Course Specifications

Course Title:	General Physics (2)
Course Code:	42031219
Program:	BSc in Physics
Department:	Department of Physics
College:	Faculty of Science
Institution:	AlBaha University

Table of Contents

A. Course Identification

1. Credit hours:	**3 credit hours (2 T + 1 P)**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Third Level / Second Year**
4. Pre-requisites for this course(if any)**:**	**General Physics (1) - (31031104)**
5. Co-requisites for this course(if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	40%
2	**Blended**	15	20%
3	**E-learning**	-	-
4	**Correspondence**	-	-
5	**Other (Laboratory)**	30	40%

7. Actual Learning Hours(based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	30
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	**75**
Other Learning Hours*		
1	**Study**	15
2	**Assignments**	15
3	**Library**	15
4	**Projects/Research Essays/Theses**	-
5	**Others**(Lab reports and exam preparation time)	20
	Total	**65**

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is an introduction to electricity and magnetism at a second-year university level.

2. Course MainObjectives:

On completing this course, the students will be able to:

- Recognize the fundamental concepts in electricity, magnetism and elementary circuits theory
- Gain practical experience in the fundamental concepts of electricity and magnetism

3. Course Learning Outcomes

CLOs		AlignedPLOs
1	**Knowledge:**	
1.1	Recall the fundamental principles of the electric field,electric potential and electric flux.	K1
1.2	Describe the magnetic field, magnetic forces (Lorentz and Laplace forces)	K1
1.3	Recognize the energy stored in a charged capacitor	K1
2	**Skills :**	
2.1	Combine resistances and capacitors in series and parallel	S1
2.2	Apply appropriate mathematical and physical conceptsto solve problems in the field of electricity and magnetism	S2
2.3	Conduct experiments in the fields of electricity and magnetism	S3
2.4	Analyze and interpret dataobtained from simple magnetic systems and electric circuits usingprinciples of physics.	S4
3	**Competence:**	
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in general physics (2)	C1
3.2	Manage a certain topic in the field of general physics(2) with his classmates.	C2

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
1	**Electric Fields:** Coulomb's law, electric field, electric field of a discrete charge distribution, electric field lines and Electric flux.	6
2	**Electric Potential:** Electric potential, potential energy due to point charges, potential due to discrete charge distributions	6
3	**Capacitance and Dielectrics :** Capacitance, combinations of capacitors, energy stored in a charged capacitor, capacitors with dielectrics.	10
4	**Current and Resistance:** Electric current, resistances, relation between resistance and temperature.	6
5	**Direct Current Circuits:** Electromotive Force, resistors in Series and Parallel, Kirchhoff's Rules, electrical meters	7
6	**Magnetic Fields:** Magnetic field, magnetic forces, Lorentz and Laplace forces Sources of Magnetic Field: Biot-Savart law and its applications	10

No	List of Topics	Contact Hours
	Total (Lectures)	45
Practical part		
1	Power sources and electric meters	2
2	Magnetic field of the earth	2
3	Metric bridge and Wheatstone bridge	2
4	The force of two magnets	2
5	Resistance of a wire depending on its length and cross section.	2
6	Voltage and Current dividers	2
7	Tangent Galvanometer	2
8	Charge and discharge of capacitors	2
9	Combinations of capacitors.	2
10	Ohm's Law and combinations of resistors	4
11	Capacitance of parallel plate capacitors.	2
12	Resistance of a wire depending on its temperature	2
13	Kirchhoff's laws	4
	Total (practical)	30
	Total (lecturers + practical) 45 + 30 = 75	75

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Recall the fundamental principles of the electric field, electric potential and electric flux.	Lectures, blended learning, open discussion and brainstorming	Quizzes, homeworkperiodical Exams, midterm and final exam
1.2	Describe the magnetic field, magnetic forces (Lorentz and Laplace forces)	Lectures, blended learning, open discussion and brainstorming	Quizzes, homework periodical exams, midterm and final exam.
1.3	Recognize the energy stored in a charged capacitor	Lectures, blended learning, open discussion and brainstorming	Quizzes, homework periodical exams, midterm and final exam.
2.0	**Skills**		
2.1	Combine resistances and capacitances in series and parallel	Lectures, blended learning, open discussion and brainstorming, Problem based learningand lab working.	Quizzes, homework periodical Exams, midterm and final exam.Lab report, final practical exam
2.2	Apply appropriate mathematical and physical concepts to solve problems in the field of electricity and magnetism	Lectures, blended learning, open discussion and brainstorming, problem based learning,	Quizzes, homework periodical exams, midterm
2.3	Conduct experiments in the fields of electricity and magnetism	Lectures, blended learning, open discussion and brainstorming and lab working.	Quizzes, homework periodical Exams, midterm and final examand final exam. Lab report, final practical exam
2.4	Analyze and interpret data obtained from simple magnetic systems and electric circuits using principles of physics.	Lectures, cooperative learning,brainstorming, problem based learningand lab working	Quizzes, homework periodical Exams, midterm and final examLab report, final practical exam
3.0	**Competence**		
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in general physics (2)	Group working, cooperative learning, search activity	Worksheet, presentations
3.2	Manage a certain topic in the field of general physics(2) with his classmates,	Group working, cooperative learning, search activity	Worksheet, presentations

