

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Plane Surveying

Class : First year

Hours : 2 hrs (Theoretical) , 3 hrs (Practical)

Objectives :

Introducing the fundamentals, purposes , & the required calculations of the plane surveying to the student as well as qualifying him to use the different kinds of surveying instruments in designing & executing the projects of civil engineering .

Week	Practical Syllabus
1	Basic fundamentals of surveying.
2&3	Using tape and chain in the linear measurement and perpendicular construction.
4&5	Details survey by measuring tape and obstacles to measuring.
6&7	Traversing, types of traverse.
8&9&10	Training how to use leveling instrument.
11&12&13	Height difference between two points from one station of level.
14&15	Trigonometric leveling.
16&17	Close leveling.
18&19&20	Topographic survey using level instrument.
21&22	Level test by two pegs methods.
23&24&25	Area computation.
26&27&28	Details survey by stadia method.
29&30	Details survey using alidade and planometry.

References :

1. المساحة المستوية والمائية د علي شكري - كلية الهندسة - جامعة الاسكندرية
2. المساحة المستوية د فوزي الخالصي - وزارة التعليم العالي والبحث العلمي
3. Text book of surveying / S.K.Husain M.S.Naga Raj.
4. Surveying / Narinder Singh
5. Surveying for construction / William Irvine

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Plane Surveying

Class : First year

Hours : 2 hrs (Theoretical) , 3 hrs (Practical)

Objectives :

Introducing the fundamentals, purposes , & the required calculations of the plane surveying to the student as well as qualifying him to use the different kinds of surveying instruments in designing & executing the projects of civil engineering .

Week	Theoretical Syllabus
1&2&3	General basics of surveying, fundamentals of surveying, units of measurements, Plotting scale.
4&5&6	Linear measurements. Means for measuring distances, Direct method of horizontal distances measurement, Target survey, Details, Electronic distance measuring instruments.
7&8	Errors in surveying. Types of errors, Accuracy and precision, Principles of errors scattering theory.
9	Obstacles to measuring.
10&11 &12&13	Traversing. Types of traverse, Coordinates measurement, Traverse adjustment.
14&15 &16&17	Leveling. Types of leveling , Leveling instrumentation , Leveling by taping, Trigonometric leveling , Sources of errors in leveling (vertical, horizontal).
18&19&20	Bearing and angles. Methods of angles measurement and bearing calculation.
21&22&23	Vertical sections , Longitudinal sections ,Calculation of cut and fill.
24&25&26	Contour lines: Method of drawing and construction.
27&28 &29&30	Areas and volumes: Volume computation from cross-section , Volume from topographic maps and grid net , Volume computation from contour maps.

References :

6. المساحة المستوية والمائية د علي شكري - كلية الهندسة - جامعة الاسكندرية
7. المساحة المستوية د فوزي الخالصي - وزارة التعليم العالي والبحث العلمي
8. Text book of surveying / S.K.Husain M.S.Naga Raj.
9. Surveying / Narinder Singh
10. Surveying for construction / William Irvine

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Engineering Mechanics

Class : First year

Hours : 2hrs (Theoretical) , 2hrs (Practical)

Objectives :

The student will know the manner of dealing with forces acting on bodies , the relation between the force and its components , the principal of moments & couples . An other purpose was to help the student to develop the logical , orderly processes of thinking which characterizes the engineer .

Week	Syllabus
1&2	Introduction to mechanics , Force systems , Scalar & vector quantities , Parallelogram law , Triangle law , Forces & components .
3&4	Moment of a force , Varignon`s theorem , Applications
5&6	Couples , Resolution of a force into a force & a couple .
7&8	Resultant of force systems , Resultant of concurrent force system , Resultant of parallel force system , Resultant of non-concurrent force system .
9&10&11	Equilibrium of force system , Free body diagram , Equilibrium of concurrent force system , Equilibrium of parallel force system , Equilibrium of non-concurrent force system .
12	Types of beams, Supports, and loads, Equilibrium of beams.
13&14&15	Trusses, Analysis of trusses, method of Joint , method of section .
16&17	Analysis of frames (method of members) .
18&19&20	Friction , Theory of friction , Angle of friction , Types of friction , Wedges ,Applications.
21&22	Centroids of areas & lines , Centroids by integration , Centroids of composite areas , Applications.
23&24&25	Moment of inertia , Polar moment of inertia , Radius of gyration , Transfer formula for moment of inertia , Moment of inertia for composite areas , Product of inertia , Moment of inertia with respect to inclined axes , Mohr` circle for moment of inertia .

