Civil Engineering Department

Project Civil 1

Design of Reinforced Concrete Deck Slab Bridge (RCDSB)

Mohammed Mostafa ,Zivreen Mohammed

Supervisors* : *Dr. ALI FLAYH HASSAN* and *MSHEER HASAN ALI

The project is consists of the analysis and design of a Reinforced Concrete Deck Slab Bridge (RCDSB) including; slab-deck, sidewalks, I-girders and bearing pads (i.e. Superstructure). The bridge has (8 m) width, (15 m) clear span and supported on six I-shape girders. The compressive strength of concrete (f'_c) of (21 MPa) for all parts of concrete and Grade 60 reinforcement steel are used in the design.

The (RCDSB) is designed to sustains its self-weight, superimposed dead load (wearing coat, railways and service pipe lines and electrical services, ..), HS-20 standard truck load based on AASHTO as the live load and the effect of impact load. The design considerations in this project meet the requirements of ACI-11 Code.

The design is performed according to Working Stress Design method; the design approved that (20 cm) as the thickness of the slab with $\emptyset\, 12\, mm$ @$15\, cm\ c/c$ reinforcement bars perpendicular to traffic is adequate. The designed I-girder is (120 cm) deep, (60 cm) wide and has $12\, \emptyset\, 32\, mm$ longitudinal reinforcement with $\emptyset 10\, mm$ @ $40\, cm$ and as double stirrups along the span of the bridge.

Project Civil 2

Study of Strip Footing Behavior On Geogrid Reinforced Sloped Embankment.

Ghareba Kakil , Hijyan Yousif

Supervised By: Assistant Prof./Dr. Rafi' M.S. Al-Ne'aimi

This study aims to know the performance of a strip footing located near the crest of a reinforced sloped fill by geogrids. It represents an application of reinforced earth technique for foundations located on slope embankment which behave as supports for bridge abutments and retaining walls.

For this purpose a six series of numerical tests are suggested in order to study the stability of axially loaded strip footing resting on unreinforced and reinforced sand slope model under static load *by using* ***Slidev5 software program*** including a variety of factors such as; inclination of the slope (β), location of the footing from the crest of the slope (b), type of reinforcement geogrid in terms of it aperture size, strength, elasticity and directionality, number of geogrid reinforcing layers (N), vertical spacing between reinforcing layers (Δv) and depth of embedment of footing (D_f).

Based on limit equilibrium methods, such as; ***Fellenius method, Bishop Simplified, Janbu Corrected, Spencer and GLE/ Morgenstern-Price,*** the numerical results proved that the

reinforcement had a considerable effect on the strip footing stability on sand slope, in addition to, the improvement in the safety factor was found to be strongly dependent on the slope angle, the relative density of sand, and the tensile strength of geogrid reinforcement.

Project Civil 3

Water supply pipe network design using pipe ++ software

Araz Mohammed Ali, Mohammed Majeed, Muneer Muhsin, Mahdi Salih

Supervisor :Miss Jwan Noori Hassan

This project presents the use of PIPES++ software in the design of a water distribution network for a rural village in Duhok Governorate. PIPES++ is a computer program that performs extended period simulation of hydraulic and water quality behavior within pressurized pipe networks. A network consists of pipes, nodes, pumps, valves and storage tanks or reservoirs. PIPES++ tracks the flow of water in each pipe, the pressure at each node, the height of water in each tank, and the concentration of a chemical species throughout the network, PIPES++ is designed to be a research tool for improving our understanding of the movement and fate of drinking water constituents within distribution systems. It can be used for many different kinds of applications in distribution systems analysis. In this project it was used to carry out the hydraulic analysis of the distribution network in the study area. The results obtained verified that the pressures at all junctions and the flows with their velocities at all pipes are feasible enough to provide adequate water to the network of the study area.

Project Civil 4

DESIGN OF INTZE TYPE ELEVATED WATER TANK

Halat Mahmood Abdullah, Hadar Hussien Abdulrahman, Ravin shaaban Ahmed

Supervised :Mr.Abdul Jalil Sulaiman Ahmed

The elevated water tank is a large water storage container constructed for the purpose of holding water supply at certain height to pressurization the water distribution system.

In the case of large diameter elevated circular tanks , thicker floor slabs are required resulting in uneconomical designs, in such cases Intze type tank with conical and bottom spherical domes provides an economical solution.

The main advantages of Intze tank is that the inward radial thrust of the conical bottom slab balances the out ward radial thrust of the bottom spherical dome.

The size of the tank has been chosen to occupy 1700 m^3 of water.

The tank is designed as reinforced concrete structure according to IS-3370 Code; it is composed of the following elements:

Spherical top and bottom dome, top and bottom Ring Beams, cylindrical walls, conical bottom dome, bottom circular girder, columns and bracing beams, mat footing.

Project Civil 5

Road Designing in a Hilly Area Using Different Data Resources

Alan M. Ahmad, Navroz N. Mohammed

Supervisors:Mr. Sami Mamluk, Mr. Sherzad W. Khalid

Design of road is important to a country's economic development such that true traffic data and geometric data collection by different instruments to construct a high quality road directly decrease journey time and journey costs. Design of these high quality roads will make a region more attractive economically and they defined as an index of infrastructure of that region.

