

RESEARCH NEWSLETTER

January, 2012

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RESEARCH NEWSLETTER

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FOREWORD

This first issue of the University Research Newsletter for the Academic Year 2011-2012 provides up-to-date information about the research and other scholarly activities undertaken by the University faculty members for the half-year period from July 2011 to December 2011. A healthy research program has the advantage of attracting the best faculty and students. The scope of research support has been expanded in response to global technological challenges and in order to support and sustain diverse faculty research interests. Our goals are to promote creativity; to address critical, scientific, technological and managerial issues; encourage research in areas of national importance; and to improve the quality of graduate education. This *Research Newsletter*, published by the Deanship of Scientific Research on a semi-annual basis, provides an overview of our faculty's research output, as well as the funding which the University provides its faculty to pursue research and scholarship. In particular, the *Research Newsletter* reports on faculty publications, conference presentations, funded projects, and many other features.

The Deanship of Scientific Research is making its best efforts in promoting the new research grants among the faculty members so that they can actively participate in research, which is not only beneficial to their own professional career but also to the development of society at large.

Our sincere appreciation is due to Mr. R. Jayaraman for compiling this edition of the *Research Newsletter*.

Dr. Nasser Al-Aqeeli
Deputy Dean of Scientific Research

2. ABSTRACTS OF SELECTED RESEARCH PROJECTS

Abstract for Approved Research Projects During the Fall Semester 2011-12

1. **IN111001**

Prof. Bekir Sami Yilbas, ME
Distinguished Professor Award

2. **IN111002**

Prof. Mohammad Abuelmatti, EE
Distinguished Professor Award

3. **IN111003**

Prof. Magdi Mahmoud, SE
Distinguished Professor Award

4. **IN111004**

Prof. Shaikh Asrof Ali, Chemistry
Distinguished Professor Award

5. **IN111005**

Dr. Mohamed Deriche and
Dr. Mohamed Mohandes

A license plate recognition system with Arabic support for GCC Region

Real time automatic license plate recognition (LPR) plays an important role in car identification and other applications of intelligent transportation systems. However, most of the previous techniques worked under restricted conditions, such as fixed illumination, limited vehicle speed, designated routes, and stationary backgrounds. The main objective of this project is to develop a robust system and a working prototype to automate the recognition of Arabic language automobile license plates. A large number of license plate recognition systems have been developed, for example Chinese, American and European ones. However, automated license plates in Arabic have not received enough attention. Developing and building this system nationally would have several advantages as opposed to asking others to do it for us. We will have control over all aspects of the system and will be able to deploy the system in new applications that suit this area of the world. The system can be upgraded in the future since most of the coding is done locally. An automated vehicle license plate recognition system has several important applications like traffic management, access control to government and private institutions, control of parking areas, national border crossings, road toll areas, access control to special areas like Makkah and Medinah during the hajj period, and many others. It will reduce traffic congestion on toll bridges such as the King Fahad causeway between Saudi Arabia and Bahrain. The system will consist basically of capturing an image of the car then applying some algorithm to locate the license plate inside the image. We will then apply other algorithms to identify the Arabic characters from the license plate region in the image. At the end of this study we will have a working real-time prototype for automated detection of Saudi vehicle license plates which we can extend easily to other countries in the region.

6. **IN111006**

Dr. Muhammad Asad Sadi

The Dynamics of *Nitaqat* to Boost the Nationalization of the Labor Market in Saudi Arabian Private Sector: Drivers and Barriers within the Service Industry

The objective of this study is to investigate the nature and consequences of job nationalization policy whereby the Saudi Arabian government acts to boost the nationalization of labor market to ensure that certain quotas are given to private businesses in accordance with their actual performance in their line of business as well as the size of their workforce. The rationale is primarily economic, but there are also underlying social and political aspects. The issues explored in this program are similar to an earlier program of job replacement known as "Saudiization" which had ambitious targets to employ locals in place of expatriates, upon whom the labor market has traditionally relied in the last four decades. The latest recently

introduced scheme entitled “*Nitaqat*” attempts to boost employment among locals and ensure wage protection among expatriates. “*Nitaqat*” (ranges) involves evaluating private sector establishments based on the percentage of its Saudi workforce so as to entitle them with certain codes based on their performance. The comparative merits of the latest job nationalization scheme will be discussed, together with the advantages and the challenges of its implementation. A sample survey of services industry executives using a self-administered postal questionnaire will be selected as an appropriate methodology. The SPSS software will be employed and an index for a Relative Services Companies Driver Index (RSCDI) is created. Validity and reliability proofs will be extended further through factor and cluster analyses of the variables and multivariate analysis of variance (MANOVA). The findings of the study are intended to inform the private sector of the service industry about the potential implications.

7. IN111007

Dr. Rakesh Tomar,

Mr. Mohammad Hamdan Hashem

Investigation and Correlation of Blood Glucose with Physical Exercise

Diet and exercise can benefit the individual with type 2 diabetes mellitus (T2DM). The type and duration of exercise, the magnitude of the effects on glycemic control, insulin sensitivity, and on risk factors for cardiovascular disease must be considered in determining the feasibility and acceptability of an intervention program. It is clear that regular physical exercise is important in both the prevention and treatment of T2DM. The benefits of exercise are many and include increased energy expenditure, which, combined with dietary restriction, leads to decreased body fat, increased insulin sensitivity, improved long-term glycemic control, improved lipid profiles, lower blood pressure, and increased cardiovascular fitness. Persons with T2DM often find it difficult to exercise and are at increased risk for injury or underlying diseases or diabetic complications. Therefore, before starting an exercise program, all patients with T2DM should have a complete history and physical examination, with particular attention to the evaluation of cardiovascular disease, medications that may affect glycemic control during or after exercise, and diabetic complications including retinopathy, nephropathy, and neuropathy. Exercise programs should be designed to start slowly, build up gradually, and emphasize moderately intense exercise performed at least three times a week and preferably five to seven times a week for best results.

8. IN111008

Dr. F.D. Zaman,

Dr. Ashfaq H. Bokhari,

Dr. M. Yousuf

A Study of Tumor Model with a Treatment Profile

We propose to study a mathematical model based upon the Burgess equation to study the tumor growth under a treatment profile. The treatment profile is initially assumed to be dependent on space variable and then a more general one with radial symmetry or no such symmetry. Using Lie symmetry analysis, we plan to classify some treatment profile functions which give promising treatment results. The reductions based upon Lie symmetries will be performed and analytical or numerical solutions will be sought for a better understanding of the during-treatment and after-treatment profiles. It is hoped that this study will lead to some new results in terms of exact solutions and tumor growth or otherwise for a particular treatment.

9. IN111009

Dr. Boubaker Smii

Feynman graph representation of the transition density of the Levy Ornstein-Uhlenbeck process

In this project we will study the Levy Ornstein-Uhlenbeck (OU) equation $\partial_t X = -m X_t + \varepsilon$, $m > 0$ and ε a Levy white noise. The main objective of this project is to find a Feynman graph representation of the transition density of the Levy O-U process. For this aim the generalized Feynman graph and rules will be introduced. The obtained expansions are not convergent in general, but it gives only an asymptotic series. A summability of the obtained expansions will be studied in this project as well. Finally some applications to the spread of historic data will be applied to our results in order to obtain a significant $m > 0$.

10. IN111010

Dr. Rajai Alassar

Hagen-Poiseuille Flow in Semi-Elliptic Microchannels

In this project, an exact solution of Hagen-Poiseuille flow in microchannels with semielliptic cross sections is to be obtained in an attempt to quantify the effect of circularity on the channel's hydraulic resistance and the pressure drop. The velocity profile, the shear stress, the channel's resistance, and the channel's correction factor will be determined.

11. IN111011

Dr. Fazlul Hoque Miah and

Dr. Ahmed Ali Califa

Rationality of Survey-Based Interest Rate Expectations

This research attempts to test the rationality of interest rate expectations using consensus survey data published by a source (www.Fx4casts.com, formerly Financial Times Currency Forecaster) previously unexploited by researchers. There are only a few studies that use survey data on interest rate expectations to understand whether an economic agent's expectations are unbiased and whether agents use all available information efficiently. To the best of my knowledge there are only four studies (Friedman (1980), Froot (1989), MacDonald and McMillan (1994), and Jongen and Verschoor (2008)) that investigated the properties of survey data on interest rate expectations. The general conclusion of these studies is that survey data is a biased predictor of future change in interest rates, and that agents do not incorporate all available information in forming their expectations. The question needs further investigation as suggested in the literature. The last study in this area covers data up to 2003. The current proposed study will be of more interest to researchers as it covers a time period when monetary authorities in many countries have become more open, especially in the United States. Survey data on expectations are useful in testing various economic hypotheses. Survey data are used as a proxy to unobservable expectations in economic models. It is also used by practitioners and policy makers to understand the influence of expectations on economic behaviour. Survey data are now available on different macroeconomic variables, like interest rates, exchange rates, GDP growth rates, inflation rates, current account, etc. This research will use unique survey data known as consensus survey data. Consensus surveys are unique because they only survey the opinions of the experts, not the public in general. Consensus forecasts are found to be more accurate most of the time over the individual forecasts. The data can provide valuable information about the efficiency of expectation formation processes by economic agents. Data on interest rate expectations will be collected from www.Fx4casts.com for this study. The journal provides monthly consensus forecasts of interest rates (of various maturities) at periods of three, six and twelve months ahead for 32 countries. Data on spot interest rates are also provided in the journal. Other relevant data will be collected from data streams, and other sources. The time period of the study will cover ten years of the most recent data available from the journal. To test the rationality of the expectations, two tests will be performed: an unbiasedness test and an orthogonality test. The unbiasedness test examines whether the expected interest rate is an unbiased predictor of the future spot interest rate, whereas the orthogonality test examines whether economic agents use all available information efficiently at the time of forecast to form their expectation of future interest rates. The null hypothesis of rational expectations (unbiasedness) implies that $a=0$ and $b=1$ in a regression of an equation of the following form: $R_{t+k} - R_t = a + b(E_t R_{t+k} - R_t) + e_{t+k}$. The dependent variable in the left hand side of the equation is the actual change in interest rate and the independent variable in the right hand side is the expected change in the interest rate, and e_{t+k} is a random error. The null of an orthogonality test is that $b=0$ in an equation of the following form: $e_{t+k} = b(X_t) + v_{t+k}$. The dependent variable in this equation is the survey forecast error, and X_t is a vector of information set, which is known at time t , and e_{t+k} is a random error. Following the literature, this study will use forward discount, recent error, recent change, and yield spread as relevant variables in the information set. Other variables may also be included as judged by the authors at the time of actual investigation. The results of this study will enhance our understanding of the efficiency of financial markets, which will be useful to both researchers and policy makers. The study will shed light on term premia of different financial instruments, and also help us understand the forward discount puzzle in the currency market.

12. **IN111012**

Dr. Muhammad Islam Mustafa

Asymptotic Behavior of some Delay Hyperbolic Thermoelastic Systems

In this project we consider non-classical thermoelastic systems with time-varying or distributed delay. We intend to study several problems including thermoelasticity with second sound and thermoelasticity of type III. In the absence of delay, these systems have been extensively studied in the literature and their uniform stability has been established. Introducing a delay term in internal or boundary feedbacks of these thermoelastic systems makes the problem different from that considered in the literature. The presence of a delay term may be a source of instability as shown in many other cases. Our goal is to study hyperbolic thermoelastic systems with delay, establish the well-posedness of the systems, investigate the effect of time delay on their stability, and determine sufficient conditions for the uniform rate of decay of the energy solution.

13. **IN111013**

Dr. Moataz Ahmed and

Dr. Mohamed Alshayeb

Automatic Messages Planning in Sequence Diagrams: Consistency Analysis of Use Cases against Class Diagrams using Design by Contract

Different UML models represent different views of the same software system. For example, use cases models represent a functional view, class models represent a structural view, and state machine diagrams represent a behavioral view. During the requirements engineering phase, the representation framework analysis version of the view-points analysis technique relies on comparing these multi-view models in discovering more systems requirements. UML offers a powerful model to compare use cases to class diagrams: sequence diagrams. During requirements analysis, each use case should be shown to be realizable by the classes and methods provided in the conceptual class model of the target system; that is, the objects of the system can pass messages among themselves to allow for offering the intended services. The sequence of message passing is depicted in the sequence diagram. One problem here is that analyzing the consistency manually can become a tedious and time-consuming process. More specifically, generating sequence diagrams manually can become a difficult and error-prone process. Automating these processes would be quite helpful and practical. Most of the previous research has focused more on automatic consistency analysis than on automatic model generation. Also, the two problems are rarely, if ever, addressed together. In the field of artificial intelligence (AI), planning creates a sequence of actions that will achieve a certain goal. Actions are specified using preconditions, which must hold before the action can be executed, and effects of these actions. It is here where the similarity between planning and concepts of design by contract (DbC) starts to emerge: actions have preconditions just like class methods do, and 'effects' is, in a sense, just another word for post-conditions. The use case represents the planning problem. It has an initial state represented by a set of preconditions and a goal situation represented by a set of post-conditions. The sequence of message passing depicted in a corresponding sequence diagram represents the plan. To solve a planning problem, a planner searches the space of states looking for a sequence of actions that will connect the initial state with the given goal. Despite the striking similarity between planning and sequence diagram generation, it seems that no previous research has tackled sequence diagram generation as a planning problem. The main objective of our proposed work is to combine AI planning techniques and concepts of DbC to research algorithms and contract representation schemes that can be used to automatically generate sequence diagrams from use cases and class diagrams and to automatically analyze their consistency. Support for code contracts is now a core feature of the .NET Framework 4. Moreover, the support for DbC in computer-aided software engineering (CASE) tools and programming frameworks is increasing. These observations suggest that more and more software developers and professionals are adopting DbC as they realize its practical benefits. In turn, this suggests that the outcomes of our research effort will be highly applicable and very much needed; accordingly, the proposed effort will aim at implementing and packaging the resultant algorithms as plug-ins for CASE tools.

