Course Specification

Course Title	Applied Statistics	
Course Code	CPW21H3	
Academic Year	First Term 2018-2019	
Coordinator	Prof.Dr/ Hafez Abbas Afify	
Teaching Staff	Dr. sobhyabd-AlmoneamYounes	
Branch / Level	CivilEngineering / Second year	
Semester	first term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 2 h lectures**
	Practical	**14 x 1 h practical**
Parent Department	Public Works Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Acquire general information and principles of statistics science.
- Discuss variable data statistically.
- Enhance testing materials using specimens, and acceptable these materials using a suitable confidence factor.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Define applied statistics for testing of engineering materials.

A2. Describe a single variable data.

A3. Mention multiple variable data.

A4. Explain Probability distribution.

A5. IllustrateRandom numbers and variables.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Apply the most appropriate procedure to take the observations and to analyze the observed data

B2. Analyze the level of correlation for indirect observations.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C1. Apply different statistical methods for any types of observations like measured lengths of lines and horizontal and vertical angles under different measuring conditions.

C2. Confirm the accuracy and precision of any measurements in terms of the known means of criteria (standard deviation and mean error) .

D. General and transferable skills:

By the end of this course, the students should be able to:

D1. Work in teamwork.

D2. Solve many cases like what are faced in field

D3. Present many alternative solutionsto problems faced on field.

D4. Collect data about certain topics.

3. Course Contents

Week	Topics
1	Analysis of a single variable data.
2	
3	Analysis of multiple variable data.
4	
5	
6	Probability distribution.
7	
8	
Mid-term exam.	
9	Random numbers and variables.
10	
11	
12	Simulation using Monte-Carlo Procedure.
13	
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	67%
Practical Examination	-	-	-
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	33%

6. List of references

Course notes:

- Enas .FouadLshien " Lectures on Applied Statistics", Faculty of Engineering, Tanta University

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof.Dr/ Hafez Abbas Afify	Prof.Dr/ Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2108	/ /2108

Course Specification

Course Title	Sanitary Engineering	
Course Code	CPW 4105	
Academic Year	2018-2019	
Coordinator	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed	
Teaching Staff	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed	
Branch / Level	Civil Engineering/Fourth year	
Semester	First term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x3 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Enhance the protection of the environment.
- Encourage the communication with economic and social concerns.
- Enable to design basics for water and wastewater treatment.
- Acquire high experience in evaluation of environmental impact.
- Enable to analysis and design of public water supplies.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A6. List the principles of environmental engineering management, water supply and treatment, wastewater treatment, solid waste management, air pollution control, noise pollution measurement and control, and environmental impact assessment.

A7. Illustrate the methods of population projection, water consumption, suitable source of water and its suggested treatment, and economical benefits.

A8. Acquire the environmental laws as they pertain to urban systems infrastructure management.

A9. Review laws for allocation of surface and groundwater supplies, and reviews environmental law.

A10. Acquire wastewater flows and characteristics, sewer system, primary treatment, biological wastewater treatment design theory and the limits of different design criteria.

B. Intellectual skills:

By the end of this course, the students should be able to:

B3. Evaluate the most appropriate wastewater treatment technology.

B4. Apply the best method of design for all of each constitutes creating detailed drawing containing all its different features.

B5. Assess the most appropriate water treatment technology.

B6. Apply the best method of design for all of each constitute creating detailed drawing containing all its different features.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C1. Perform the methods of protecting public health.

C2. Apply suitable formula to protect environment from degradation or contamination.

C3. Apply different methods for estimation of operating and capital costs of water and wastewater treatment.

C4. Design and construct different types of water and wastewater treatment plants.

D. General and transferable skills:

By the end of this course, the students should be able to:

D1. Manage the major components of engineering work.

D2. Communicate with updating of engineering applications.

D3. Work under pressure.

D4. Participate and compose team works.

3. Course Contents

Week	Topics
1,2,3,4,5,6	**Water resources and water supplies works:-** population prediction Introduction to water treatment plants and design of intake Coagulation and Design of flash mixing tank Flocculation and Design of Flocculation tanks Sedimentation and design of sedimentation tanks Sedimentation with Coagulation design of clariflocculator Filtration, design of different types of filter Disinfections and water storage tanks design
7,8	**Water supplies works (continue):-** Water distribution network design
Mid term exam	
9,10	**Preliminary studies for wastewater systems and structures:-** Introduction to Sanitary Engineering and population prediction Introduction to Wastewater treatment – wastewater collection systems
11	**Treatment and recycling of wastewater** Wastewater primary treatment design Secondary treatment and design of different types of wastewater treatment plants Introduction to tertiary treatment and design of sludge treatment systems
12	
13	
14	

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Assessment	-	-	-
Practical Examination	-	-	-
Semester work	5h (overall)	On week 2,3,5,7,9,10,11,13	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

Course notes:

Essential Books:

- Good practices in urban Water management: decoding good practices for a Successful Future" ed. by Anand Chiplunkar, Kallidaikurichi Seetharam, Cheon Kheong Tan. 2012, ADB, National University of Singapore.
- Water and Wastewater Engineering, 2010, McGraw-Hill Professional.
- Baruth, E.E., (2005)." Water Treatment Plant Design" .AWWA, ASCE, 4th edition, MC Graw-Hill.
- WHO. 2004. Guidelines for Drinking-water Quality, 3rd edition. World Health Organisation.
- WHO. 2004. Safe Piped Water : Managing Microbial Water Quality in Piped Distribution Systems, Richard Ainsworth (ed.) IWA.
- Metcalf and eddy, inc. (2003), wastewater engineering: treatment Disposal and Reuse, McGraw Hill series, International Edition.
- Crites, R., and G. Techobanoglous. (1998), Small and Decentralized wastewater management System, McGraw Hill series, International Edition.
- Baruth, E.E., (2005)." Water Treatment Plant Design" .AWWA, ASCE, 4th edition, MC Graw-Hill.
- Basiouny,M.,(2000)." Sewerage, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Basiouny,M.,(2000)." Water Supply, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Schulz, R.C. and Okuh, (1992), surface water treatment for communities in Developing countries, International Technology Publication.
- Vigneswaran, S. and Visvanathan, C. (1995), water treatment processes. CRC Press.

Web sites- Periodicals … etc:

- www.huntsman.com/tioxide
- www.aquaoffice.de/downlaod/HandbuchAd.pdf
- www.owp.csus.edu/WTOP1.html
- www.ovivowater.com
- www.glv.com
- www.wrc.org.za
- Water research
- Journal of environmental engineering
- Water science and technology

7. Facilities required for teaching and learning

- White board.
- Portable display screen.

