optoelectronics Engineering Dept.
3. Course title/code	Electronics (I) / LOPE2204

4. Programm(s) to which it contributes	Laser & Optoelectronics Eng. Programs
5. Modes of Attendance offered	Full Hours
6. Semester/Year	1st &2nd Semester / Year
7. Number of hours tuition (total)	four Hours / Week (2hours theory ,2 hours application) 4H X30W=120H/Year
8. Date of production/revision of this specification	5/7/2014

9. Aims of the Course

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

- Introduction of advanced concepts in electronics devices and circuits for students of the Second year in both branches, such as diodes, transistors and complex circuits of specific function.
- Theoretical and experimental preparation of students to gain knowledge of electronics physics.
- Scientific applications and uses of electronic devices in current days.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Know the physics of semiconductor materials and operation, properties and applications of the diode.

A2. Enable the student to use mathematical equations of the diode and know the types of diodes with applications such as Zener diode etc.

A3. Enable the student to learn and understand the basic characteristics of Transistors and its operation and explain their structures, advantages and drawbacks.

A4. Enable the student to learn and understand the mathematical principles of using equation in order to find the value of transistor current and voltage.

A5. Diode and Transistor biasing methods and their function within circuit.

B. Subject-specific skills

Skills in electronic subject include studying and gain knowledge of semiconductor characteristics of diodes and transistors with their applications. In addition to how students can analyze the electronics circuits mathematically and schematically to find the output signal and what are the changes on it. Further to studying the h-parameters of the transistor.

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 (optical fiber communications) Laboratory experiments.
Assessment methods
- Classroom discussions and to identify the potential of the student to analyze problems. - Homework - Sudden exams. - Quarterly examinations. - Projects and seminars. - The student's performance in the laboratory. -First semester exam (20%). -Second semester exam (20%). -Home work and quizzes (10%). - Final exam (50%).
C. Thinking Skills C1. Description of diode I-V characteristics. C2. Description of rectifier and amplifier work. C3. Description of diode and transistor characteristics with different biasing methods. C4. Understanding the Transistor operation. C5. Describe the applications of modern electronic circuit and its importance in engineering topics.

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

1-8	4 hours per week (included lab time)	Knowledge and Understanding – Specific Skills –Thinking methods	- Introduction to Semiconductors – PN junction – Diode types	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.
9-15	4 hours per week (included lab time)	Knowledge and Understanding – Specific Skills – Thinking methods	Transistor – Transistor types – Transistor characteristic – load line – Transistor biasing	=	=
16-23	4 hours per week (included lab time)	Knowledge and Understanding – Specific Skills – Thinking methods	-Transistor - h-parameters – Amplifiers – Amplifier applications – FET – JFET biasing	=	=
24-30	٤ hours per week (included lab time)	Knowledge and Understanding – Specific Skills – Thinking methods	Digital Electronics	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	- Electronic Circuits - Theraja - Electronic Circuits - Millman

Special requirements (include for example workshops, periodicals, IT software, websites)	Lectures are available on the http://www.uotechnology.edu.iq/dep-laserandoptoelec-eng/branch2.htm
Community-based facilities (include for example, guest Lectures , internship , field studies)	- Conducting experiments in the laboratory.
13. Admissions	
Pre-requisites	Pass from last stage (year).
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 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 Engineering College
3. Course title/code	Geometrical Optics

4. Programme(s) to which it contributes	Laser & Optoelectronics Programme
5. Modes of Attendance offered	Full Time
6. Semester/Year	1st & 2nd semesters / year
7. Number of hours tuition (total)	2Hours / Week 2*30=60Hours / year
8. Date of production/revision of this specification	8/9/2014

9. Aims of the Course

1. The student should understand the theories of light and their applications in optical instruments.
2. This course is intended for engineers, scientists, and managers who are developing, specifying, or purchasing optical, electro-optical, and infrared systems. An introduction to geometrical optics for first semester and physical optic for second semester.
3. Identification of aberration occurring in optical systems.
4. Understanding the mechanism of interferometry instruments by students.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

B- Knowledge and Understanding

A1. Reflection and Refraction equations of mirror and lens.
A2. Matrix methods in paraxial optics.
A3. Aberration.
A4. Superposition of waves.
A5. Interference.