14. IN111014

Dr. Naser Al-Aqeeli and
Prof. C. Suryanarayana

Synthesis of Novel Metastable Phases from Immiscible Metals

The development of new materials with improved properties is of fundamental importance for any developing/developed country. Even though a large number of materials of engineering importance are available, the continued demands of high-technology industries for materials with high strength, good ductility, higher stiffness, lower densities, and ever higher temperature capabilities necessitate development of newer and better materials. Such materials can only be synthesized under non-equilibrium processing conditions. The process of alloying between two different elements is determined by the heat of mixing between them. Alloying can only occur if the heat of mixing is negative, but not when it is positive. But, the development of several non-equilibrium processing techniques during the past few decades have greatly aided in synthesizing alloys from immiscible metals that have a positive heat of mixing. Two of the most popular and highly successful techniques are rapid solidification processing and mechanical alloying. Between these two again, mechanical alloying has an edge over rapid solidification processing in that it is possible to synthesize metastable phases more easily. Therefore, it was chosen to synthesize metastable phases in the Zr-Nb system using a mechanical alloying technique. Zr-Nb powder blends of different compositions will be milled-in and subsequently analyzed for their crystal structure, microstructure, and chemical composition. Additionally, the crystallite size and lattice strain will also be evaluated from the breadth of the X-ray diffraction peaks as milling progresses. The phase evolution as determined by X-ray diffraction will be related to the crystallite size and lattice strain in the milled powder to derive the conditions under which alloying occurs between different metals. This will provide useful information on the fundamental basis for alloying to occur between two metals under non-equilibrium conditions. Moreover, consolidation of the powders will be carried out using conventional hot-isostatic pressing (HIP) and a non-conventional novel sintering technique of spark plasma sintering for subsequent mechanical characterization. The properties of these non-equilibrium alloys will be investigated by conventional mechanical testing methods.

15. IN111015

Dr. Izhar Ahmed
Dr. Soliman Al-Homidan
Mr. Shamsuddin Khan

Optimality Conditions and Duality in Mathematical Programming

Optimality conditions and duality have played an important role in the development of mathematical programming. We are interested in studying the following two aspects of mathematical programming problems: optimality conditions and duality theory. We shall study the higher order duality results for (FP) under the generalized convexity assumptions. We are also interested in developing the optimality conditions, first-, second- and higher-order duality results for generalized fractional problem (MFP). The multi-objective problem (VP) is also considered and appropriate optimality conditions, first-order, second-, and higher-order duality results will be discussed under weaker convexity assumptions. We shall consider the continuous version of (VP) i.e. called multi-objective variational programming problem (VVP) and develop the second duality results by formulating the dual models. The static case of continuous problem will be presented in the project.

16. IN111016

Dr. Mohammad Alshayeb and
Dr. Moataz Ahmed (ICS)

Object-Oriented Class Stability Metrics Validation

Stability is a desirable quality attribute of any software design. Building and keeping software stable is a big challenge as changing and adapting new requirements to software are necessary due to customer needs and technological advances, where unstable software may lead to high maintenance cost and effort. Classes in object-oriented (OO) systems can be used during system evolution as an important source of information for project management to verify project plan and project progress. They form the basic components of the

software architecture; hence, stable classes may contribute to reducing the maintenance and effort cost. As software involves a large number of classes and is subject to frequent modifications, many class stability metrics were proposed to measure class stability. These class stability metrics use different factors to measure the class stability. Hence, they lead to different measurements of the class stability. Therefore, there is a need to validate these metrics and provide confidence in their measurement capability. The objectives of this project are to: empirically validate these metrics and to find if there are inconsistencies among these measurements when computing the class stability. As a result, we will provide prediction models for validating the existing object-oriented class stability metrics and a framework for associating a probability distribution of error to the measurements computed by each metric, thus enabling the assessment of the degree of reliability of measurements of each metric when used to rank a set of classes with regard to their stability quality.

17. IN111017

Dr. Jameleddine-Hassine (ICS)

Dr. Daniel Amyot (Univ of Ottawa, Canada, Consultant)

Empirical Validation of Goal-Oriented Models

Goal models represent interests, intentions, and strategies of different stakeholders. Reasoning about the goals of a system unavoidably involves the transformation of unclear stakeholder requirements into goal-oriented models. The ability to validate goal models would support the early detection of unclear requirements, ambiguities and conflicts. In this research, we propose a novel validation approach to check the correctness of goal models. Our approach is based on a statistical analysis that helps justify the modeling choices during the construction of the goal model as well as detecting conflicts among the stakeholders of the system.

18. IN111018

Dr. Robert Opoku (Mgt & Mkt)

Perceptions of Mobile Phone Usage Behavior in Public Places among Young Saudi Adults

The mobile phone has rapidly spread into our daily lives. Yet, there remains no public consensus as to what should be appropriate boundaries or acceptable etiquette for the use of this technology in public space. With strict customs, laws and social etiquette characterising Saudi society, it is not clear whether its young adults are aware of mobile phone usage etiquette in public space. We intend to investigate this phenomenon in this proposed study. The proposed research methods to be used in this research may include a survey of about 300 or more young Saudis. It is expected that the result of this study will provide meaningful managerial guidelines for both Saudi marketing practitioners in their marketing practices and international companies yet to enter the Saudi market.

19. IN111019

Dr. Mohammad H. Omar and

Dr. Anwar H. Joarder (Math & Statistics)

Joint Distribution of Sample Variances under Bivariate T-Population

We will derive the joint distribution of sample variances based on a bivariate t-population, and closed form expression for their product moments. We will study the marginal and conditional distributions, the distribution of the sum, product and ratio of the sample variances, and related measures. Finally, we plan to develop a test for testing the equality of true variances when the parent population is a bivariate t-distribution.

20. IN111020

Dr. Mohammad Enamul Hossain and Dr. Abdulaziz Al-Majed (Pete)

Investigation of Canola Oil as an Environment Friendly Drilling Fluid

The current industrial trend is toward sustainable technology development and practices. The petroleum industry is one of the more hazardous and risky industries. Drilling fluids must be used to drill oil and gas

wells safely and economically. The materials used to improve the quality and functions of drilling fluid, unfortunately contain toxic materials. The proposed research outlines the major types of drilling fluids, their strengths and limitations, and remedies. The current trend and the future challenges of this technology inspire the researchers toward the development of an environmentally friendly drilling fluid with zero impact on the environment. This trend leads toward the development of an environment friendly drilling fluid. The need for the greening of drilling fluid is germane and inevitable in the face of the ever-growing restriction where the use of the oil-based drilling fluid is facing real challenges worldwide. Oil-based drilling fluids do not only impact the environment negatively, but also humans (examples include drilling workers and consumers of sea-foods). Drilling operations are pointed out as potential sources of occupational exposure to hazardous fluids. This research aims to investigate the use of canola oil as an environment friendly drilling fluid for obtaining an oil-based mud. In addition, it depicts a guideline for developing a sustainable drilling fluid which leads toward the greening of drilling fluid. The findings of this research will help academia, R&D groups in the industry, and researchers to develop new green and sustainable drilling fluids further.

21. IN111021

Dr. Rakesh Tomar, Dr. Varghese Anthony and Dr. Abdul Hameed Al-Ameer (Physical Education)

Perception of KFUPM Faculty and students towards Physical Education Activity, Obesity, Smoking and Knowledge of Cardiovascular Disease: A Descriptive Study

Cardiovascular disease is a leading cause of death; despite this fact, few plans were developed for tackling cardiovascular disease during the period 2000-2011. There is a direct relationship between physical activity and risk reduction for coronary heart disease, stroke, and diabetes. In the Kingdom of Saudi Arabia, with increasing longevity and changes in lifestyle, there has been a consequent increase in patterns of disease with a marked increase in illnesses related to non communicable diseases, in particular cardiovascular disease and diabetes. Cardiovascular diseases constitute the leading cause of death in Saudi Arabia. Objectives: The objectives of this study are: 1. To create a profile of King Fahd University of Petroleum and Minerals (KFUPM) faculty and students in relation to physical activity, obesity, smoking, and knowledge of cardiovascular disease. 2. To assess and describe the perceptions of KFUPM faculty and students towards physical activity and body mass status in relation to health and knowledge of risks of cardiovascular disease and its prevention. 3. To evaluate if greater knowledge and awareness about cardiovascular disease and physical activity will affect lifestyle habits. Research Methods: For the purpose of the present study, faculty and students of KFUPM will be selected as the sample. The age of faculty will range from 25-65 years. On the basis of age, four groups will be formed: 25-35 yrs, 36-45yrs, 46-55 yrs, 56-65 yrs. The age of students will range from 18-25 years. A self-reported questionnaire will be developed to collect the data. The questionnaire will include a cross-sectional survey to determine the perception, knowledge and awareness towards cardiovascular disease and physical activity. The questionnaire will be divided into three sections. Section one will consist of questions based on demographics, self-reported weight and height, waist circumference, blood pressure and cholesterol screening, smoking status and physical activity status. Section two will comprise questions on the source of health information, perceptions of how well-informed the subjects are, discussion with a doctor, and knowledge of cardiovascular disease. Section three will contain questions on perception of their level of physical activity, perception of weight as healthy or unhealthy, and perception of cardiovascular risk. Participants will be requested to self-report their physical activity based on a seven-day re-call item. Self-reported mass, height and waist circumference facilitated estimation of body mass index (BMI) and waist adiposity. Multiple-choice items will be included to investigate knowledge of cardiovascular disease, and screening behaviour. Participants' perceptions of their physical fitness will be compared against their activity levels. Their perceptions of their body weight as healthy or unhealthy will be compared against their BMI. The data will be analysed using a statistical package for social sciences for Windows. Univariate descriptive statistics will be used to analyze the data. Nominal data will be summarized in terms of frequencies and continuous data will be summarized in terms of percentage, mean scores and standard deviation.

22. IN111022

Dr. Varghese C. Anthony and Dr. Rakesh Tomar (Physical Education)

Participation Motives of KFUPM Students Towards Physical Activity and Sports

The purpose of the study will be to identify the participation motives of KFUPM students towards physical activity and sports. Objectives: The investigation will focus on the following research questions: 1. What are the reasons for participating in physical activity and sports? 2. What are the various factors of motivation for participation in physical activity and sports among students? • To identify motives for participation at different educational levels (orientation, freshmen, sophomores, juniors, and seniors) • To suggest what causes individuals to continue or withdraw from physical activities and sports participation • To study the geographical influences of participation motives towards physical activity and sports. Methodology: Subjects of the study will be students studying in this university at different educational levels (freshmen, sophomores, juniors, and seniors). This study consists of two categories of independent variables namely educational level (orientation, freshmen, sophomore, junior, and senior) and region. The dependent variable for this study will be the participation motives. The subjects will be given a modified Participation Motivation Questionnaire (PMQ) (Gill et al., 1983) translated into Arabic to collect the data, a 30-item list of possible reasons students have for participating in physical activity and sports. Responders will answer to the stem: "I participate in physical activity and sport because ...", indicating their preferences from "very important" to "not at all important". The factors of participation motives will be skill/competition, status/recognition, energy release, team atmosphere, affiliation and fitness. A pilot study will be conducted to establish test reliability. Hypotheses: 1. There will be no significant difference among orientation, freshman, sophomore, junior and senior students in their preferences or ranking on participation motives. 2. There will be no significant difference between participation motive factors among the KFUPM students. 3. There will be a significant difference among the geographical influence on their participation motives. Statistical Analysis: The hypotheses and the data will be analysed using appropriate statistical methods. The level of significance will be set at .05 levels. For statistical analyses SPSS 16 for Windows will be used. Rank order will be used to find out the preferences of reasons for participation motives and descriptive statistics will be calculated for orientation, freshmen, sophomores, juniors and senior students on motivational factors. Analysis of variance (ANOVA) and post-hoc tests will be used to determine the significances of differences among means of motivational factors and students. Further to determine the geographical influence on reasons for participation the ANOVA test together with post-hoc comparisons will be applied. Significance: • The study will provide a significant input to design and develop new curriculum modules. • The results and conclusions can be used to understand a student's motivation to participate in physical activity and sports. • Findings will be useful for future planning of the physical activities and sports programs for students in this university (KFUPM). • This study will provide valuable information to the physical education department, physical education teachers, parents and coaches regarding the reasons why students participate in physical activity and sports. • This study will help the PE department, teachers, and coaches to design sports programs that will satisfy student needs and contribute to their growth and development.

23. IN111023

Dr. Wael H. Ahmed, Dr. Hassan Badr, and Dr. Amro Al-Qutub of ME Dept.

Developing a Multi-Stage Airlift Pump Operating under Continuous Multiphase Flow Operating Conditions

Airlift pumps are finding increasing use where pump reliability and low maintenance are required, and when a compressed air or gas is readily available as a source of a renewable energy for water pumping applications. The main objective of the proposed study is to design an innovative multi-stage airlift pump operating under continuous multiphase flow conditions, both gas-liquid and gas-liquid-solid. The new design will be able to handle multiphase flows with high operating performance where available conventional airlift pumps fail to perform. These airlift pumps with an enhanced performance will be introduced to the market for the benefit of two main industries: oil production and water treatment.

24. IN111024

Dr. Mohammad Kafini, DCC

Dr. Salim Messaoudi, Math

Global Nonexistence for Some Nonlinear Wave Systems

In this project, we discuss two nonlinear systems. The first one consists of two wave equations in the presence of nonlinear damping and nonlinear source terms. By exploiting the work by Autuori and Pucci (2010), we aim to establish the nonexistence result of global solutions with initial data which belong to a class larger than that usually taken in the literature. Once the result is obtained, we try to push it to a system of viscoelastic equations under suitable conditions on the relaxation functions.