This engineering project presents a study on design of a path between two exist origin and destination points (Engineering Faculty and Medical Faculty) and it has 1.8 km length and 20 m width two way two lanes road.

Total Station (T.S 02 Leica) and GPS instrument (GS10 and GS15) were used for data collection to define counters map.

It was found that in this mountain area some horizontal and vertical curves should be used based on AASHTO specifications to reach equal quantity of cut and fill and also suitable grade, super elevation which design speed was 60 kmph.

The study suggests super elevation about inner side, horizontal curves to decrease grade, box culvert, retaining walls and traffic signs are important in mountains area.

Project Civil 6

Design of Covered Swimming Pool

Khalid Qasim, Rezgar Haji

Supervisor: Dr. Alaa Alsaad

The project is to learn how to analysis and design of mixed steel and reinforced concrete structures using structural engineering software and how to check the design manually. Covered swimming pool of 10.5m total height and total area of about 1650m^2 have been selected as a case study. Steel truss of 24m span is used for roof. Reinforced concrete columns and beams are selected for supporting of roof. The modeling, analysis and design of building were achieved by using two structural engineering software; ETABS-2013 for analysis and design of superstructure (including reinforced concrete beams, columns and steel truss), and PROKON for analysis and design of swimming pool walls and foundation in-addition to steel connections. This software is based on numerical method (finite element). The

common soil properties of Duhok city is used for geotechnical design of swimming pool. All design procedure based on the latest version of ACI-code (ACI-318, 2011). Also, hand calculations have been done to check the design by using classical methods.

Project Civil 7

water treatment plant for a specific region

Rojan Ahmed. ,kurdjeen Abdulkraim , Regina Tawer

Supervisor: Dr. Nashwan Shawkat

The purpose of water treatment plant is to remove the impurities of raw water and bring the quality of water to the required standards. Consequently, it will ensure water of good physical and chemical quality. Objectives of our project are to design the water treatment plant according to the standard specification and criteria range, to explain all about water treatment plant's processes (sedimentation, coagulation, flocculation, filtration and disinfection), using a number of engineering software. The quantity of water consumption for approximate of (200000) population has been estimated with high turbidity. The design units include one unit of direct intake, one unit of circular pre sedimentation tank, four units of circular clariflocculation tanks with paddle impeller using alum as a chemical coagulant, and 10 units of filter, using chlorine gas in the disinfection unit.

Project Civil 8

Design of Reinforced Concrete Multistory Car Parking

Haval Safar, Niroj Basheer , Amina Ziad

Supervisors: Dr. Alaa Alsaad, Mrs. Gulan Bapee

The project is to learn how to analysis and design of reinforced concrete structures using structural engineering software and how to check the design manually. Multistory car parking of 5-floor and semi-circular ramps at ends with total area of about 28500m^2 have been selected as a case study. Plot limit of building is selected based on master plan of Duhok city in order to be constructible. Flat slab with drop panels structural system is used. Reinforced concrete walls are selected for lift cores and for supporting of ramps. One way drive type of 6m width is adopted for traffic design. The modeling, analysis and design of building were achieved by using two structural engineering software; ETABS-2013 for analysis and design of superstructure (including beams, columns and shear walls), and SAFE-12 for analysis and design of slab and foundation. This software is based on numerical method (finite element). All design procedure based on the latest version of ACI-code (ACI-318, 2011). Also, hand calculations have been done to check the design by using classical methods.

Project Civil 9

Study of Some Properties of Concrete Containing Crushed Brick as Coarse Aggregate

Students' names: Shaker Mahmoud, Beyar Segvan, Abdulstar A. Abdullah, Muhammad Ibrahim

Supervisor: Ghanim Hussein Qoja, Assistant Professor

That research investigates the suitability of crushed clay-brick as coarse aggregate in concrete and comparing the properties of such concrete with ordinary concrete.

Four mixes have been tried (different mix proportions by weight), using crushed clay-brick as a substitute for gravel. These mixes have been also tried for ordinary gravel. The results show that good lightweight concrete can be obtained using crushed clay-brick as coarse aggregate. The mean properties include unit weight, absorption, compressive and flexural strength.

A comparison study has been done therefore ,it is preferable to use this type of concrete in building internal non-bearing walls and partitions ,as well as it can be used in regions that need a reduction in the dead load of the structure or as a pavements in some fields .

Water Resources Engineering Department

Project WRE 1

GIS for Runoff Estimation and Dam site selection, Applied on selected areas in Kurdistan

Names of students conducting the project: **Dleen Jalal Muhammed, Salwa Khether Qassim, Rand Suhail Hussin, Media Waleed , Water Resources Engineering Department, University of Duhok.**

Supervisor: **Dr. Abdulghani Hasan**

One of the main approaches for an efficient use of water resources in Kurdistan is to harvest all the runoff water through constructing small to medium size dams. Locating, designing, and constructing dams are already started by ministry of water resources and other governmental organizations in Kurdistan.In this project, we suggest using hydrological modelling and spatial analyst tools in GIS to find the best location of proposed dams for any selected area.Additionally some other hydrological and engineering characteristics of the proposed dam and lake are to be deducted.The project is applied on four different study areas in Kurdistan. The selected areas are Zakho, Khanke, Mangeshke, and Penjwin.