B. Subject-specific skills

B1. The student has to recognize nature of theories of light.
B2. To be able to interpret reflection of spherical waves on different surfaces.
B3. To recognize operation of different kinds of lenses and their application

Teaching and Learning Methods

1. Lectures
2. Practical
3. Simulation programs and problem solving

Assessment methods

1. Student understand to the lectures evaluation semester activities including classroom interaction and Quizzes.
2. Practical skills by practical evaluation
3. The ability of student to acquire evaluation oral exam
4. Student achievement evaluation final exam

C. Thinking Skills

To be able to interpret reflection of light at plane surfaces from both points of view of corpuscular and wave theories.

Teaching and Learning Methods

1. Lectures

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

D1. The student has to recognize nature of theories of light.

D2. To be able to interpret reflection of spherical waves on different surfaces.

D3. To recognize operation of different kinds of lenses and their application

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-2	5		**Wave Optics:** Wave nature of light **Geometrical Optics:** Basics of light and light propagation	Lectures, tutorials and practical	Examination, Reports, Quiz
3-4	5		**WO:** Wave nature of light **GPO:** Refraction at plane Surfaces, lens, mirrors and Prism	Lectures, tutorials and practical	Examination, Reports, Quiz
5-7	5		**WO:** Superposition of waves **GPO:** lens, mirrors and Prism Refraction at Spherical Surfaces	Lectures, tutorials and practical	Examination, Reports, Quiz
8-10	5		**WO:** Interference **GPO:** Refraction at Spherical Surfaces	Lectures, tutorials and practical	Examination, Reports, Quiz
11-13	5		**WO:** Interference **GPO:** Thin Lenses	Lectures, tutorials and practical	Examination, Reports, Quiz
14-16	5		Aberration	Lectures, tutorials and practical	Examination, Reports, Quiz
17-20	5		Superposition of waves.	Lectures, tutorials and practical	Examination, Reports, Quiz
21-24	5		Interference.	Lectures, tutorials and practical	Examination, Reports, Quiz
25-28	5		Interferometry instrument	Lectures, tutorials and practical	Examination, Reports, Quiz
29-30	٥		Geometrical Practices	Lectures, tutorials and practical	Examination, Reports, Quiz

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Introduction to Optics, *Frank L. Pedrotti, and Leno S. Pedrotti, 2nd Ed., ISBN(0-13-501545-6)*
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	
Minimum number of students	
Maximum number of students	

COURSE REVIEW: Visual Basic Programming

COURSE SPECIFICATION

This course acquaints students of 2nd Year with the design, development, testing and documentation of Visual BASIC programs. Visual BASIC's object oriented event driven (OOED) interface is used to program sequential, conditional, and repetition structures. Multiple objects and control arrays are used to gather input. Sequential data files are created and accessed in Visual BASIC programs.

1. Teaching Institution	University of Technology
2. University Department/Centre	Laser and Optoelectronics Engineering Dept.
3. Course title/code	Visual Basic Programming /LOPE2206
4. Programme(s) to which it contributes	General
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1st &2nd Semesters / Year
7. Number of hours tuition (total)	1 Hour / Week (Theory) 2 Hours / Week (Practical) 1H X30W=30H/Year(Theory) +60H (practical)
8. Date of production/revision of this specification	6/7/2014

9. Aims of the Course

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

1- Giving knowledge about the computer hardware & software

2- Understanding of programming in Visual Basic

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Create a program using the VB development environment

A2. Use sequential looping & control logic in programs

A3. Solving problems in different applications

B. Subject-specific skills

B1.Literatures

B2. Tutorials

B3. 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. 1- Final Examination

D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Solution of different examples . D2. Training to write flow charts for different applications. D3. Training to build a projects in real world for examples supermarket . D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching	Assessment
9-12	=	=	**Components:** Menu Bar, Tool Bar, Project Explorer Window, Form Layout Window, properties Window, Toolbox	=	=
13-18	15	=	**Working with Forms: Properties, Events, Methods Working with Basic Controls:** Label, Command Button, Text Box, Option Button, Frame, Check Box, List Box, Combo Box, Image, Scroll, Picture, Timer, Drive List Box, Dir List Box, File List Box and Shape Controls.	=	=
19-25	18	=	**Basic Programming Fundamentals:** Variables, Data types, Constant, Conversion Function. Scope of Variable: Public, Private Static. Operators: Logical, Arithmetic, Concatenation, Comparison. Decision Structure: If.. Then, If..Then..Else, Select Case.. End Case. Loop Structure: Do..While, For.. Next,	=	=
26-30	١٢	=	**One & Two Dimensional Array**	=	=

