Course Specifications
Engineering Mathematics (1)
2025\2026

1. Basic Information

Course Title	**Engineering Mathematics (1)**				
Course Code	**BAS 011**				
Department participating in delivery of the course	**Basic Science Department**				
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Self-Learning**	**SWL**
		Lectures	**Tutorial**		
	4	**3**	**3**	**6**	**12**
Course Type	**Faculty Requirements (Compulsory)**				
Academic level at which the course is taught	**Level 000**				
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering				
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**				
University/Academy	**Ministry of Higher Education and Scientific Research**				
Semester	**Fall Semester**				
Prerequisite	**BAS010***				
Name of Course Coordinator	**Prof. Dr. Bishri Abdel-Moemen**				
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**				
Course Specification Approval	**Basic Science Department Council, Institute Council**				

2. Course Overview (Brief summary of scientific content)

Differential Calculus: Functions and graphs - Limits and continuity. Derivatives of algebraic and trigonometric functions, chain rule; Exponential, logarithmic, circular, and hyperbolic functions: their inverses. Applications of derivatives: Maxima and minima, and related rates, Curve sketching, Indefinite forms of limits, functions expansion (Talyor and Maclurin expansions), approximations.

Introduction to Algebra: Vectors and matrices, solution of linear system of equations, vector spaces and subspaces, orthogonality, determinants, eigenvalues and eigenvectors, and linear transformations. Partial fractions. Introduces students to solution and manipulation of matrix equations using a standard package of mathematical software).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Choose differentiation rules and appropriate differentiation techniques for solving problem involving algebraic, transcendental, trigonometric, inverse trigonometric, and composite functions.
		CLO2	Demonstrate the concepts of Determinants, spaces and subspaces, orthogonality, eigenvalues and eigenvectors, linear transformations, and solution of linear system of equations
A4	Use of contemporary technologies, standards, specifications and codes of practice, principles of quality, health and safety requirements, environmental issues, principles of risk management.	CLO3	Utilize mathematical tools to manipulate and solve matrix equations for engineering applications.
A9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO4	Apply differentiation and matrix algebra techniques creatively to formulate and solve engineering problems involving optimization, function approximation, systems of linear equations, eigenvalues, and eigenvectors.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming - Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	▪ Functions and graphs • Matrices	12	3	3	-	6
2-3	▪ Limits, Asymptotes and Continuity. • Determinants	24	6	6	-	12
4-5	▪ Derivative of a composite and implicit functions & Higher order derivatives. • Solution of linear system of equations	24	6	6	-	12
6-7	▪ Transcendental Functions (Trigonometric, Exponential, Hyperbolic. • vector spaces and subspaces, orthogonality	24	6	6	-	12
8	**Midterm +Revision**	12	3	3	-	6
9-10	▪ inverse of transcendental Functions (Trigonometric, Exponential, Hyperbolic). • Partial fractions	24	6	6	-	12
11-12	▪ Derivatives of transcendental functions • eigenvalues and eigenvectors, and linear transformations	24	6	6	-	12
13-14	▪ Indeterminate forms and L'Hopital;s rule & Taylor series & Approximations • Introduces students to solution and manipulation of matrix equations using a standard	24	6	6	-	12

	package of mathematical software					
15	**Revision**	**12**	3	3	-	**6**
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	15	15%
2	Quizzes	Every 2 weeks	15	15%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	16	50	50%
5	Formative assessment	5,12	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** (**must be written in full according to the scientific documentation method**)	• H Edwards, "Calculus and analytic geometry", 3rd Ed., (1990), Prentice Hall. • George B. Thomas, Ross L. Finney, "Calculus and Analytic Geometry", 9thEd., (1998), Addison Wesley. • Howard Anton, Chris Rorres, "Elementary Linear Algebra, Applications Version", 11th Ed., (2013), Wiley.
	Other References	• Differential Calculus, Dr. Bishri A. Abdel-Hamid, (2015). • Entsar EL-Shazly, Algebra, (2020).
	Electronic Sources (Links must be added)	Egyptian Knowledge Bank | بنك المعرفة المصري https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• www.els.engmet.edu.eg • Google Classroom(https://classroom.google.com)
	Other	• Instructor power point presentations

Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Prof. Dr. Bishri Abdel-Moemen

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Engineering Physics 1
2025\2026

1. Basic Information

Course Title	Engineering Physics 1					
Course Code	BAS 021					
Department participating in delivery of the course	Basic Science Department					
Number of credit hours of the course	Credit Hours	Theoretical		Practical	Self-Learning	SWL
		Lectures	Tutorial			
	3	2	1	1	6	10
Course Type	Faculty Requirements (Compulsory)					
Academic level at which the course is taught	Level 000					
Academic Program	• Civil Engineering • Architecture Engineering • Communications & Electronic Engineering • Computer Engineering					
Institute	Misr Higher Institute of Engineering and Technology					
University/Academy	Ministry of Higher Education and Scientific Research					
Semester	Spring Semester					
Prerequisite	BAS020*					
Name of Course Coordinators	Assoc. Prof. Abd El-Monem Khallaf & Dr. Dalia Azmy					
Course Specification Approval Date	18/ 8 /2025 8/9/2025					
Course Specification Approval	Basic Science Department Council, Institute Council					

2. Course Overview (Brief summary of scientific content)

Properties of material: The units and the dimensional analysis, conversion of units - Elastic properties of metal, types of the elastic coefficients, Poisson's ratio and safety factor – Oscillations, simple harmonic motion, equations of the displacement, velocity and acceleration, Hooke's law, waves, Sound waves – Lab Experiments.

Heat and thermodynamic: Temperature and thermometers - Quantity of heat and latent heat, thermal stress, - Heat transfer -Thermal expansion, linear, surface and volume thermal expansions – Quantity of heat. Lab Experiments.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	State first principles and theories in physics engineering fundamentals
		CLO2	Apply the thermal and mechanical properties of metals & waves physics related to engineering application to solve the fundamental engineering problems.
A2	Develop and conduct experiments and / or simulations, analyze and interpret data, evaluate and derive results and use statistical analyzes to arrive at conclusions.	CLO3	Evaluates the engineering tools with empirical measurements.
		CLO4	Analyzes the data of the thermal and mechanical properties of metals and waves physics.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.
6. Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments / Projects)
			Lectures	Tutorial		
1	• Physics and Measurements • Experiment: Determination of the viscosity coefficient of the liquid	10	2	1	1	6
2	• Temperature and Thermometers	10	2	1	1	6
3	• Elastic Properties of Solids • Experiment: Determine the Young 's modulus of materials	10	2	1	1	6
4	• Thermal Expansion	10	2	1	1	6
5	• Oscillation (Part 1) • Experiment: Determination of the acceleration due to gravity using simple pendulum	10	2	1	1	6
6	• Quantity of Heat (Part 1)	10	2	1	1	6
7	• Oscillation (Part 2) • Determination of the melting point of a solid material	10	2	1	1	6
8	• **Midterm +Revision**	10	2	1	1	6
9	• Quantity of Heat (Part 2)	10	2	1	1	6
10-11	• Wave motion (Part 1)	20	4	2	2	12
12	• Heat transfer	10	2	1	1	6
13	• Acoustics • Experiments: Determine the speed of sound by using open air column and tuning forks	10	2	1	1	6
14	• Wave motion (Part 2)	10	2	1	1	6
15	• **Revision**	10	2	1	1	6
16	**Final Exam**					

وزارة التعليم العالي
معهد مصر العالي للهندسة والتكنولوجيا بالمنصورة
هندسة وتكنولوجيا