	Course Coordinator	**Head of Department**
Name	Dr. Ahmed El-Morsy Dr. Abd El-Aziz Elsayed	Dr. Hafez Abbas Afify
Name (Arabic)	أ.م.د.أحمد المرسي أحمد	أ.د. حافظ عباس عفيفي

د.عبدالعزيز السيد

Signature

Date / /2018 / /2018

Course Specification

Course Title	Geodesy and Satellite Surveying	
Course Code	CPW 4106	
Academic Year	First Term 2018-2019	
Coordinator	Prof. Dr / Hafez Abbas Afify	
Teaching Staff	Dr. Sobhy Abd-Almoneam younes	
Branch / Level	Civil Engineering / Fourth year	
Semester	First term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 2 h lectures**
	Practical	**14 x 2 h practical**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Enhance techniques for establishing survey control networks.
- Discuss concepts of geodetic astronomy and relating it to engineering applications.
- Encourage of map projections and their use in engineering applications.
- Acquire basic skills and knowledge for using the Global positioning System (GPS) in survey control, detail surveying and setting out.
- Provide the ability to use the techniques, skills, and modern engineering tools in the field of satellite surveying which are necessary for engineering practice and applications.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A11. Define the principles of geodesy and geodetic astronomy.

A12. Illustrate the concept of GPS satellite surveying and use of GPS receivers.

A13. Illustrate the different methods of Map projections.

A14. Explain the relationships between coordinate systems, datums and map projections.

B. Intellectual skills:

By the end of this course, the students should be able to:

B7. Evaluate issues of geodetic surveying for establishing control networks for quality control and quality.

B8. Expose students to the concepts and applications of satellite surveying and surveying information in engineering.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C3. Perform geodetic calculations, analyzing results and geodetic quality assessment.

C4. Design how to use maps with varying map projects and datum in engineering applications.

C5. Design geodetic and GPS satellite surveys.

D. General and transferable skills:

By the end of this course, the students should be able to:

D5. Work in teamwork.

D6. Build self confidence.

3. Course Contents

Week	Topics
1	3-D coordinates computations and transformations.
2	
3	Coordinates determinations using different GPS techniques.
4	
5	GPS operation planning.
6	
Mid-term exam.	
7	Remote basics and principles.
8	
9	Elements of photography process.
10	
11	Types of microwave and radar's.
12	
13	Terrestrial monitoring.
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- - Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Practical Examination	-	-	-
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	30%

6. List of references

Course notes:

Essential Books:

- Allan, A.L.1997 "Practical Surveying and Computations "Butterworth-Heinemann Rev. 2nd ed.
- Kavanagh, B.F. 2004. " Surveying with Construction Applications " Prentice-Hall 5th ed

- Leick, Alfred. 2004. GPS Satellite Surveying. 3th. ed. New York: John Wiley & Sons.

Web sites:

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof. Dr / Hafez Abbas Afify	Prof. Dr / Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	**Highway Engineering.**	
Course Code	**CPW4107**	
Academic Year	2018-2019	
Coordinator	**Dr. Ragaa Abdel Hakim**	
Teaching Staff	**Dr. Ragaa Abdel Hakim**	
Branch / Level	Civil Engineering/Fourth year	
Semester	First term	
Pre-Requisite	-----	
Course Delivery	**Lecture**	**14 x3 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Help to know different types of roads and its items.
- Discuss the different geometric design elements like pavement widths, horizontal alignment, vertical alignment, slopes, shoulders, and channelization.
- Provide knowledge about the methods of designing flexible and rigid pavement.
- Discuss the soil category according to its characteristics, which is very important for designing different layers of highways.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Explain the information about the functional classification of highways and illustrate the dimensions and arrangement of the visible features of highway including (pavement width, slopes, channelization, intersections, as well as horizontal and vertical alignment).

A2. Illustrate the basics about the horizontal and vertical alignment considering the balance between high speed and safety as well as achieving the sight distance on the curves.

A3. Describe Knowledge about the classification methods of soils such as AASHTO and Unified systems and describe the behavior of each soil as sub-grade. Measure the sub-grade soil strength in lab and in the field through CBR test, plate bearing test, and direct shear test.

A4. Tell how to design the flexible pavement layers thickness by using AASHTO procedures method. Also understand the methods of designing the rigid pavement via calculating the thickness of a pavement concrete slab.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Evaluate the minimum length of vertical curve to satisfy sight distance, and determine the suitable grades of road to satisfy the land topography.

B2. Analysis the horizontal curve and determine the required pavement widening.

B3. Measure the thickness of flexible pavement layers as well as the thickness of rigid pavement to satisfy the loads of traffic.

C. Professional and practical skills:

C1. Diagnose the properties and behavior of the soil if used as sub-grade.

C2. Verify the thickness of existing pavement layers.

C3. Diagnose different asphalt mixtures and determine the properties regarding the stress and elasticity.

C4. Design the roads to satisfy the traffic loads requirements.

D. General and transferable skills:

By the end of this course, the students should be able to:

D7. Work in teamwork.

D8. Build self confidence.

D9. Work under pressure.

D10. Collect data about certain topics.

3. Course Contents

Week	Topics
1	Classification of road
2	Planning and route selection
3-4	Geometric design criteria .
5-6	Planning and design of intersections
Mid-term exam.	
7-8	Design and characteristics of asphalt mixes
9-10-11	Design of pavement and concrete roads.
12-13-14	Surface drainage of roads

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Examination	-	-	-
Practical Examination	-	-	-
Semester work	5hours (overall)	3,5,9	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

6.1- Essential Books (Text Books)

- S Nicholas J. Garber,Lester A. Hoel, “Traffic and highway engineering”, Fourth Edition, 2009.
- Roger L. Brockenbrough, “Highway Engineering Handbook: Building and Rehabilitating the Infrastructure, Third Edition”, 2009.
- T.F. Fwa, “The Handbook of Highway Engineering”, 2005.
- Martin Rogers, “Highway engineering”, 2003.
- John George Schoon, “Traffic and highway engineering”, Second Edition, 2000.

6.2- Periodicals, Web Sites, etc

- To be sited during the course

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Dr. Ragaa Abdel Hakim	Pro. Dr. Hafez Abbas Afify
Name (Arabic)	د.رجاء عبد الحكيم	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	**Highway and Airports Engineering.**	
Course Code	**CPW4112**	
Academic Year	2018-2019	
Coordinator	**Dr. Islam Abou Elnaga**	
Teaching Staff	**Dr. Islam Abou Elnaga**	
Branch / Level	Structural Engineering/Fourth year	
Semester	First term	
Pre-Requisite	----	
Course Delivery	**Lecture**	**14 x3 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Discuss different geometric design elements like pavement widths, horizontal alignment, vertical alignment, slopes, shoulders, and channelization.
- Provide methods of designing flexible and rigid pavement.
- Help to know the methods of asphalt mixes design.
- Acquire skills of the structural design of airports.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Mention the functional classification of highways. Understand the dimensions and arrangement of the visible features of highway including (pavement width, slopes, channelization, intersections, as well as horizontal and vertical alignment).

A2. Illustrate the basics about the horizontal and vertical alignment considering the balance between high speed and safety as well as achieving the sight distance on the curves.

A3. Explain how to design the flexible pavement layers thickness by using AASHTO procedures method. Also understand the methods of designing the rigid pavement via calculating the thickness of a pavement concrete slab.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Measure the minimum length of vertical curve to satisfy sight distance, and determine the suitable grades of road to satisfy the land topography.

B2. Evaluate the horizontal curve and determine the required pavement widening.

B3. Plan the thickness of flexible pavement layers as well as the thickness of rigid pavement to satisfy the loads of traffic.