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical exam 1	5	5 %
2	Mid- Term exam	9	10 %
3	Periodical exam 2	13	5 %
4	Home works	During the term	10 %
5	Practical (lab reports)	During the term	10 %
6	Final practical	16	10 %
7	Theoretical Exam	17	50%

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1. Student Academic Counseling
   - The arrangements for academic counseling and advices for the students, including scheduling of faculty office hours, advices on program planning, subjects selection and career planning are announced and published to the students in the physics department and the faculty website.
   - The students are divided into groups, whereas each student has academic counseling.
2. Student Appeals
   - The regulations for student appeals on academic matters are announced and published in the physics department and the faculty website.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	-Physics for Scientists and Engineers, Raymond A. Serway, Thomson Brooks, 2004; 6th Edition.
Essential References Materials	- Halliday, David, Robert Resnick, Jearl Walker. Fundamentals of Physics, 7th ed. Hoboken, N.J.: John Wiley and Sons. 2005
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- One classroom containing computer access, white board and laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	- One AV. - One data show. - One Smart Board.

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Effectiveness of teaching. - The course content. - Satisfaction with the course - Quality of Learning Resources	Students	Questionnaire
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Faculty (staff member)	Observation of lectures, analysis of assessment data
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Program Leader	Observation of lectures, interviews with involved faculty member, analysis of assessment data
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Peer Reviewer	interviews with involved faculty member and course participants, analysis of assessment data,

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum Committee
Reference No.	
Date	

Course Specifications

Course Title:	General Chemistry for Physics
Course Code:	42021218
Program:	Bachelor of Science in Physics
Department:	Chemistry
College:	Faculty of Science
Institution:	Albaha University

Table of Contents

A. Course Identification

1. Credit hours:	**4 credit hours (3 T + 1 P)**
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Third Level / Second Year**
4. Pre-requisites for this course (if any)**:**	**General Chemistry 1 (42020102)**
5. Co-requisites for this course (if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	75	100%
2	**Blended**		
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	75
Other Learning Hours*		
1	**Study**	45
2	**Assignments**	15
3	**Library**	15
4	**Projects/Research Essays/Theses**	
5	**Others**(specify)	
	Total	75

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is the second course in the General Chemistry sequence that when combined with the first semester provides a thorough foundation of chemical principles. This course is appropriate both as an introductory course for chemistry and other science majors as well as an introductory and terminal course for non-science majors who desire a basic foundation in

chemical principles. The topics may include: Chemical equilinirium, Kinetics, chemical thermodynamics, Electrochemistry, nuclear chemistry and radioactivity.

2. Course MainObjective

This course aimed at providing the students with fundamental understanding of chemistry concepts and principles.

The primary learning outcomes are: learning the fundamental nature of chemicals and chemical systems, and becoming familiar with the language and symbols of chemistry.

3. Course Learning Outcomes

	CLOs	AlignedPLOs
1	**Knowledge:**	
1.1	Define the basic concepts and basics of Equilibria, Kinetics, thermodynamics, electrochemistry and nuclear chemistry.	1-1
1.2	Recall the rules and theories of equilibria, kinetics, thermodynamics, electrochemistry and nuclear chemistry and use them in calculations.	1-2
1.3	Explain and interpret acid base equilibrium, rate laws, electrochemistry principles and radioactive decay and rates of decay.	1-3
1...		
2	**Skills :**	
2.1	Use laws in calculations and principle to interpret the kinetic behavior of different chemical reactions, the thermodynamics of reactions, reactions electrochemistry and energy of nuclear reactions..	2-1
2.2	Conduct laboratory experiments by using different techniques and effective communication	2-4
2...		
3	**Competence:**	
3.1	Cooperate with his colleagues in teamwork and actively collaborate within one team in solving chemical problems.	3-1
3.2	Bear self-learning responsibility.	3-2
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Chemical Equilibria: Dynamic equilibrium, equilibrium constant, Le Chalelier's Principle	3
2	Acid-Base Equilibria: Acid and base ionization constants, calculating concentrations and pH, hydrolysis	3
3	Kinetics: Reaction rates, Rate law	3
4	Kinetics: Integrated Rate law, Half-life	3
5	Kinetics: Collision Theory, Reaction mechanisms, catalysts	3
6	Thermodynamics: First Law, Second Law	3
7	Thermodynamics; Free energy and spontaneity, free energy and equilibrium constants	3
8	Electrochemistry: Half-reactions, balancing redox reactions, voltaic cells	6