25. IN111025

Dr. Hassan Badr, ME

Bookwriting project

This book is intended to be a basic reference on the theoretical foundation and applications of pumping machinery. In view of the great importance of pumps and compressors in almost every engineering system, this book presents a detailed discussion of the theoretical formulation and design of various types of pumping machinery and their applications and operational problems. The proposed book will focus on two important parts in the area of pumping machinery. The first part deals with different concepts and basic theories of pumping machinery design, performance and operational-type problems for the benefit of undergraduate students and junior engineers. The second part focuses on advanced topics such as two-phase flow and transients in pumping systems targeting practicing engineers and introductory research scientists.

26. IN111026

Dr. Ashraf Farahat, Prep Year Phys,

Dr. Emad Ramadan, ICS

Plasma-Gas Interaction in the Micro-thrusters of Miniaturized Satellites

In recent years Micro Systems Technology (MST) has been introduced to manufacture miniaturized components for satellite subsystems, like small sensors, valves, micro motors, antennas and many more. These components can be used to build a new class of satellites known as small satellites. This category of satellites can be classified into Minisatellites (mass between 100 and 500 kg), Microsatellites (mass between 10 and 100 kg), Nanosatellites (mass between 1 and 10 kg) and Picosatellites (mass between 0.1 and 1 kg). With the possibility of cheap mass production of such small satellites, new applications become possible; however, the construction of very small satellites is connected with some technical problems. On the other hand, small satellites flying in clusters require periodic "station keeping" to keep them in place. One challenge results from the fact that the satellites in a cluster don't stay but continually move about with respect to one another. The goal is to keep the individual satellites in well-defined orbitals with respect to one another and this can be done by using a thruster system to control the satellite location. However, reducing a spacecraft's size means shrinking its component scale, including the propulsion system, as the space craft should contain electronics and other payloads and this requires a micro propulsion system in the small satellite. Recently, there has been a great deal of interest in this micro propulsion system for space applications. These applications range from drag make-up and station keeping to formation flying of multiple satellites. Micro-thrusters readily lend themselves to these applications for several reasons. First, their small size and reduced power requirements make it possible to scale down the size and weight of the entire spacecraft. The lower weight and smaller size translate to reduced launch costs and potentially lower manufacturing costs, and thrusters in this class give very small and precise impulse bits. One of the efficient methods to produce thrust is the electro thermal propulsion. This method has been under development for many years and different types of electrical thrusters are being developed and tested. The fundamental principle of electro thermal propulsion is to apply electrical heating from an external power source, which can be accomplished by microwaves or plasma heating. In this project, we propose a study for a micro-electrothermal thruster that can be used in small satellites. The specific electrothermal thruster studied generates plasma (positive and negative charges) to increase the heat of the bulk propellant gas. The thermal energy imparted to the propellant gas is then converted into kinetic energy by a nozzle. The thermal energy is created by the interaction between charged particles, namely electron and ions with an atmospheric pressure-neutral gas in

the microthruster. The interaction results in heat and energy transfer between the charged and the neutral species, which results in heating up the gas. The charged species will be controlled using crossed electric and magnetic fields. The study will focus on understanding the behavior of the gas parameters including temperature and pressure inside the microthruster and to measure the thrust produced under different electric and magnetic fields and the geometrical conditions of different thrusters.

27. IN111027

r-partite Edge Covers of Graphs

This research aims at formulating and solving three new NP-hard optimization problems, namely the Minimum r-partite Cover (MRC) problem, the Minimum Connected r-partite Cover (MCRC) problem and the Minimum r-partite Decomposition (MRD) problem. These problems will generalize the various known problems of covering the edges of a graph with a minimum number of bipartite subgraphs. We propose to define new graph parameters, namely r-particity, connected r-particity and r-decomposability of a graph as the minimum number of subgraphs in a solution of MRC, MCRC and MRD problems, respectively. The main objectives of the project include developing exact and heuristic algorithms for solving these optimization problems and understanding the relationships of the newly defined parameters with each other and with other well-known graph parameters like the chromatic number. Furthermore, Nordhaus-Gaddum type theorems will be established for biparticity and r-particity to better understand the behavior of these parameters. We also aim to construct connected r-partite covers from r-partite covers in polynomial time, thus simplifying the integer linear programming formulations of the MCRC problem and its special case, the Minimum Bipartite Graph Cover (MBGC) problem.

28. IN111028

Embracing Robustness Analysis and Diagrams to Improve Software Development

Robustness analysis is a technique that can be performed to help ensure the correctness, completeness and consistency of use case and domain models. Robustness analysis also helps bridge the gap between the analysis and design phases by providing a guided approach to identify a first-guess set of objects that will realize scenarios described in use cases. The purpose of this research work is to embrace robustness analysis to improve other software developmental activities. In particular, we propose to use robustness analysis for early validation of functional security requirements by developing a comprehensive set of security acceptance tests. We also propose using robustness analysis to specify glue-code during the integration phase of a component-based software development.

29. IN111029

A Survey of Management Accounting Practices in the Saudi Arabian Manufacturing Sector

The rate of change in the practice of and research on management accounting appears to be increasing. Many organizations worldwide are attempting to change their existing, or implement new and innovative, management accounting practices, based on new management accounting and business organizations' ideas, practices, structures, processes, systems and information. A number of new challenging objects of measurement and control have recently emerged, including strategic cost and value analysis, balanced scorecard performance measurement and information processing. While much of this innovation and implementation concentrates on new costing or performance measurement systems, there is also a change related to the roles of management accountants in organizations. Such current developments provide many new opportunities for innovative management accounting research, and a fruitful integration of existing accounting knowledge and the currently emerging practices. This research study seeks to report on the status of management accounting practices in the Saudi manufacturing sector. In particular, this study intends to investigate the effective use of management accounting systems and information in the management processes (e.g. strategy formulation, strategy implementation, value analysis, planning, decision-making, communication, control, and managing strategic and operational risks). A web-based survey questionnaire will be used for this purpose. It is hoped that the study will contribute to the on-going research targeting the roles of management accountants in business organizations and the effective use of management accounting in management areas, functions and processes in these organizations.

**APPROVED JUNIOR FACULTY GRANTS PROJECTS DURING THE ACADEMIC YEAR
2011-2012**

1. JF111001

Dr. Ali T. Awami (EE)

Dr. Mohammad Abido (Consultant)

Tools for Integrating Wind Energy in Power Grid Operations

Due to environmental concerns, among other reasons, renewable energy sources (RES) have been experiencing a huge implementation surge worldwide. This surge is expected to continue as many countries have already set ambitious green energy targets. By 2030, the US aims to achieve 20% penetration of renewable energy, while the European Union aims at 26-34%. Among the different RES, wind energy enjoys the largest penetration level as of today. Wind energy is fuel-free, emission-free, scalable, and has low maintenance cost. However, wind energy is highly unpredictable and uncontrollable. Historically, because of the domination of conventional, predictable electric power generation technologies, traditional power system operation tools used to be deterministic. However, for systems with high wind penetration, wind uncertainty cannot be neglected. Therefore, stochastic wind models need to be developed. Then, these stochastic models need to be incorporated in stochastic grid operation methodologies. This project aims to develop some of these wind models and demonstrate their use through applications related to grid operations. The first phase of the project concerns modeling wind forecast error. Several probability density functions will be presented and compared. Then, the use of Gaussian mixtures (GM) will be promoted due to their desired characteristics. The performance of GM as compared to the other density functions will be analyzed. Finally, the effectiveness of GM will be demonstrated through incorporating GM into an emission-constrained stochastic dispatch algorithm. The second phase will present a simple, yet effective, wind scenario generation technique that uses non-symmetrical density functions. This technique will be used to generate several multi-period wind scenarios that meet a given set of statistical properties. The use of this wind scenario generation technique will be demonstrated through applying it to dynamic (or multi-period) economic dispatch (DED). The DED problem will be formulated as a stochastic program (SP) where the wind power output as the stochastic variable. Multiple scenarios of the wind power output will be generated using the proposed technique. Those scenarios will all be considered to obtain the optimal DED schedules for the online generating units in a given time horizon.

2. JF111002

Dr. Mohamed A. Mahmoud and

Dr. Abdulaziz Al-Majed (Consultant)

New Model to Predict Formation Damage due to Sulfur Deposition in Sour Gas Wells

Elemental sulfur (S₈) is often present in considerable amounts in sour gas reservoirs at the reservoir conditions (pressure and temperature). For the isothermal conditions in the reservoir, the reduction in reservoir pressure below a critical value will cause the elemental sulfur to deposit in the formation. Sulfur deposition can cause severe loss in the pore space available for gas, and in turn it will affect the gas well productivity. Accurate prediction of sulfur deposition in the reservoir will help in better management of sour gas reservoirs with potential sulfur deposition problems. In this proposal a new analytical model will be developed to predict the formation damage due to sulfur deposition. This model can be used to study the effect of sulfur deposition on gas relative permeability, reservoir porosity, skin damage and gas flow rate. The main objective of this model is to investigate the effect of radial distance on formation damage. Different rock and fluid properties accurate correlation were used in this model for better results prediction. Gas viscosity and gas compressibility factor accurate correlations were used, as the sulfur solubility is a strong function on gas viscosity and gas density. These correlations were used for better a calculation of sulfur solubility at any reservoir conditions. Initial results of the model predictions showed that sulfur deposition depends on the radial distance from the well bore. The most damage occurred in the 6 ft area around the wellbore. As the radial distance increases the effect of sulfur deposition becomes negligible. Unlike previous models, which neglect the effect of pressure on gas properties, accurate correlations were used in the new model. Also, various sulfur solubility correlations were tested using the new model. A reduction of 2000 psi in the reservoir pressure causes a 40 % loss of reservoir porosity at a radial distance of 3 ft from the wellbore

and almost 85 % in the gas relative permeability at the same distance. The model can also predict a suitable production rate from the well that will prevent the deposition of sulfur near the wellbore.

3. JF111003

Dr. Abdulaziz Barnawi (COE)

Dr. Tareq Sheltami (COE, Consultant)

Energy Efficient MAC Protocols for Low-Power Wireless Sensor Networks

Energy-efficient MAC design is a critical objective for wireless sensor networks, which are usually highly energy constrained. In addition, throughput and latency are also important for several sensor network applications. Several wireless sensor network applications are characterized by the many-to-one communications; from sources to sink; instead of the one-to-one mode in ordinary ad-hoc networks. Reducing data redundancy due to spatial and temporal correlation in sensing data is also an important goal. Furthermore, major energy waste factors in wireless communications, i.e., idle listening, overhearing, collisions and control overhead, influence the design of MAC protocols. Previous research addresses the identified energy waste factors by proposing a centralized multi-hop scheduling TDMA MAC protocol called On-Demand Convergecast Scheduling based MAC (OCSMACS). OCSMACS supports data collection (source-driven), event-driven and query driven WSN applications with the objective of energy efficiency and delay guarantee. In addition, it employs an adaptive on-demand slot assignment, compact and aggregate scheduling requests and integrated routing/MAC. For topology construction, an energy-efficient progressive protocol, called PROGRESSIVE, in which gradual topology information reaches the sink at the same time as the TDMA slots are assigned to already discovered nodes was proposed. In addition, it proposes Correlation-Aware (CA) scheduling which allocates enough slots based on the level of data correlation. This scheduling mechanism considers two correlation models: the Global Correlation model and the Sensing Range Correlation model. Correlation-Aware scheduling exploits the presence of correlation in the transmitted data to minimize energy consumption. In this proposal we aim to extend our previous research by adopting additional mechanisms that further enhance energy efficiency and support different network conditions. First, different variations of previously proposed scheduling schemes would be investigated. For example, in deciding the next node along the route to sink, residual nodes energy, queue size, event type, etc. will be considered. In addition, different transmit powers will be assigned to nodes to enhance overall energy consumption. Second, in Correlation-Aware (CA) scheduling, we propose to use a selection mechanism that considers better-correlated routes to achieve more energy efficiency. Finally, we propose to test the current implementation of OCSMACS under different WSN network application assumptions and deployment scenarios. Performance analysis of the proposed solutions will be done through analytical modeling as well as simulation. Simulations will be carried out using ns-2. The objective of simulations is to evaluate and compare the performance of the proposed solutions to that of previous research including other protocols such as S-MAC, DMAC, and Z-MAC. In addition, our simulations will consider real-life scenarios of wireless sensor networks for oil and gas industry applications. The outcome of this research will be submitted in both a conference paper and a journal paper.

4. JF111004

Dr. Khalid Aljasser (ICS)

Dr. Moataz Ahmed (ICS, Consultant)

Implementing Design Patterns as Reusable Components Using Parametric Aspects

Software design patterns represent well-known solutions to different programming problems. However, the actual design and implementation of those patterns often result in code tangling and scattering. In a study by Hanenman and Kiczales, they showed a considerable improvement in the implementation of 17 (out of 23) of those patterns by using aspect-oriented programming (using the AspectJ language). This improvement focused on the modularity of the pattern code which used to be scattered in object-oriented languages such as Java. Utilizing the ability to encapsulate crosscutting concerns inside aspects and also the ability to statically modify class hierarchy (using inter-type declarations in AspectJ) resulted in a much better implementation of these patterns. However, when considering the reuse opportunities of those patterns (even with AspectJ), it ends up being limited in this sense. In a previous work, we proposed the idea of parametric aspects and implemented it as a programming language extension that we called ParaAJ. ParaAJ is an extension of the

AspectJ language that allows the creation of component aspects, i.e., modular aspects that can be applied and used in different contexts according to the supplied parameters. Its main distinguishing features are that aspects must be explicitly applied to the classes they affect, and that aspect applications may specify parameters that indicate how the aspect is to be applied. These features enhance maintainability, as the aspect parameters create a formal interface between aspects and classes, allowing each to be developed and maintained separately, and encouraging reuse of both aspects and classes. The aim of this project is to investigate the usefulness of ParaAJ in implementing these design patterns. We already tested ParaAJ with some examples that were difficult to implement in a maintainable and reusable way, and we had good results. However, the advantage of testing ParaAJ with these design patterns is twofold. First, successful implementation of the design pattern would create, for the first time, reusable design patterns that can be shipped as components rather than being only designs that should be followed. Second, it is a great chance to add new features to ParaAJ rendering it more mature and more widely applicable instead of being only a research language.