B4. Analyze the runways & subways.

C. Professional and practical skills:

C1. Design and determine the thickness of existing pavement layers.

C2. Diagnose different asphalt mixtures.

C3. Verify properties and behavior of the soil if used as sub-grade for runways

D. General and transferable skills:

By the end of this course, the students should be able to:

D11. Work in teamwork.

D12. Build self confidence.

D13. Work under pressure.

D14. Collect data about certain topics

3. Course Contents

Week	Topics
1	Classification of roads
2	Planning and route selection
3	Geometric design criteria
4	Planning and design of intersection
5	Design and characteristics of asphalt mixes
6	Design of pavement and concrete roads
Mid-term exam	
7	Surface drainage of roads
8	Types and properties of airplanes
9-10	Design of runways
11	Design subways
12	Structural design of airports as a general
13-14	System of lights,drainage,and traffic signals

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Examination	-	-	-
Practical Examination	-	-	-
Semester work	5hours (overall)	3,5,9	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

6.1- Essential Books (Text Books)

- Martin Rogers, “Highway engineering”, 2009.
- Nicholas J. Garber,Lester A. Hoel, “Traffic & Highway Engineering”, First Edition, 2008.

- Norman J. Ashford, Saleh Mumayiz, Paul H. Wright, “Airport Engineering: Planning, Design and Development of 21st Century Airports”, 2011.

6.2- Periodicals, Web Sites, etc

- To be cited during the course

7. Facilities required for teaching and learning

- Portable display screen.
- White board

	Course Coordinator	Head of Department
Name	Dr. Islam Abou Elnaga	Pro.Dr. Hafez Abbas Afify
Name (Arabic)	د. اسلام ابو النجا	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Plane surveying A	
Course Code	CPW 1101	
Academic Year	First Term 2018-2019	
Coordinator	Prof. Dr / Hafez Abbas Afify	
Teaching Staff	Prof. Dr / Hafez Abbas Afify	
Branch / Level	Civil Engineering / first year	
Semester	First term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 4 h lectures**
	Practical	**14 x 2 h practical**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Acquire the information about the physical shape of the Earth and the dimensions of the approximated shapes to the true one.
- Provide the definitions of horizontal and vertical lines and planes on the Earth.
- Enhance and draw different types of scales and verniers that usually used in maps and in most of the surveying instruments.
- Encourage of map projections and their use in engineering applications.
- Encourage the ability to draw maps from field measurements using tapes and some simple measuring tools and instruments in surveying.
- Provide leveling projects and determine the 3D coordinates of points and the height difference between them.
- Encourage the ability to study the magnetic bearing, the geographic bearing of lines, traverses using the compass and calculate the departure and latitude of lines to end up with the planimetric coordinates of points.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Know the divisions and types of surveying, and the horizontal and vertical lines and planes on the Earth's surface. Illustrate the units of measurements used in surveying (English, French, and Egyptian).

A2. Illustrate the different types of scales (numerical, longitudinal and net scales).

A3. Understand the fundamental steps for creating maps or setting out points in the field and measuring lengths of lines using a chain or a tape under different terrain configurations.

A4. Recognize different types of verniers (Forward, reverse, and double verniers).

B. Intellectual skills:

By the end of this course, the students should be able to:

B9. Suggest the most appropriate field procedure to determine the horizontal measurements of lines however the measuring and viewing obstacles found mid-way the measured lines.

B10. Formulate the leveling table to determine the level of each observed point.

B11. Formulate the coordinates of points from the measured length and azimuth of traverse lines.

B12. Measure and represent the land, three dimensional objects, point-fields and trajectories.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C6. Perform corrections to the measured lengths of lines due to environmental and measuring conditions.

C7. Verify field-points and axes using simple tools in surveying.

C8. Perform leveling projects and check their accuracy then reduce errors or eliminate mistakes.

D. General and transferable skills:

By the end of this course, the students should be able to:

D15. Work in teamwork.

D16. Build self confidence.

D17. Work under pressure.

D18. Collect data about certain topics.

3. Course Contents

Week	Topics
1	Classification of surveying sciences.
2	
3	Units of measurements.
4	Drawing scales.
5	
6	Types of surveying maps.
7	
Mid-term exam.	
8	Distance measurements.
9	
10	Angles measurements
11	Angles measurements.
12	Coordinates Systems.
13	
14	Setting out of points.

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	60%
Practical Examination	15min	On week 14	20%

Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	20%

6. List of references

Course notes:

Essential Books:

- Hafez A. Afify "Lectures on plane Surveying and leveling", Faculty of Engineering, Tanta University (2006).
  - Moffitt F. H. and Bouchard H. " Surveying", Harper Collins Publishers Inc., Ninth Edition, 1992, New York, NY 10022.
  - Kavanagh B. F. and Glenn bird S. J. , "Surveying Principles and applications", Prentice-Hall Inc., Fifth Edition, 2000, New Jersey, USA.
- Paul R. Wolf and Charles D. Ghilani, "Elementary Surveying – An Introduction to geomatics", Pearson Prenrics-Hall Inc., Eleventh Edition, 2006, New Jersey 07458, USA.

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof. Dr / Hafez Abbas Afify	Prof. Dr / Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Title	Sanitary Engineering	
Course Code	CPW 4113	
Academic Year	2018-2019	
Coordinator	Dr. Ahmed El-Morsy -Dr. Mohamed Ayoub	
Teaching Staff	Dr. Ahmed El-Morsy -Dr. Mohamed Ayoub	
Branch / Level	Structural Engineering/Fourth year	
Semester	First term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x3 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Enhance the protection of the environment.
- Communicate with economic and social concerns.
- Enable to design basics for water and wastewater treatment.
- Acquire high experience in evaluation of environmental impact.
- Enable to analysis and design of public water supplies.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A15. List the principles of environmental engineering management, water supply and treatment, wastewater treatment, solid waste management, air pollution control, noise pollution measurement and control, and environmental impact assessment.

A16. Illustrate the methods of population projection, water consumption, suitable source of water and its suggested treatment, and economical benefits.

A17. Acquire the environmental laws as they pertain to urban systems infrastructure management.

A18. Review laws for allocation of surface and groundwater supplies, and reviews environmental law.

A19. Acquire wastewater flows and characteristics, sewer system, primary treatment, biological wastewater treatment design theory and the limits of different design criteria.

B. Intellectual skills:

By the end of this course, the students should be able to:

B13. Evaluate the most appropriate wastewater treatment technology.

B14. Apply the best method of design for all of each constitutes creating detailed drawing containing all its different features.

B15. Assess the most appropriate water treatment technology

B16. Apply the best method of design for all of each constitute creating detailed drawing containing all its different features.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C5. Perform the methods of protecting public health.

C6. Apply suitable formula to protect environment from degradation or contamination.

C7. Apply different methods for estimation of operating and capital costs of water and wastewater treatment.

C8. Design and construct different types of water and wastewater treatment plants.

D. General and transferable skills:

By the end of this course, the students should be able to:

D5. Manage the major components of engineering work.

D6. Communicate with updating of engineering applications.

D7. Work under pressure.