9	Electrochemistry: Electromotive force, Standard Electrode Potentials	3
10	Electrochemistry: Free energy and equilibrium constants form emfs	3
11	Electrochemistry: Nernst Equation, Electrolytic cells and batteries	3
12	Nuclear chemistry: Radioactivity, nuclear stability, types of radioactive decay,Particle accelerators, detection methods, rates of decay, energy of nuclear reactions	6
13	Revision	3
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Define the basic concepts and basics of Equilibria, Kinetics, thermodynamics, electrochemistry and nuclear chemistry.	Lectures PowerPoint presentation Debate and discussion. Assignments (Co-operative &Individual assignments).	quizzes assigned textbook problems; Responses to in-class questions asked by instructor. students group work Mid-term and Final exam
1.2	Recall the rules and theories of equilibria, kinetics, thermodynamics, electrochemistry and nuclear chemistry and use them in calculations.		
1.3	Explain and interpret acid base equilibrium, rate laws, electrochemistry principles and radioactive decay and rates of decay.		
2.0	**Skills**		
2.1	Use laws in calculations and principle to interpret the kinetic behavior of different chemical reactions, the thermodynamics of reactions, reactions electrochemistry and energy of nuclear reactions..	* Lectures * Discussion questions during class * Assignments	* Short quizzes * Mid-term exam * Final exam *Individual and group assignments
2.2	Conduct laboratory experiments by using different techniques and effective communication	• Lectures • Debate and discussion. • Assignments (Co-operative &Individual assignments). • Working in small groups Individual & group research	• Continuous evaluation through interaction during work in the laboratory. • Presentation of summaries and reports during experimentation. • Evaluation of assignments. • Lab reports. • Midterm exam. Final practical exam
2.3			
3.0	**Competence**		
3.1	Cooperate with his colleagues in teamwork and actively collaborate	*The classroom strategy of student-	*Participation and interaction with

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
	within one team in solving chemical problems.	teacher and student-student discussions and groupWork. *problem-solving encourages the development of these skills.	peers during class. *Monitoring individual behavior during the class and group work.
3.2	Bear self-learning responsibility.	• Working in small groups Individual & group assignments	• Evaluation of individual & group works. Observation Card
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5%
2	Midterm Written Theoretical Exam	9	10%
3	Quiz2	13	5%
4	Assignments and Activities	During Semester	10%
5	Final Practical Exam	16	10%
6	Lab Reports	During semester	10%
7	Final Written Theoretical Exam	17	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

. (include amount of time teaching staff are expected to be available each week)

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1.General Chemistry Enhanced by Ebbing and Gammon 9th Edition Houghton Mifflin 2. Foundations of Chemistry: Applying POGIL Principles. D. Hanson; Pacific Crest: Lisle IL, 2007. 3. Chemistry: A Guided Inquiry. R. Moog and J. Farrell; John Wiley & Sons: New York, 2008..
Essential References Materials	General Chemistry: Principles and Structure; by: James E. Brady; 5th edition, Wiley (2000). ISBN-13: 978-0471528746

Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classrooms equipped with smart board and display screen for (40) students • Practical labs provided with glassware, chemicals and different equipment for (20-25) students.
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	• Glass wares. • A sensitive balance and melting point equipment and other lab instruments. • Chemicals.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching strategies.	Students	Direct Students feedback/ survey
Course contents and Learning resources	Students, Faculty and external reviewer.	Direct
Verifying Standards of Student Achievement	Independent member teaching staff	Direct, check marking and assessment methods. Analyzing results of students.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

Course Specifications

Course Title:	Mathematical Physics (1)
Course Code:	42031207
Program:	BSc in Physics
Department:	Department of Physics
College:	Faculty of Science
Institution:	AlBaha University

Table of Contents

A. Course Identification

1. Credit hours:	**3credit hours**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Third Level / Second Year**
4. Pre-requisites for this course(if any)**:**	**None**
5. Co-requisites for this course(if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	36	80%
2	**Blended**	9	20%
3	**E-learning**	-	-
4	**Correspondence**	-	-
5	**Other (course project)**	-	-

7. Actual Learning Hours(based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	-
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	**45**
Other Learning Hours*		
1	**Study**	10
2	**Assignments**	10
3	**Library**	10
4	**Projects/Research Essays/Theses**	10
5	**Others**(Lab reports and exam preparation time)	-
	Total	**40**

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Is to offer mathematical foundation to physics students.

2. Course MainObjective

On completing this course , the student will be able to :
Know the basic concepts of complex numbers, linear and non linear algebraic equations. Basic algebra of determinants, matrices and their properties, in addition to the different properties of vectors.