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	10	10%
2	Quizzes and Reports	Every 2 weeks	10	10%
3	Proctored exams: Midterm Exam	8	20	20%
4	Lab. Exam	14	10	10%
5	Proctored exams: Final Exam	15	50	50%
5	Formative assessment	5,12	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course (must be written in full according to the scientific documentation method)**	• R.A.Serway, John W. Jewett, "Physics for Scientists and Engineers", 10th Edition, 2019. • David Halliday, Robert Resnick, Jearl Walker" Fundamentals of Physics", 12 Edition, Wiley pulse, October 2021.
	Other References	• Stephen T. Thornton, Andrew Rex," Modern Physics for Scientists and Engineers, Jul 14, 2020.
	Electronic Sources (Links must be added)	Egyptian Knowledge Bank | بنك المعرفة المصري • https://www.ekb.eg/ar/home • https://phet.colrado.edu/ar_SA/simulations/filter?subjects=physics&type=html • https://www.youtube.com/playlist?list=PL9mOMVQjeuq1H6_3xkl3fyvO_LkDIZwN
	Learning Platforms (Links must be added)	**www.els.engmet.edu.eg**

	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Assoc. Prof. Abd -Monem Khallaf

Abd El-monem Khallaf

Program Coordinator

Assoc. Prof. Abd -Monem Khallaf

Abd El-monem Khallaf

Course Specifications

Engineering Mechanics (1)

2025\2026

1. Basic Information

Course Title	Engineering Mechanics (1)					
Course Code	BAS 031					
Department/s participating in delivery of the course	Basic Science Department					
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Self-Learning**	**SWL**	
		Lectures	**Tutorial**			
	3	**2**	**2**	**5**	**9**	
Course Type	Faculty Requirements (Compulsory)					
Academic level at which the course is taught	Level 000					
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering					
Institute	Misr Higher Institute of Engineering and Technology					
University/Academy	Ministry of Higher Education and Scientific Research					
Semester	Spring Semester					
Prerequisite	BAS030*					
Name of Course Coordinator	Prof. Bishri Abdel Moemen					
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**					
Course Specification Approval	**Basic Science Department Council, Institute Council**					

2. Course Overview (Brief summary of scientific content)

Forces in three-dimensions, vector algebra. Resultant of force systems - Moment of forces - Equivalent Couples - Equivalent force systems – Equilibrium of rigid bodies (Equation of equilibrium - reactions at supports and connections for a 2D structure, 2D trusses - Equilibrium of coplanar force-couple systems - Equilibrium of space force-couple systems - Reduction of force systems) - Centroids and centers of gravity, center of gravity of 2D bodies, centroids of composite plates and wires - Moments of inertia, moments of inertia of areas, polar moment of inertia, radius of gyration of an area, parallel-axis theorem, moments of inertia of composite areas, product of inertia, principal axes and principal moments of inertia).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Apply vector algebra to analyze force systems in two and three-dimensional space.
		CLO2	Determine resultants and moments of force systems and equivalent force representations.
		CLO3	Calculate centroids and centers of gravity for simple and composite bodies.
		CLO4	Determine moments of inertia and related properties of engineering areas and composite sections.
A3	Application of engineering design to achieve cost-effective solutions that meet specific needs. Taking into account global, cultural, social, economic, environmental and ethical aspects. These applications are within the principles of sustainable design	CLO5	Analyze equilibrium conditions of rigid bodies and structural systems to determine support reactions under engineering constraints and assumptions.

	and development.		

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Forces in three-dimensions, vector algebra. Resultant of force systems - Moment of forces - Equivalent Couples - Equivalent force systems	9	2	2	-	5
2-3	• Equilibrium of rigid bodies (Equation of equilibrium - reactions at supports and connections for a 2D structure, 2D trusses	18	4	4	-	10
4-5	• Equilibrium of coplanar force-couple systems	18	4	4	-	10
6-7	• Equilibrium of space force-couple systems-Reduction of force systems	18	4	4	-	10
8	• **Midterm +Revision**	9	2	2	-	5
9-10	• Centroids and centers of gravity, center of gravity of 2D bodies,	18	4	4	-	10
11-12	• centroids of composite plates and wires and Moments of inertia, moments of inertia of areas	18	4	4	-	10
13-14	• polar moment of inertia, radius of gyration of an area, parallel-axis	18	4	4	-	10

	theorem and moments of inertia of composite areas, product of inertia, principal axes and principal moments of inertia					
15	• **Revision**	**9**	2	2	-	**5**
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	15	15%
2	Quizzes	Every 2 weeks	15	15%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	15	50	50%
5	Formative assessment	5,12	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	**• Beer, Johnston, Mazurek, Cornwell, Self "Vector Mechanics for Engineers: Statics and Dynamics", 12th Ed., (2019), McGraw Hill** **• Russell C. Hibbeler, "Engineering Mechanics: Statics", 14th Ed., (2015), Pearson** **• J.L. Meriam, L.G. Kraige, J. N. Bolton, "Engineering Mechanics: Statics", 9th Ed., (2018), Wiley** **• Dietmar Gross, Werner Hauger, Jörg Schröder, Wolfgang A. Wall, Nimal Rajapakse, "Engineering Mechanics 1: Statics", (2020), Wiley** **•Merle C. Potter, E. W. Nelson, Charles L. Best and W. G. McLean," Schaum's Outlines: Engineering Mechanics**

		Statics, Seventh Edition", 7th Ed., (2021), McGraw-Hill Education LLC
	Other References	• Engineering Mechanics: Statics, 7ted Edition by Bishri A. Abdel-Hamid, 2021 (3rd Edition), ISBN 16088 / 2002
	Electronic Sources (Links must be added)	Egyptian Knowledge Bank | بنك المعرفة المصري https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• **www.els.engmet.edu.eg** • Google Classroom(https://classroom.google.com)
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	------
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Prof. Dr. Bishri Abdel-Moemen

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications

Principles of Manufacturing Engineering
2025\2026

1. Basic Information

Course Title	Principles of Manufacturing Engineering				
Course Code	ENG011				
Department participating in delivery of the course	Basic Science Department				
Number of credit hours of the course	Credit Hours	Theoretical	Practical	Self-Learning	SWL
	2	Lectures: 1	2	3	6
Course Type	Faculty Requirements (Compulsory)				
Academic level at which the course is taught	Level 000				
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering				
Institute	Misr Higher Institute of Engineering and Technology at Mansoura				
University/Academy	Ministry of Higher Education and Scientific Research				
Semester	Spring Semester				
Prerequisite	------				
Name of Course Coordinator	Dr. Nabil Shalaby				
Course Specification Approval Date	18/ 8 /2025 8/9/2025				
Course Specification Approval	Basic Science Department Council, Institute Council				

2. Course Overview (Brief summary of scientific content)

Principles of Manufacturing Engineering is a multidisciplinary course that integrates materials science, mechanical, and systems theories to transform raw materials into finished goods. The curriculum explores the different engineering materials & their properties, metal alloys, and casting, metal forming, plastics operations, welding, sheet metal work, and the high-precision advanced machining. The course emphasizes metrology and quality control to ensure dimensional precision.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Define the terminology, classifications, properties, and fundamental principles of engineering materials and manufacturing processes, including casting and molding, metal forming, plastics forming, powder metallurgy, welding, joining, and metal cutting processes.
		CLO2	Explain the relationships between engineering materials, manufacturing and joining processes, material removal operations, and industrial applications in manufacturing engineering, including practical training applications.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.
6. Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	Engineering Materials (Types and Properties, Young's Modulus of Elasticity, Heat Treatment, Ceramics, Polymers, Composite, Advanced, Semiconductors, Biomaterials, Smart, and Nano-Structured Materials)	**6**	1	-	2	**3**
2	Metal Alloys (Metallurgy, Aluminum, Copper, Nickel, Magnesium, Zink, Lead, Tin, Cadmium, Titanium, Refractory Metals, Noble Metals)	**6**	1	-	2	**3**
3	Metal Casting (Sand Casting, Permanent Casting, Centrifugal Casting)	**6**	1	-	2	**3**
4	Shaping Operations (Rolling, Drawing, Extrusion, Forging, Spinning, Stamping)	**6**	1	-	2	**3**
5	Plastics Shaping (Polymerization, Thermoplastic and Thermosetting, Injection, Extrusion, Drawing, Blowing,	**6**	1	-	2	**3**
6	Welding Operations (TIG, MIG, Oxyacetylene, Spot Welding, Plasma, Safety)	**6**	**1**	**-**	2	**3**
7,9	Metal Machining (Cutting Parameters, Machine Tools, Turning, Milling, Shaping, Planning, Drilling, Grinding, Sawing, Broaching, Boring, Reaming)	**12**	2	-	4	**6**
8	**Midterm +Revision**	**6**	1	-	2	**3**
10	Carpentry Operations (Manual and Machine Tools, Types and Applications of Wood, Safety)	**6**	1	-	2	**3**