D8. Participate and compose team works.

3. Course Contents

Week	Topics
1,2,3,4,5,6	**Water resources and water supplies works:-** population prediction Introduction to water treatment plants and design of intake Coagulation and Design of flash mixing tank Flocculation and Design of Flocculation tanks Sedimentation and design of sedimentation tanks Sedimentation with Coagulation design of clariflocculator Filtration, design of different types of filter Disinfections and water storage tanks design
7,8	**Water supplies works (continue):-** Water distribution network design
Mid term exam	
9,10	**Preliminary studies for wastewater systems and structures:-** Introduction to Sanitary Engineering and population prediction Introduction to Wastewater treatment – wastewater collection systems
11	**Treatment and recycling of wastewater** Wastewater primary treatment design Secondary treatment and design of different types of wastewater treatment plants Introduction to tertiary treatment and design of sludge treatment systems
12	
13	
14	

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Assessment	-	-	-
Practical Examination	-	-	-
Semester work	5h (overall)	On week 2,3,5,7,9,10,11,13	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

Course notes:

Essential Books:

- Good practices in urban Water management: decoding good practices for a Successful Future" ed. by Anand Chiplunkar, Kallidaikurichi Seetharam, Cheon Kheong Tan. 2012, ADB, National University of Singapore.
- Water and Wastewater Engineering, 2010, McGraw-Hill Professional.
- Baruth, E.E., (2005)." Water Treatment Plant Design" .AWWA, ASCE, 4th edition, MC Graw-Hill.
- WHO. 2004. Guidelines for Drinking-water Quality, 3rd edition. World Health Organisation.
- WHO. 2004. Safe Piped Water : Managing Microbial Water Quality in Piped Distribution Systems, Richard Ainsworth (ed.) IWA.
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- Crites, R., and G. Techobanoglous. (1998), Small and Decentralized wastewater management System, McGraw Hill series, International Edition.
- Baruth, E.E., (2005)." Water Treatment Plant Design" .AWWA, ASCE, 4th edition, MC Graw-Hill.
- Basiouny,M.,(2000)." Sewerage, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Basiouny,M.,(2000)." Water Supply, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Schulz, R.C. and Okuh, (1992), surface water treatment for communities in Developing countries, International Technology Publication.
- Vigneswaran, S. and Visvanathan, C. (1995), water treatment processes. CRC Press.

Web sites- Periodicals … etc:

- www.huntsman.com/tioxide
- www.aquaoffice.de/downlaod/HandbuchAd.pdf
- www.owp.csus.edu/WTOP1.html
- www.ovivowater.com
- www.glv.com
- www.wrc.org.za
- Water research
- Journal of environmental engineering
- Water science and technology

7. Facilities required for teaching and learning

- White board.
- Portable display screen.

	Course Coordinator	Head of Department
Name	Dr. Ahmed E-lmorsy	Prof. Dr. Hafez Abbas Afify
Name (Arabic)	أ.م.د. أحمد المرسي د. محمد ايوب	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Title	**Transportation and Traffic Engineering**	
Course Code	**CPW 3103**	
Academic Year	2018-2019	
Coordinator	**Dr. Ahmed Mohamed Alkafoury**	
Teaching Staff	**Dr. Ahmed Mohamed Alkafoury**	
Branch / Level	Civil Engineering/ Third year	
Semester	First term	
Pre-Requisite	-----	
Course Delivery	**Lecture**	**14 x2 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Provide objectives and goals of transportation planning stages.
- Discuss the three fundamental traffic parameters (speed, volume and density).
- Discuss information about traffic volume, travel time, delay, parking and accidents.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Mention the information about urban transportation planning process a1- Mention about urban transportation planning process containing objectives, surveys, future land use planning, models and evaluation.

A2. Illustrate the fundamentals about transportation models (trip generation, trip distribution, modal spilt and traffic assignment).

A3. List some concepts related to the traffic engineering studies such as topography and physical features, traffic data, design speed, design vehicles, sight distance and Traffic control systems.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Conclude steps of how to make a transportation study of any region.

B2. Measure the speeds on the roads and determine the causes of decreasing it.

B3. Measure the time for any traffic signal.

C. Professional and practical skills:

C1. Design the roads to satisfy the traffic volume requirements.

C2. Apply the current transportation networks and find their improvement methods

C3. Perform the required data for any transportation study.

D. General and transferable skills:

By the end of this course, the students should be able to:

D19. Work in teamwork.

D20. Build self confidence.

D21. Work under pressure.

D22. Collect data about certain topics

3. Course Contents

Week	Topics
1-2	Urban planes
3-4	Objectives and goals and transportation planning stages
5-6-7	Traffic studies
Mid-term exam.	
8-9-10	Traffic flow characteristics
11-12-13-14	Interception control

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.

. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Examination	-	-	-
Practical Examination	-	-	-
Semester work	5hours (overall)	3,5,9	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

.1- Course Notes

- Mohamed. H. Fahmy, "Transportation Planning and Railways", 2005, Alexandria University.

6.2- Essential Books

- Klügl, Ana L. C. Bazzan, Sascha Ossowski, "Applications of agent technology in traffic and transportation", 2005.
- Roger P. Roess, Elena S. Prassas, William R. McShane "Traffic Engineering",2010
- Myer Kutz, "Handbook of Transportation Engineering (Volume II)", 2011.
- Slim Hammadi and Mekki Ksouri, "Multimodal Transport Systems", 2012.

6.3- Periodicals, Web Sites, etc

- To be cited during the course

7. Facilities required for teaching and learning

- Portable display screen.
- White board

	Course Coordinator	Head of Department
Name	**Dr. Ahmed Mohamed Alkafoury**	**Pro.Dr. Hafez Abbas Afify**
Name (Arabic)	د. احمد محمد الكافوري	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	**Transportation and Traffic Engineering**
Course Code	**CPW 3103**
Academic Year	2018-2019

Coordinator	**Dr. Ahmed Mohamed Alkafoury**		
Teaching Staff	**Dr. Ahmed Mohamed Alkafoury**		
Branch / Level	Civil Engineering/ Third year		
Semester	First term		
Pre-Requisite	-----		
Course Delivery	**Lecture**	**14 x2**	**h lectures**
	Tutorial	**14 x2**	**h tutorial**
Parent Department	Structural Engineering Department		
Date of Approval			

1. Course Aims

The aims of this course are to:

- Provide objectives and goals of transportation planning stages.
- Discuss the three fundamental traffic parameters (speed, volume and density).
- Discuss information about traffic volume, travel time, delay, parking and accidents.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A4. Mention the information about urban transportation planning process a1- Mention about urban transportation planning process containing objectives, surveys, future land use planning, models and evaluation.

A5. Illustrate the fundamentals about transportation models (trip generation, trip distribution, modal spilt and traffic assignment).

A6. List some concepts related to the traffic engineering studies such as topography and physical features, traffic data, design speed, design vehicles, sight distance and Traffic control systems.

B. Intellectual skills:

By the end of this course, the students should be able to:

B4. Conclude steps of how to make a transportation study of any region.

B5. Measure the speeds on the roads and determine the causes of decreasing it.