Project WRE 2

Analysis and Design of Reinforced Concrete Elevated Water Tank Considering Seismic Effect

Students: Ali Abdul-Rahman, Baderkhan Sediq, Obed Abdul-Qader, Waled Muhammed Sharef, Water Resources Engineering Department, University of Duhok.

Supervisor: Dr. James H. Haido

Concrete water tanks are widely used nowadays in many water supply projects for villages and small cities in Kurdistan Region, Iraq. Due to the increasing the risks of recently earthquakes on the constructions in this region, further investigations and studies are regarded essential in this direction.

Present endeavour is devoted to design a concrete elevated water tank for specified area in Duhok city with using of CSi Programs. The structure is composed of many concrete members or elements such as slabs, beams, columns, shear walls, retaining walls as well as mat foundation. Sap2000 and ETABS Programs are used to analysis and design of frames, walls and slabs. The foundation is designed in SAFE program after exporting the supports reaction from ETABS or Sap2000 programs. CSi column program is employed to check the required uniformly distributed steel bars within the section of the shear walls.

Project WRE 3

Solving Hydraulic Problems Using FORTRAN

Students: Sarmad Abdullah; Hindreen Muhammed; Mateen Shafiq; Ibrahim Omer, Water Resources Engineering Department, University of Duhok.

Supervisor: Miss. Jihan M. Qasim

This project aims is to use FORTRAN programming language to solve the following open-channel hydraulic problems: geometric elements of open channels; flow properties of open channels; alternate depths of flow; critical depth of flow; drawing specific energy diagram; drawing specific force diagram; sequent depth of hydraulic jump; normal depth of flow; gradually varied flow: direct-step method and standard-step method.

The designed FORTRAN programs have many advantages for engineering practice, over manual solution. These computer programs solve problems in seconds, solve different forms of the same problem, handle increased volume of data, check the validity of user-defined input data, yield highly accurate results, and present output data using tables and figures.

Project WRE 4

Drought Flow characteristics of Greater Zab river basin

Students: Sara Muhammed, Khorbat Hussen, Amer Wasfy, Omran Zerar, Melat Hikmat ,Water Resources Engineering Department, University of Duhok.

Supervisor: Dr. Khalid M.Khider

Drought is one of the most complex natural phenomena, that is hard to quantify and manage. In other words it is a climatic phenomenon represent an abnormal dry weather causes a significant deficiency of precipitation from "normal" over an extended period of time,cause in turn a serious hydrologic imbalance and carries connotations of moisture deficiency, resulting in a multiple and severe social and economic impacts due to water shortage for some activity, group, or environmental.

The magnitude of the drought impacts in any country is determined by the level of development, population density and structure, demands on water and other natural resources, government policies and institutional capacity, technology, and the political system

During the last century many countries in the middle east are facing serious drought conditions. These countries , including Iraq, Turkey, Iran and Syria , have been dealing with decreased rainfall, reduced water storage, and irrigation water

shortages which affected seriously their agricultural sector and others.

Drought reasons inGreater Zab river basin due lack of rainfall over the past few years beside water Policy of Turkey ,which causes a lowering of the water-levels in the river due to constructing dams and other projects in the river basin.

Ven T. Chow equation was used for estimating the drought flow for different return periods for greater Zab and its tributaries at different stations using different probability distributions as normal distribution , Gumble distribution, Pearson type III distribution, log Pearson type III distribution using the recorded data available for these stations.

The estimated drought flow was tested for each case using efficiency test.

The meteorological data for different stations within the catchment for the period from 2002 to 2012 were used also to estimate the standardized precipitation index (SPI) to evaluate the spatial and temporal characteristics of drought.The results also indicated that the area under study is facing frequent non-uniform drought periods in an irregular repetitive manner. The entire area suffered from drought nearly to the same degree. The hydrologic years, 2007/2008 and 2008/2009 were the worst dry years during the period of the study

Project WRE 5

Analysis of the seepage and stability of an earth dam in Duhok

Students: Bayan Abdul-Hakem, Roja Hazim, Beshank Hussen, Toren Adnan, Water Resources Engineering Department, University of Duhok.

Supervisor: Dr. Najdat Sabri

Bosale dam is located on about 26 km east of Zakho city center and about 2 km to the north of the village of Bosale. The main dam and the coffer dam, both are earth fill type with central clay core followed by one layer of filter on downstream side and supported by sand and gravel shell. The dam was completed in 2004 with the primary purpose of providing water for irrigation.

The project is to use some hydrological and geotechnical data to study the slope stability of the upstream of the dam under the scenario of the rapid drawdown, different time periods will be examined. The results will be gained by Geo-studio 2004 software which use the finite element technique for the seepage analysis and the conventional methods for slope stability analysis.