11	Advanced Machining (Plasma Arc, Laser Beam, Water Jet, Electro Discharge, Electrochemical, Electron Beam, CNC, CAD/CAM)	**6**	1	-	2	**3**
12,13	Testing and Measurement (Destructive and Non-Destructive Testing, Type of defects, Metrology, Inspection, Measurement, Calibration)	**12**	2	-	4	**6**
14	Quality Control (Assurance, QMS, TQM, Standardization)	**6**	**1**	**-**	2	**3**
15	**Revision**	**6**	**1**	**-**	2	**3**
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	5	5%
2	Quizzes and Reports	Every 2 weeks	5	5%
3	Proctored exams: Midterm Exam	8	20	20%
4	Workshop Exam	14	10	20%
5	Proctored exams: Final Exam	15	50	50%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course**	Serope Kalpakjian, Steven R. Schmid, "Manufacturing Engineering and Technology", 7th Ed., (2013), Pearson Education.
	Other References	Andrew Y. C. Nee, "Handbook of Manufacturing Engineering and Technology", (2015), Springer-Verlag London.
	Electronic Sources	https://www.sciencedirect.com/topics/engineering/manufacturing-engineering Egyptian Knowledge Bank | بنك المعرفة المصري https://www.ekb.eg/ar/home https://www.nist.gov/mep

	Learning Platforms	www.els.engmet.edu.eg Google Classroom(https://classroom.google.com)
	Other (to be mentioned)	**Dieter, G. E., & Bacon, D. (2017). Mechanical Metallurgy. McGraw-Hill Education.**
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	جميع الأدوات المتاحة في ورش السباكة والنجارة واللحام
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Dr. Nabil Shalaby

Nabil Shalaby

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications

Engineering Drawing
2025\2026

1. Basic Information

Course Title (according to the bylaw)	Engineering Drawing					
Course Code (according to the bylaw)	ENG 021					
Department/s participating in delivery of the course	Basic Science Department					
Number of credit hours/points of the course (according to the bylaw) عدد الساعات / النقاط المعتمدة للمقرر (تبعا لما ورد باللائحة)	**Credit Hours**	**Theoretical**		**Self-Learning**	**SWL**	
		Lectures	**Tutorial**			
	3	**1**	**4**	**5**	**9**	
Course Type	Major Requirements (Institute Compulsory)					
Academic level at which the course is taught	Level 000					
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering					
Faculty/Institute	Misr Higher Institute of Engineering and Technology					
Academic year	2025/2026					
Semester	Spring Semester					
Academic Standards	NARS 2018					
Prerequisite	---					
Name of Course Coordinator	Prof. Mohamed Shapara					
Course Specification Approval Date	18/ 8 /2025 8/9/2025					
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Basic Science Department Council, Institute Council					

2. Course Overview (Brief summary of scientific content)

Techniques & Skills of the Engineering Language – Free Hand & Instrumental Drawing Geometrical Constructions-Theory of Engineering Projection – Axonometric & Multiview Projections – Techniques of Dimensioning – Reading and Interpretation of Drawings – Sectional Views – Introduction to Computer Drawings.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	State fundamental principles and theories of technical engineering drawing, and recognize basic projection concepts of points, lines, planes, and objects.
		CLO2	Demonstrate free-hand and instrumental drawing skills to construct and represent 3D geometric objects and apply 2D and 3D projection techniques.
		CLO3	Demonstrate a comprehensive understanding of engineering drawing concepts by developing layouts, analyzing geometrical details of objects, and constructing accurate 3D representations using standard projection methods.
		CLO4	Apply sectioning and dimensioning principles to produce accurate engineering sectional drawings, identify internal features, and use standard drawing conventions.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Techniques & Skills of the Engineering Language.	10	1	4	-	5
2-3	• Free Hand & Instrumental Drawing	20	2	8	-	10
4-5	• Geometric Accuracy Constructions	20	2	8	-	10
6-7	• Theory of Engineering Projection	20	2	8	-	10
8	• **Midterm +Revision**	20	2	8	-	10
9-10	• Multi-views of Planes and Objects	20	2	8	-	10
11-12	• Techniques of Dimensioning- Reading and Interpretation of Drawings	20	2	8	-	10
13-14	• Sectional Views – Introduction to Computer Drawings	20	2	8	-	10
15	• **Revision**					
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quizzes	3, 12	10	10%
2	Assignments	Weakly	20	20%
3	Mid Term Examination (written exam)	8	20	20%
4	Final Term Examination (written exam)	15	50	50%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** (must be written in full according to the scientific documentation method)	• **Engineering Drawing & Projection, prepared by Course Coordinator**
	Other References	• Principles of Engineering Graphics, F.E. Giesecke et al, Macmillan Pupl. Comp. (2000). • Engineering Graphics with Auto-CAD, J.D.Bethone, Printice Hall Inc. (2001). • Engineering Graphics with Auto-CAD, James D.Bethune, 1St edition (2014).
	Electronic Sources (Links must be added)	Egyptian Knowledge Bank | بنك المعرفة المصري https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• www.els.engmet.edu.eg Google Classroom(https://classroom.google.com)
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter

for teaching and learning *		• Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Prof. Mohamed Shapara

Prof. Mohamed Shapara

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd EL-monem Khallaf

Course Specifications

English Language
2025\2026

1. Basic Information

Course Title (according to the bylaw)	English Language				
Course Code (according to the bylaw)	GEN011				
Department/s participating in delivery of the course	Basic Science Department				
Number of credit hours/points of the course (according to the bylaw) عدد الساعات / النقاط المعتمدة للمقرر (تبعا لما ورد باللائحة)	**Credit Hours**	**Theoretical**		**Self-Learning**	**SWL**
	2	Lectures: 0	Tutorial: 2	2	4
Course Type	Major Requirements (Institute Compulsory)				
Academic level at which the course is taught	Level 00				
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering				
Faculty/Institute	Misr Higher Institute of Engineering and Technology				
Academic year	2025/2026				
Semester	Spring Semester				
Academic Standards	NARS 2018				
Prerequisite	---				
Name of Course Coordinator	Dr. Hytham				
Course Specification Approval Date	18/ 8 /2025 8/9/2025				
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Basic Science Department Council, Institute Council				

2. Course Overview (Brief summary of scientific content)

How to talk about the people in your life - how to talk about greeting customs - how to explain who people are - how to correct a misunderstanding - writing a self - introduction - how to talk about your background - how to talk about tourism - how to describe objects - how to tell an anecdote - writing an intercultural experience - how to talk about your schooldays - how to talk about your achievements - how to offer hospitality - how to talk about your education and career - writing a CV - how to say how you feel about things - how to talk about music - how to compare and discuss preference - comparing with as - how to explain what a film is about - writing a description of a film or book - how to talk about countries and governments - how to talk about rules and laws - how to talk about stories in the news - how to talk about past events - writing narrating a story - how to express strong feelings - how to tell and show interest in an anecdote - how to talk about people in your neighborhood (pronouns in reported speech) - how to report what people said - writing exchanging news in a personal letter - how to say how people look - how to talk about fashion - how to talk about plans and intentions - how to express guesses - writing a letter of application - how to talk on the phone - how to talk about ability - how to report an interview - how to report a conversation - writing a report - how to make small talk - how to talk about your future - how to give advice - how to talk about unreal situations - writing an opinion - how to exchange opinion - how to talk about your shopping habits - how to talk about recent activities - how to ask about products in a shop - writing a letter of complaint - how to give and ask about directions - how to talk about holiday accommodation - how to give health advice - how to give extra information - writing a website recommendation - how to explain your point of view - how to talk about hopes and wishes - how to describe the plot of a story - how to talk about important decisions - writing a story with a moral).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A8	Communicate effectively—graphically, verbally, and in writing—with others using modern tools.	CLO1	Explain essential information, ideas, and experiences related to personal, social, academic, and general communication contexts using appropriate language structures.