B6. Measure the time for any traffic signal.

C. Professional and practical skills:

C1. Design the roads to satisfy the traffic volume requirements.

C2. Apply the current transportation networks and find their improvement methods

C3. Perform the required data for any transportation study.

D. General and transferable skills:

By the end of this course, the students should be able to:

D23. Work in teamwork.

D24. Build self confidence.

D25. Work under pressure.

D26. Collect data about certain topics

3. Course Contents

Week	Topics
1-2	Urban planes
3-4	Objectives and goals and transportation planning stages
5-6-7	Traffic studies
Mid-term exam.	
8-9-10	Traffic flow characteristics
11-12-13-14	Interception control

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Problems solution in theoretical exercises.

. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Examination	-	-	-
Practical Examination	-	-	-
Semester work	5hours (overall)	3,5,9	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

.1- Course Notes

- Mohamed. H. Fahmy, "Transportation Planning and Railways", 2005, Alexandria University.

6.2- Essential Books

- Klügl, Ana L. C. Bazzan, Sascha Ossowski, "Applications of agent technology in traffic and transportation", 2005.
- Roger P. Roess, Elena S. Prassas, William R. McShane "Traffic Engineering",2010
- Myer Kutz, "Handbook of Transportation Engineering (Volume II)", 2011.
- Slim Hammadi and Mekki Ksouri, "Multimodal Transport Systems", 2012.

6.3- Periodicals, Web Sites, etc

- To be cited during the course

7. Facilities required for teaching and learning

- Portable display screen.
- White board

	Course Coordinator	Head of Department
Name	**Dr. Ahmed Mohamed Alkafoury**	**Pro.Dr. Hafez Abbas Afify**
Name (Arabic)	د. احمد محمد الكافوري	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	**Airports Engineering.**
Course Code	**CPW4208**
Academic Year	2018-2019
Coordinator	**Dr. Ragaa Abdel Hakim**
Teaching Staff	**Dr. Ragaa Abdel Hakim**
Branch / Level	Civil Engineering/Fourth year

Semester	second term	
Pre-Requisite	----	
Course Delivery	**Lecture**	**14 x2 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Discuss the methods of designing flexible and rigid pavement.
- Acquire knowledge of methods in asphalt mixes design.
- Enhance structural design of airports.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Explain how to design the flexible pavement layers thickness by using AASHTO procedures method. Also understand the methods of designing the rigid pavement via calculating the thickness of a pavement concrete slab.

A2. Illustrate some concepts about types and properties of airplanes.

A3. Mention how to design the runways.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Measure the thickness of flexible pavement layers as well as the thickness of rigid pavement to satisfy the loads of traffic.

B2. Analyze the runways & subways.

B3. Create a master plan for airport project.

C. Professional and practical skills:

C1. Design and determine the thickness of existing pavement layers.

C2. Diagnose different asphalt mixtures .

C3. Verify properties and behavior of the soil if used as sub-grade for runways.

D. General and transferable skills:

By the end of this course, the students should be able to:

D27. Work in teamwork.

D28. Build self confidence.

D29. Work under pressure.

D30. Collect data about certain topics

3. Course Contents

Week	Topics
1	Types and properties of airplanes
2-3	Design of runways

4-5-6	Design subways
Mid-term exam	
7-8-9-10	Structural design of airports as a general
11-12-13-14	System of lights, drainage and traffic signals

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Examination	-	-	-
Practical Examination	-	-	-
Semester work	5hours (overall)	3,5,9	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

6.1- Essential Books (Text Books)

- Airport planning & management by Alexander T. Wells, Seth B. Young.2004, McGraw-Hill
- Airport Engineering by S. C. Rangwala and P. S. Rangwala 2008.
- Planning and Design of Airports by Robert Horonjeff,Francis , McKelveyAnd William2009.
- Norman J. Ashford, Saleh Mumayiz, Paul H. Wright, "Airport Engineering: Planning, Design and Development of 21st Century Airports, 4th Edition", 2011

6.2- Periodicals, Web Sites, etc

- To be cited during the course

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	**Dr. Ragaa Abdel Hakim**	Pro. Dr. Hafez Abbas Afify
Name (Arabic)	**د.رجاء عبد الحكيم**	**أ.د. حافظ عباس عفيفي**
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Water and Sanitary Networks	
Course Code	CPW 4211	
Academic Year	2018-2019	
Coordinator	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed - Dr. Mohamed Ayoub	
Teaching Staff	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed - Dr. Mohamed Ayoub	
Branch / Level	Civil Engineering/Fourth year	
Semester	Second term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x2 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Enhance the protection of the environment.
- Criticize the performance of water distribution networks and sewerage networks.
- Enable to design basics for distribution of potable water and collection of domestic sewage.
- Acquire high experience in evaluation of environmental impact.
- Enable to analysis and design of public water supplies.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A20. Illustrate the elements of water distribution networks and sewerage networks.

A21. Define the principles and practice of water resources engineering. In addition, explain analytic methods and computer models to design and evaluate water and sanitary networks.

A22. Illustrate the methods of population projection, water consumption, design discharges and economical benefits.

A23. List water supply system components (service reservoirs, pipelines, pipeline accessories, dams, storage reservoirs and control mechanisms).

A24. Mention sewerage system components (pipelines, storm water drains, sewers and manholes), pollutants (industrial and domestic).

B. Intellectual skills:

By the end of this course, the students should be able to:

B17. Analyze of public water supplies. Topics include supply evaluation; water quality and quantity requirements; treatment requirements and methods; hydraulic analysis of water distribution systems including line sizing, fire protection, pumps, valves, and storage; environmental impact assessments; and federal, state, and local government laws and regulations related to public water systems.

B18. Evaluate of environmental engineering management tools and suggest the most suitable method to design water and sanitary networks.

B19. Integrate hydraulic formulas which used in analysis of water and sanitary networks.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C9. Perform the methods of protecting public health.

C10. Design of water supply and sewerage system components.

C11. Design and construct different types of water distribution systems and all its different features.

C12. Design and construct different types of wastewater collection systems and all its different features.

D. General and transferable skills:

By the end of this course, the students should be able to:

D9. Manage the major components of engineering work.

D10. Communicate with updating of engineering applications.

D11. Work under pressure.

D12. Participate and compose team works.

3. Course Contents

Week	Topics
1,2,3,4,5,6,7	**Different types of water supply pipes and networks:-** Design and analysis of water distribution systems networks, pipes. Computer applications. Design of water distribution systems storage; pump stations, valves and appurtenances. **Construction of water supply networks:-** Construction laying, jointing, testing of pipes and maintenance of water distribution systems.
Mid term exam	
8,9,10,11,12,13,14	**Construction of wastewater networks:-** Quantity of sanitary sewage, characteristics and composition of sewage and their significance estimation of storm runoff. Design and hydraulics of flow in sanitary and storm sewers Design of sewers pipes systems Construction, laying, jointing, testing of sewers pipes and maintenance of systems.