Project WRE 6

Discharge Coefficient of Combined Cylindrical Oblique Weir and Gate Structure

Students: Rojan Mohammed Shareef , Payman Mubarak Mahmmod, Bishang Najeeb Mohammed Jihan Sleman, Water

Resources Engineering Department, University of Duhok.

Supervisors: Safa S. Ibrahim and Rondk A. Jafer

In the present study, the effects of different oblique angles and diameters on the cylindrical weir and blow a gate as a combined device have been studied experimentally.

For this purpose, sixteen models of combined cylindrical weir and gate structures have been built and tested in a laboratory flume. These models had four different oblique angles to the longitudinal axis of the channel ($\alpha = 30^0, 45^0, 60^0, \text{and } 90^0$). For each angle, the diameter of cylindrical weir-gate was changed four times (d = 4, 7.3, 9, and 11cm).

Experimental results of all models showed that the theoretical discharge (Q_{th}) was inversely proportional to (d/h, a/h and L/h) and it was found that the values of theoretical discharge (Q_{th}) increases with the increase of diameter and decreases of the oblique angles. Within the limitations of the present experimental work the theoretical discharge equation was predicted. A good relation was found between the estimated value and the calculated value.

Project WRE 7

Design of Water Supply for Bakoz Village

students: Karoj Hashim, Deldar Qeem, Bawar Haji Aref, Emad Zober, Water Resources Engineering Department, University of Duhok.

Supervisor: Mr. Sarhan Abdulsattar Sarhan

The aim of the project is to design the water supply project for bakoz village in Dohuk governorate. The design is comprised of pump, supply pipes between the pump and storage tank, pipes network through the village by the computer programs (water cad and branch). The procedure of the design includes the investigation the area, selection the source of water, selection appropriate place for storage tank, surveying process between the source of water (well) and storage tank, and between storage tank and the village and finally the design of pipes network using computer programs (water cad and branch).

Project WRE 8

Irrigation of Land use Master Plan in the Faculty of Engineering

Students: Zaytona Rasheed, Roa Nawaf, Shang Salam, Naren Abdul-Aziz ,Water Resources Engineering Department, University of Duhok.

Supervisor: Dr.ShakerA.Jalil

The project includes exploiting the area designated for environmental, based on a general survey of main sources for planting and designing land use master plan.

The planning and organization of the collection of information on the requirements of the design such as adding new features to the existing maps by surveying equipment, study and analysis of soil samples, classification of soil and finding the soil water holding capacity. Searching for climate data and plant properties to find the water needs by employing FAO CROPWAT 8 Software. The project includes designing the land use for the area between the buildings, fixing walkways and gardens for the best

connections between these buildings using 3D Google SkechUP7 software, then visualization the project. Finally, the project includes the design of a drip and micro-sprayers irrigation system for the green area for the proposed master plan.

Project WRE 9

Conceptual design of wastewater treatment plant

Student names:Ismail Muhammed Saeed,Ibrahim Abdulla Ibrahim, Regir Mahmood Salih, Gara Hussien Muhammed, Water Resources Engineering Department, University of Duhok.

Supervisor : Mr.Khairi Ali Omar, Mr. Siyamand Muhammed Ali

The aim of this project is to design the wastewater treatment plant with sufficient capacity to treat the increased sewage results from the steady incremental in the city population.

The project deals with the design of the domestic wastewater treatment plant and its major components such as screening chamber, grit chamber, skimming tank, sedimentation tank, secondary clarifier, active sludge tank and sludge drying beds

This wastewater treatment plant is designed for 30 years as design period to cope with the future expansions of the city and consequence increase in the wastewater quantities should be predicted to serve the community satisfactorily for a reasonable year. In design of this plant, characteristics of wastewater recommended by Directorate of Sewerage in Duhok are used. In addition, a population of 100,000 is assumed.

By the execution of the project the entire waste water of the proposed district in the city can be treated effectively and efficiently.

Architectural Engineering Department

Project Arch 1

Plastic Surgery Hospital

Designed By: Abdulrhman Ayman Ibrahim
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Aram, M.Sc
Location: Duhok City, Etit Site
Capacity: 100- Bed Hospital

Concept of Design:

In plastic surgery, they remove parts of skin and put it in other places. The conclusion of this process is: An Addition and a Subtraction

Addition and Subtraction is done as a function needed, and after the function is solved, I used skin for the form, because skin has a relationship with plastic surgery operations.

Project Arch 2

Children Hospital

Designed By: Masud mohammed said mohammed
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan M.Sc.
Location: Duhok City, Etit Site
Capacity: 100- Bed Hospital

Concept of Design:
How to prepare a good case for sick children
- Use removable Games for kids
- Graphical cartoon characters on the walls
- using different kinds of colors
- Building far away from parking to avoid interring voices
- using a lot of nature inside and outside
- Plants for healthy air and a beautiful view, this is why I chose this site.
- Simplicity (simple shape, and simple circulation)
- using good system for ventilation, (especially, in operating department)

Project Arch 3
Children Hospital
Designed By: Sherzad Kh. Elias
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan, M.Sc.
Location: Duhok City
Capacity: 100- Bed Hospital

Concept of Design:

My Concept Come From Rubix Cube and Its Movement

The hospital Plan is divided into several different sections in terms of function and relationship between them.