26	<i>Principles of dynamics , Kinematics & kinetics , Motion of a particle , Fundamental Equations of kinetics for a particle , Effective force on a particle.</i>
27&28	Rectilinear translation , Rectilinear motion with constant acceleration , Free falling bodies .
29&30	Kinetics of rectilinear translation (Analysis as a particle) , Dynamic Equilibrium in translation (Analysis as a rigid body) .

References:

- 1. Engineering Mechanics / F.L. Singer**
- 2. Engineering Mechanics / Mclean & Nelson**
- 3. Engineering Mechanics / J.F. Shelley**
- 4. Engineering Mechanics / A. Higdon & W.B. Stiles**
- 5. Mechanics for Engineers / Statics / F.P. Beer , E.R. Johnston,Jr**

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Mechanical & Civil Workshops

Class : First year

Hours : 6 hrs (Practical) , 3 hrs : Civil , 3 hrs : Mechanical

Objectives :

The student will gain manual skills in manual equipments , measurement apparatus , operating machines , & all building items in construction engineering .

Week	Syllabus
1&2&3	Carpentry workshop .
4&5&6	Casting workshop .
7&8&9	Welding workshop .
10&11&12	Plumbing workshop .
13&14&15	Auto-mechanics – workshop .
16	The manner of writing an engineering technical report
17	Civil Engineering : Definition , Importance , Types .
18	Construction Safety.
19&20	Engineering maps , Diagrams , and details : Types , Reading.
21&22&23&24&25&26&27&28	The stages of engineering project execution : Preparation of site, Planning, Construction materials, Construction equipments, Foundations, Concrete works, Formworks, Reinforcement, Stairs, Doors & windows, Insulation works, Finishing works, Plumbing works,ets
29&30	Introduce an engineering report & discussion.

References :

1. إنشاء المباني / زهير ساكو و آرتين ليفون
2. **Building Design and Construction Hand Book / Frederick S. Merritt & Jonathan T. Ricketts .**
3. **The Civil Engineering Hand Book / W. F. Chen .**
4. **Building Services Hand Book / FredHall & Roger Greeno .**
5. المرشد لامتلاك وبناء المسكن / محمد علي بن عبد العزيز حلواني
6. أعمال البناء / المؤسسة العامة للتعليم الفني والتدريب المهني / المملكة العربية السعودية
7. أعمال التنفيذ / المؤسسة العامة للتعليم الفني والتدريب المهني / المملكة العربية السعودية
8. دليلك لعالم التنفيذ / عماد حامد حسان
9. **The Construction of Buildings / R. Barry**
10. الكتاب الشامل في الموقع / أحمد متولي السنجهاوي
11. الموسوعة الهندسية لإنشاء المباني والمرافق العامة / عبد اللطيف البقري

Technical College / Al-Najaf
Department : Building & Construction Technology Engineering

Subject : Engineering Geology
Class : First year
Hours : 2hrs (Theoretical)

Objectives:

The student will be able to gain the information about the earth materials (soils , rocks) , their minerals, properties, and their engineering applications. Also the student will learn the effect of soils and rocks foundations on the stability of structures.

Week	Syllabus
1	Introduction to the earth science, crust and interior of the earth
2	Minerals and physical properties
3	Factors effecting on the mineral physical properties
4	Mineral classification
5	Clay minerals, Minerals Expansive soil
6	Rocks, Classification of rocks ,igneous rocks
7&8	Sedimentary rocks, classification of sedimentary rocks
9	Metamorphic rocks, Stabilization of rock slopes
10&11	An engineering classification of rock materials
12	Weathering and erosion, weathering agents on structures
13	Soil, Soil profile, Soil forming processes
14	Properties of engineering soil
15	Properties of engineering rocks
16	Geological structure , Dipping layer
17	Folds, Conformities and Disconformities
18	Faults, Joints, Effect of Faults and Joints on structures
19&20	Surface water and underground water
21&22	Site investigation
23&24&25	Mass movement, causes of mass movement, classification of mass movement, creep, creep causes and treatment, landslides, causes of landslides, Earthquake due to landslides
26&27	Geological investigation, Geophysical investigation
28	Geological sites of reservoirs, Ground reservoirs, Underground reservoirs