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Assessment	-	-	-
Practical Examination	-	-	-
Semester work	5h (overall)	On week 2,3,4,6,7,9,11,13	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

Course notes:
Essential Books:

- Good practices in urban Water management: decoding good practices for a Successful Future" ed. by Anand Chiplunkar, Kallidaikurichi Seetharam, Cheon Kheong Tan. 2012, ADB, National University of Singapore.
- Water and Wastewater Engineering, 2010, McGraw-Hill Professional.
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- WHO. 2004. Guidelines for Drinking-water Quality, 3rd edition. World Health Organisation.
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- Basiouny,M.,(2000)." Water Supply, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Garg, S.K., Environmental Engineering, Vols. I and II, Khanna Publishers, New Delhi, 1994.
- C.S.Shah, Water Supply and Sanitation, Galgotia Publishing Company, New Delhi, 1994
- Schulz, R.C. and Okuh, (1992), surface water treatment for communities in Developing countries, International Technology Publication.
- Vigneswaran, S. and Visvanathan, C. (1995), water treatment processes. CRC Press.

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- www.owp.csus.edu/WTOP1.html
- www.ovivowater.com
- www.glv.com
- www.wrc.org.za
- Water research
- Journal of environmental engineering
- Water science and technology

7. Facilities required for teaching and learning

- Portable display screen.

	Course Coordinator	Head of Department
Name	Dr. Ahmed El-Morsy	Dr. Hafez Abbas Afify

	Dr. Abd El-Aziz Elsayed Dr. Mohamed Ayoub	
Name (Arabic)	أ.م.د.أحمد المرسي د.عبدالعزيز السيد د.محمد ايوب	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Water and Sanitary Networks	
Course Code	CPW 4211	
Academic Year	2018-2019	
Coordinator	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed - Dr. Mohamed Ayoub	
Teaching Staff	Dr. Ahmed El-Morsy - Dr. Abd El-Aziz Elsayed - Dr. Mohamed Ayoub	
Branch / Level	Civil Engineering/Fourth year	
Semester	Second term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x2 h lectures**
	Tutorial	**14 x2 h tutorial**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

The aims of this course are to:

- Enhance the protection of the environment.
- Criticize the performance of water distribution networks and sewerage networks.
- Enable to design basics for distribution of potable water and collection of domestic sewage.
- Acquire high experience in evaluation of environmental impact.
- Enable to analysis and design of public water supplies.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A25. Illustrate the elements of water distribution networks and sewerage networks.

A26. Define the principles and practice of water resources engineering. In addition, explain analytic methods and computer models to design and evaluate water and sanitary networks.

A27. Illustrate the methods of population projection, water consumption, design discharges and economical benefits.

A28. List water supply system components (service reservoirs, pipelines, pipeline accessories, dams, storage reservoirs and control mechanisms).

A29. Mention sewerage system components (pipelines, storm water drains, sewers and manholes), pollutants (industrial and domestic).

B. Intellectual skills:

By the end of this course, the students should be able to:

B20. Analyze of public water supplies. Topics include supply evaluation; water quality and quantity requirements; treatment requirements and methods; hydraulic analysis of water distribution systems including line sizing, fire protection, pumps, valves, and storage; environmental impact assessments; and federal, state, and local government laws and regulations related to public water systems.

B21. Evaluate of environmental engineering management tools and suggest the most suitable method to design water and sanitary networks.

B22. Integrate hydraulic formulas which used in analysis of water and sanitary networks.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C13. Perform the methods of protecting public health.

C14. Design of water supply and sewerage system components.

C15. Design and construct different types of water distribution systems and all its different features.

C16. Design and construct different types of wastewater collection systems and all its different features.

D. General and transferable skills:

By the end of this course, the students should be able to:

D13. Manage the major components of engineering work.

D14. Communicate with updating of engineering applications.

D15. Work under pressure.

D16. Participate and compose team works.

3. Course Contents

Week	Topics
1,2,3,4,5,6,7	**Different types of water supply pipes and networks:-** Design and analysis of water distribution systems networks, pipes. Computer applications. Design of water distribution systems storage; pump stations, valves and appurtenances. **Construction of water supply networks:-** Construction laying, jointing, testing of pipes and maintenance of water distribution systems.
Mid term exam	
8,9,10,11,12,13,14	**Construction of wastewater networks:-** Quantity of sanitary sewage, characteristics and composition of sewage and their significance estimation of storm runoff. Design and hydraulics of flow in sanitary and storm sewers Design of sewers pipes systems Construction, laying, jointing, testing of sewers pipes and maintenance of systems.

4. Teaching and Learning Methods

4.1- Lectures.

4.2- Problems solution in theoretical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	70%
Oral Assessment	-	-	-
Practical Examination	-	-	-
Semester work	5h (overall)	On week 2,3,4,6,7,9,11,13	30%

Attendance is essential in all tutorial classes. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments.

6. List of references

Course notes:
Essential Books:

- Good practices in urban Water management: decoding good practices for a Successful Future" ed. by Anand Chiplunkar, Kallidaikurichi Seetharam, Cheon Kheong Tan. 2012, ADB, National University of Singapore.
- Water and Wastewater Engineering, 2010, McGraw-Hill Professional.
- Baruth, E.E., (2005)." Water Treatment Plant Design" .AWWA, ASCE, 4th edition, MC Graw-Hill.
- WHO. 2004. Guidelines for Drinking-water Quality, 3rd edition. World Health Organisation.
- WHO. 2004. Safe Piped Water : Managing Microbial Water Quality in Piped Distribution Systems, Richard Ainsworth (ed.) IWA.
- Metcalf and eddy, inc. (2003), wastewater engineering: treatment Disposal and Reuse, McGraw Hill series, International Edition.
- Crites, R., and G. Techobanoglous. (1998), Small and Decentralized wastewater management System, McGraw Hill series, International Edition.
- Basiouny,M.,(2000)." Sewerage, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Basiouny,M.,(2000)." Water Supply, Theory, Design Criteria, and Solved Examples" . BHIT, Egypt.
- Garg, S.K., Environmental Engineering, Vols. I and II, Khanna Publishers, New Delhi, 1994.
- C.S.Shah, Water Supply and Sanitation, Galgotia Publishing Company, New Delhi, 1994
- Schulz, R.C. and Okuh, (1992), surface water treatment for communities in Developing countries, International Technology Publication.
- Vigneswaran, S. and Visvanathan, C. (1995), water treatment processes. CRC Press.

Web sites- Periodicals ... etc:

- www.huntsman.com/tioxide
- www.aquaoffice.de/downlaod/HandbuchAd.pdf
- www.owp.csus.edu/WTOP1.html
- www.ovivowater.com
- www.glv.com
- www.wrc.org.za
- Water research
- Journal of environmental engineering
- Water science and technology

7. Facilities required for teaching and learning

- Portable display screen.