APPROVED FAST TRACK GRANTS PROJECTS DURING THE ACADEMIC YEAR 2011-2012

1. FT111001

Dr. Mohammad S. Sharawi
Dr. Oualid Hammi

A Programmable Digitally Controlled Radio Frequency Feed Network

Design specifications. The excitations of the various elements of the antenna array are provided to steer the beam in a certain direction to enhance the communication link (thus 'beam steering') or create nulls in the radiation pattern of the array to eliminate interference (thus 'null steering'). Phased array feed networks that are programmable and cover the 2 - 6 GHz range are extremely useful for today's wireless communication and personal communication standards that lie within the 2–6 GHz range, and, thus, a flexible, programmable feed network platform is important to have, especially for practicing engineers who do not want to design and fabricate a specific feed network every time they change their design frequency band requirements. In this work, we propose the design of a wideband four-path microwave/RF feed network that can operate in the 2.4–6 GHz range for phased array applications (as well as any RF system design that needs phase and amplitude variations between the RF paths). The proposed feed network will be programmable (via a digital microcontroller) and will have two degrees of freedom; amplitude and phase variations. Six-bit digitally controlled words are used to program the phase shifters (thus providing a $360/26 = 5.625$ degree resolution) and 6-bits will be used to vary the gain (amplitude excitation) in 0.5 dB steps from -13.5 to 18 dB. The feed network will be designed using off-the-shelf microwave components, and will be fabricated on a multilayer printed circuit board (PCB) with a small footprint. The digitally controlled feed network will be ideal for any antenna array application within the covered frequency range

2. FT111002

Dr. Salim Messaoudi
Dr. Mohamed Kafini
Dr. Muhammad Islam Mustafa

Stability in some systems of thermoelasticity type III with delay

In this project we consider several systems of thermoelasticity type III with internal delay. In the absence of delay, these systems have been extensively studied in the literature and their uniform stability has been established. Introducing a delay term in the domain or on the boundary makes the problem different from the ones discussed in the literature. The presence of a delay term can be a source of instability as shown in many other problems related to elasticity. Our goal here is to study some thermoelastic systems, of type III and with delay, establish the well-posedness, investigate the effect of time delay on their stability, and determine the rate of decay whenever a uniform decay exists.

3. FT111003

Dr. Sami Zhioua

Investigation of Two New Attacks on Tor Protocol

This research is about investigating two new attack ideas on Tor (The Onion Routing) network. Tor is an "open network that helps users defend against a form of network surveillance that threatens personal privacy, confidential business activities and relationships, and state security known as traffic analysis". Tor is currently the state-of-the-art in low-latency anonymity systems and is the largest deployed anonymity network ever. Since its first deployment in 2004, several vulnerabilities have been discovered and several attacks have been reported. At the same time, the design of Tor went through several modifications and improvements driven by the discovered vulnerabilities and the reported attacks. In this research, we plan to move in the same direction as we investigate two relevant attack ideas that can break the anonymity of Tor clients. The first attack aims to push the client to use unpopular ports for its traffic. This way, the path selection algorithm of Tor is manipulated to select among a small number of Tor relays from where the attacker controls an important fraction. The attack is successful if both the entry and exit nodes selected by the client happen to be compromised. In the second attack we assume a threat model consisting in an attacker in the same Local Area Network (LAN) as the victim. The attacker aims first to

tell if the victim is using Tor protocol for his traffic and then to match the victim's traffic with some anonymous forum/blog participations. This attack uses packet sniffing and Man-In-The-Middle techniques. The outcomes of this research might be very relevant for law enforcement and for security forces in the Kingdom. For instance, a branch of the U.S. Navy uses Tor for open source intelligence gathering, and one of its teams used Tor while deployed in the Middle East recently. Law enforcement uses Tor for visiting or surveiling web sites without leaving government IP addresses in their web logs, and for security during sting operations.

4. FT111004

Dr. Tareq Al-Naffouri,
Dr. Mohammad S. Sharawi,
Mr. Muhammad Saqib Sohail

Low-Complexity Blind Equalization for SISO Systems with General Constellations

This project proposes a low-complexity algorithm for blind channel estimation and data detection in OFDM-based wireless systems with general constellation. The investigators propose to develop an algorithm able to recover data in a fast fading scenario, where the channel changes from one OFDM symbol to the next. The algorithm will not require any statistical information of the channel and thus will not suffer from latency normally associated with blind methods. The project also aims to utilize the structure of the OFDM system to reduce the computational complexity of the blind algorithm. The performance of the proposed algorithm will be evaluated through extensive simulations.

5. FT111005

Dr. Hassan Ragheb
Dr. Essam Hassan

Radiation from Axial Slot on a Conducting Circular Cylinder

This proposal aims at developing analytical formulation for an axial slot on a conducting circular cylinder coated with eccentric dielectric and partly embedded in a ground plane. Also a computer program is to be developed using MATLAB to produce radiation patterns for the present problem. The radiation pattern of such an antenna will be calculated for different cases of eccentricity. The problem is highly significant since the ground plane could be the body of an air craft, a ship, or any other mobile system. The effect of the ground plane can be used to enhance the radiation characteristics in some cases. It is also a support for the antenna instead of using other mechanical mounting supporting system.

6. FT111006

Dr. Ahmed A. Khalifa,
Mr. Omer Al-Titi,
Prof. Edoardo Otranto (Consultant)

Asymmetric Information, Volatility Spillover and Global Hedging

The project utilizes three new statistical approaches, The Multi-chain Markov Switching (MCMS), the Asymmetric Dynamic Conditional Correlations-Multivariate GARCH (ADCC-MVGARCH) and a Multiplicative Error Model (MEM), to analyze the volatility spillover mechanism among foreign exchange markets, (EUR/USD, JPY/USD, AUD/USD, GBP/USD, and the dollar Index), five metals (gold, silver, copper, platinum and palladium), and oil. The data period spans January 3, 2002 through March 31, 2012. The MCMS will enable us to distinguish between the main concepts of volatility transmission (volatility comovement, volatility spillover and volatility interdependence). The ADCC-MVGARCH model captures the dynamic correlation across the selected markets and it enables us to estimate the impact of different economic variables on the dynamic correlations across those markets. In addition, it enables us to distinguish between the impacts of negative shocks, which have a greater impact relative to positive shocks (Asymmetric Information). For instance, market drops can significantly reduce the ability to diversify the investments. In addition to that, the project will use this approach to construct the global hedging strategies and optimal portfolio using the results of ADCC-GARCH. The MEM enables us to estimate volatility spillover across the sampled markets and it distinguishes between the volatility spillover before and after the 2007-2009 global financial crises. The results of the study will help portfolio

managers, and other policy makers to diversify their portfolio between precious metals and fiat money. In addition, the study will provide several applications for constructing optimal portfolio designs and hedging strategies using our estimates of MV-GARCH and Asymmetric DCC-GARCH results of the selected assets. Also the project carries implications for traders in financial markets, especially those who are looking for a global hedging strategy, and it has implications for the pricing of financial derivatives (options and futures options) in the selected markets.

7. FT111007

Dr. Mahmoud Elish
Dr. Tarek Helmy and
Dr. Mohammad El-Attar (ICS)

A Hybrid Computational Framework for Software Development Effort Estimation

Software development effort. Many estimation techniques have been proposed in the research community in order to build accurate estimation models for software engineering-related estimation problems. However, none of the existing models proved to be suitable under all circumstances. We need to build estimation models that are reliable and provide high accuracy. Ensembles of hybrid computational intelligence models are candidates for this goal, which take advantage of standalone model capabilities. In this research, we will survey existing computational intelligence models and identify the most commonly used models, build different heterogeneous and homogenous ensemble models from existing computational intelligence techniques, search for different datasets for software development effort estimation problems, study their characteristics, optimize their parameters using an evolutionary algorithm-based genetic algorithm and empirically evaluate and compare the proposed ensemble models with respect to their estimations accuracy and training time over other individual models.

8. FT111008

Dr. Mohammad Yousuf, Dept of Math & Statistics

Valuation of American Options with Stochastic Volatility under Regime-Switching

Regime-switching models have drawn considerable attention recently in financial mathematics due to their ability to describe stochastic volatility, stochastic interest rate, and other stochastic factors in an effective and efficient way. Regime-switching models may be the most suitable ones to capture the random shift of significant changes in market behaviors, especially for time periods when the markets are extremely volatile. Stochastic volatility models have become popular for derivative pricing and hedging in the last ten years as the existence of non-flat implied volatility surface (or term structure) has been noticed, and become more pronounced, especially since the 1987 crash. Pricing and hedging American-type derivative securities with stochastic volatility under regime-switching is a challenging problem. It is seen that the American derivative securities lead to an extremely difficult multi-dimensional free boundary value problem. The purpose of this project is to solve such difficult problems by applying and extending recent breakthroughs in the numerical solution of PDEs. We have recently been successful in developing linearly implicit penalty methods and exponential time differencing methods for single-asset American option prices with Markovian regime-switching. We have successfully treated the nonlinearities with computational efficiency in these works. We will study the much more difficult problems arising in American derivative securities with stochastic volatility. We plan to further develop these new ideas, both theoretically and practically, with important financial applications as goals, achieving highly accurate, reliable computational schemes for large-scale systems. The main focus of this project is on developing efficient numerical schemes for multi-dimensional nonlinear PDEs with free boundary conditions that will have significant applications in financial engineering practice, in particular the evaluation of American-type derivative securities with stochastic volatility. Moreover, the new schemes, when combined with an efficient nonlinear filtering technique (e.g., Wonham filter) for state estimation, will be especially appealing for practical use in addition to being a worthwhile avenue of cutting-edge research. This will be accomplished through discovery and experimentation based on fundamental principles in numerical analysis of new highly accurate and efficient computational algorithms for PDE systems in multiple dimensions. Performance tests will be published and will demonstrate the efficacy of the results of this project.

**APPROVED SABIC RESEARCH GRANTS PROJECTS DURING
THE ACADEMIC YEAR 2011-2012**

1. SB111001

Dr. Abul Kalam Azad,
Mr. Ibrahim Y. Hakeem

Development of Hybrid Concrete construction Eliminating Traditional Steel Reinforcements

The advent of ultra-high-performance concrete (UHPC), a new generation of advanced concrete, has created enormous possibilities for new construction utilizing the excellent material properties of UHPC. As steel-fiber-reinforced UHPC has tensile strength exceeding 30 MPa, the use of UHPC as a replacement for traditional steel reinforcement is a distinct possibility. In this respect, this proposal seeks to explore some conceptual ideas. Two alternative forms of construction of slab-type members (flexure-controlled design) will be explored in this work for their structural adequacy. In one option, the bottom tension part of an ordinary slab will be cast with fiber-reinforced UHPC to provide the tensile strength. In the other option, the concrete slab will be reinforced with precast 'UHPC bars' as tension reinforcement. The mix design for UHPC developed at the host university using locally available materials will be utilized. An experimental program in which beam specimens, designed for flexure failure, will be tested to determine the ultimate strength and behavior is proposed. Test results will be compared with analytical values determined from a mechanistic modeling of the composite section using material properties of UHPC as determined from tests. The proposed hybrid construction, using ordinary concrete and UHPC, the latter providing the tensile strength, if found structurally feasible and sound, will have significant impact on new construction. Use of such construction will eliminate the corrosion problem, solving a critical durability issue for concrete. Encouraged by the preliminary findings, the proponents feel it is now appropriate to undertake a more systematic evaluation of the two conceptual ideas.

2. SB111002

Dr. Syed Sohail Akhtar and
Dr. Abul Fazal M. Arif

Development of Optimization Guidelines for Extrusion Die Profiles with Improved Service Life

The aluminum extrusion process is based on simple principles, but is capable of efficiently producing complex cross-sectional shapes. One of the challenges of hot aluminum extrusion is to design the die cavities, used to extrude thin-walled profiles, by considering the effective nitriding surface treatment of the die-bearing surface. A carefully controlled gas nitriding process provides case depths of 100 μm to 150 μm with a uniform thin compound layer which protects the die-bearing surface. The bearing surfaces of complex geometric profiles in the die, which is in contact with hot aluminum billet under high pressure, must be carefully designed for effective surface treatment in order to secure high quality extruded product and extended die life. If simple and optimal geometric designs of die cavities could be implemented, the cost and dimensional variability of extruded profiles could be significantly reduced. The proposed study deals with the optimization of various geometric features of extrusion die cavities taking into account the gas nitride layer formation. Both experimental and numerical investigation will be carried out in conducting this proposed research.

3. SB111003

Dr. Bekir Sami Yilbas,
Dr. Syed Sohail Akhtar, and
Mr. B.J. Abdul Aleem

Laser Surface Treatment of Phosphorous Bronze

Phosphorous bronze finds applications in industry because of its resistance to fatigue and ease of heat dissipation due to its high thermal conductivity. Laser treatment of a bronze surface improves the hardness of the surface through forming a dense layer in the surface region. In the proposed research, laser treatment of a bronze surface will be carried out. Laser gas-assisted melting of phosphorous bronze

in the nitrogen gas environment will be carried out. In addition, the influence of TiC particles at the surface on the microstructure after the laser processing will be investigated. Thermal stress and temperature fields developed during the laser treated region will be numerically modeled in accordance with the experimental conditions. The microstructural and morphological changes in the laser-treated region will be examined using optical microscopy, Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS), and X-Ray Diffraction (XRD). The residual stresses will be determined using the XRD technique. The residual stress predicted will be compared with the data obtained from the XRD technique.