3. Course Learning Outcomes

	CLOs	AlignedPLOs
1	**Knowledge:**	
1.1	Define the fundamental principles of Complex Number	K1
1.2	Describe and recognize special types of matrices.	K2
1.3	Outline the basic properties of vectors	K3
2	**Skills :**	
2.1	Explain the complex logarithms, trigonometric, and hyperbolic functions	S1
2.2	Reconstruct the function and use the exponential form of a complex number together with de Moivre's theorem to evaluate some physical problems	S1
2.3	Solve linear and nonlinear algebraic equations as application of electronic circuits.	S1,S4
2.4	Evaluate the basic algebra of determinants and use them to solve system of equation.Calculate Eigenvalues, eigenvectors of matrices	S4
3	**Competence:**	
3.1	Dealing with others and collaborative work	C1
3.2	Respect the opinion of others and accepts the criticism.	C2

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
1	**Complex numbers (**Complex numbers formulas, de Moivre's theorem, Euler's formula, Complex logarithms, trigonometric and hyperbolic functions).	12
2	**Linear and nonlinear algebraicequations.**	3
3	**Matrices and their properties.**	12
4	**Determinants and their properties in addition to their applications.**	6
5	**Vector analysis (**Vector products, gradient, divergence, curl and Laplace operators. Gauss, Stokes and Green theorems. Curvilinear coordinates).	12
	Total	45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Define the fundamental principles of Complex Number	Lectures, Open discussion, Search activities, brain storming	Quizzes, Short exams, final exam
1.2	Describe and recognize special types of matrices.	Lectures, Open discussion, Search activities	Quizzes, Short exams, final exam

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.3	Outline the basic properties of vectors	Lectures, Open discussion lab working, Group working	Quizzes, Short exams, final exam
2.0	**Skills**		
2.1	Explain the complex logarithms, trigonometric, and hyperbolic functions	Lectures, Open discussion, Search activities, brain storming	Quizzes, Short exams, final exam
2.2	Reconstruct the function and use the exponential form of a complex number together with de Moivre's theorem to evaluate some physical problems	Lectures, Open discussion, Search activities	Quizzes, Short exams, final exam,
2.3	Solve linear and nonlinear algebraic equations as application of electronic circuits.	Lectures, Open discussion, Search activities, brain storming	Exams, short quizzes
2.4	• Evaluate the basic algebra of determinants and use them to solve system of equation. • Calculate Eigenvalues, eigenvectors of matrices	Lectures, Brain storming, problem solving.	Exams, short quizzes
3.0	**Competence**		
3.1	Dealing with others and collaborative work	Working group, open discussing,	Worksheet, presentations
3.2	Respect the opinion of others and accepts the criticism.	Working group, open discussing,	Worksheet, presentations

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical exam 1	5	10 %
2	Mid- Term exam	9	20 %
3	Periodical exam 2	13	10 %
4	Home works	During the term	10 %
5	Final theoretical Exam.	17	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1. Student Academic Counseling

- The arrangements for academic counseling and advices for the students, including scheduling of faculty office hours, advices on program planning, subjects selection and career planning are announced and published to the students in the physics department and the faculty website.
- The students are divided into groups, whereas each student has academic counseling.

2. Student Appeals
   - The regulations for student appeals on academic matters are announced and published in the physics department and the faculty website.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• "Mathematical Physics, Applied Mathematics for Scientists and Engineers", Bruce R. Kusse and Erik A. Westwig, 2nd, 2006, by WILEY-VCH Verlag GmbH & Co. KGaA. • "Higher Mathematics for Physics and Engineering",HiroyukiShimaTsuneyoshi Nakayama, 2010, by Springer-Verlag Berlin Heidelberg.
Essential References Materials	Hans J. Weber and George B. Arfken, Essential Mathematical Methods for Physicists, Academic Press, (2003).
Electronic Materials	- http://en.wikipedia.org/wiki/Mathematical_physics - http://www.physics.miami.edu/~nearing/mathmethods/
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- One classroom containing computer access, and white board.
Technology Resources (AV, data show, Smart Board, software, etc.)	- One AV. - One data show. - One Smart Board.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Effectiveness of teaching. - The course content. - Satisfaction with the course - Quality of Learning Resources	Students	Questionnaire
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Faculty (staff member)	Observation of lectures, analysis of assessment data,
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Program Leader	Observation of lectures, interviews with involved faculty, analysis of assessment data,

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Peer Reviewer	interviews with involved faculty and course participants, analysis of assessment data,

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Qualityoflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,PeerReviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum Committee
Reference No.	
Date	

Course Specifications

Course Title:	Calculus (2)
Course Code:	42041229
Program:	BSc in Physics
Department:	Department of Physics
College:	Faculty of Science
Institution:	AlBaha University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Third Level / Second Year
4. Pre-requisites for this course (if any)**:Calculus (1) – (42041103)**
5. Co-requisites for this course (if any)**:Calculus (3)-differential equations**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	45	100%
2	**Blended**	0	0%
3	**E-learning**	0	0%
4	**Correspondence**	0	0%
5	**Other**	0	0%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	45
Other Learning Hours*		
1	**Study**	60
2	**Assignments**	0
3	**Library**	30
4	**Projects/Research Essays/Theses**	0
5	**Others**(specify)	30
	Total	120

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description:

Calculus (2)is a branch of mathematics which the student learn the basic concepts methods of integration, theorems and results in Integral calculus(Integral of functions, logarithm function, exponential function, inverse trigonometric function, hyperbolic functions and their inverses, integration methods, improper integrals,, Some applications of integration). Differential & Integral 2 is serves a variety of problems that arise in physics, engineering, chemistry.