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	- Computer Science, Dr. Balagurusamy E, 2005 -Visual Basic 6 , Made Easy, D.Liew Voon Kiong, 2006 -Visual Basic , Dr. Abdul Mutalib, 2004

13. Admissions

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

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

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: **Electromagnetic Fields for second year**

COURSE SPECIFICATION

This Course Specification provides the main features of the Electromagnetic Fields for the students of 2nd year. 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 Engineering Dept.**
3. Course title/code	**Electromagnetic fields / LOPE 2207**
4. Programme(s) to which it contributes	**Laser & Optoelectronics Engineering Programs**
5. Modes of Attendance offered	**Actual classroom learning- interactive Full Hours**
6. Semester/Year	**1st &2nd Semester / 2014**
7. Number of hours tuition (total)	**2 Hours / Week Total =60H**

8. Date of production/revision of this specification	**8/05/2014**
9. Aims of the Course	
The overall goals of the course are to develop student proficiency in:	
I. Gaining factual knowledge (terminology, classifications, and methods) in the area of Electromagnetic fields	
2. Learning fundamental principles, generalization or theories concerning the basic area of Electromagnetic fields.	
3. Learning to apply a background in physics and math and to improve engineering problem solving.	
4. Developing skill in communicating engineering solutions both orally and in writing	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A1.Enabling student to get the knowledge and understanding of the theoretical principles of Electromagnetic Fields. A2. Understanding of Ideological philosophy of Electromagnetic Fields and their applications. A3. Understanding the knowledge of Electromagnetic Fields for different methods of solution in their applications. A4. At the end of the year the student should be able demonstrate knowledge and understanding of the concepts, theory and application of Electromagnetic Fields
B1.An ability to analyze the Electromagnetic Fields problems. B2. An ability to identify, formulates, and solves Electromagnetic Fields problems. B3. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
Teaching and Learning Methods
- Include theoretical lectures and the Practical experiments. - The implementation of reports by student and monitoring by supervisors
Assessment methods
-General or Central Examinations in scientific Dept. -Quizzes. -Home works. -Tutorials and discussions
C. Thinking Skills C1. Reports. C2.Problem analysis depending on theoretical in formations. C3. Decisions making for solve problems. C4. Working together as groups.
Teaching and Learning Methods
-Literatures. -Using the blackboard as basic way for learning. -Using Al Data- Show for presentation of material.
Assessment methods
-First semester exam (15%). -Second semester exam (15%). -Home work and quizzes (10%). -Final exam (60%).

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. The ability to throw and apply for different subjects . D 3 - To doing the work of different reports - summaries D2. Examinations.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
Week 1	٢	Literature and Experimental	Vector notation Vector algebra Coordinate system	Lecture	Examinations ,Quizzes, and Reports Training.
Week 2	٢	=	Differential value Vector field	=	=
Week 3	٢	=	Transformation coulombs law	=	=
Week 4	٢	=	Electric field Distributions	=	=
Week 5	٢	=	Standard charge configuration	=	=
Week 6	٢	=	Net charge in a region Electric flux	=	=
Week 7	٢	=	Flux density gausss law	=	=
Week 8	٢	=	Relation between flux and density electric flux	=	=
Week 9	٢	=	divergence	=	=
Week 10	٢	=	Divergence in Cartesian Coordinates	=	=
Week 11	٢	=	Divergence of D	=	=
Week 12	٢	=	The del operator	=	=
Week 13	٢	=	The del operator	=	=
Week 14	٢	=	The divergence theory	=	=
Week 15	٢	=	The divergence theory	=	=
Week 16	٢	=	Work done in moving point charge	=	=
Week 17	٢	=	Electric potential	=	=
Week 18	٢	=	Potential of a charge Distribution Gradient	=	=
Week19	٢	=	Relationship between E and V	=	=
Week 20	٢	=	Charge in motion Convection current density	=	=
Week 21	٢	=	Conductivity Current I, resistance	=	=
Week 22	٢	=	Polarization of p and relation permittivity	=	=
Week 23	٢	=	Fixed-voltage D and E	=	=
Week 24	٢	=	Boundary conductivity	=	=
Week 25	٢	=	Conductor , dielectrics, Capacitance	=	=
Week 26	٢	=	Poissons" equation and Laplace	=	=