29&30	Dams and tunnels, Type of Dams, loads on Dams, Classification of tunnels and nomenclature, Construction of tunnels.
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References:

Plummer C., Diane H., 2007, " Physical Geology", Mc-Graw Hill, Eleventh edition

1. ن . دنكان . ترجمة كنانة محمد ثابت، ١٩٨٠، "الجيولوجيا الهندسية وميكانيك الصخور" ، المكتبة الوطنية بغداد
2. كنانة محمد ثابت & محمد عمر العشو ، ١٩٩٣ "أسس الجيولوجيا للمهندسين"، الموصل ، جامعة الموصل

Subject: Principles of Computer

Class: First year

Hours: 1hrs (Theoretical), 2hrs (Practical)

Objectives:

The student must know how to deal with operating system as a good user of windows from installing (formatting) to maintain the general component ,also the student deals with Microsoft programs as (word, Excel, Power point) .In addition the student must knowing how to deal with internet and E-mail

Week	Syllabus
1	Introduction to computer , computer component (hardware , software)
2&3	Operating system (windows) , installing windows (formatting)
4	Start menu , desktop , taskbar , mouse applications
5	My computer , My documents , drivers , folders , files , cut , copy , paste , shortcut , right click menu
6	Setting menu , control panel
7	Microsoft word 2007 (program view , office button)
8	Menu (home icons)
9	Menu (insert icons)
10	Menus (page layout , review , view , design)
11	Icons (symbols , equation)
12	Practical exercises
13	Microsoft excel 2007 (program view , office button)
14	Home icons
15	Insert icons
16	Page layout icons
17	Formula icons , view icons
18	Data icons , chart wizard
19	Practical exercises
20	Microsoft power point 2007 (program view , office button)
21	Insert icons , design icons
22	Animations icons , slid show icons
23	Practical exercises
24	Viruses , types of viruses , protection from viruses
25	Internet , internet explorer , starting , menus of internet explorer
26	E-mail : yahoo , hotmail

27	Search engines , google , yahoo , search information
28&29	Surfer
30	Practical exercise

References:

- 1. Computer Skills (2) , د محمد بلال الزغبى و أحمد الشرايعة و أمجد هديب**
- 2. Internet Explorer , By S.Haag , J. T. Perry & A. Phillips**
- 3. Exel a comprehensive approach By K. Stewart**
- 4. Computers & Internet (IC3), By د محمد بلال الزغبى**
- 5. Word By S. Haag , J.T. Perry & A. Phillips**

الصف الاول

اسم المادة : حقوق الانسان والديمقراطية

عدد الساعات : ٢ ساعة نظريا

الاسبوع	تفاصيل المفردات
١	حقوق الانسان ، تعريفها ، اهدافها حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
٢	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام
٣	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة
٤	الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوروبية لحقوق الانسان ١٩٥٠ ، الاتفاقية الامريكية لحقوق الانسان ١٩٦٩ ، الميثاق الافريقي لحقوق الانسان ١٩٨١ ، الميثاق العربي لحقوق الانسان ١٩٩٤
٥	المنظمات غير الحكومية وحقوق الانسان (اللجنة الدولية للصليب الاحمر ، منظمة العفو الدولية ، منظمة مراقبة حقوق الانسان ، المنظمات الوطنية لحقوق الانسان)
٦	حقوق الانسان في الدساتير العراقية بين النظرية والواقع
٧	العلاقة بين حقوق الانسان والحريات العامة : ١- في الاعلان العالمي لحقوق الانسان ٢- في المواثيق الاقليمية والدساتير الوطنية
٨	حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية
٩	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين
١٠	ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني ، الضمانات في الدستور والقوانين ، الضمانات في مبدأ سيادة القانون الضمانات في الرقابة الدستورية ، الضمانات في حرية الصحافة والرأي العام ، دور المنظمات غير الحكومية في احترام وحماية حقوق الانسان
١١	ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي : - دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات - دور المنظمات الاقليمية (الجامعة العربية ، الاتحاد الأوروبي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة آسيان) - دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق

الانسان	
النظرية العامة للحريات : أصل الحقوق والحريات ، موقف المشروع من الحقوق والحريات المعلنة ، استخدام مصطلح الحريات العامة	١٢
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حق التملك	٢٥
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الأحزاب السياسية والحريات العامة	٢٨
التقدم العلمي والتقني والحريات العامة	٢٩
مستقبل الحريات العامة	٣٠

Subject : Engineering Drawing & Descriptive Geometry
 Class : First year
 Hours : 6hrs (Practical)

Objectives :

Introducing the fundamentals of engineering drawing to the student so that he can be qualified to express his thoughts, draw & execute the projects related to civil engineering.

Week	Syllabus
1	<ul style="list-style-type: none"> • Introduction to defined the engineering drawing and introduction about AutoCAD software in engineering drawing • Windows setting, limits, grid, snap, object snap
2	<ul style="list-style-type: none"> • Draw menu, line, polyline, ray, construction line • Polygon, arc, circle, rectangle, ellipse
3&4	<ul style="list-style-type: none"> • Modify-part one • Modify -part two
5	<ul style="list-style-type: none"> • Dimensions • Hatching
6	<ul style="list-style-type: none"> • Text • Layers
7	<ul style="list-style-type: none"> • Perspective • Ortho graphic projection
8	The first and third angle projection method
9&10	Draw the projection with the first angle projection method
11	<ul style="list-style-type: none"> • Printing • Drawing the projection with the third angle projection method
12	<ul style="list-style-type: none"> • Tools • Drawing the three projection with the first and third angle
13	Drawing the three projection with the first and third angle and see the difference between them
14&15	Finding third projection after knowing the other two projections
16&17	Draw Isometric after knowing two or three projection
18&19	Sectional theory, cutting projection drawing
20	Sectional theory, cutting projection drawing
21	Drawing section from defined sections
22	Draw partial section
23	Draw half section

24	Draw offset sections
25	Introduction about descriptive geometry
26	Projection of point
27	Representation of straight line
28	Projection of line and surface on auxiliary plane
29& 30	Section of bodies and determination of true shape of section

References:

1. **Engineering Drawing (plan and solid geometry) / N.D.Bhatt**
2. الهندسة الوصفية / د يوسف نيقولا
3. **AutoCad 2009, 2D training manual / K.S.Kurland**
4. **AutoCad user guide / <http://www.autodesk.com>**
5. الرسم الهندسي / هاشم عبود العيسوي و يوسف حسين الراضي

Technical College / Al-Najaf
Department : Building & Construction Technology Engineering

Subject: Applied Mathematics

Class: First year

Hours: 2 hrs (Theoretical), 2hrs (Practical)

Objectives :

This subject will develop the ability of student in using mathematics in engineering applications; also the student will learn different methods in equation expressions, formation multi kinds of curves related to civil engineering applications.

Week	Syllabus
1&2	Limits
3	Slope of the straight line , Slope of the curve
4&5	Derivatives of algebraic functions , Chain rule , Second and higher order derivative , Application in mechanics
6	Trigonometric functions
7	Derivatives of trigonometric functions
8	Inverse of trigonometric function , The exact value of trigonometric functions
9	Derivatives of inverse of trigonometric functions
10&11	Logarithmic and exponential functions , Logarithmic method in derivatives
12	Derivative of logarithmic and exponential functions , Derivative of a^u , $\log_a u$
13	Hyperbolic functions , Relation between the hyperbolic functions and exponential functions
14	Derivative of hyperbolic functions
15	Applications of derivatives , Rate of change
16	Integration of algebraic functions
17	Applications of indefinite integration and finite integration
18&19	Integration of trigonometric functions and inverse Trigonometric functions
20	Integration of $\ln x, u^{-1}, a^u, e^u$
21&22	Methods of integration
23	Area by calculus (Rectangular method ,Trapezoidal rule, Simpson rule)
24	Area under curve , Area between two curves
25&26	Volume by revolution (Disk strip ,Washer strip, Shell strip)
27	Length of the plane curve , Area of surface of revolution
28&29	Matrices (Inverse Matrix)
30	Matrices (Grammar Method)

References:

- 1. Calculus “Seven Edition” By H. Anton , I.Bivens , S. Davis**
- 2. Advanced Engineering Mathematics , By C.R. Wylie ,**
- 3. Calculus , By Thomas**

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Construction Materials

Class : First year

Hours : 2hrs (Theoretical) , 3hrs (Practical)

Objectives :

The student must know the properties of construction materials , their standard specifications , & standard tests .