		CLO2	Demonstrate effective spoken communication in discussions, presentations, interviews, and everyday interactions, including expressing opinions, preferences, and intentions using appropriate language.
		CLO3	Produce coherent and well-structured written texts for academic and practical purposes, including essays, reports, CVs, letters, narratives, and opinion-based writing following standard conventions.
		CLO4	Apply digital and online communication tools to create, share, and exchange information effectively in academic and social contexts, including emails, online discussions, and digital presentations.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	Introductions: talking about people in life, greeting customs, and Engineering fields.	4	0	2	0	2
2	Personal Background: how to correct a misunderstanding. How to talk about schooldays and achievements.	4	0	2	0	2

3	Education & Career: talking about education and career; writing a CV; how to talk about abilities, and how to report an interview.	**4**	**0**	**2**	**0**	**2**
4	Culture & Tourism: writing an intercultural experience, offering hospitality, and describing objects	**4**	**0**	**2**	**0**	**2**
5	Narratives & Records: telling and showing interest in incidents; talking about past events; writing on fields of study.	**4**	**0**	**2**	**0**	**2**
6	Feelings & Preferences: presenting how you feel about things; expressing strong feelings; comparing and discussing preference.	**4**	**0**	**2**	**0**	**2**
7	Media & Entertainment: explaining what a book is about. Writing a description of a research or book.	**4**	**0**	**2**	**0**	**2**
8	**Midterm +Revision**	**4**	**0**	**2**	**0**	**2**
9	Reported Speech & Communication: reporting what people said; talking about people in your neighborhood (reported speech pronouns). Exchanging news in a personal letter.	**4**	**0**	**2**	**0**	**2**
10	Plans & Predictions: talking about plans and intentions; expressing guesses.	**4**	**0**	**2**	**0**	**2**
11	Formal Communication: talking on the phone; writing a letter of application; reporting an interview (revision/extension)	**4**	**0**	**2**	**0**	**2**
12	Opinions & Advice: exchanging opinions; explaining points of view; giving advice; talking about unreal situations; writing an opinion	**4**	**0**	**2**	**0**	**2**
13	Daily Life: talking about shopping habits; asking about products in a shop.	**4**	**0**	**2**	**0**	**2**
14	Practical Skills: writing a letter of complaint; giving extra information; talking about important decisions	**4**	**0**	**2**	**0**	**2**

15	**Revision**	**4**	**0**	**2**	**0**	**2**
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz (1)	**3**	**10**	**10%**
2	Presentation (1)	7	**10**	**10%**
3	Mid Term Examination (written exam)	8	**20**	**20%**
4	Assignment	12	**10**	**10%**
5	Final Term Examination (written exam)	15	**50**	**50%**

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course**	• **Cunningham, C. M., & Kelly, G. J. (2017). Epistemic practices of engineering for education. *Science Education*, *101*(3), 486-505.**
	Other References	• **Selcen Guzey's; Moore, T. & Morse, G. (2016). *Student interest in engineering design-based science*. School Science and Mathematics, 116 (8), 411-419.**
	Electronic Sources (Links must be added)	Egyptian Knowledge Bank | بنك المعرفة المصري https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• **www.els.engmet.edu.eg** Google Classroom(https://classroom.google.com)
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for	**Devices/Instruments**	• Presenter • Data show system • Sound System

teaching and learning *	**Supplies**	• Whiteboard
	Electronic Programs	• Google Classroom
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Dr. Hithem Yahia

Hithem Yahia

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Engineering Mathematics (2)
2025\2026

1. Basic Information

Course Title	**Engineering Mathematics (2)**				
Course Code	**BAS 012**				
Department participating in delivery of the course	**Basic Science Department**				
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	4	**Lectures**	**Tutorial**	**6**	**12**
		3	**3**		
Course Type	**Institute Requirements (Compulsory)**				
Academic level at which the course is taught	**Level 000**				
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**				
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**				
University/Academy	**Ministry of Higher Education and Scientific Research**				
Semester	**Spring semester**				
Prerequisite	**BAS 011**				
Name of Course Coordinator	**Prof. Dr. Bishri Abdel-Moemen**				
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**				
Course Specification Approval	**Basic Science Department Council, Institute Council**				

2. Course Overview (Brief summary of scientific content)

Analytical geometry: Equations of second order Equations of pair of straight lines - Translation and rotation of axes – coaxial system of circles- Conic sections (properties of the ellipse, parabola and hyperbola) – Analytic geometry in space: Cartesian, Cylindrical and spherical coordinate systems – planes in space- surfaces equations of second order- translation and rotation of axes in space.

Integral calculus: Indefinite integrals (basic function and theorems) - Methods of integration (Direct - indirect - using tables) - Definite-integral (Definition - Properties - theorems) - Application on definite integral (plane area - volume of revaluation and arc length of a plane - area of surfaces of revolution) - Numerical Integration.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Define terminology and facts related to engineering mathematics including straight lines, circles, parabola, In-definite integral and Methods of integration.
		CLO2	Demonstrate understanding and competency with respect of many tools and concepts related to integral calculus and analytic geometry which are the basis of the mathematics required in engineering.
A2	Develop and conduct experiments and / or simulations, analyze and interpret data, evaluate and derive results and use statistical analyzes to arrive at conclusions.	CLO3	Solve problems involving areas, volumes, arc lengths, and surface areas using integral calculus and utilize vector and analytic geometry to model and solve three-dimensional engineering problems.
A10	Acquisition and application of new knowledge; and pursuit of self-learning, lifelong learning.	CLO4	Apply independent self-learning skills to explore, analyze, and apply advanced numerical integration techniques and coordinate

			transformations in solving non-standard mathematical problems.
B2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO5	Calculate spatial configurations, and geometric structures in engineering applications using 2D/3D conic sections, second-order surfaces, and integral calculus

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Integral Calculus: Indefinite Integrals – Basic Functions and Theorems • Analytical Geometry: Straight Line and Basic Coordinate Geometry.	6	3	3	0	6
2	• Integral Calculus: Methods of Integration – Direct and Indirect Methods • Analytical Geometry: Equations of Second Order and Pair of Straight Lines.	6	3	3	0	6

3	• Integral Calculus: Integration Using Tables and Reduction Formula • Analytical Geometry: Translation and Rotation of Axes	6	3	3	0	6
4	• Integral Calculus: Definite Integral – Definition, Properties and Theorems • Analytical Geometry: Coaxial System of Circles	6	3	3	0	6
5	• Integral Calculus: Improper Integrals and Their Applications • Analytical Geometry: Conic Sections – Parabola and Its Properties	6	3	3	0	6
6	• Integral Calculus: Applications of Definite Integrals – Plane Areas • Analytical Geometry: Ellipse and Its Properties	6	3	3	0	6
7	• Integral Calculus: Volumes of Revolution, Arc Length and Surface Area of Revolution • Analytical Geometry: Hyperbola and Properties of Conic Sections	6	3	3	0	6
8	• Midterm + Revision	6	3	3	0	6
9	• Integral Calculus: Numerical Integration • Analytical Geometry: Cartesian, Cylindrical and Spherical Coordinates	6	3	3	0	6
10	• Integral Calculus: Applications of Definite Integrals – Advanced Problems • Analytical Geometry: Lines and Planes in Space	6	3	3	0	6
11	• Integral Calculus: Numerical Integration – Trapezoidal and Simpson's Rules • Analytical Geometry: Equations of Surfaces in Space	6	3	3	0	6
12	• Integral Calculus: Review and Applications of Integration • Analytical Geometry: Second-Order Surfaces – Basic Forms	6	3	3	0	6
13	• Integral Calculus: Comprehensive Applications of Definite Integrals • Analytical Geometry: Translation of Axes in Space	6	3	3	0	6