Students are introduced to

Indefinite Integral and definite integrals: (Trigonometric, Exponential and Logarithmic Functions and other functions), Basic of Integration Forms.

Integration methods:Some integration by substitution - use Some trigonometric integrals, Integrals involving radicals.

Integration by parts: - Integration by parts - Reduction Formulas -Partial fraction – integrals by special substitution.

The Definite Integral: -Riemann Sum, The Geometric Meaning of Riemann Sum, The Fundamental Theorem of Calculus, Mean Value Theorem for Integral. Properties of Definite Integral

Improper integral: methods of integration, theorems and results in improper Integral.

Some applications of integration: Calculate the area between the curves - sizes rotation - the length of arc –the area of surfaces.

2. Course MainObjective:

- Students learn the basic concepts methods, theorems and results in Integral calculus(Integral of functions, logarithm function, exponential function, inverse trigonometric function, hyperbolic functions and their inverses, integration methods, improper integrals,, Some applications of integrationproblems.
- To apply the different methodof integration for calculate the definite, indinite and improper integral for some functions.
- Identify the maximum and minimum points.
- To understand the basic difference between definite and indefinite integrals.
- Student acquires cognitive skills through thinking and problem solving.
- Student becomes responsible for their own learning through solutions of assignments and time management

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Know the principles of calculus in Integral calculus of transcendental function	K1
1.2	Understanding some the applications of integral	K2
1.3	Learning the student to face the problems related to mathematics in the basic sciences, engineering sciences and computer sciences	K3
2	**Skills :**	
2.1	Ability of the student to search and learn scientific terms	S1
2.2	Planning for the application by using the mathematical approach	S2
2.3	The ability to collect and arrange information and display to solve problems The ability to comparison and analysis of mathematical results.	S3
2.4	Using the means of illustrations, whether with computer or models.	S4
3	**Competence:**	
3.1	Communicates effectively in oral and written form in educational situations related to the subjects of the course	C1
3.2	Take responsibility for own learning and professional development	C2
3.3	Work effectively in groups and exercise leadership when appropriate.	C3

C. Course Content

No	List of Topics	Contact Hours
1	**Indefinite Integral and definite integrals:** Basic of Integration Forms ((Trigonometric, Exponential and Logarithmic Functions and other functions)),	6
2	Integration methods: Some integration by substitution - use Some trigonometric integrals, Integrals involving radicals. .	6
3	Integration by parts - Integration by parts - Reduction Formulas -Partial fraction – integrals by special substitution. .	9
4	The Definite Integral: - Riemann Sum, The Geometric Meaning of Riemann Sum, The Fundamental Theorem of Calculus, Mean Value Theorem for Integral. Properties of Definite Integral	9
5	improper integrals: methods of integration, theorems and results in improper Integral	6
6	Some applications of integration: Calculate the area between the curves - sizes rotation - the length of arc –the area of surfaces.	9
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Know the principles of calculus in Integral calculus of transcendental function	- The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved collectively or individually. - Provide a short research collective or individual. - Research	- Discussion in lectures. - Follow-up in the practical lessons and correct test. - Homework assignments. - Solve Problems - Achievement tests. (Periodic tests – Midterm tests - final exams). s.
1.2	Understanding some the applications of integral	- The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved collectively or individually. - Provide a short research collective or individual. - Research	- Discussion in lectures. - Follow-up in the practical lessons and correct test. - Homework assignments. - Solve Problems - Achievement tests. (Periodic tests – Midterm tests - final exams). s.
1.3	Learning the student to face the problems related to mathematics in the basic sciences, engineering sciences and computer sciences	- The main lectures - Scientific discussion. - Open discussion. - Intensifying the issues to be resolved collectively or individually. - Provide a short research collective or individual. - Research	Midterm & final exam Quiz1 & Quiz2
2.0	**Skills**		
2.1	Ability of the student to search and learn scientific terms	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
2.2	Planning for the application by using the mathematical approach	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).
2.3	The ability to collect and arrange information and display to solve problems The ability to comparison and analysis of mathematical results	Presentation (traditional lecture). Electronic media. Mutual discussion and sharing the students in making cognitive skills. Educate students on selected models in the presentation	Continuous evaluation through scientific meetings and other activities. Continuous discussion and questions Regular testing Discuss the duties Self-evaluation by the student (questionnaires).
3.0	**Competence**		
3.1	Communicates effectively in oral and written form in educational situations related to the subjects of the course	Team work-Assignments-student presentation-reporting-Scientific media Co-operative & Individual assignments. Cooperative Learning.	Evaluation of individual & group works. Observation
3.2	Take responsibility for own learning and professional development	Working in small groups Group research	Evaluation of individual & group works.
3.3	Work effectively in groups and exercise leadership when appropriate.	Team work. small groups and the distribution of roles.PowerPoint presentation. Writing reports.	Oral discussion Report evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Assignments	During the semester	**10%**
2	Quiz 1	The 5 week	**10%**
3	Mid-Term Exam	The 9th week	**20%**
4	Quiz 1	The 13 week	**10%**
5	Final Exam	The 16th week	**50%**