Week	Practical Syllabus
1	Recognition of laboratory , Using of balances .
2&3&4&5	Clay brick tests : Density , Dimension , Absorption , Compressive strength , Efflorescence , Analysis of soluble salts , Porosity
6	Sand-lime brick tests : (Density , Absorption , Compressive strength) .
7&8	Concrete bricks & block tests : (Density , Absorption , Compressive strength) .
9	Cellular concrete block tests : (Density ,Absorption , Compressive strength) .
10&11&12	Bonding materials (gypsum) tests : , Fineness , Standard consistency ,Time of setting of gypsum, Compressive strength , Tensile strength of gypsum .
13&14	Tile tests : (Dimension , Total absorption, Face absorption, Modulus of rupture) .
15	Concrete flags :(Absorption , Fracture strength) .
16	Standard specification for water proofing materials
17	Standard specification of epoxy .
18&19	Timber (wood) : Compressive strength parallel & perpendicular to fiber test , Modulus of rupture .
20	Steel : (Tensile strength test) .
21	Standard specification for insulating materials .
22	Standard specification for acoustical materials .
23	Standard specification for paints .
24	Standard specification for glass .
25&26&27 &28	Bituminous materials (Asphalt) tests : Softening point , Penetration , Flash point , & ductility .
29	Standard specification for plastics .
30	Standard specification for polymers .

References :

1. **Materials of Construction / R.C. Smith .**
2. **Civil Engineering Materials / N. Jackson .**
3. **Iraqi Standard Specification .**
4. **American Society for Testing Materials (ASTM) .**
5. انشاء المباني / يوسف الدواف
6. انشاء المباني / زهير ساكو ، آرتين ليفون

Technical College / Al-Najaf

Department : Building & Construction Technology Engineering

Subject : Construction Materials

Class : First year

Hours : 2hrs (Theoretical) , 3hrs (Practical)

Objectives :

The student must know the properties of construction materials , their standard specifications , & standard tests .

Week	Theoretical Syllabus
1	Physical properties & standard specification for construction materials , Types of metallic materials , Non metallic materials .
2&3&4	Clay bricks : Definition , Classification , Properties , Types , Advantages & disadvantages of clay bricks , Type of defects , Standard specification .
5	Sand-lime brick : Properties , Standard tests & specification.
6	Glass bricks , Concrete bricks : Properties , Standard tests & specification .
7	Concrete blocks : Types , Uses , Engineering properties , Standard specification .
8	Cellular concrete blocks : Properties , Standard tests & specification .
9&10	Building stone : Definition , Classification , Uses & properties .
11&12&13	Bonding materials : Classification , Chemical composition , properties & uses of common bonding materials , Standard tests & specification (Cement mortar , Cement lime mortar , Gypsum) .
14&15	Flooring materials (Tiles & concrete flags) : Types , Properties , Standard tests & specification .
16&17	Water proofing materials : Classification , (Liquid , Rigid & semi-rigid water proofing materials) , Types & uses .
18	Polymers : Definition , Classification , Chemical composition , Uses .
19	Epoxy : Definition , Properties , Types & uses .
20	Steel : Composition & classification , Properties , Uses & standard tests .
21	Metallic materials (non ferrous) : Classification & use .
22&23	Timber (wood) : Classification, Properties, Seasoning, Types of defect , Standard tests .

24	Insulating materials : Types , Properties .
25	Acoustical materials : Types , Properties .
26	Protective coating (paints) : Composition , Types .
27	Glass : Classification , Properties , Uses .
28&29	Bituminous materials (Asphalt) : Sources & type , Chemical composition , Properties , Uses & tests .
30	Plastic : Properties & classification .

References :

7. **Materials of Construction / R.C. Smith .**
8. **Civil Engineering Materials / N. Jackson .**
9. **Iraqi Standard Specification .**
10. **American Society for Testing Materials (ASTM) .**
11. انشاء المباني / يوسف الدواف
12. انشاء المباني / زهير ساكو ، آرتين ليفون