14	• Integral Calculus: Numerical Integration – Applications and Problems • Analytical Geometry: Rotation of Axes in Space	6	3	3	0	6
15	• Revision	6	3	3	0	6
16	Final Exam					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	15	15%
2	Quizzes	Every 2 weeks	15	15%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	16	50	50%
5	Formative Assessments	6	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	• *Wiley," introduction to integral calculus".*
	Other References	• *Integral calculus, Prof. Dr. Bishri Abdel-Hamid* • *Engineering Mathematics for Engineering and Applied Sciences, Samir Shams* • *Banica, T. (2024). Calculus and applications. arXiv preprint arXiv:2401.00911.* • *Birkhoff, G. D., & Beatley, R. (2024). Basic geometry (Vol. 120). American Mathematical Society.*

		• *Thomas; "Calculus and Analytical geometry" 11th.*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Prof. Dr. Bishri Abdel-Moemen

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Engineering Physics 2
2025\2026

1. Basic Information

Course Title	**Engineering Physics 2**					
Course Code	**BAS 022**					
Department participating in delivery of the course	**Basic Science Department**					
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Practical**	**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	3	**Lectures**	**Tutorial**	**1**	**6**	**10**
		2	**1**			
Course Type	**Institute Requirements (Compulsory)**					
Academic level at which the course is taught	**Level 000**					
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**					
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**					
University/Academy	**Ministry of Higher Education and Scientific Research**					
Semester	**Spring semester**					
Prerequisite	**BAS 021**					
Name of Course Coordinator	**Dr. Ahmed N. Mahmoud**					
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**					
Course Specification Approval	**Basic Science Department Council, Institute Council**					

2. Course Overview (Brief summary of scientific content)

Electrostatic: Coulomb's law and the electric field- Gauss's law and its Applications-Electrostatic potential-Capacitors and Dielectrics- Experiments.

Magnetism, optics and atomic physics: Magnetic field- Nature of light and electromagnetic spectrum-Interference of light waves-Diffraction of light waves polarization of light waves-Lasers-Relativity theory. Lab Experiments.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	State engineering fundamentals and scientific theories related to electric charges, electric force, electric field, electric potential, capacitors, magnetic field, electromagnetic spectrum, interference, diffraction and polarization of light waves, lasers, and relativity theory.
		CLO2	Apply principles of electricity, magnetism, and optics physics related to engineering application to solve engineering physics problems.
A2	Develop and conduct experiments and / or simulations, analyze and interpret data, evaluate and derive results and use statistical analyzes to arrive at conclusions.	CLO3	Evaluate physical systems in electricity, magnetism, and optics to determine appropriate problem-solving techniques.
		CLO4	Analyze the data of the electricity, magnetism, and optics physics related to engineering application.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.
6. Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Electrostatics: Coulomb's Law, Electric Force and Electric Field	4	2	1	1	6
2	• Electrostatics: Motion of Charged Particles in a Uniform Electric Field – Electric Flux	4	2	1	1	6
3	• Electrostatics: Gauss's Law and Its Applications	4	2	1	1	6
4	• Electrostatic Potential: Electric Potential and Potential Difference	4	2	1	1	6
5	• Capacitors and Dielectrics: Capacitance, Dielectric Materials and Energy Stored in Capacitors	4	2	1	1	6
6	• Magnetism: Magnetic Field, Magnetic Force and Force on Current-Carrying Conductors	4	2	1	1	6
7	• Magnetism: Torque on Current Loops and Applications + Lab Experiments	4	2	1	1	6
8	• Midterm + Revision	4	2	1	1	6
9	• Nature of Light: Electromagnetic Spectrum and Basic Properties of Light + Lab Experiment	4	2	1	1	6

10	• Interference: Interference of Light Waves and Applications	**4**	2	1	1	6
11	• Diffraction: Diffraction of Light Waves and Applications	**4**	2	1	1	6
12	• Polarization: Polarization of Light Waves and Applications	**4**	2	1	1	6
13	• Lasers: Principles and Applications of Lasers – Optical Fiber	**4**	2	1	1	6
14	• Relativity: Special Theory of Relativity – Basic Concepts and Applications + Lab Experiment	**4**	2	1	1	6
15	• Revision	**4**	2	1	1	6
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments & Quizzes	Every 3 weeks	20	20%
2	Lab exam	15	10	10%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	16	50	50%
5	Formative Assessments	6	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific	**The main (essential) reference for the course** (**must be written in full according to the scientific documentation method**)	• *Sears, F. W., Zemansky, M. W., & Young, H. D., University Physics, Addison-Wesley.*
	Other References	• *Notes on Engineering Physic2 prepared by Dr. Ahmed Nageeb Mahmoud*

references, etc.) *		• *John W. Jewett, Raymond A. Serway, '' Physics for Scientists and Engineers '' ,10th Edition, January 1, 2018.* • *David Halliday, Robert Resnick," Fundamentals of Physics", 11 Edition, Wileypluse, Jan 15, 2020*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	• Avometer • Electrical Resistors • Ohm's Law Circuit • Wheatstone Bridge Circuit • Monochromatic Light Source • Convex Lenses • Graduated Ruler
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	• Physics Lab
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Dr. Ahmed N. Mahmoud

Dr. Ahmed Nageeb

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Engineering Mechanics (2)
2025\2026

1. Basic Information

Course Title	**Engineering Mechanics (2)**				
Course Code	**BAS 032**				
Department participating in delivery of the course	**Basic Science Department**				
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	3	**Lectures**	**Tutorial**	**5**	**9**
		2	**2**		
Course Type	**Institute Requirements (Compulsory)**				
Academic level at which the course is taught	**Level 000**				
Academic Program	– Civil Engineering – Architecture Engineering – Communications & Electronic Engineering – Computer Engineering				
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**				
University/Academy	**Ministry of Higher Education and Scientific Research**				
Semester	**Spring semester**				
Prerequisite	**BAS 031**				
Name of Course Coordinator	**Prof. Dr. Bishri Abdel-Moemen**				
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**				
Course Specification Approval	**Basic Science Department Council, Institute Council**				

2. Course Overview (Brief summary of scientific content)

Kinematics of a particle: Displacement -velocity and acceleration of particle in Cartesian, intrinsic and polar coordinates – application of rectilinear and curvilinear motion (motion of projectiles, relative motion, constrained motion) – space curvilinear motion.

Kinetics of a particle: Newton's law of motion- applications on rectilinear motion of a particle and motion on circular path – The principle of work and kinetic energy – Conservation of mechanical energy - principle of linear impulse and momentum for a particle- application on collision of particles. Dynamics of rigid bodies (translation, rotation, and general motion).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Analyze particle kinematics in Cartesian, normal-tangential, and polar coordinates, including rectilinear, curvilinear, projectile, relative, and constrained motion.
		CLO2	Apply Newton's laws of motion to solve particle dynamics problems in rectilinear and circular motion.
A3	Application of engineering design to achieve cost-effective solutions that meet specific needs. Taking into account global, cultural, social, economic, environmental and ethical aspects. These applications are within the principles of sustainable design and development.	CLO3	Apply work–energy, conservation of mechanical energy, and linear impulse–momentum principles to analyze particle motion and collisions.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Kinematics: Rectilinear Motion – Displacement, Velocity and Acceleration	4	2	2	0	5
2	• Kinematics: Motion with Constant and Variable Acceleration – Free Fall	4	2	2	0	5
3	• Kinematics: Curvilinear Motion - Cartesian Coordinates and Projectile Motion	4	2	2	0	5
4	• Kinematics: Normal-Tangential and Polar Coordinates	4	2	2	0	5
5	• Kinematics: Relative Motion and Constrained Motion	4	2	2	0	5
6	• Kinematics: Space Curvilinear Motion and Applications	4	2	2	0	5
7	• Kinematics: Comprehensive Applications and Problem Solving	4	2	2	0	5
8	• Midterm + Revision	4	2	2	0	5
9	• Kinetics: Newton's Laws of Motion – Equations of Motion of a Particle	4	2	2	0	5
10	• Kinetics: Rectilinear Motion and Motion on a Circular Path	4	2	2	0	5