	Course Coordinator	Head of Department
Name	Dr. Ahmed El-Morsy	Dr. Hafez Abbas Afify

	Dr. Abd El-Aziz Elsayed Dr. Mohamed Ayoub	
Name (Arabic)	أ.م.د.أحمد المرسي د.عبدالعزيز السيد د.محمد ايوب	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Plane surveying B	
Course Code	CPW 1201	
Academic Year	second Term 2018-2019	
Coordinator	Prof. / Hafez Abbas Afify	
Teaching Staff	Prof. / Hafez Abbas Afify	
Branch / Level	Civil Engineering / first year	
Semester	second Term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 3 h lectures**
	Practical	**14 x 3 h practical**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Discuss the areas of lands of any shape pounded with straight or curved lines from either the field observation or from the map.
- Provide with the Planimeter to determine areas from maps and know how to extract information from contour lines.
- Acquire skills of practical field observations required to represent topographic surfaces by grid leveling and draw contour maps for different terrain surfaces.
- Provide leveling projects and determine the 3D coordinates of points and the height difference between them.
- Provide with the different methods of volume evaluation from various sources of data; cross sections, points' coordinates, and contour lines for either regular or irregular bodies.
- Discuss the systems of maps numbering and arrangements based on different map scale.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Know the different methods of calculating and measuring areas from various data sources; regular figures, points coordinates, line components.

A2. Understand the function of each component of the Planimeter and measure areas from maps as direct observations.

A3. Be aware of the contour line and contour interval and draw contour maps from grid leveling by linear interpolation procedure.

A4. Realize the methods of volume evaluation for any 3D shape and from various sources of data.

A30. B. Intellectual skills:

By the end of this course, the students should be able to:

B23. Suggest the most appropriate procedure to determine the areas of lands based on the available field observations.

B24. Conclude the natural geometric properties of terrain surfaces from contour maps.

B25. Interpret the theoretical concept of each method used for area or volume determination and analyze the sources of errors involved in the computed quantity.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C17. Solve for the areas of figures from maps using the Planimeter.

C18. Design contour maps from field observation required for grid leveling and interpret the topographic surfaces from contour maps.

C19. Solve the problems of partitioning of lands and volume evaluation.

D. General and transferable skills:

By the end of this course, the students should be able to:

D31. Work in teamwork.

D32. Build self confidence.

D33. Work under pressure.

3. Course Contents

Week	Topics
1	Areas and land divisions: • Shapes pounded by straight lines. • Shapes pounded by curved lines. • Using the Planimeter. • Measurements using theoretical laws.
2	
3	
4	
5	Calculation of quantities for land leveling.
6	
7	
Mid-term exam.	
8	Methods of determination of difference in elevation.
9	
10	Grid leveling.
11	
12	Contour line.
13	Theodolite traverses.
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	60%
Practical Examination	15min	On week 14	20%
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	20%

6. List of references

Course notes:

Essential Books:

- Hafez A. Afify "Lectures on Areas, Volumes, and Map Arrangements", Faculty of Engineering, Tanta University (2006).
- Moffitt F. H. and Bouchard H. " Surveying", Harper Collins Publishers Inc., Ninth Edition, 1992, New York, NY 10022.
- Kavanagh B. F. and Glenn bird S. J. , "Surveying Principles and applications", Prentice-Hall Inc., Fifth Edition, 2000, New Jersey, USA.
- Paul R. Wolf and Charles D. Ghilani, "Elementary Surveying – An Introduction to geomatics", Pearson Prenrics-Hall Inc., Eleventh Edition, 2006, New Jersey 07458, USA.

Web sites:

- To be sited during the course.

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof. / Hafez Abbas Afify	Prof. / Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Plane surveying B	
Course Code	CPW 1201	
Academic Year	second Term 2018-2019	
Coordinator	Prof. / Hafez Abbas Afify	
Teaching Staff	Prof. / Hafez Abbas Afify	
Branch / Level	Civil Engineering / first year	
Semester	second Term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 3 h lectures**
	Practical	**14 x 3 h practical**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Discuss the areas of lands of any shape pounded with straight or curved lines from either the field observation or from the map.
- Provide with the Planimeter to determine areas from maps and know how to extract information from contour lines.
- Acquire skills of practical field observations required to represent topographic surfaces by grid leveling and draw contour maps for different terrain surfaces.
- Provide leveling projects and determine the 3D coordinates of points and the height difference between them.
- Provide with the different methods of volume evaluation from various sources of data; cross sections, points' coordinates, and contour lines for either regular or irregular bodies.
- Discuss the systems of maps numbering and arrangements based on different map scale.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A5. Know the different methods of calculating and measuring areas from various data sources; regular figures, points coordinates, line components.

A6. Understand the function of each component of the Planimeter and measure areas from maps as direct observations.

A7. Be aware of the contour line and contour interval and draw contour maps from grid leveling by linear interpolation procedure.

A8. Realize the methods of volume evaluation for any 3D shape and from various sources of data.

A31. B. Intellectual skills:

By the end of this course, the students should be able to:

B26. Suggest the most appropriate procedure to determine the areas of lands based on the available field observations.

B27. Conclude the natural geometric properties of terrain surfaces from contour maps.

B28. Interpret the theoretical concept of each method used for area or volume determination and analyze the sources of errors involved in the computed quantity.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C20. Solve for the areas of figures from maps using the Planimeter.

C21. Design contour maps from field observation required for grid leveling and interpret the topographic surfaces from contour maps.

C22. Solve the problems of partitioning of lands and volume evaluation.

D. General and transferable skills:

By the end of this course, the students should be able to:

D34. Work in teamwork.

D35. Build self confidence.

D36. Work under pressure.

3. Course Contents

Week	Topics
1	Areas and land divisions: • Shapes pounded by straight lines. • Shapes pounded by curved lines. • Using the Planimeter. • Measurements using theoretical laws.
2	
3	
4	
5	Calculation of quantities for land leveling.
6	
7	
Mid-term exam.	
8	Methods of determination of difference in elevation.
9	
10	Grid leveling.
11	
12	Contour line.
13	Theodolite traverses.
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	60%
Practical Examination	15min	On week 14	20%
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	20%

6. List of references

Course notes:

Essential Books:

- Hafez A. Afify "Lectures on Areas, Volumes, and Map Arrangements", Faculty of Engineering, Tanta University (2006).
- Moffitt F. H. and Bouchard H. " Surveying", Harper Collins Publishers Inc., Ninth Edition, 1992, New York, NY 10022.
- Kavanagh B. F. and Glenn bird S. J. , "Surveying Principles and applications", Prentice-Hall Inc., Fifth Edition, 2000, New Jersey, USA.
- Paul R. Wolf and Charles D. Ghilani, "Elementary Surveying – An Introduction to geomatics", Pearson Prenrics-Hall Inc., Eleventh Edition, 2006, New Jersey 07458, USA.

Web sites:

- To be sited during the course.

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof. / Hafez Abbas Afify	Prof. / Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Surveying	
Course Code	CPW 1221	
Academic Year	second Term 2018-2019	
Coordinator	Prof. / Hafez Abbas Afify	
Teaching Staff	Dr. sobhy abd-Almoneam younes	
Branch / Level	Civil Engineering / first year	
Semester	second Term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 2 h lectures**
	Practical	**14 x 2 h practical**
Parent Department	Architectural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Discuss the information about the physical shape of the Earth and the dimensions of the approximated shapes to the true one.
- Provide the definitions of horizontal and vertical lines and planes on the Earth.
- Acquire the ability to design, and draw different types of scales and verniers that usually used in maps and in most of the surveying instruments.
- Enhance the ability to draw maps from field measurements using tapes and some simple measuring tools and instruments in surveying.
- Encourage leveling projects and determine the 3D coordinates of points and the height difference between them.
- Provide determining the areas of lands of any shape pounded with straight or curved lines from either the field observation or from the map.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A32. Define the divisions and types of surveying, and the horizontal and vertical lines and planes on the Earth's surface. Know the units of measurements used in surveying (English, French, and Egyptian).