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	[1] H. Anton, I. Bivens, and S. Davis. Calculus, 8th Edition. John Wiley and Sons, 2005. [2] James Stewart. Calculus Early Transcendentals, 5th edition. Thomson, 2003. [3] R. Larson, R. Hostetler, and B. Edwards. Calculus, 7th edition . Houghton Mifflin Company, 2002. [3] H. Anton. Calculus, 7th Edition. John Wiley and Sons, 2002.
Essential References Materials	[1] E. Swokowski, M. Olinic, and D. Pence Calculus, 6th Edition. PWS Publishing Company,1994- **ISBN-10: 0534936245**. [2] E. Swokowski, M. Olinic, and D. Pence Calculus, 6th Edition. PWS Publishing Company,1994
Electronic Materials	https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx
Other Learning Materials	- CD-ROM containing the scientific subjects in the course

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms equipped with smart board and display screen for (30) students
Technology Resources (AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	The teacher using an excel program that measure CLO's	Direct
Quality of learning resources	Students and Program Leaders	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	1. Dr. Saber Ali Kharrati
Reference No.	
Date	

Course Specifications

Course Title:	Waves and Vibrations
Course Code:	42031211
Program:	BSc in Physics
Department:	Department of Physics
College:	Faculty of Science
Institution:	AlBaha University

Table of Contents

A. Course Identification

1. Credit hours:	**3 credit hours (2 T + 1 P)**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Third Level / Second Year**
4. Pre-requisites for this course(if any)**:**	**General Physics (1) - (42032102))**
5. Co-requisites for this course(if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	24	40%
2	**Blended**	12	20%
3	**E-learning**	-	-
4	**Correspondence**	-	-
5	**Other (Laboratory)**	24	40%

7. Actual Learning Hours(based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	**60**
Other Learning Hours*		
1	**Study**	15
2	**Assignments**	15
3	**Library**	15
4	**Projects/Research Essays/Theses**	-
5	**Others**(Lab reports and exam preparation time)	20
	Total	**65**

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

To introduce the students to the basic concepts of waves and vibrations.

2. Course MainObjective

- Recognize the basic principles of mechanical and electrical oscillators including Simple harmonic motion, damped oscillations, forced oscillations, periodical waves
- Conclude the basic laws of wave motion, sound waves and superposition
- Gain practical experience in the field of vibrations, oscillations and sound waves through achieving selected experiments in these topics.

3. Course Learning Outcomes

	CLOs	AlignedPLOs
1	**Knowledge:**	
1.1	Outline the parameters and characteristics of waves	K1
1.2	Recognize the basic principles of mechanical and electrical oscillators including Simple harmonic motion, damped oscillations, forced oscillations, periodical waves, wave motion and sound waves.	K1, K2
1.3	Memorize the superposition of waves at the same and different frequencies, amplitudes and phase angles.	K3
2	**Skills :**	
2.1	Explain the physical phenomena related to waves and vibrations.	S1
2.2	Conclude the basic laws of oscillatory motions, wave motion, sound waves and superposition.	S2
2.3	Conduct experiments in basic principles of mechanical waves and vibrations.	S3
2.4	Analyze data using waves and vibrations principles.	S4
3	**Competence:**	
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in waves and vibrations course.	C1
3.2	Manage a certain topic in the field of waves and vibrations with his classmates.	C2
....		

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
1	**Mechanical and electrical Oscillators**	2
2	Simple harmonic motion, damped oscillations, forced oscillations, periodical waves.	8
3	**Wave Motion** Sinusoidal waves, reflection and transmission, propagation equation.	8
4	**Sound Waves** Speed of sound, Doppler Effect, digital sound recording.	6
5	Superposition: Superposition principle, superposition of waves of the same frequency, standing waves, resonance, phase and group velocities, energy and power, random and coherent Sources.	4
6	Complex pendulum	2
	Total (Lectures)	30
Practical Part		
1	Resonance in tube: Measuring the wavelength and velocity of the standing wave resonating with an open tube and in a tube closed at one end	6