11	• Work and Energy: Principle of Work and Kinetic Energy – Power and Efficiency	4	2	2	0	5
12	• Work and Energy: Conservative Forces – Potential Energy – Conservation of Mechanical Energy	4	2	2	0	5
13	• Impulse and Momentum: Linear Impulse and Momentum – Applications	4	2	2	0	5
14	• Collision of Particles: Direct and Oblique Collision Applications	4	2	2	0	5
15	• Dynamics of Rigid Bodies: Translation, Rotation and General Plane Motion	4	2	2	0	5
16	Final Exam					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	15	15%
2	Quizzes	Every 2 weeks	15	15%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	16	50	50%
5	Formative Assessments	5	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	• *Russell C. Hibbeler, "Engineering Mechanics: Statics", 14th Ed., (2015), Pearson*
	Other References	• *Engineering Mechanics: Statics, 7ted Edition by Bishri A. Abdel-Hamid, 2021 (3rd Edition), ISBN 16088 / 2002* • *Beer, Johnston, Mazurek, Cornwell, Self "Vector Mechanics for Engineers: Statics and Dynamics", 12th Ed., (2019), McGraw Hill* • *J.L. Meriam, L.G. Kraige, J. N. Bolton, "Engineering Mechanics: Statics", 9th Ed., (2018), Wiley*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Prof. Dr. Bishri Abdel-Moemen

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd EL-monem Khallaf

Course Specifications
Engineering chemistry
2025\2026

1. Basic Information

Course Title	**Engineering chemistry**					
Course Code	**BAS 041**					
Department participating in delivery of the course	**Basic Science Department**					
Number of credit hours of the course	**Credit Hours**	**Theoretical**		**Practical**	**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	3	**Lectures**	**Tutorial**	**1**	**4**	**8**
		2	**1**			
Course Type	**Institute Requirements (Compulsory)**					
Academic level at which the course is taught	**Level 000**					
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**					
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**					
University/Academy	**Ministry of Higher Education and Scientific Research**					
Semester	**Spring semester**					
Prerequisite	**----**					
Name of Course Coordinator	**Assoc. Prof. Hanaa Elabbasy**					
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**					
Course Specification Approval	**Basic Science Department Council, Institute Council**					

2. Course Overview (Brief summary of scientific content)

Equations of State - Introduction to Chemical Thermodynamics - Material & Energy Balance in Fuel Combustion and Chemical Processes - General Properties of Solutions - Dynamic Equilibrium in Physical and Chemical Processes - Basic Principles in Electrochemistry - Introduction to Corrosion Engineering - Selected topics in process Chemical Industries (Industry & Chemistry of Cement - Chemical Fertilizer Industries - Sugar Industry - Dyes & Dyeing Industry).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Define key concepts, principles, and theories of engineering chemistry, including equations of state, chemical thermodynamics, properties of solutions, fuel combustion, chemical and physical equilibrium, electrochemistry, cement chemistry, and corrosion engineering.
		CLO2	Apply principles of engineering chemistry to solve quantitative and conceptual problems involving gases, thermodynamics, solutions, chemical equilibrium, electrochemistry, and fuel combustion.
A2	Develop and conduct experiments and / or simulations, analyze and interpret data, evaluate and derive results and use statistical analyzes to arrive at conclusions.	CLO3	Evaluate chemical techniques, instruments, and laboratory methods used in engineering chemistry and identify their limitations.
		CLO4	Analyze experimental and data derived from engineering chemistry topics using fundamental principles and mathematical relationships.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.
6. Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Equations of State: Ideal and Real Gases – Reduced Equations of State	4	2	1	1	6
2	• Equations of State: Applications and Problems	4	2	1	1	6
3	• Introduction to Chemical Thermodynamics: Work, Heat, Energy and First Law	4	2	1	1	6
4	• Chemical Thermodynamics: Enthalpy, Entropy and Second Law	4	2	1	1	6
5	• Chemical Thermodynamics: Free Energy and Thermodynamic Applications	4	2	1	1	6
6	• Material and Energy Balance: Fuel Combustion, Excess Air and Heat Balance	4	2	1	1	6
7	• Material and Energy Balance: Chemical Processes and Applications	4	2	1	1	6
8	• Midterm + Revision	4	2	1	1	6

9	• General Properties of Solutions: Concentration Units and Methods of Expressing Concentrations	**4**	2	1	1	6
10	• Solutions: Colligative Properties and Applications	**4**	2	1	1	6
11	• Dynamic Equilibrium: Physical and Chemical Equilibria – Phase Equilibria and Acid-Base Equilibria	**4**	2	1	1	6
12	• Electrochemistry: Standard Electrode Potentials and Nernst Equation – Applications	**4**	2	1	1	6
13	• Corrosion Engineering: Electrochemical Aspects, Environmental Effects and Corrosion Prevention	**4**	2	1	1	6
14	• Chemical Industries: Cement Industry – Raw Materials, Portland Cement Manufacturing, Setting and Hardening • Chemical Industries: Fertilizers, Sugar, Dyes and Dyeing Industries – Selected Topics	**4**	2	1	1	6
15	• Revision /Oral Exam	**4**	2	1	1	6
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	Every 3 weeks	10	10%
2	Quizzes and Reports	Every 2 weeks	10	10%
3	Proctored exams: Midterm Exam	8	20	20%
4	Oral exam	15	10	10%
5	Proctored exams: Final Exam	16	50	50%
6	Formative Assessments	5	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	• *· P. C. Jain, Monica Jain; Engineering Chemistry, 16th ed., Dhanpat Rai Publishing Company, India, (2017)..*
	Other References	• *Lin Qiu, Yanhui Feng; Thermal engineering: Engineering thermodynamics and heat transfer, 1st ed., De Gruyter, German, (2024).* • *H. Kuhn, D.H. Waldeck, H.D. Försterling; Principles of physical chemistry. John Wiley & Sons, (2024).* • *Naseem Uddin; Thermodynamics fundamentals and applications, 1st ed., CRC Press, U.S.,(2024).* • *P.L.Bonora; Electrochemical approach to selected corrosion and corrosion control studies, 1st ed., CRC Press, U.S., (2024).* • *Engineering Chemistry, Hanaa M. Elabbasy, (2026).* • *Practical Engineering Chemistry, Hanaa M. Elabbasy, (2026).*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom

		https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	• Beakers • Erlenmeyer Flasks • Volumetric Flasks • Graduated Cylinders • Test Tubes • Burettes • Pipettes • Funnels and Separatory Funnels • Reagent Bottles
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	• Chemist Lab
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Assoc. Prof. Hanaa Elabbasy

Hanaa Elabbasy

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Basic Training
2025\2026

1. Basic Information

Course Title	Basic Training					
Course Code	ENG041					
Department participating in delivery of the course	Communications and Electronics Engineering Department					
Number of credit hours of the course	Credit Hours	Theoretical		Practical	Self-Learning (Tasks/ Assignments/ Projects)	SWL
	1	Lectures: 0	Tutorial: 0	0	0	0
Course Type	Institute Requirements (Compulsory)					
Academic level at which the course is taught	Level 100					
Academic Program	Communications and Electronics Engineering Department					
Institute	Misr Higher Institute of Engineering and Technology at Mansoura					
University/Academy	Ministry of Higher Education and Scientific Research					
Semester	Summer semester					
Prerequisite	Completing 30 CH					
Name of Course Coordinator	Dr.					
Course Specification Approval Date	18/ 8 /2025 8/9/2025					
Course Specification Approval	Basic Science Department Council, Institute Council					

2. Course Overview (Brief summary of scientific content)

What is MATLAB- MATLAB as a calculator-MATLAB for mathematical applications- Matrices in MATLAB- m files –loading and saving variables-programming with MATLAB (looping and conditional statements- methods and functions)- introduction to graphical user interface (GUI)- project 1 (design of a smart scientifically

calculator)-project 2 (management interface system for educational purposes)-introduction to MATLAB Simulink-design a simple passive components based circuit diagram using SIMSCAPE library.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A8	Communicate effectively - graphically, verbally and in writing - with others using modern tools.	CLO 1.	Structure, format, and compile detailed technical laboratory logs and engineering reports following standard professional documentation guidelines.
		CLO 2.	Demonstrate structural programming workflows and algorithmic design logic using formal technical language, functional annotations, and standardized engineering flowcharts.
		CLO 3.	Design interactive software application graphical layouts (GUIs) that utilize intuitive visual hierarchies and descriptive messaging to communicate system outputs to diverse end-users.