Week 27	٢	=	The steady magnetic field	=	=
Week28	٢	=	The steady magnetic field	=	=
Week 29	٢	=	Magnetic Forces, Material and Inductance	=	=
Week 30	٢	=	Magnetic Forces, Material and Inductance	=	=

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Electromagnetic Fields /Sixth Edition by William Hayt. 2-Elements of electromagnetic by SADIKU
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 past year
Minimum number of students	No limits
Maximum number of students	No limits

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TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: MEASUREMENTS AND EQUIPMENTS

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	Laser and Optoelectronics Engineering
2. University Department/Centre	Laser & Optoelectronics Engineering / University of Technology
3. Course title/code	Measurements LOPE2208
4. Programme(s) to which it contributes	General
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1st &2nd Semester / Year
7. Number of hours tuition (total)	Two Hours / Week (Theory) 2H X30W=60H/Year
8. Date of production/revision of this specification	24/6/2014
9. Aims of the Course	
- See reference systems that describe units of measurement.	
- Knowledge of various types of electrical units.	
- Know the different types of errors in the measurement process.	
- Make statistical analysis of the errors in the measurement process.	
- Knowledge of the elements of electronic measuring devices.	
- How to choose and care using measuring devices.	

- See reference systems that describe units of measurement.
- Knowledge of various types of electrical units.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Knowledge of the installation and operation of D'arsnoval measurable with moving coil.

A2. Enable the student to the optimal use of mathematical equations to design a device to measure a moving coil and how to use it for measuring electrical quantities (voltage - current - resistance).

A3. Enable the student to know the basic principles of bridges used in DC circuits in addition to the bridges used in AC circuits and their applications in measurement and control.

A4. Enable the student to know and understand the basic principles of the work of electronic measuring devices.

B. Subject-specific skills

B1. Use mathematical equations to work statistical analysis of the mistakes that you get during the measurement.

B2. Use mathematical equations to make the conceptual design of the devices to measure voltage and current.

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 the best solution through textbooks and lectures, in addition to the practical experiences laboratory.

Assessment methods

- Classroom discussions and to identify the potential of the student to analyze issues.
- Homework.
- Sudden exams.
- Quarterly examinations.
- Performance in the laboratory.

C. Thinking Skills

C1. Describe the elements of different measurement devices.

C2. Description and study of the factors causing the occurrence of errors during the measurement process.

C3. Description and study the types of bridges and its applications in DC and AC circuits.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-4	2Hrs/week	litruters	1. Introduction. 2. Classification of Measuring Instruments. 3. Essential Requirements of an Instrument. 4. Deflecting System. 5. Controlling System. 6. Damping System.	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.
5-8	2Hrs/week	=	1. Permanent Magnet Moving Coil Instruments (PMMC). 2. Moving Iron Instruments.	=	=
9-12	2Hrs/week	=	1. Basic D.C. Ammeter. 2. Multirange Ammeter. 3. The Aryton Shunt or Universal Shunt. 4. Requirements of a Shunt. 5. Basic D.C. Voltmeter.	=	=
17-21	2Hrs/week	=	1. Introduction to Resistance Measurements. 2. Classification of Resistances. 3. Voltmeter-Ammeter Method. 4. Ohmmeter Method. 5. Wheatstone Bridge Method. 6. Sensitivity of Wheatstone Bridge.	=	=
22-25	2Hrs/week	=	1. Introduction to A.C. Bridge. 2. Types of Bridges. 3. A.C. Bridges. 4. Maxwell's Bridge.	=	=
26-30	2Hrs/week	=	1. Hay's Bridge. 2. Wien's Bridge. 3. Heaviside Mutual Inductance Bridge. 4. Measurement of Power.	=	=

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Uday A.Bakshi. "Electrical Measurements", first edition 2008.

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 first year
Minimum number of students	No limit.
Maximum number of students	No limit.

COURSE SPECIFICATION: Freedom and Democracy 2nd 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	Freedom and Democracy / LOPE2109
4. Programme(s) to which it contributes	General
5. Modes of Attendance offered	Complete Hours
6. Semester/Year	1st&2ndSemester / 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.