No	List of Topics	Contact Hours
2	Hook's Law: Spring	2
3	Simple pendulum to test the accuracy of equation for the simple harmonic motion	2
4	Compound pendulum	4
5	oscillator waves in string: To demonstrate wave properties including amplitude, wavelength, crests, nods, antinodes, wave speed, frequency in medium density	8
6	Electric oscillators	4
7	Damped harmonic motion	4
Total (practical)		30
Total (Lectures + practical)		**60**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge**		
1.1	Outline the parameters and characteristics of waves	Lectures, blended learning, open discussion and brainstorming	Quizzes, homework periodical Exams, midterm and final exam
1.2	Recognize the basic principles of mechanical and electrical oscillators including Simple harmonic motion, damped oscillations, forced oscillations, periodical waves, wave motion and sound waves.	Lectures, blended learning, open discussion and brainstorming	Quizzes, homework periodical exams, midterm and final exam.
1.3	Memorize the superposition of waves at the same and different frequencies, amplitudes and phase angles.	Lectures, blended learning, open discussion and brainstorming	Quizzes, homework periodical exams, midterm and final exam.
2.0	**Skills**		
2.1	Explain the physical phenomena related to waves and vibrations.	Lectures, blended learning, open discussion and brainstorming, Problem based learning, cooperative learning and lab working.	Quizzes, homework periodical Exams, midterm and final exam.
2.2	Conclude the basic laws of oscillatory motions, wave motion, sound waves and superposition.	Lectures, blended learning, open discussion and brainstorming, problem based learning, Cooperative learning and computer Simulated labs	Quizzes, homework periodical exams, midterm and final exam.
2.3	Conduct experiments in basic principles of mechanical waves and vibrations.	brainstorming, problem based learning, cooperative learning, lab working and computer Simulated labs	Lab report, oral exam, final practical exam
2.4	Analyze data using waves and vibrations principles.	Lectures, cooperative learning, lab working and computer	Quizzes, lab report, oral exam, final

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
		Simulated labs	practical exam
3.0	**Competence**		
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in Waves and Vibrations.	Group working, cooperative learning	Worksheet, presentations
3.2	Manage a discussion in a certain topic in the field of Waves and Vibrations with his classmates.	Group working, cooperative learning	Worksheet, presentations
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical exam 1	5	5 %
2	Mid- Term exam	9	10 %
3	Periodical exam 2	13	5 %
4	Home works	During the term	10 %
5	Practical (lab reports)	During the term	10 %
6	Final practical	16	10 %
7	Theoretical Exam	17	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1. Student Academic Counseling
   - The arrangements for academic counseling and advices for the students, including scheduling of faculty office hours, advices on program planning, subjects selection and career planning are announced and published to the students in the physics department and the faculty website.
   - The students are divided into groups, whereas each student has academic counseling.
2. Student Appeals
   - The regulations for student appeals on academic matters are announced and published in the physics department and the faculty website.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Physics for Scientists and Engineers, Raymond A. Serway, Thomson Brooks, 2004; 6th Edition. - The Physics of Vibrations and Waves, Dr Youfang Hu and H. J. Pain, 2008; 6th Edition.

Essential References Materials	Halliday, David, Robert Resnick, Jearl Walker. Fundamentals of Physics, 7th ed. Hoboken, N.J.: John Wiley and Sons. 2005.Optics by Eugene Hecht, 4th ed. 2002, Publisher: Addison Wesley.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- One classroom containing computer access, and white board ,One laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	- One AV. - One data show. - One Smart Board.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Effectiveness of teaching. - The course content. - Satisfaction with the course - Quality of Learning Resources	Students	Questionnaire
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Faculty (staff member)	Observation of lectures, analysis of assessment data,
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Program Leader	Observation of lectures, interviews with involved faculty, analysis of assessment data,
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Peer Reviewer	interviews with involved faculty and course participants, analysis of assessment data,

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum Committee
Reference No.	
Date	

Course Specifications

Course Title:	Specialized English Language for Physics
Course Code:	31031255
Program:	BSc in Physics
Department:	Department of Physics
College:	Faculty of Science
Institution:	AlBaha University

Table of Contents

A. Course Identification

1. Credit hours:	**2 credit hours**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Third Level / Second Year**
4. Pre-requisites for this course(if any)**:**	**None**
5. Co-requisites for this course(if any)**:**	**None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	24	80%
2	**Blended**		
3	**E-learning**	-	-
4	**Correspondence**	-	-
5	**Other (Laboratory)**	06	20%

7. Actual Learning Hours(based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	30
2	**Laboratory/Studio**	-
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	30
Other Learning Hours*		
1	**Study**	15
2	**Assignments**	15
3	**Library**	15
4	**Projects/Research Essays/Theses**	-
5	**Others**(Lab reports and exam preparation time)	-
	Total	**45**

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

To introduce the students to the basic concepts of Specialized English Language for Physics.