4. SB111004

Dr. Sulaiman Pashah

Dr. Abul Fazal M. Arif

Dr. Syed M. Zubair

Study of Combined Heat and Mass Transfer from Composite Annular and Pin Fins

Extended surfaces are widely used to enhance the rate of heat transfer between a solid and a surrounding fluid. Annular fins and spines (or pin fins) are commonly used types of extended surfaces for many types of heat exchanger and thermal engineering applications. For the cooling and dehumidification processes that take place in refrigeration and air conditioning equipment, heat and mass transfer occurs simultaneously when the fin surface temperature is lower than the dew point temperature of incoming air. In this case, the incoming moist air condenses on the fin surface. Therefore, the performance of the equipment or the heat exchanger is mainly depending upon the performance (or efficiency) of the fins. Several analytical solutions are available in the literature to analyze the fin efficiency with combined heat and mass transfer. In some cases a coating layer can be required to protect the fin surface from a harsh working environment. A fin with a coating layer over fin base material is called a composite fin. The analytical solutions for composite fins can become complex for the case of variable profile composite fins. The finite element method can be used for the problems that contain multiple materials and variable geometry. The utility of a FE solution can be enhanced by getting it in non-dimensional form. The proposed work deals with the design methodology using non-dimensional FEM simulation for annular and pin fins with combined heat and mass transfer. In the proposed study, an axisymmetric finite element will be developed in non-dimensional form having the capability of heat and mass transfer. The advantage of a non-dimensional finite element is that the FE results would be in dimensionless form thus applicable to a class of problems whereas the conventional FE solution is valid for a specific problem. The developed finite element will then be used for studying the heat and mass transfer rate predictions for annular and pin fins. The non-dimensional finite element formulation results will be first validated through some test case of studies by comparing them with experimental or analytical results. The effect of various parameters (such as fin geometry and material, coating layer thickness and thermal conductivity and operating conditions) on the resulting performance of the composite annular and pin fins will be investigated.

5. SB111005

Dr. Muhammad S. Vohra,

Dr. Mohammad Al-Suwaiyan

Competitive TiO₂-Mediated Photocatalytic Treatment of Wastewater Contaminated with Selenite, Selenate and Thiocyanate

The introduction of increased amounts of selenium-based species into the natural environment because of activities such as large-scale mining, the enhanced use of fossil fuels, and the use of selenium in manufacturing industries, is of great concern. Though selenium is a micronutrient essential for human health, the intake of elevated selenium amounts could result in serious health concerns and diseases. Considering the various health issues, several countries have imposed very low selenium regulatory limits both for water and wastewater treatment. Furthermore, the co-presence of selenium with thiocyanate has also been reported in several industrial wastes such as gold mining wastewater, petroleum refinery wastewater, etc., and respective streams do require treatment as per the local regulatory stipulations. Although several technologies have been employed to remove selenium and thiocyanate from the

streams, including titanium dioxide (TiO₂) mediated photocatalytic degradation (PCD) process, for single selenium and thiocyanate systems, there is a lack of studies on competitive and simultaneous removal of both selenium and thiocyanate from the streams under mixed conditions. It should be noted that findings from the individual TiO₂ photocatalysis initiated selenium and thiocyanate species removal studies, will not be sufficient for the treatment of mixed systems. Hence, the present study's main objective is to investigate the efficiency of TiO₂-based photocatalysis for the simultaneous removal of selenite, selenate, and thiocyanate species from simulated mixed wastewater streams. We intend to determine the efficiency of the PCD process for the treatment of said mixed streams under a varying set of conditions and extend the fundamental knowledge on this subject for possible practical applications. We also aim to investigate the role of h⁺/hole scavengers such as EDTA to expedite the removal of selenium species via the reduction route using e⁻/electron species, specifically under mixed conditions. The other variables will include process pH and target pollutants concentration.

6. SB111006

Dr. Ayman Sherif El-Said,
Dr. Stefan Facsko

Nanostructures Creation in Lithium Niobate Single Crystals by Swift Heavy Ions

In many solid targets, swift heavy ions produce narrow cylindrical tracks accompanied by the formation of a surface nanostructure. More recently, a similar nanometric surface effect has been revealed for the impact of individual, slow but highly charged, ions. While swift ions transfer their large kinetic energy to the target via ionization and electronic excitation processes (electronic stopping), slow highly-charged ions produce surface structures due to potential energy deposited at the top surface layers. Despite the differences in primary excitation, the similarity between the nanostructures is striking and points strongly to a common mechanism related to the energy transfer from the electronic to the lattice system of the target. The project aims for the creation of surface nanostructures in Lithium niobate (LiNbO₃) single crystals by both swift heavy ions and slow but highly charged ions. The ion-irradiation experiments will be performed at the Electron Beam Ion Trap (EBIT) facility at Helmholtz Forschungszentrum, Dresden-Rossendorf (HZDR, Dresden, Germany) and at the Heavy Ion Accelerator Center (GSI, Darmstadt, Germany). The dependence on potential energy and kinetic energy of the ions for the creation of nanostructure in LiNbO₃ is studied. The comparison of surface nanostructures induced by both types of ions is expected to provide a valuable insight towards a better understanding of the formation mechanisms of surface nanostructures.

7. SB111007

Dr. Ali H. Muqaibel

Practical Implementation of Compressive Sensing on Ultra Wideband Systems

Ultra-wideband (UWB) radios promise to be the next generation of transmission systems that can support high data rate and power-constrained applications such as wireless sensors and body area networks. However, despite the inherent advantages of UWB transmission due to its large signal bandwidth, UWB receivers are hampered by relatively complex structures. Many challenges have been encountered in receiver design, particularly. Compressive Sensing (CS) proposes a desirable solution for many of these challenges. Based on a literature review, all the published results for the application of CS on UWB systems are based on the theoretical simulated UWB channel model which is proposed by the IEEE 802.15.4a work group. Practical UWB signals are not only shifted and scaled versions of the transmitted signal. Modelling of a received signal using the tap delay line as in the IEEE 802.15.4a channel model, introduces artificial sparsity. The dispersion in time affects the temporal distribution of power. Moreover, UWB propagation is antenna-dependent. However, it is not clear how CS approaches can deal with UWB pulse dispersion or the physical effect of the UWB channel. The main objective of this research is to develop a compressive sensing algorithm to be applicable for practical UWB signals and systems. First, we examine the impact of pulse dispersion and the practical band limitation on the performance of CS algorithms as applied to UWB signals. This examination is performed utilizing some practical measurements. Based on the physical effects of the antenna on the pulse propagation, a directional dictionary is designed to be a sparsity domain of UWB, subsequently increasing the ability of

CS to deal with UWB channels. The work includes the evaluation of the bit-error-rate (BER) performance with the modified practical channel estimation techniques. The results of this research should pave the way for a more practical implementation of CS in UWB systems.

8. SB111008

Dr. Mohammad Riaz (Math)

Enhancing the Performance of Control Charting Schemes

Quality has become a key determinant of success in all aspects of industry. The control chart is an important tool of SPC used to monitor and improve quality of industrial processes. To enhance the performance of control charts, there are many strategies including the choice of an efficient plotting statistic, choice of an efficient sampling design, application of runs rules, and the use of auxiliary information, among many others. In this study, we intend to enhance the performance of control charting structures on EWMA\CUSUM\Shewhart patterns using different approaches to serve the purpose (which may include auxiliary information such as signaling schemes, sampling strategies, merging different structures, and integrating the available sample information). For performance evaluation we will be mainly using power and ARL measures. We will also perform comparisons of the proposals with well-known existing counterparts serving the same purpose.

9. SB111009

Dr. Basheer Chanbasha (Chem) and

Dr. Amjad Sheikh (Che)

Detoxification of chlorinated organic compounds using nano catalyst

Chlorinated organic pollutants are persistent, toxic and ubiquitously distributed environmental contaminants. These compounds are highly bioaccumulative and adversely affect the ozone layer in the atmosphere. As such, their widespread usage is a major cause of environmental and health concern. Therefore it is important to detoxify such compounds using environment-friendly methods. In this proposal we will attempt to utilise hydrogenolysis of chlorinated compounds using insitu hydrogen donor and in the presence of noble metal nanoparticles as catalysts. A low-cost, simple glass capillary microreactor will be designed. The experiments will be performed at ambience pressure and temperature. The reaction will be monitored by gas chromatography-mass spectrometry.

10. SB111010

Dr. Amine Nehari Talat (Acct & MIS) and Dr. Razali Mat-Zin (Mgt & Mkt)

Place of Knowledge Management with Risk Management for Information Technology Projects in Saudi Organizations

This research focused on the challenges experienced when executing risk management processes in Information Technology (IT) projects. The lack of knowledge management support for risk management processes has caused many project failures in the past, encountered unanticipated resistance, and never met expectations. The purpose of this research is to study how Saudi companies consider knowledge process to support risk analysis and how they use and foster it. The present empirical study will be based on a sample of the data collected from managers and senior managers in selected organizations which represent the manufacturing, information technology (IT) and services sectors. The key contribution is to explore how Saudi companies integrate Knowledge Management with Risk Management for IT projects, which provides the capability to mediate the problem of IT project failures by integrating KM and RM in a single context. The findings will provide good support for these organizations by integrating Knowledge Management with Risk Management for IT projects.

**APPROVED RESEARCH GROUP PROJECTS DURING THE
ACADEMIC YEAR 2011-2012**

1. LRG1201-1 LRG1201-2

Dr. Abbas A. Naqvi, Physics
Dr. M.A. Gondal
Mr. M. Rasheed
Mr. Khateeb-ur-Rehman
Mr. Dastageer, Physics, and
Dr. Anvarhusain Isab, Chemistry

Comparison of Detection Sensitivities of Prompt Gamma-Ray Neutron Activation Analysis and Laser Induced Breakdown Spectroscopy Techniques for Analysis of Toxic Elements Ag, Br, Cd, Cr, Cl, Gd, Hg, Ni and V in Liquid and Solid Samples

The environmental pollution level is continuously increasing and accordingly human concern is increasing about its impact on the environment. Particular attention is being paid to the presence of heavy metals because of their irreversible effects on mankind. The pollution sources of heavy metals in the environment are mainly derived from anthropogenic activities. There is a need for in situ monitoring of toxic halogen and metal concentrations in the environmental samples in the field utilizing non-destructive techniques. Although there are several conventional techniques available to assess the concentration of toxic elements in the samples, they are laborious, destructive, time consuming and cannot be used in situ in the field. The Prompt Gamma Neutron Activation Analysis technique (PGNAA) and the Laser Induced Breakdown Spectroscopy (LIBS) technique are ideally suited for in-situ concentration measurements of toxic elements in bulk samples. The PGNAA method will yield total concentration information while the LIBS technique will provide surface concentration data with high sensitivity in liquid and solid samples. At KFUPM nuclear and laser research groups have developed PGNAA and LIBS techniques for the analysis of various types of samples. In earlier studies, the KFUPM nuclear group developed a PGNAA setup to measure total concentration of chloride, calcium and silicon in plain and blended cement concrete samples. This technique will be extended to develop a PGNAA setup based on portable neutron generator MP320 for the in situ measurement of toxic element concentrations in solid and liquid samples. Similarly, the KFUPM Laser group has developed a single laser-based LIBS setup to measure the concentration of metals in environmental and biological samples. The method will be extended to develop a dual laser based LIBS system for the in situ measurement of toxic elements in solid and liquid samples. In this study PGNAA and LIBS techniques will be used to measure surface and total concentrations of toxic elements such as Ag, Br, Cd, Cr, Cl, Gd, Hg, Ni and V present in liquid and solid samples. The proposed project will be conducted by a multi-disciplinary PGNAA team (coordinated by Dr. A. A. Naqvi) and a LIBS team (coordinated by Dr. M. A. Gondal) comprising researchers from the departments of Physics and Chemistry at King Fahd University of Petroleum and Minerals (KFUPM). The research teams possess significant research experience and have extensively published their research work in international journals. The proposed project will be completed in 36 working months at a cost of SR 1,492,200. The bulk of the requested funds will be utilized to purchase equipment that could be utilized for future research activities at KFUPM and lead to the development of facilities at the University.

2. RG1202-1

RG1202-2

Dr. A.H. Abdur-Rahim and
Dr. Mohammad Abido, EE Dept.

Smart Control of Variable Speed Wind Systems for Efficiency and Performance Improvement

Conventional fixed-speed induction generators have a fairly low power efficiency for most wind speeds. To improve their efficiency many modern wind generators adopt a variable speed operation. The advantages of variable speed control include maximum power extraction and improvement in dynamic

behavior of turbines. The permanent magnet synchronous generators (PMSG) and the wound-rotor type, doubly-fed induction generators (DFIG) are the two most widely variable speed wind generator systems. The DFIG systems are simpler and less expensive but require the regular maintenance of slip rings and carbon brushes. Moreover, any kind of grid voltage fluctuation may produce oscillations in stator output power and can cause rotor torque pulsations. The PMSG systems are more efficient with reduced size and high power density but require complicated control circuitry to maintain the converter voltages within strict limits. One of the important aspects of wind generation systems is the capture of maximum energy from the wind under variable wind speed conditions and its transfer efficiently and reliably. Maximum power point tracking (MPPT) has been a topic of intensive research. The increased power input to the generator increases stator current and flux which requires the converter currents and voltages to go up. A complex control of the duty ratio of the converter system is well reported in power tracking problems. This research proposes a method of tracking the maximum power points through an intelligent adaptive radial basis function neural network (RBFNN) controller for a PMSG wind system. The RBFNN controller will track the generator speed to the desired values in order to get the desired power. A superconducting magnetic energy storage system (SMES) will be installed on the inverter side of the back to back converters. The SMES controls are expected to force the converter voltages and currents at the same time leveling the oscillations during the transient power transfer process. The SMES controls will be guided by the adaptive RBFNN strategy. The project will involve the development of a wind system model, variable speed PMSG dynamic model, SMES model and neural network-based online adaptive control strategy for tracking. The use of a storage capacitor in lieu of SMES will be explored. The wind data collected from a recently installed wind generator system on the KFUPM campus will be employed for the wind speed model. The intelligent control strategy proposed will be extended to a variable speed DFIG system.