A33. Illustrate the different types of scales (numerical, longitudinal and net scales).

A34. Explain the fundamental steps for creating maps or setting out points in the field and measuring lengths of lines using a chain or a tape under different terrain configurations.

A35. Explain the function of each component in the automatic level and the principles of leveling process as well.

B. Intellectual skills:

By the end of this course, the students should be able to:

B29. Suggest the most appropriate field procedure to determine the horizontal measurements of lines however the measuring and viewing obstacles found mid-way the measured lines.

B30. Formulate the leveling table to determine the level of each observed point.

B31. Suggest the most appropriate procedure to determine the areas of lands based on the available field observations.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C23. Solve for areas of topographic terrain surfaces and predict the sources of errors in the determined quantities.

C24. Perform leveling projects and check their accuracy then reduce errors or eliminate mistakes.

C25. Design maps for land areas involving different features using only chains or tapes (length measurements).

D. General and transferable skills:

By the end of this course, the students should be able to:

D37. Work in teamwork.

D38. Build self confidence.

D39. Work under pressure.

3. Course Contents

Week	Topics
1	Introduction to the plane and photogram try surveying and their use in architectural engineering.
2	
3	
4	
5	
6	
7	Drawing scales.
8	
Mid-term exam.	
9	Measuring devices for topographical surveying.
10	
11	
12	
13	
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	50%

Practical Examination	15min	On week 14	20%
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	30%

6. List of references

Course notes:

Essential Books:

- Jensen, John R., 1986. "Introductory Digital Image Processing, A Remote Sensing Perspective", Englewood Cliffs, New Jersey, Prentice-Hall.
- Lillesand, T. M. and Kiefer, R. W., 1994. "Remote Sensing and Image Interpretation", New York.
- Richards, J. A. 1998. "Remote Sensing Digital Image Analysis an Introduction", Springer, Germany.
- Wolf, Paul R., Elements of Photogrammetry: with applications in GIS, 3rd ed., Boston, Mass.; London: McGraw-Hill. 2000.

Web sites:

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	**Head of Department**
Name	Prof. / Hafez Abbas Afify	Prof. / Hafez Abbas Afify
Name (Arabic)	**أ.د. حافظ عباس عفيفي**	**أ.د. حافظ عباس عفيفي**
Signature		
Date	/ /2018	/ /2018

Course Specification

Course Title	Topographic Surveying	
Course Code	CPW 2202	
Academic Year	second Term 2018-2019	
Coordinator	Prof.Dr / Hafez Abbas Afify	
Teaching Staff	Prof.Dr / Hafez Abbas Afify	
Branch / Level	Civil Engineering / second year	
Semester	second Term	
Pre-Requisite	-	
Course Delivery	**Lecture**	**14 x 4 h lectures**
	Practical	**14 x 3 h practical**
Parent Department	Structural Engineering Department	
Date of Approval		

1. Course Aims

By the end of this course students should be able to:

- Discuss and be familiar with different types of Theodolites that are usually used in collecting field observations in most engineering works.
- Acquire measuring horizontal and vertical angles using Theodolites and adjust the measured observations.
- Enhance field measurements of traverses using Theodolites (measure length of lines and horizontal angles of traverses).
- Acquire the longitudinal and angular field observations of traverses and determine the bearing of the traverse lines and calculate their components and the corrected coordinates of traverse points.
- Provide the principles and different steps of aerial phothogrammetry starting from the design of the flight plan and ending with the various mapping products (maps, DTM, mosaics, and orthoimages).
- Encourage field measurements of photographic coordinates of objects and model the viewing geometry to determine the 3D coordinates of ground points.
- Discuss, understand, design, and layout different types of curves in both horizontal and vertical planes.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A36. List the fundamental principles of remote sensing as they relate to engineering and environmental problems.

A37. Describe the characteristics of the different earth observation satellite systems.

A38. Define the contour line and contour interval and draw contour maps from grid leveling by linear interpolation procedure.

A39. Define different types of resolution.

B. Intellectual skills:

By the end of this course, the students should be able to:

B32. Analyze the different procedures used for measuring horizontal and vertical angles in plane and geodetic surveying.

B33. Analyze the different types of traverses (closed, open and network traverses).

B34. Analyze horizontal and vertical curves, their parts, and know the steps required to design and layout curves.

B35. Plan the flight plan that state at what altitude to fly, give a layout of flight lines, and state at what intervals to make exposures.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C26. Verify horizontal and vertical angles (using Theodolites) and perform corrections to the measured angles due to environmental and measuring conditions.

C27. Solve for the correct coordinates of traverse points from field observations such as horizontal distances and azimuth (or horizontal angles).

C28. Perform different Tachometric procedures to determine the horizontal and vertical distances indirectly.

D. General and transferable skills:

By the end of this course, the students should be able to:

D40. Work in teamwork.

D41. D2. Solve many cases like what are faced in field

D42. D3. Present many alternative solutions to problems faced on field.

D43. Collect data about certain topics.

3. Course Contents

Week	Topics
1	Tacheometry surveying.
2	
3	Electronic measuring devices.
4	Drawing methods of contour lines, Drawing using computers and digital maps.
5	
6	Horizontal circular curves (Curve elements – degree of curve- derivation of formula- Curve layout methods – compound and reverse curves).
7	
8	
9	
Mid-term exam.	
10	Vertical parabolic curves – equation and computation of parabolic curves – high or low point on a vertical curve.
11	
12	
13	Theory of errors.
14	

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solution in theoretical exercises.
4.3- Labs and practical exercises.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	60%
Practical Examination	15min	On week 14	20%
Oral Examination	-	-	-
Semester work	5hours (overall)	On week3,5,9	20%

6. List of references

Course notes:

Essential Books:

- Hafez A. Afify, "Lectures on Topographic Surveying and Photogrammetry", Faculty of Engineering, Tanta University (2008).
- Philip Kissam. "Surveying for Civil Engineering", McGraw-Hill Book Company, Second Edition, 1981, USA.
- Kavanagh B. F. and Glenn bird S. J., "Surveying Principles and applications", Prentice-Hall Inc., Fifth Edition, 2000, New Jersey, USA.
- Michael H. Elfick, John G. Fryer, Russell C. Brinker and Paul R. Wolf "Elementary Surveying", Harper & Row, Seventh Edition, 1987, Australia.

Web sites:

7. Facilities required for teaching and learning

- Portable display screen.
- White board.

	Course Coordinator	Head of Department
Name	Prof.Dr / Hafez Abbas Afify	Prof.Dr / Hafez Abbas Afify
Name (Arabic)	أ.د. حافظ عباس عفيفي	أ.د. حافظ عباس عفيفي
Signature		
Date	/ /2018	/ /2018