The design took into consideration the following accesses

- entrance of patients and visitors
- the entrance of outpatient clinics
- ambulance entrance
- service entrance
- entrance to the morgue

Project Arch 4

Children Hospital

Designed By: Naz Abdulkarim Mohammad
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan M.Sc.
Location: Duhok City, K.R.O street
Capacity: 100- Bed Hospital

Concept of Design: (Child's Imagination)

We search for regularity and continuity in the forms we see within our field of vision. When regular forms have fragments missing from their volumes, they can retain their formal identities if we perceive them as if they were whole and complete .We refer to these mutilated forms as subtractive forms. "FRANCIS CHING - ARCHITECTURE FORM.SPACE & ORDER".

Imagination: Is the ability to form images and sensations that are not perceived through sight, hearing, or any other sense, (Absence).

The most distinctive characteristic of children is their ability of unlimited imagination, enhancing child's imagination by (Visual Tension) and avoiding restrictions is the core of the design concept.

Project 5

Children Hospital

Designed By: Alind Jalal Hossain
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Aram M.Sc.
Location: Duhok City, K.R.O street
Capacity: 100- Bed Hospital

Concept of Design: (Site contour lines)

- one of the ways for taking concept for project is taken from contour lines.

- as we know in Duhok governorate the earth contains many contour lines

- our site that I have chosen is located in KRO , and it a sloping topography

- I took my concept from the contour lines of the site and I offset it until I got to this form...

Project 6

Plastic Surgery Hospital

Designed By: Shler Rashid
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Aram M.Sc.

Concept of Design:

Architecturally expressed in Form and Space:

I took my concept from the process of plastic operation that affects the psychological aspect of a person and what he expects the physical appearance looks like. I achieved this by presenting how each form (by different material) is an expression of the same person, but after and before surgery, and correction to the best and new shape and new thinking in the mirror way

Project 7

Plastic Surgery Hospital

Designed By: Khanda Khalid Khdr
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Aram M.Sc.

Concept of Design:

Plastic surgery is a medical specialty concerned with the "correction" or restoration of form and function, so I begin to thinking about this and to be the substantial of my concept it was taken from AXIAL MIRROR changing that will happen during the operation after and before.....

Project Arch 8

Apartments/ Housing Project

Designed By: Jeer A. Yakoob

Architectural Design course, 4th Stage, 2012-2013
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan M.Sc.
Location: Duhok, Tenahi

Concept of Design:

My project consists of a number of rectangular capsules and each one has a green area in order to creat a comfortable and fresh weather for people who live in the building. Each building consists of 4 stories, and each story has 3 apartment types. They were schemed as: yellow for a doublex and 170 sq m apartment, blue for a 100 sq m apartment, and green for a single with 70 sq m one.

Project Arch 9

Traditional cafe& commercial

Designed by: Nihad Adil Hassan
Urban infill, 5th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Maha al Malaika
Location: Duhok city, Baroshke
Area: 840 m²

Concept of Design

The location of the project located in front of the ancient mosque in Akre, and may location is suitable place that to see the historical mosque, so I respect the religious importance of the place and I designed underground according to the topography of place .

Project Arch 10

Resedintial Building Restoration

Designed by: Qais Harbi Ahmed
Urban infill, 5th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Maha al Malaika
Location: Kurdistan -Akre (Justaye destrict)

Justaye History:

From archeological aspect, the history of Akre dates back to cretaceous period or the beginning of village and city era in the world, the district is built by the prince (zand).

Design Concept:

The building in the Chustaye is seldom architecture wealth reflecting our ancient civilization and they were the result of long experience and depth studies by architects and researchers. and that master planning came suitable to face the harmful climatic conditions and to maintain the traditions inherited social, and rebuilding and maintaining what was destroyed them according to scientific method to make it lively again and to remain it a symbol tall in the history of Kurdistan civilization and for to be a source of our predecessors in the field of architecture and art.The project is a collection of old residential building, and the idea is the process of restoration and unification of forms of windows and doors and external finishing materials and we must

keep those buildings because it is old fashioned of the city heritage.

Project Arch 11

Commercial and residential

Designed by: Hisham Hamed Yaseen

Urban infill, 5th Stage, 2013-2014

Department of Architectural Engineering

Supervisor: Maha al Malaika PhD

Location: Kurdistan -Akre (Justaye destrict)

The concept: is redesigning of the commercial and residential buildings according to the Islamic elements and natural materials like stones and trees trunks

Project Arch 12

Cardiac Hospital

Designed By: Nihad Adil Hassan
Architectural Design course, 4th Stage, 2012-2013
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan M.Sc.
Location: Duhok City, Baroshke
Area: 11000 m²
Type: 100- Bed Hospital

Concept of Design:

I get the idea from the function of the heart it self , that cleaning the blood ,so i think about a big internal lobby (waiting)for people in order not to see a dangerous zones & even for the patient themselves to avoid the faire ,then you can separate in to the main zones. I get the idea from the function of the heart it self , that cleaning the blood ,so i think about a big internal lobby (waiting)for people in order not to see a dangerous zones & even for the patient themselves to avoid the faire ,then you can separate in to the main zones.