4. Teaching and Learning Methods

1) Face to face lectures\tutorials
2) Blended Learning (Synchronous\Asynchronous sessions)
3) Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4) Self-learning.
5) Problem-based learning
6) Project-based learning
7) Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Day	Scientific content of the course (Course Topics)	Total Daily Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• What is MATLAB • MATLAB as a calculator	4	0	0	4	5
2	• MATLAB for mathematical applications • Matrices in MATLAB	4	0	0	4	
3	• m files • Loading and saving variables • Programming concept with MATLAB	4	0	0	4	
4	• looping and conditional statements • Methods and building functions-examples	4	0	0	4	
5	• Introduction to graphical user interface (GUI)	4	0	0	4	5
6	GUI applications: • project 1 (design of a smart scientifically calculator) • project 2 (management interface system for educational purposes)	4	0	0	4	
7	• Introduction to MATLAB Simulink	4	0	0	4	
8	• Design a simple passive components-based circuit diagram using SIMSCAPE library	4	0	0	4	

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Day Number)	Marks/ Scores	Percentage of total course Marks
1	Class participation	Daily	20	50%
2	Tasks and Roprts	Every 2 days	30	
3	Oral /practical and Projects	8	50	50%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** (must be written in full according to the scientific documentation method)	• *Chapman, S. J. (2005). MATLAB Programming for Engineers, 3rd ed.*
	Other References	• *Note Book – including required software and brief discussion on all topics.* • *MathWorks (2025). Simulink User's Guide.* • *Attaway, S. (2023). MATLAB: A Practical Introduction to Programming and Problem Solving, 7th ed.*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations.
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	• MATLAB
	Skill Labs/ Simulators	Computer lab
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Program Coordinator

Dr. Ibrahim Elmetwally

Ibrahim Elmetwally

Course Specifications
History of Engineering & Technology
2025\2026

1. Basic Information

Course Title	**History of Engineering & Technology**			
Course Code	**GEN021**			
Department participating in delivery of the course	**Basic Science Department**			
Number of credit hours of the course	**Credit Hours**	**Theoretical**	**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	1	**Lectures** **1**	**2**	**3**
Course Type	**University Requirements (Compulsory)**			
Academic level at which the course is taught	**Level 000**			
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**			
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**			
University/Academy	**Ministry of Higher Education and Scientific Research**			
Semester	**Spring semester**			
Prerequisite	**-**			
Name of Course Coordinator	**Dr. Mohamed Kandil**			
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**			
Course Specification Approval	**Basic Science Department Council, Institute Council**			

2. Course Overview (Brief summary of scientific content)

Engineering history: Art, Science, Engineering and technology – Role of engineering and technology in development and establishment of civilizations, Methods and tools used to satisfy needs through exploitation of human and natural resources in ancient time, Middle Ages and modern time, Technology and environment. The relationship between the development of engineering and development environment socially and economically - examples on Development of engineering activity.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A4	Use of contemporary technologies, standards, specifications and codes of practice, principles of quality, health and safety requirements, environmental issues, principles of risk management.	CLO1	Apply engineering ethics regulations, professional codes of conduct, and responsibilities toward society, clients, employees, and the engineering profession.
		CLO2	Integrate sustainable engineering practices with socio-economic and environmental factors through disciplined scientific thinking.
A7	Work efficiently as an individual and as a member of a multidisciplinary and multicultural working group.	CLO3	Explain the role of engineering and technology in the development and advancement of civilizations.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Art, Science, Engineering and Technology	**1**	1	0	0	**2**
2	• Engineering History and the Development of Engineering	**1**	1	0	0	**2**
3	• Role of Engineering and Technology in the Development of Civilizations	**1**	1	0	0	**2**
4	• Engineering and Technology in Ancient Civilizations	**1**	1	0	0	**2**
5	• Methods and Tools Used in Ancient Times	**1**	1	0	0	**2**
6	• Exploitation of Human and Natural Resources in Ancient Times	**1**	1	0	0	**2**
7	• Engineering During the Middle Ages and Modern Times	**1**	1	0	0	**2**
8	• **Midterm + Revision**	**1**	1	0	0	**2**
9	• Technology and the Environment	**1**	1	0	0	**2**
10	• Environmental Impacts of Engineering and Technology	**1**	1	0	0	**2**
11	• Relationship Between Engineering Development and Social Development	**1**	1	0	0	**2**

12	• Relationship Between Engineering Development and Economic Development	**1**	1	0	0	**2**
13	• Examples of the Development of Engineering Activities	**1**	1	0	0	**2**
14	• Major Historical Examples of Engineering Development	**1**	1	0	0	**2**
15	• Review and Integration of Engineering History	**1**	1	0	0	**2**
16	**Final Exam**					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments	2,4,10,12	15	15%
2	Quizzes	3,5,11,13	10	10%
3	Proctored exams: Midterm Exam	8	25	25%
4	Proctored exams: Final Exam	16	50	50%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** (**must be written in full according to the scientific documentation method**)	• *Oravas, G. E., Lectures on the History of Technology & Engineering: Two Volume Set, 2004*
	Other References	• *Engineering and technology, John Peter Oleson, 2008.* • *Graham Hollister-Short, History of Technology Volume 21, 2000* • *History of Technology, Ian Inkster, 2010* • *History of Engineering and Technology", Bishri Abdel-Hamid, 2023*

	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Dr. Mohamed Kandil

mohamed Kandil

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Human Rights
2025\2026

1. Basic Information

Course Title	**Human Rights**			
Course Code	**GEN041**			
Department participating in delivery of the course	**Basic Science Department**			
Number of credit hours of the course	**Credit Hours**	**Theoretical**	**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	1	**Lectures** **1**	**1**	**2**
Course Type	**University Requirements (Compulsory)**			
Academic level at which the course is taught	**Level 000**			
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**			
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**			
University/Academy	**Ministry of Higher Education and Scientific Research**			
Semester	**Spring semester**			
Prerequisite	**----**			
Name of Course Coordinator	**Dr. Basma S. Embaby**			
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**			
Course Specification Approval	**Basic Science Department Council, Institute Council**			

2. Course Overview (Brief summary of scientific content)

An introduction to human rights and the evolution of the human rights concepts over the various ages. It discusses the various types of human rights and the social theories related to that subject. In addition, it discusses a group of international human rights declarations and essential assurance tools that enable human rights practice. It discusses the international human rights treaties and basic rights of citizenship and all related topic that are declared by the United Nations.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A6	Planning, supervision and monitoring of engineering projects.	CLO1	Define key human rights concepts, including their evolution, classification, and social theories, within structured activities aligned with international human rights frameworks.
		CLO2	Explain human rights systems by examining international human rights declarations, treaties, United Nations instruments, and assurance tools supporting human rights practice.
A7	Work efficiently as an individual and as a member of a multidisciplinary and multicultural working group.	CLO3	Discuss ethical and social issues in human rights, including citizenship rights and global perspectives, within an international context, through effective individual and group participation.
		CLO4	Collaborate in multidisciplinary and multicultural environments to analyze human rights challenges, ethical dilemmas, and equity issues in line with international standards and UN declarations.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Introduction to Human Rights: concept, importance, and basic principles of human rights.	1	1	0	0	1
2	• Evolution of Human Rights Concepts over the Various Ages.	1	1	0	0	1
3	• Types and Classification of Human Rights.	1	1	0	0	1
4	• Social Theories Related to Human Rights.	1	1	0	0	1
5	• International Human Rights Declarations: Historical Development and Major Declarations.	1	1	0	0	1
6	• Essential Assurance and Protection Mechanisms for the Practice of Human Rights.	1	1	0	0	1
7	• International Human Rights Treaties and Conventions.	1	1	0	0	1
8	• Midterm + Revision	1	1	0	0	1