2. Course Main Objective

- Develop the English language skills of students pursuing degrees in scientific fields.
- Emphasis is placed on developing technical writing skills.
- Improve Technical and science reading skills, science vocabulary, and oral presentations on scientific topics.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Recall the fundamental learning approaches connected to scientific language	K1
1.2	Familiarize students with language form, content, and style of scientific and technical texts	K1, K2
1.3	Write clear essays driven by arguments about texts in a written or electronic portfolio in connection with the prospective field of specialty	K3
2	**Skills :**	
2.1	Ask effective questions and listen actively	S1
2.2	Improve critical thinking skills, especially those of analysis and argument	S2
2.3	Develop basic oral presentation skills, focusing on meaningful information and clear organization	S3
2.4	Analyze visual communication and accurately scientific document visual sources	S4
3	**Competence:**	
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in Specialized English Language for Physics	C1
3.2	Manage a certain topic in the field of Specialized English Language for Physics with his classmates.	C2
....	-	

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
1	**Classifying: The composition of matter** Sentence Patterns, the passive voice, Reading Skills, Vocabulary building and writing skills.	6
2	**Comparing** : **The element** Using English to compare, Sentence Patterns and creating comparisons, Reading Skills Vocabulary building and writing skills	6
3	**Cause and Effect: color, light and sound** Using English to show Cause and Effect: Sentence Patterns, subordination Reading Skills, Vocabulary in context and vocabulary building and writing skills.	6
4	**Hypothesizing** : **motion and gravity** Using English to hypothesize, reading skills, vocabulary building, finding main Ideas and note taking, and writing skills	6
5	**Energy:** Using English to define, reading skills, vocabulary building, scanning, finding main Ideas and note taking, and writing skills	6
	Total (Lectures)	30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Recall the fundamental learning approaches connected to scientific language	Lectures, Open discussion, Search activities	Quizzes, Short exams, final exam
1.2	Read closely, to familiarize themselves with language form, content, and style of scientific and technical texts	Lectures, Open discussion, Search activities	Quizzes, Short exams, final exam
1.3	Write clear essays driven by arguments about texts in a written or electronic portfolio in connection with the prospective field of specialty	Lectures, Open discussion, Search activities, Group working	Quizzes, Short exams, final exam
2.0	**Skills**		
2.1	Ask effective questions and listen actively	Lectures, blended learning, open discussion and brainstorming, Problem based learning, cooperative learning and lab working.	Quizzes, Short exams, final exam
2.2	Improve critical thinking skills, especially those of analysis and argument	Lectures, blended learning, open discussion and brainstorming, problem based learning, Cooperative learning and computer Simulated labs	Quizzes, Short exams, final exam
2.3	Develop basic oral presentation skills, focusing on meaningful information and clear organization	brainstorming, problem based learning, cooperative learning, lab working and computer Simulated labs	Quizzes, Short exams, final exam
2.4	Analyze visual communication and accurately scientific document visual sources	Lectures, cooperative learning, lab working and computer Simulated labs	Quizzes, Short exams, final exam
3.0	**Competence**		
3.1	Demonstrate interpersonal skills of teamwork, individual responsibility for own learning and ethical standards on assigned tasks in Specialized English Language for Physics.	Working group, open discussing	Worksheet, presentations
3.2	Manage a discussion in a certain topic in the field of Specialized English Language for Physics with his classmates.	Working group, open discussing	Worksheet, presentations
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical exam 1	5	10 %
2	Mid- Term exam	9	20 %
3	Periodical exam 2	13	10 %
4	Home works	During the term	10 %
5	Theoretical Exam	17	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1. Student Academic Counseling
   - The arrangements for academic counseling and advices for the students, including scheduling of faculty office hours, advices on program planning, subjects selection and career planning are announced and published to the students in the physics department and the faculty website.
   - The students are divided into groups, whereas each student has academic counseling.
2. Student Appeals
   - The regulations for student appeals on academic matters are announced and published in the physics department and the faculty website.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- English for Science . by Fran Zimmerman; Prentice Hall Regents. ISBM: 0-13-282179-6.
Essential References Materials	- I. Eisenbach, English for Materials Science and Engineering, DOI 10.1007/978-3-8348-9955-2, © Vieweg + TeubnerVerlag | Springer Fachmedien Wiesbaden GmbH 2011 - Dictionaries Recommended for Students (the latest available edition of the printed versions should be used)
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- One classroom containing computer access, and white board ,One laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	- One AV. - One data show. - One Smart Board.

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Effectiveness of teaching. - The course content. - Satisfaction with the course - Quality of Learning Resources	Students	Questionnaire
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Faculty (staff member)	Observation of lectures, analysis of assessment data,
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Program Leader	Observation of lectures, interviews with involved faculty, analysis of assessment data,
- Teaching methods. - Planned and actual study hours. - Achievement of course learning outcomes.	Peer Reviewer	interviews with involved faculty and course participants, analysis of assessment data,

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum Committee
Reference No.	
Date	