3. RG1203-1

RG1203-2

Dr. Than Htun Maung, Chemistry,

Dr. Abdulaziz Al-Jalal, Physics,

Dr. Khaled Gasm, Physics

Excited-State Proton Transfer Kinetics of Naphthalene Derivatives

Excited-state proton transfer kinetics of 2-chloro-1-naphthol, 4-chloro-1-naphthol, and 1-chloro-2-naphthol to water and dimethylsulfoxide in acetonitrile, methanol, tetrahydrofuran, n-propanol will be studied by Time-Resolved Fluorescence Spectroscopy. In this study, the proton transfer rates of the photoacids will be measured and the structure of proton acceptors in the excited-state proton transfer reactions will be investigated. The dependence of proton acceptor size on the acidity of the photoacid will be discussed. A kinetic scheme will be proposed to explain the dissociation of photoacids.

4. RG1204-1

RG1204-2

Dr. Bekir Sami Yilbas, ME,

Dr. Ahmet Sahin, ME

First and Second Law Performance Analysis of Thermoelectric Power Generator under Volumetric Constraint

The efficiency of the thermoelectric power generators can be optimized through the proper sizing of the device's geometric configurations. This provides useful information for designing the thermoelectric generator with high efficiency. Pin length optimization of the thermoelectric generator for a fixed total pin volume will be carried out and the pin length maximizing the device efficiency will be formulated. The influence of temperature ratio on the device efficiency and output power operating at the optimum pin length will be examined. In addition, the second law of thermodynamics analysis will be applied to the thermoelectric power generator considering both the internal and external irreversibilities. The study aims at improving the performance from the point of view of not only first law efficiency but also the second law efficiency considering the volumetric constraint.

5. RG1205-1 RG1205-2

Dr. Mahmoud Kassas,
 Dr. Ibrahim El-Amin,
 Dr. Chokri B. Ahmed,
 Dr. Said A.M. Said (ME)

Modeling, Simulation and Performance Assessment of Variable Frequency Drives for Air Conditioning System

The efficient control of air conditioning systems has become increasingly important due to environmental awareness and concerns. Innovations in mechanical and electronic system designs are some techniques used to improve system efficiency. Some of the techniques being considered are the application of new electronic-based drive systems. Advances in power electronics and control strategies have made Variable Frequency Drives (VFD) serious competitors to traditional fixed speed air-conditioning systems. This proposal is devoted to the assessment of air-conditioning systems that employ VFD to run compressors. Following the assessment of the technology advancement, the team will install the complete prototype of the VFD integrated to air-condition systems. Along with this, a simulation of integrated system performance will be conducted to solve any problem which may arise as a consequence of integration. The system performance will be tested under different temperature settings. Energy consumption and related data are also compared to the operation of conventional on-off air-conditioning systems. The proposed research work will contribute to technology transfer and to the invention of novel control strategies associated with energy conservation systems. The project outcome will serve the national plan goals in transferring new technology to the Kingdom and to utilize power electronic components within power systems.

6. RG1206-1, RG1206-2

Dr. Abdulmohsen Al-Hammad, ARE,
 Dr. Mohammad Hassanain, ARE,
 Dr. Salih Duffuaa, SE

Development of Maintenance Management Standards for Facilities of Large Public Organizations in Saudi Arabia

Saudi Arabia is witnessing unprecedented development in many aspects. Most of this development is realized in the construction industry. Examples that illustrate this development involve constructing several types of facilities, including educational facilities. These large facilities require extensive maintenance programs in order to preserve them in good running condition as they were originally intended. The objectives of this study are to develop effective maintenance management standards for facilities of large public organizations in Saudi Arabia, and to conduct a case study to demonstrate the applicability and effectiveness of the developed maintenance management standards. The methodology adopted in this research consists of two phases. First, the research will focus on acquiring knowledge through an extensive literature review, questionnaire survey and conducted interviews about the development of effective maintenance management standards for large public organizations. The research, then, will develop a case study to demonstrate the applicability and effectiveness of the developed maintenance management standards. These standards can be consistently applied to these facilities in order to provide for the long-term protection and preservation of large public building facilities, provide a safe and healthy environment for users, eliminate the deterioration of existing and future public building facilities, and provide efficient use of government funds in support of facilities. This research will focus on applying the developed maintenance management standards on public school buildings as a case study. The significance of this study stems from the non-availability of maintenance management standards in Saudi Arabia, saving the value of the investment in public facilities, providing a high level of satisfaction for users of these facilities, and providing a healthy and safe environment to improve productivity levels.

7. RG1207-1 RG1207-2

Dr. Mohammad Abido, EE,
Dr. Abu H. Abdur Rahim, EE,
Dr. M. Hassan, EE

Dynamic Analysis, Control and RTDS Implementation of Microgrids

Power system construction has changed in the last two decades due to a number of challenges, such as load growth, new environmental policy with a demand to reduce CO₂ emissions, and the economic stresses of the marketplace. This has led to an increased interest in the local connection of the renewable energy sources at the distribution level. Microgrids are small electrical distribution systems that connect multiple customers to multiple distributed sources of generation and storage through power electronic inverters which provide the necessary interface. Microgrids can operate in both islanded (autonomous) and grid-connected modes. The control of microgrids in both modes has recently been investigated. In the grid-connected mode, the control of the inverter is required to make the microgrid capable of regulating the active and reactive output currents, ensuring high power quality levels, and achieving relative immunity to grid perturbations. In the islanded mode, the inverter-based distributed generation unit is controlled to feed the load with the pre-defined voltage and frequency values according to a specific control strategy. This project proposes a systematic approach to optimize the settings of the microgrids voltage and current controllers, filter design, and droop characteristics to enhance the system stability. The results will be validated through a Real Time Digital Simulator (RTDS) under different disturbances. The dynamic performance of a microgrid operating in both islanded and grid-connected modes will be studied. The work in this project will be divided into two tracks: a simulation track and an experimentation track. In the simulation track, voltage source inverter (VSI), LC filter, coupling inductance, phase-locked loop (PLL), lines, loads, and power, current, and voltage controllers will be modeled. The design problem of different microgrid components and controller parameters will be formulated as an optimization problem where eigenvalue-based as well as nonlinear time domain simulation-based objective functions will be considered. The performance of the microgrid with the proposed controllers and optimal parameters will be examined under different disturbances through eigenvalue analysis and nonlinear time domain simulations. In the experimentation track, the proposed control strategies will be implemented in a laboratory scale prototype through a Real Time Digital Simulator (RTDS) where a microgrid model will be built in the grid-connected mode as well as in the islanded or autonomous mode. The results of the simulation track will be validated through the experimentation track.

3. RESEARCH/BOOK-WRITING PROJECTS CURRENTLY SUPPORTED BY THE UNIVERSITY

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
College of Engineering Sciences		
Aerospace Engineering	Dr. Ahmad Al-Garni (AE) Dr. Aymen H. Kassem (AE)	Outdoor Economic Cooling System (IN10001)
Chemical Engineering	Dr. Saleemur Rahman (CHE) Dr. O.S.B. Al-Amoudi (CE) Dr. Shamshad Ahmad (CE)	An Exploratory Study on Corrosion Protection of Reinforcing Steel in Concrete Using Conducting Polymers (CHE/POLYMER/329)
Chemical Engineering	Dr. Halim H. Redhwi Dr. M. Nahid Siddiqui	Durability of Thermoplastic Nano-Composites under Local Weather Exposure and the Applicability of the Reciprocity Rule to their Ultraviolet Initiated Degradation (IN100021)
Chemical Engineering	Dr. Mohammad Shamsuzzoha and Dr. Abdallah Al-Shammari	PI/PID Controller Tuning of Open-Loop Unstable Processes with Time Delay: A Comparative Study and New Design Approach (IN101012)
Civil Engineering	Dr. Husain J. Al-Gahtani Dr. Faisal Fairag (Math)	Application of Radial Basis Functions to Incompressible Solids and Fluids (CE/IN080411)
Civil Engineering	Dr. Salah Al-Dulaijan Dr. Mohammad Maslehuddin Dr. Mohammad Al-Zahrani	Performance Evaluation of Corrosion-Resistant Reinforcing Steel Bars—Service Life Prediction and Service Life Cost (CE/STEEL/465)
Civil Engineering	Dr. Mohd. Maslehuddin Dr. Luai Al-Hadrami –ME Dr. Salah Al-Dulaijan-CE	Evaluation of Mechanical Properties and Durability of Electric Arc Furnace Slag: Aggregate Concrete [CE/ARC/472]

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Civil Engineering	Dr. Kenan Hazirbaba Dr. Talat Bader –CE	Stabilization of Eolian Sand with Geofiber and Synthetic Fluid [IN101014]
Electrical Engineering	Dr. Tarek Y. Al-Naffouri	Broadcasting Data to Multiple User Groups: Information Theoretic Investigation of the wide Band Case (EE/Data/373)
Electrical Engineering	Dr. Mohammad Abido Dr. Ibrahim El-Amin Dr. A.H. Abdur Rahim Dr. Ibrahim Habiballah	Static Synchronous Compensator-based Stabilizer Design and Implementation (EE/DESIGN/450)
Electrical Engineering	Dr. M.H. Shwehdi Dr. M.A. Gondal Mr. Khaled Al-Soufi Mr. Umar Johar	Scrutinize Failure Causes of Real Distribution Underground Cable System of Saudi Electric Company (SEC) (IN100042)
Mechanical Engineering	Dr. Mohammad Hawwa	Ultrasonic Characterization of Inhomogeneous Cladded Plates (ME/Ultra/431)
Mechanical Engineering	Dr. S.A.M. Said Dr. M.A. Habib Dr. T.Y. Ayinde	Characterization of Natural Convection Heat Transfer in an Array of Discrete Heat Sources (ME/HEAT/438)
Mechanical Engineering	Dr. Mohammad Antar Dr. S.F. Ahmad	Experimental and Theoretical Investigations of Knock Tendency and Emissions of a Spark Ignition Engine Fueled with Gasoline Octane 91 and 95 (ME/SPARK/444)
Mechanical Engineering	Dr. S.A.M. Said Dr. M.A. Habib Dr. T.F. Ayinde	Experimental Investigation of Flow Mal-Distribution in Air Cooled Heat Exchangers (ME/Flow/447)
Mechanical Engineering	Dr. Mehmet Sunar Dr. Khalid Al-Dheyilan	Analysis of Functionally Graded Thermopiezoelectro-Magnetic Materials (ME/MAGNET/451)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Mechanical Engineering	Dr. Ahmet Sahin Dr. Bekir Sami Yilbas	The Effect of Viscosity Variation in Thermodynamic Analysis of Fluid Flow (ME/FLUID FLOW/462)
Mechanical Engineering	Dr. Syed Fida Hassan Dr. Zuhair Gasem Mr. F. Patel	Fatigue, Creep, and Corrosion Properties of New-Generation Magnesium Nanocomposites (IN100013)
Mechanical Engineering	Dr. Adrian Bejan Dr. Bekir Sami Yilbas Dr. Ahmet Sahin	Distributed Energy System: The Tapestry of Multi-Scale Design in the Globe (IN100025)
Mechanical Engineering	Dr. Numan Abu Dheir Dr. Shafique Khan Dr. Abdulrahman Shuaib	Microforming Set up Development (IN100031)
Mechanical Engineering	Dr. Samer F. Ahmed Dr. Mohammad Antar	Combustion characteristics and emissions of a HCCI:-DI Diesel Engine Running with a Bio-Fuel Suitable for Saudi Arabian Environment (IN100033)
College of Computer Sciences and Engineering		
Information & Computer Science	Dr. Wasfi Al-Khatib Dr. Sabri A. Mahmoud	Toward Content-Based Indexing and Retrieval of Arabic Manuscripts (ICS/INDEX/325)
Information & Computer Science	Dr. Farag Azzedin Dr. Sajjad Mahmoud	Trust Model for Context-Aware Systems: An Aspect-oriented Approach (ICS/Trust/483)
Information & Computer Science	Dr. Sajjad Mahmoud Mr. Mohammad Ali Khan	An Integrated Requirement Analysis and Component Selection Approach for Component-Based Software Systems (IN100023)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Information & Computer Science	Dr. Lahaouri Ghouti	Digital Imaging and Computer Vision: Digital Copyright, Biometrics and Forensic Systems [Bookwriting project] (IN100019)
Information & Computer Science	Dr. Mohammad Alshayeb Dr. Sajjad Mahmoud	Integrated Unified Modeling Language (IUML) (IN100046)
Computer Engineering	Dr. Aimen El-Maleh Dr. Ahmad Al-Yamani	Transistor-Level Defect-Tolerant Digital System Design at the Nanoscale (COE/Nanoscale/387)
Systems Engineering	Dr. Malick Ndiaye	Locating Facilities with Various Distance Functions (SE/LOCATION/307)
Systems Engineering	Dr. Salih O. Duffuaa Dr. Mohammad Darwish Dr. Ahmed Haron	Multi-Objective Mathematical Models for Process Targeting (SE/MATH MODEL/321)
Systems Engineering	Dr. Chawki Fedjki Dr. Salih Duffuaa	Heuristics for QAP Using a Characterization of a B-Local Star Minimum (IN080391)
Systems Engineering	Dr. Ammar Khoukhi Dr. Fouad Al-Sunni	A Hybrid Multi-Agent System for Intelligent Distributed Control of Collaborative Robots (SE/HYBRID/441)
Systems Engineering	Dr. Moustafa El-Shafei	Modern Distributed Computer Control Systems (SE/Control/474)
Systems Engineering	Dr. Magdi Mahmoud Dr. Fouad Alsunni	Development of Performance Analysis and Design Methods for Interconnected Control and Communications Systems (IN100018)
Systems Engineering	Dr. Abdulwahid Saif Dr. Moustafa El-Shafei Dr. Mujahid Dhaifullah	Integrated Guidance and Control of Unmanned Aerial Vehicle (IN100036)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
College of Industrial Management		
Department of Management & Marketing	Dr. Mansour Murad (Management & Marketing)	An Empirical Study on the Factors Influencing Employer Decisions in Hiring and Retaining Individuals with Disabilities in the Arab World (Mgt/Hiring/349)
Department of Management & Marketing	Dr. Mourad Mansour Dr. Mustapha Achoui	Gender and Job Satisfaction among Employees in Saudi Arabia (MGT/Gender/381)
Department of Management & Marketing	Dr. Razali Matt Zin Dr. Obaid M. Al-Shuraidah	Ethical Orientations Among Saudi and Malaysian Undergraduate Students: A Comparative Study (CIM/ETHICAL/412)
Department of Management & Marketing	Dr. M. Jamil Qazi	Relationships of the Self-Directed Expatriates with Home and Host Country: A Study of the Academics in Saudi Arabia (IN101007)
Department of Management & Marketing	Dr. Mohammad Sadiq Sohail	Mall Patronage, Shopping Attitudes and Purchase Patterns: A Study on the Influence of Demographics (IN101006)
Department of Management & Marketing	Dr. Abdallah M. El-Amin and Dr. Marwan Al-Quran	Relationships among Organizational Justice, Trust and Organizational Citizenship Behavior: A Study of Employees in Private and State-Owned Manufacturing Enterprises in Saudi Arabia (MGT/TRUST/488)
Department of Management & Marketing	Dr. Marwan Al-Quran Dr. Abdallah M. El-Amin	The Consumer Buying Decision Making Process: A Cross Cultural Study [IN101010]