9	• Basic Rights of Citizenship and Their Relationship to Human Rights.	1	1	0	0	1
10	• Human Rights and Citizenship: Civil, Political, Social, and Economic Rights.	1	1	0	0	1
11	• United Nations and Human Rights: Role and Responsibilities of the United Nations.	1	1	0	0	1
12	• United Nations Declarations, Conventions, and Related Human Rights Instruments.	1	1	0	0	1
13	• International Protection of Human Rights and Mechanisms for Their Implementation.	1	1	0	0	1
14	• Contemporary Issues Related to Human Rights and Citizenship – Comprehensive Review.	1	1	0	0	1
15	• Review	1	1	0	0	1
16	Final Exam					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quizes	3	10	10%
2	Assignment	10	15	15%

3	Midterm Examination (written exam)	8	25	25%
4	Final Term Examination (written exam)	16	50	50%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	• *Hannum, H., 2019, "Rescuing Human Rights: A Radically Moderate Approach, "Cambridge University Press*
	Other References	• *Human Rights," Dr. Mohamed Gamal El-den."* • *Michael-James, David Scorey, (February 8, 2024)," Building Bridges in European and Human Rights Law: Essays in Honour and Memory of Paul Heim CMG", Hart Publishing*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	-
	Skill Labs/ Simulators	-
	Virtual Labs	-
	Other (to be mentioned)	-

Course Coordinator

Dr. Basma S. Embaby

Basma Saad

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf

Course Specifications
Computer Skills
2025\2026

1. Basic Information

Course Title	**Computer Skills**				
Course Code	**GEN051**				
Department participating in delivery of the course	**Basic Science Department**				
Number of credit hours of the course	**Credit Hours**	**Theoretical**	**Practical**	**Self-Learning** (Tasks/ Assignments/ Projects)	**SWL**
	2	**Lectures** **1**	**2**	**3**	**6**
Course Type	**University Requirements (Compulsory)**				
Academic level at which the course is taught	**Level 000**				
Academic Program	– **Civil Engineering** – **Architecture Engineering** – **Communications & Electronic Engineering** – **Computer Engineering**				
Institute	**Misr Higher Institute of Engineering and Technology at Mansoura**				
University/Academy	**Ministry of Higher Education and Scientific Research**				
Semester	**Spring semester**				
Prerequisite	**----**				
Name of Course Coordinator	**Prof. Sally Elghamrawy**				
Course Specification Approval Date	**18/ 8 /2025** **8/9/2025**				
Course Specification Approval	**Basic Science Department Council, Institute Council**				

2. Course Overview (Brief summary of scientific content)

The basic computer concepts and understanding; the essential skills (using the Internet, creating a résumé) - Computer Basics (Introduction to Computers - Common Computer Terminology - Computer Performance and Features - Operating Systems)- Communicating on the Internet – Introduction to productivity Programs (Word Processing - Spreadsheet Programs - Presentation Programs - Database Programs); Computer Security and Privacy; Digital Life-styles (The Digital Experience, Introduction to Digital Audio - Introduction to Digital Video - Introduction to Digital Photography - Digital Technology and Career Opportunities).

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A8	Communicate effectively - graphically, verbally and in writing - with others using modern tools.	CLO1	Produce engineering reports using Microsoft Office packages by merging word, excel, PowerPoint and data-bases programs.
		CLO2	Use graphs and diagrams (algorithms) to interpret different problems by implementing sequential, selection and repetition programming concepts
A10	Acquisition and application of new knowledge; and pursuit of self-learning, lifelong learning.	CLO3	Apply the essential skills of using different operating systems, network systems and computer security to analyze and evaluate problems
		CLO4	Apply self-directed learning to gain and use new computer systems and IT knowledge, demonstrating lifelong learning.

4. Teaching and Learning Methods

1. Face to face lectures\tutorials.
2. Blended Learning (Synchronous\Asynchronous sessions)
3. Active Learning (Interactive Discussions - Case studies -Brainstorming – Presentations)
4. Self-learning.
5. Flipped classroom.
6. Project-based learning
7. Experimental Learning (Practical lab. \Simulation)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)		Training (Practical)	Self-learning (Tasks/ Assignments/ Projects)
			Lectures	Tutorial		
1	• Introduction to Computers: Basic computer concepts - Common computer terminology - Computer components and applications.	3	1	0	2	3
2	• Computer Basics: Computer performance and features - Numbering systems - Operating systems.	3	1	0	2	3
3	• Program Development Process: Algorithms - Flowcharts - Pseudocode.	3	1	0	2	3
4	• Basic Programming Concepts: Variables - Data types - Operators - Basic programming structures.	3	1	0	2	3
5	• Productivity Programs: Word Processing - Creating and formatting documents - Creating a résumé.	3	1	0	2	3

6	• Productivity Programs: Spreadsheet Programs - Basic formulas and functions - Data organization and simple analysis.	3	1	0	2	3
7	• Productivity Programs: Presentation Programs - Creating and delivering presentations.	3	1	0	2	3
8	• Midterm + Revision	3	1	0	2	3
9	• Database Programs: Basic database concepts - Tables, records, fields, and simple database operations.	3	1	0	2	3
10	• Communicating on the Internet: Internet concepts - Web services - Online communication - Effective Internet use.	3	1	0	2	3
11	• Computer Networks: Basic networking concepts - Network types - Communication and connectivity.	3	1	0	2	3
12	• Computer Security and Privacy: Security threats - Safe computing practices - Privacy and protection of personal information.	3	1	0	2	3
13	• Digital Lifestyles: The digital experience - Introduction to digital audio and digital video.	3	1	0	2	3
14	• Digital Photography and Career Opportunities: Introduction to digital photography - Digital technology and career opportunities.	3	1	0	2	3
15	• Review	3	1	0	2	3
16	Final Exam					

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Assignments & Quizzes	Every 3 weeks	20	20%

2	Lab exam	15	10	10%
3	Proctored exams: Midterm Exam	8	20	20%
4	Proctored exams: Final Exam	16	50	50%
5	Formative Assessments	6	0	0%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** **(must be written in full according to the scientific documentation method)**	• *Almehmadi, Bandar B Alotaibi, Computer Skills and Applications Paperback – January 2, 2018*
	Other References	• *Computer Skills, Sally Elghamrawy, ISBN 2017/19959* • *Englander, I., & Wong, W. (2021). The architecture of computer hardware, systems software, and networking: An information technology approach. John Wiley & Sons* • *Michael Halvorson, Start Here! Learn Microsoft Visual Basic 2019, Microsoft Press*
	Electronic Sources (Links must be added)	• Egyptian Knowledge Bank: https://www.ekb.eg/ar/home
	Learning Platforms (Links must be added)	• Electronic Learning System www.els.engmet.edu.eg • Google Classroom https://classroom.google.com/h/tv
	Other (to be mentioned)	• Instructor power point presentations
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-
	Supplies	• Whiteboard • Presenter • Data show system • Sound System
	Electronic Programs	• Visual Studio
	Skill Labs/ Simulators	• Computer Lab
	Virtual Labs	-

	Other (to be mentioned)	-

Course Coordinator

Prof. Sally Elghamrawy

Sally Elghamrawy

Program Coordinator

Assoc. Prof. Abd El-Monem Khallaf

Abd El-monem Khallaf