Project Arch 13

Plastic surgery Hospital

Designed By: Ahmed Mustafa Ali
Architectural Design course, 4th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Arch. Najeh PHD, Arch. Hariwan M.Sc.
Location: Duhok City, K.R.O street
Area: 100- Bed Hospital

Concept of Design:

Plastic surgery hospital is a very specialized building that deals with human beauty, for that reason concept took the GOLDEN RATIO as the bases of design and proportions between elements. Extracting the beauty of the form used in the composition as the way the plastic surgery hospital extracts the real beauty of human being.

Project Arch 14

Urban Infill Design

Designed By: Aban mohamed
Architectural Design course, 5th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Maha Al Malaika PHD

Location: Duhok City, Aqra
Type: public use buildings

Concept of Design:

We linked the existing two building (mosque, arcade) through a road passes to link between them , and this road is flanked by it's both side by two public building .
This two buildings are the kindergarten and the literary forum for the old people who live in the neighborhood , with taking in mind the restriction that the municipality of the town that have put through the restrictions of the type and size of openings , the type of the materials and the balconies .

Project 15
Urban Infill Design

Designed By: Sipal Younis
Architectural Design course, 5th Stage, 2013-2014
Department of Architectural Engineering
Supervisor: Maha Al Malaika PHD
Location: Duhok City, Aqra
Type: Educational

Concept of Design:

The inspiration of the project came from the Qishal that exist in the city with all the ornaments and the architecture style in the town that the municipality have restricted to use

There is an arched gate in the entrance of the building that comes from the design of the same architecture style of the mosque and qishla.

Projec Arch 16

Urban Infill Design

Title: religious buildings

Name: Chiman Abdul Majeed

Location: Kurdistan - Akre Justay district,

Supervisor: Maha Al Malaika

Concept:

The project is church , re designed such a way to preserved its function such a church .using local material for interior space and exterior using coloring glass for opening (windows and doors) , and Rehabilitation the church appendix to café and restaurant . the aim of changing church appendix to restaurant is to revive the project, using the same material of church to the restaurant

Electrical and Computer Engineering Department

Project: ECE 1

Simulating Mano Machine

Mohammed Abdullah Ali, Farman Najmedeen Majeed, Norsy Abdulkhaliq Ali, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Mr.Namiq Abdullah

The Mano machine is a computer theoretically described by M. Morris Mano. It contains a central processing unit, random access memory, and an input-output bus. Ten Thousands of students in the world have been studying Mano machine during the courses of Computer Architecture. In this

project, we aim to simulate Mano machine such that the user can apply assembly programming, debugging, and tracing the programs executed on this simulator. The simulator will also allow the user to edit, delete, or change data in computer units interactively through a Graphical-User Interface (GUI).

Project ECE 2

Microcontroller Based Patient Medicine Reminder System

Students names: Aidel Jumaa Bapir, Hendereen Hassan Mustafa, Masoma Shawkat Haji, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Mr. Raafat Safaa Alden Habeeb

Most of the patients forget to take the appropriate prescribed medication at the required time. There are occasions when patients remember to take medicines at the stipulated time but forget which pill has to be taken at that particular time. This poses a big problem as it affects the dosage quantum required for the patient that results in not yielding the right recovery result. It is difficult for doctors/paramedics/attenders to monitor patients round the clock. In order to avoid these problems, this project is introduced as FYP to design and construct the patient medicine reminder system which send a text or a voice message to the patient through his/her mobile.

The system is based on ATmega328p microcontroller that allows the user to enter the prescribed timings, at which the patient has to take the medication, the list of medicines to be administered is entered through the PC. This data will be stored in the EEPROM of the microcontroller. The microcontroller continuously reads the time from the real time clock device "RTC" ,when the timings read from the RTC equals the timings stored in the EEPROM, the system alerts the buzzer and displays the list of medicines to be taken at that particular prescribed time on the LCD. Also the system is capable to send a text or voice message on required time to patient mobile to remind him for medicine pill has to take. Thus, the patient can listen to the audio indication and see the name of the medicines on the LCD and take them on time.

Project ECE 3

Microcontroller based TAKE OUT ROBOT controller

Students:Ammar Sabri Andrawous Asmaro, Hammed Ismael Ahmed, Ninab Issaq Issa, Electrical And Computer Engineering Department, University of Duhok

Supervisor: Dr.Auday Adnnan Abo, Mr.Raafat Safaa Aldeen Habeeb

Pneumatic robotic systems have two movements about two axis, it functions as a takeout robot for any part (like bottle or Jar or any things solid) from one side to another. The detection of part could be noticed by its weight, so a strain gauge will be install in the system to detect the load. The

microcontroller like 895x from ATMEL and two magnetic sensor have to be used to control the robot movement. The magnetic sensor is used in feedback loop to control the termination of robot. A display may be added to count number of parts is moved.