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Department of Management & Marketing	Dr. Mohammad Mahdi	The Use of International Electronic Banking Services in Saudi Arabia (IN100012)
Department of Management & Marketing	Dr. Hassan Qudrat-Ullah, Mgt & Mkt Dr. Haider Madani, Acct & MIS and Dr. Jamal Al-Zayer, Mgt & Mkt	Improving Decision Making in Dynamic Tasks through Debriefing: An Experimental Investigation (IN101011)
College of Sciences		
Chemistry	Dr. Bassam El-Ali Dr. Jimoh Tijani (Chemistry)	Rhodium-Catalyzed One Pot Hydroformylation-Cyclization Reactions of Allylbenzene Derivatives (CY/BENZENE/379)
Chemistry	Dr. Sasa Antonijevic (Chem) Dr. Zain Yamani (Physics)	Probing Dynamics of Nanotubes: Water Molecules by ² H Solid-State NMR Spectroscopy (CY/Nanotubes/465)
Chemistry	Dr. Abdulaziz Al-Saadi (Chem) Dr. Nissar Ullah (Chem)	Conformational Properties and Vibrational Assignments of 2-methoxyresorcinol and 4,6-Dihaloeresorcinols: Experimental and ab initio study [CY/AB-INITIO/471]
Chemistry	Dr. Abdulrahman Al-Arfaj Dr. M. Nahid Siddiqui	Problem Solving for Freshman Chemistry I [CY/Problems/470]
Chemistry	Dr. Anvarhusain Isab Dr. Mohammad Wazeer	NMR Studies of Possible Interaction of Novel Potential Anticancer Gold(III) Complexes with Biologically Important L (IN100039)
Chemistry	Dr. Amer El-Batta Dr. Musa M. Musa Dr. Oussama Elbjeirami	Synthesis of Functionalized Five-Membered Rings: Building Blocks in Therapeutic Agents (IN101005)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Chemistry	Dr. Abdullatif Ibdah	Computational Study on the Reactivity and Mechanism of Xanthine Oxidase Enzymes (IN101013)
Mathematics & Statistics	Dr. Ahmed Bouketir Dr. H. Bahlouli (Physics)	Intrinsic Localized Vectorial Modes in BEC and Optical Waveguide Systems with Cubic-Quintic Nonlinearity (MATH/WAVEGUIDE/439)
Mathematics & Statistics	Dr. Mohammad Aslam Chaudhry	Extension of Ramanujan's Interpolation Formula and Applications of His Master Theorem (MS/Ramanujan/480)
Mathematics & Statistics	Dr. Jawad Abuihlail	Monads and Comonads in Varieties (MS/MONADS/491)
Mathematics & Statistics	Dr. A.S. Bonfah	Dynamics of Singularly Perturbed Dissipative Evolution Equations (IN100017)
Mathematics & Statistics	Dr. Assane Lo	Phase Transitions in Higher Dimensional Kac-like Models (IN100022)
Mathematics & Statistics	Dr. Othman Echi	A Categorical Study of Some Typical Examples of Alexandroff Spaces (IN100027)
Mathematics & Statistics	Dr. Uwe Schavz	Projective and Affine Berlekamp (IN100028)
Mathematics & Statistics	Dr. Nassereddine Tatar	On a Viscoelastic Problem in Whole Space (IN100030)
Mathematics & Statistics	Dr. Rajai Alassar	Unsteady Heat Conduction From Spheroids (IN100035)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Mathematics & Statistics	Dr. Nassereddine Tatar	On a Fractional Differential Problem with Hilfer Fractional Derivatives (IN1010002)
Mathematics & Statistics	Dr. Mohammad Khamsi Dr. Mohammad Abu-Sbeih	New Fixed-Point Results for Multivalued Maps in Discrete Sets and Applications (IN1010008)
Mathematics & Statistics	Dr. Soliman Alhomidan	Nonsmooth Vector Variational Inequalities (IN101009)
Physics	Dr. A.K. Aksoy (Physics) Mr. Mohammad Raashid (Physics)	Enhancement of the Technical Capability of the 14 MeV FNAA Facility at KFUPM (PH/FNAA Facility/357)
Physics	Dr. Khalil Ziq Mr. A. Ghannam Mr. A.F. Salem	Magnetic Properties of ZnO-TM Semiconductors (PH/Magnetic/364)
Physics	Dr. Abdullah Alsunaidi	Dynamics and Morphology of Phase-Separating Liquid-Crystal/Polymer Blends (PH/Crystal/382)
Physics	Dr. Khalil Ziq Dr. Nouar Tabet Mr. A. Ghannam Mr. A.F. Salem	Oxygen Vacancies Effects on the Properties of ZnO-TM (IN100032)
Physics	Dr. Khalil Harrabi Dr. Khalil Ziq Dr. Ahmed Salem	Detection of Sudden Excitations by Nanometric Superconducting Films (DSENSF) (IN100034)
Physics	Dr. Basheer Haider Dr. S.M.A. Durrani Dr. M.F. Al-Kuhaili	Growth and Characterization of a GaN by Pulsed Laser Deposition (IN100040)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
Physics	Dr. Abdulaziz Aljalal Dr. Ibrahim Nasser Mr. Khateeb-ur-Rahman	Manual Editing Entitled General Physics: Multiple-Choice Questions: Waves, Thermodynamics, Electricity and Magnetism (PH/Multiple Questions/384)
Physics	Dr. Mohammad Al-Kuhaili Dr. S.M.A. Durrani Dr. A.M. Al-Shukri	Growth of Molybdenum Oxide Thin Films Using Pulsed Excimer Laser Deposition (PH/FILM/434)
Physics	Dr. Mohammad Faiz Dr. Abdulaziz Al-Jalal Dr. Mohd. Kariapper	Computer-Aided Laboratory Manual for General Physics I [Bookwriting Project] (IN100041)
Physics	Dr. Abdullah Al-Sunaidi Dr. Akhtar Naqvi Dr. M.I. Al-Jarallah Dr. Anvarhusain Isab	Adsorption and Dissociation of Hydrogen Sulfide (H ₂ S) on Functionalized ZnO Nanoparticles and Nanotubes: A Computational Study (PH/NANO/435)
Physics	Dr. F.Z. Khiari (Phys) Mr. Khateeb-ur-Rahman, Mr. Rashid Mohammad, and Mr. Azad-ul-Islam	Design and Testing of a 14 MeV Neutron Based Prompt Gamma Neutron Activation Analysis Set up to Determine H, C, N and O Element Concentration in Bulk Samples with Low Atomic Number (Z) (PH/Neutron/464)
Islamic & Arabic Studies Department	Dr. Abdul Karim Zahrani Dr. Moustafa El-Shafei Ahmed, Dr. Atef Al-Najjar, Dr. Essam Eid Abu-Gharbia, Dr. Saeed Ben Ali Al-Amri, Dr. Abdul-Majeed Al-Mubarak and Mr. Husni Al-Muhtaseb	Automatic Voice Identification of Arabic Poetry Meters (IAS/POETRY/426)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
General Studies	Dr. Ahmed Bendania Dr. Abdullah El-Amin	Relationship between Student Choice of Major and Career Orientation among Saudi State-Owned and Private University Students in Arabia (IN100029)
Physics	Dr. Khaled Gasmi	Synchronous Fluorescence Spectroscopy of Edible Oil from Saudi Origin (IN100043)
College of Environmental Design		
Architecture Department	Dr. Rabee Reffat (ARC) Dr. Emad El-Sebakhy (ICS)	A Semantic Based Virtual Design Environment for Digital Designing in Architecture (ARC/SEMANTIC/311)
Architecture Department	Dr. Rabee Reffat (ARC) Mr. Mir Sabeer Hamid Mr. Yaman Khaeruzzan (ICS)	A Knowledge-Based Tool for Contextual-Based Assessment of Intelligent Buildings (AR/Knowledge/405)
City & Regional Planning	Dr. Adel Aldosary Mr. Khan Mohammad Nahi-duzzaman Dr. Ali Al-Naser	Socio-Cultural Analysis of Third Places Through GIS: A Case Study of Al-Khobar (CRP/GIS/432)
Construction Engineering and Management Dept.	Dr. Ashraf El-Azzouni (CEM) Dr. Mohammad Abido (EE)	Finance-Based Scheduling of Construction Projects Using Evolutionary and Heuristic Algorithms (CEM/FINANCE/422)
Construction Engineering and Management	Dr. Ashraf El-Azouni (CEM)	Simulation Approach for Scheduling Based on Fund Availability for Sustained Saudi Contracting Business (CEM/Schedule/479)
College of Applied and Supporting Studies	Dr. Shariefuddin Peerzada Dr. Abdulaziz Al-Assaf Dr. Koko Kaybi	Imbalance Sequence in Digraphs (CASS/Digraphs/475)

RECENTLY APPROVED RESEARCH PROJECTS WHICH ARE CURRENTLY ONGOING (SPRING SEMESTER 2010-11 AND FALL SEMESTER 2011-12)

S. No	Project No.	Project Title	College	Dept	Investigators
1	AR101001	شرح الفصيح	CASS	IAS	Dr. Abdullah Al-Haj
2	AR101002	ال غفال	CASS	IAS	Dr. Abdullah Al-Haj
3	AR101004	Fuzzy Logic with Engineering Applications,3/c	CCSE	ICS	Dr. El-Sayed Elalfy Dr. Mohammad Abido
4	AR101005	100مسألة محلولة في التراكيبات	CS	MATH	Dr. Mohammad Abu Sobaih
5	AR101006	صورة المدينة المنورة في أشعر العربي	CASS	IAS	Dr. Abdurrazak Hussein
6	AR101007	Study of Causes of Attrition for some aquatic sports players of open age group to participate in GCC Championship	CASS	P. Ed	Dr. Adel Al-Namoury
7	AR101008	Assessment of Sport Activities for Students of KFUPM	CASS	P. Ed	Dr. Adel Al-Namoury
8	AR101009	الكيمياء العامة وفق نظرية التفكير الإستقصائي الموجه	CS	CHEM	Dr. Khalid Al-Hoshani
9	AR101010		CS	MATH	Dr. Jawad Abuhilal
10	IN101001	Cases on ICT Utilization, Practice and Solutions: Tools for Managing Day-to-Day Issues	HBCC	EE	Dr. Mubarak Al-Mutari Dr. Lawan Mohammad
11	IN101002	Uniform stabilization for thermoelastic systems with internal or boundary delay	CS	MATH	Dr. Muhammad Islam Mustafa Mr. Mohammad Mustafa Kafini Prof. Salim Messaoudi
12	IN101003	On a Fractional Differential Problem with Hilfer Fractional Derivatives	CS	MATH	Dr. Nasser-eddine Tatar
13	IN101004	The Price Discovery Process in the Saudi Stock Market	CIM	FINEC	Dr. Abraham Abraham Dr. Haider Al Madani

S. No	Project No.	Project Title	College	Dept	Investigators
14	IN101005	Synthesis of Functionalized Five-Membered Rings: Building Blocks in Therapeutic Agents	CS	CHEM	Dr. Amer A. El-Batta Dr. Musa M. Musa Dr. Oussama Elbjeirami
15	IN101006	Mall patronage, shopping attitudes and purchase patterns: A study on the influence of demographics	CIM	MGT MKT	Dr. Mohammad Sadiq Sohail
16	IN101007	Relationships of the Self-Directed Expatriates with Home and Host Country – A Study of the Academics in Saudi Arabia	CIM	MGT MKT	Dr. Mohammad Jamil Qazi
17	IN101008	New Fixed Point Results for Multivalued Maps in Discrete Sets and Applications	CS	MATH	Dr. Mohammad Khamisi Dr. Mohammad Abu-Sbieh
18	IN101009	Non-smooth Vector Variational Inequalities	CS	MATH	Dr. Soliman Alhomidan
19	IN101010	Consumer Buying Decision-Making Process: A Cross-Cultural Study	CIM	MGT MKT	Dr. Marwan Al-Quran Dr. Abdallah M. El-Amin
20	IN101011	Improving Decision Making in Dynamic Tasks through Debriefing: An Experimental Investigation	CIM	MGT MKT	Dr. Hassan Quadrat-Ullah Dr. Haider Madani (ACTMIS) Dr. Jamal Al-Zayer
21	IN101012	PI/PID Controller Tuning of Open-Loop Unstable Processes Time Delay: A Comparative Study and New Design Approach	CES	CHE	Dr. Mohammad Shamsuzzoha Dr. Abdallah Al-Shammari
22	IN101013	Computational Study on the Reactivity and Mechanism of Xanthine Oxidase Enzymes	CS	CHEM	Dr. Abdellatif Ibdah
23	IN101014	Stabilization of Eolian Sand with Geofiber and Synthetic Fluid	CES	CE	Dr. Kenan Hazirbaba Dr. Talat Bader