The project is to design, program, and construct a controller using 8051 microcontroller. The main part of the project is to build a prototype and running in real time process.

Project ECE 4

Harmonics in power systems (in Duhok region)

Students : Salima Ibrahim , Dulnia Ali , Quber Khalil, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Mr. Auda A. Kasyounan.

Harmonics is a term used to describe the shape or characteristic of a voltage or current waveform with respect to the fundamental frequency in an electrical distribution system.

Harmonic currents results from loads that draw power in non-sine-wave format. These loads are so called NON-LINEAR Loads (like Arc welder ,Ballasts, Rectifiers, TVs ,Computers ,Switching power supplies ,DC Drives……).

This project concerned with :

- Analysis and measurements of the waveform harmonics supplied from the main distribution network.

- The Effects of the sources of distortion (non-linear loads) on the electrical System

-The Effect of the harmonics on the system power factor.

Project ECE 5

Wireless Water Level Indicator

Students: Hazhar Bangen Qasim, Imran Ibrahim Hasan, Hazhar Saadon Ahmed, Electrical And Computer Engineering Department, University of Duhok

Supervisor: Mr. NAMIQ SULTAN

This project aims to implement a wireless tank water level indicator. The device has two units; the transmitter and the receiver. The transmitter is attached to tank water and continuously sends signal to the receiver. The signal indicates the level of the water in the tank. The receiver unit shows the different levels of the water on different LEDs.

Project ECE 6

Building Mindstorms ev3 robot

Students: Yazin Essam Shamdeen , Burhan Anwar Abdulrazq ,Santa Nader Hasqiyal ,Vanteen Abnowel yalda, Electrical and Computer Engineering Department, University of Duhok

Supervisor::Mohammed Subhi Hadi

Lego Mindstorms Ev3 Robot kit is an excellent tool for Electrical and computer engineering students to understand and interact with robotic and Mechatronic course, the robot can be constructed and programmed to do multiple actions, the main aim in this project is to familiarize students to various types of sensors and actuators and programming them to perform robotic movements.

Project ECE 7

Design and construction of conveyor belt system

Students: Samir Ramadhan Ibrahim, Zakariya Sadiq Ramo, Steven Wasfi Denkha, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Mohammed Subhi Hadi

Conveyor belt is one of the important parts in any industrial factory and even in small businesses, in this project a small Conveyor belt system has been designed and constructed which is controlled by a digital platform, the conveyor belt has the ability to perform automated actions using sensors and actuator

Project 8

Opportunity of vibration based energy harvesting in Duhok city

Students: Kovan Ramadhan Khorshed, Ayad Shawkat Qutbadeen, Reber Mohammad Shakir Mahmud , Electrical and Computer Engineering Department, University of Duhok.

Supervisor: Adnan Ismail Hussein

Wireless Sensor technology which integrates sensors, processing unit, and wireless communication has been increasingly vital in many applications like target detection and tracking, environmental monitoring, industrial process monitoring and many others. Energy consumption of these devices is a prime issue in the design of wireless sensor networks (WSNs) which typically rely on portable energy source like batteries for power. The main disadvantage of the battery is limited energy capacity, thus it must be replaced or recharged on regular basis which may be uneconomical or not possible in many cases.

Recently, there has been growing interest in converting the wasteful energy surrounding the sensor node into electrical signal to supplement battery or even replace it. In this project, we measure the vibration parameters (amplitude and frequency) in many location of the city like railway, traffic ligth cross road, bridges, etc. These parameters will be used to choose appropriate devices for extracting energy.

Project ECE 9

Wireless Mobile Charger

Students: Himdad Zero Miro, Rubad Akrem Abdullah, Mohammed Jalal Mohammed Salih, Electrical and Computer Engineering Department, University of Duhok

Supervisors: Ismail Amin Ali, Mohammed Subhi Hadi

Day by day new technologies are making our life simpler. Wireless charging through inductive coupling could be one of next technologies that bring the future nearer. In this project it has been shown that it is possible to charge low power devices wirelessly via inductive coupling. It minimizes the complexity that arises for the use of conventional wire system. In addition, the project also opens up new possibilities of wireless systems in our other daily life uses.

Project ECE 10

Parking space Availability System

Student: Ageed Shaheen Khudeida, Barhav Sarbast Lazgeen, Idres Abdulaziz Idres, Electrical and Computer Engineering Department, University of Duhok.

Supervisor: Dr. Ahmed Khorsheed Al-Sulaifanie

The project is used in the car pars, it automatically open and close the entrance gate. Also, it reads the number of vacant place in the car parking Area space. At the entrance gate it directs drivers to find the exact vacant place. Current monitoring systems include weigh-in-motion sensors which are embedded in the pavement and control is implemented using Arduino kit.

Project ECE 11

Heart Rate Monitor

Students: Hizrat Khalil Ahmed, Iman khalid Yusuf, Shahlaa Mahmod Abdulla, Electrical and Computer Engineering Department, University of Duhok.

Supervisor: Dr. Ahmed Khorsheed Al-Sulaifanie

The purpose of this project is to design a heart rate monitor which enables the user to view his/her heart rate on a computer & processing it by MATLAB software.

•The project included two aspects: Physical Implementation and Circuit Design

•Physical implementation: consist of low cost instrumentation amplifier, band pass filter and an Arduino Uno device.

•Circuit Design: cadence was used to design and verify the proper functionality of the analog circuits.

Project ECE 12

Mini Robotic Arm

Engineer Haval Nawzad, Teaching assistant, Mr. Mohammed Subhi Hadi Electrical and Computer Engineering Department, University of Duhok

Robotic arm has many applications, one of the important uses of robotic arm is to operate it in environments where human cannot reach, and this environments can be narrow or dangerous places, in this project a mini robotic arm is built to be used in small and contracted locations. The arm is compact and controlled remotely.

Project ECE 13

Design of A Planar Wi-Fi Antenna

Students: Huda Najim Mohammed, Noor Hussien Ismail, Media Salim Saedy Electrical and Computer Engineering Department, University of Duhok

Supervisor: Dr. Yasser A. Fadhel

Wi-Fi communication is one of the fast speed and secure wireless technology, which is vastly used in nowadays portable and handheld devices. This project is oriented on designing of a planar Wi-Fi antenna to serve in WLAN network devices. A dual band 2.4 and 5 GHz planar monopole antenna has been designed to be working under the standards of 802.11b and 802.11a, respectively. The antenna has been designed and simulated using CST software package. Simulation results have shown that the designed antenna has good features including compact size, moderate gain and omnidirectional radiation.

Project ECE 14

Design of A Planar UWB Antenna with Band Rejection

Students: Avan Ismail, Muhaned Muhammed, Hajar Bengin Electrical and Computer Engineering Department, University of Duhok,

Supervisor: Dr. Yasser A. Fadhel

Recently, Ultra Wide Band (UWB) has been shown to be a very promising technology using frequency range of (3.1 ~ 10.6 GHz) and serving in systems of different types. Among the major parts of these systems are their antennas, called UWB antennas. This project emphasize on the design of a planar UWB antenna covering the entire UWB frequency range with band-rejection at 5 GHz to avoid the interference with other existing wireless communication systems like WiMAX and Wi-Fi. CST software package has been used to simulate the designed antenna. Simulation results have shown that this antenna obeys the UWB requirements with a reduction in its gain at 5 GHz.

Project ECE 15

Photovoltaic (PV) System Design

Students: Hasan Ageed Hussien, Farhad Muhamad Ameen Khalid, Berhat Kamal Nasrullah, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Dr. Lokman H Hassan

Off-grid (stand-alone) photovoltaic (PV) systems are widely used to generate electrical energy. A system model that supplies an

induction motor using an off grid photovoltaic system is proposed. Matlab Simulink is used for modeling and simulating the proposed project.

Project ECE 16

Heartbeat monitor

Engineer Haval Nawzad, Engineer Milat Khalil, Electrical and Computer Engineering Department, University of Duhok

For this project we will use an IP sensor to monitor the heartbeat of an Human being. Since the blood of an human being isn't an continuous flow but rather pumped throw the body discretely by the heart we can use the pushed blood to reflect the IR light to display the heart rate. The received information by the IR transmitter-receiver must be modified a bit (amplified then filtered) to make it readably for an microcontroller and hence monitored.

Project ECE 17

The Electric and magnetic Fields below High voltage Transmission lines

Students: Zana Hewa, Hersh Hadi, Mohammed Sediq, Electrical and Computer Engineering Department, University of Duhok

Supervisor: Dr.Salih M.Saleem Al Atroushi

This project explains what Electromagnetic field is in detail is and what are the Hazards of Electromagnetic Fields. Also there are some theoretical and practical calculations of Electric and Magnetic Fields of High Voltage 132 KV Transmission Line. The variation of magnetic field is measured along the center line of different transmission line.

Project ECE 18

Application of Genetic Algorithm in Solving the Economic Load Dispatch problem

Students: Shamal Khidr muhamad, Ayad Abdulla Taha, Hozan Omer Hassan, Diana Hamid Ali
Supervisor: Dr. Lokman H Hassan

Abstract

Genetic Algorithm (GA) as an intelligent technique to search for optimal solution of the Economic Load Dispatch (ELD) problem is proposed. The approach is successfully tested on multi-machine power systems. Simulation results show the effectiveness of the approach when compared to a conventional optimization technique.

Project ECE 19

Design of a Flat Plate Collector

Students: Jovan Mohammad, Ava Ghazi, Mevan Ahmad
Supervisor: Dr. Lokman H Hassan
Abstract

Flat plate collectors are the most common type of solar thermal and perform well in warm climates. A Flat plate solar thermal collector prototype for solar water heating is built. Single glass as a cover sheet to reduce convective heat loss is proposed.