S. No	Project No.	Project Title	College	Dept	Investigators
24	IN101015	Planar Motion axes XY Design and Interface for High-Speed Micro-Machining Platform	CES	ME	Dr. Samir Mekid
25	IN101016	Seismic Retrofit of Typical Masonry Wall Systems in the Kingdom	CES	CE	Dr. Ali Al-Gadhib, Dr. Abul Kalam Azad, Dr. Mohammad Baluch Dr. Mohammad Kalimur Rahman
26	IN101017	Fundamentals of Sustainable Drilling Engineering (bookwriting project)	CES	PETE	Dr. M. Enamul Hossain Dr. Abdulaziz Al-Majed
27	IN101018	Copolymerization of ethylene and propylene in the presence of nanofillers using early transition metal catalysis	CES	CHE	Dr. Mamdouh Al-Harathi Dr. Sadhan Kumar De Dr. Bijal K. Bahuleyan
28	IN101019	Redesigning the Community: Walkability as the Prime Determinant of Sustainability: A GIS Application in the Doha District of Dhahran	CED	CRP	Dr. Muhammad Tauhidur Rahman Mr. Khan Md Nahiduzzaman
29	IN101020	The effect of physical education program on the physical fitness levels of the orientation students of KFUPM	CASS	PE	Dr. Syed Ibrahim Dr. Kaukab Azeem Mr. Hassan Al-Moslem Mr. Abbas Al-Saif
30	IN101021	Quantitative Quality measures for network-based schedules	CED	CEM	Dr. Mohsin Khalid Siddiqui Mr. Muhammad Ali Khan
31	IN101022	Synthesis and characterization of novel nanocomposite materials based on poly(styrene-co-ethyl methacrylate) or poly(styrene-co-butyl methacrylate) copolymers and organomodified clay	CS	CHEM	Dr. Mohammad Nahid Siddiqui Dr. Halim Hamid Redhwi Dr. Mohammad Ashraf Gondal

S. No	Project No.	Project Title	College	Dept	Investigators
32	IN101023	Outcrop and laboratory investigations of microbial carbonate deposits of Denovian Qasr Member, Northwestern Saudi Arabia	CS	ES	Dr. Khalid Al-Ramadan Dr. Michael Kaminski Dr. Wyn Hughes (Saudi Aramco) Dr. Robert Riding, USA
33	IN101024	Applied Control System Design: State-Space Methods	CCSE	SE	Dr. Magdi Mahmoud
34	IN101025	A Graphical Representation of the One-Dimensional Ito Formula	CS	MATH	Dr. Boubaker Smii
35	IN101026	Investigation of Lie symmetries, subalgebras' classification, Noether symmetries, conservation laws, reductions and solutions of wave equation on static spherically symmetric spacetimes	CS	MATH	Dr. Ahmad Y. Al-Dweik Dr. Hassan Azad Dr. Ryad Ghanam Dr. M. Tahir Mustfa
36	IN101027	Fault Detection, Isolation and Prognosis using Advances in Computational Intelligence and Parameter Estimation	CCSE	SE	Dr. Amar Khoukhi Dr. Lahouari Cheded
37	IN101028	Seismic Evaluation And Retrofit Assessment Of Multi-Storey Structures Using Pushover Analysis	CES	CE	Dr. Mohammad H. Baluch Dr. M.K. Rahman, CER-RI Dr. Hussain J. Al-Gahtani
38	IN101029	The Control of Thermoelastic Systems by Viscoelastic Damping of General Type	CS	MATH	Dr. Muhammad Islam Mustafa
39	IN101030	Magnetic and Photocatalytic Properties of Aggregated Zinc-Sulfide (ZnS) Nanoparticles Doped with Metal Ions	CS	PHYS	Dr. Abdullah Al-Sunaidi Dr. Khalil Ziq Dr. Mohammad Afzaal

S. No	Project No.	Project Title	College	Dept	Investigators
40	IN101031	Non-Isothermal Performance of Bubble Column Reactors (sabbatical leave project)	CES	CHE	Dr. Abdullah Shaikh
41	IN101032	Robust State Estimation and Monitoring of Power System Networks (sabbatical leave project)	CES	EE	Dr. Ibrahim Habiballah
42	IN101034	Crossover Phenomena for Hellmann Potential in the J-matrix Approach	CS	PHYS	Dr. Ibrahim Nasser Dr. M.S. Abdulmonem
43	IN101033	Hg and other trace metals in saliva: Electro-analytical detection in dental amalgam	CS	CHEM	Dr. Nouri Hassan Dr. Abdelnaser Kawde
44	IN101035	The Gulf Cooperation Council Economies: Stepping up to Future Challenges (Bookwriting project)	CIM	FINEC	Dr. Mohammad Ramady
45	IN101036	Computer-Aided Modeling and Simulation of Flow of Self-Compacting Concrete	CES	CE	Dr. Mohammad Baluch Dr. Muhammad Kaluimur Rahman Dr. Ali Al-Gadhib
46	IN101037	Coupled Fixed Points of Multivalued Maps in Ordered Metric Spaces with Applications	CS	MATH	Dr. Abdul Rahim Khan Dr. M.A Khamsi
47	IN101038	Improved Hybrid Variable Neighborhood - Tabu Search algorithm for the Multi-Depots Vehicle Routing Problem with Multi-Time Windows	CS	MATH	Dr. Slim Belhaiza
48	IN101039	Nano- and Micro-Scale Processing	CES	ME	Dr. Bekir S. Yilbas Mr. Abdul Aleem
49	IN101040	Laser Machining and Surface Treatment	CES	ME	Dr. Bekir S. Yilbas Mr. Abdul Aleem

S. No	Project No.	Project Title	College	Dept	Investigators
50	IN101041	Electrostatic Vapor Condensation for Cooling and Desalination Systems	CS	PHYS	Dr. Jihad Al-Sadah Dr. Basem Abu Saud (CHE)
51	IN101042	Modulation of Surface-Plasmon Polaritons Propagation in Optical Nanostructures	CES	EE	Dr. Mohammad Alsunaidi (EE) (Sabbatical Leave project)
52	JF101001	A Novel Reaction for the Synthesis of Piperadines, Azepines and Diazepinones	CS	CHEM	Dr. Mohammad Yar Dr. Shaikh Asrof Ali (Consult)
53	JF101002	Monitoring of Process Parameters Using Bayesian Methodology	CS	MATH	Dr. Muhammad Riaz Dr. Hassan Muttalak (Consult)
54	JF101003	Codimension 2 subvarieties of non-projective varieties	CS	MATH	Dr. Parsa Bakhtary
55	JF101004	Conservation Laws for Certain Classes of Nonlinear Wave Equation via a New Conservation Theorem	CS	MATH	Dr. Ahmad Yousef Al-Dweik Dr. Ashfaq H. Bokhari (Consult)
56	JF101005	Experimental Measurements of Sea Water Thermal Conductivity	CES	ME	Dr. Mostafa El-Sharwawy Dr. Syed M. Zubair (Consult)
57	JF101006	Investigation of Artificial Neural Network and Neuro-Fuzzy Modeling for Hydrodynamic Studies in Liquid-Solid Circulating Fluidized Bed Riser	CES	CHE	Dr. Shaikh Abdul Razzak Dr. S.M. Javaid Zaidi (Consult)
58	JF101007	Operations Research in Health Care: Mathematical Models and Simulation Modeling	CCSE	SE	Dr. Abdur Rahim O. Shamayleh, Systems Engineering Department
59	JF101008	Exploring the prevalence and impact of student entitlement in the classroom	CASS	GS	Dr. Christopher Paul Garris Dr. Ahmed Bendania (Consult)

S. No	Project No.	Project Title	College	Dept	Investigators
60	JF101009	Crystallization Kinetics and Chain Dynamics of Poly (vinyl alcohol) (PVA) in Thin Films: Polarized Optical Microscopy, AFM, and NMR Investigations at Polymer Solid Inter-phases	CS	CHEM	Dr. Salim Ok Dr. Mazen Khalid (Consult)
61	JF101010	Designing Vehicle Routes for Integrated Forward and Reverse Logistics Systems	CCSE	SE	Dr. Yuvraj Gajpal Dr. Mohammad Ben Daya (Consult)
62	JF101011	An Integrated Economic Production Quantity and Machining Economics Model with Products Quality Consideration	CCSE	SE	Dr. Mohammad Al-Durgam and Dr. Shokri Selim
63	JF101012	Linking Perceived Value of Context Awareness with Context Determinants in Mobile Environments	CIM	ACT	Dr. Yaser Mowafi Dr. Ibrahim Al-Jabri (Consultant)
64	JF101013	Thermodynamic optimization of a novel solar trigeneration plant using hybrid steam and organizing ranking cycles	CES	ME	Dr. Fahad Al-Sulaiman Dr. Ahmet Sahin (Consultant)
65	JF101014	Investigation of Disorder Effects of Magnetic and Electric Properties of Nd(1-x)SrxMnO3 in the Ferromagnet-Antiferromagnet Competition Doping Region	CS	PHYS	Dr. Ahmad Ibrahim Mansour Dr. Khalil Ziq (Consultant)
66	JF101015	Extensions of Picard Stacks	CS	MATH	Dr. Ahmet Emin Tatar Dr. Salah-Eddine Kabbaj (Consultant)
67	JF101016	Structural Characterization of Optimal Transmission Control Policies for Biosensor Networks Operating in Temperature-Sensitive Environments	CCSE	COE	Dr. Yahya Esmail Osais

S. No	Project No.	Project Title	College	Dept	Investigators
68	JF101017	A Scalable Prototype for Mass-Departure Path Modeling	CCSE	SE	Dr. Mojahed Osman Dr. Salih O. Duffuaa
69	JF101018	Channel Statistics and performance of distributed antenna-based cellular networks	CES	EE	Dr. Saad Al-Ahmadi
70	JF101019	An Investigation of Corporate Reactions to Stock Market Listing Requirements: The Case of Nasdaq-Listed Companies	CIM	ACT	Dr. Ammr Kurdi
71	JF101020	Simulation-Aided Characterization of Biomimetic Separation Membrane for Water Purification	CES	CHE	Dr. Ali Alshami Dr. Javed Zaidi (Consultant)
72	JF101021	Market Interdependence and Volatility Spillover across the GCC Financial Markets	CIM	FINEC	Dr Ahmed Khalifa
73	RG1101	Effect of Hot Weather and Curing Conditions on the Durability of Plain and Blended Cement Concretes (Part-I)	CES	CE	Dr. O.S.B. Al-Amoudi Dr. Mohammad Maslehuddin Dr. H.J. Al-Gahtani
74	RG1102	Artificial Recharge of Groundwater Using Tertiary Effluent: Laboratory and Field Experiments	CES	CE	Dr. Mohammad Al-Zahrani Dr. Mohammad Essa Dr. Mohammad Al-Suwaiyan Dr. Mohammad Vohra Dr. Saad Aiban Dr. Shokhawati Choudhary Dr. Mohammad Makkawi (ES)
75	RG1103	Synthesis and optical characterizations of hybrid nano-structures using advanced laser-based techniques	CS	PHYS	Dr. Saleem Ghaffar Rao Dr. Mohammad Ashraf Gondal Dr. Zain Yamani

S. No	Project No.	Project Title	College	Dept	Investigators
76	RG1104	Automatic Vocalization of Arabic Text	CCSE	SE	Dr. Moustafa El-Shafei Dr. Husni Al-Muhtaseb, Dr. Elsayed ElAlfy Dr. Wasfi Al-Khateeb
77	RG1105	Decentralized Networked Control Systems (DNCS)	CCSE	SE	Dr. Magdi Mahmoud Dr. Abdulwahed Saif Dr. Moustafa El-Shafei Dr. Marwan Abu-Amara,
78	RG1106	Design of Pattern Recognition Systems for Multimode Biometric Authentication	CCSE	COE	Dr Zubari Baig, Dr Syed Elfy, ICS, Dr Radwan Abel-Aal
79	RG1107	Stability, Dynamics and Applications of Two- and Multi-Soliton Molecules	CS	PHYS	Dr. Saeed Al-Marzoug, Dr. Saeed Al-Amoudi Dr. H. Bahlouli
80	RG1108	Transport of Dirac Fermions in Graphene Systems	CS	PHYS	Dr. H. Bahlouli
81	RG1109	J-Matrix Method of Scattering for Potentials with Inverse Square Singularity	CS	PHYS	Dr. H. Bahlouli Dr. Abdelmonem Dr. Ibrahim Nasser
82	RG1110	Management of water resources for sustainable development of the Kingdom of Saudi Arabia	CES	CE	Dr Shakhawat Chowdhury Dr M A Zahrani
83	RG1111	Retrofitting of Exterior Beam-column joins in reinforced concrete buildings	CES	CE	Dr. Mohammad Baluch Dr. Muhammad Kalimur Rahman Dr. Ali Al-Gadhib

S. No	Project No.	Project Title	College	Dept	Investigators
84	RG1112	Adaptive Impairments Modeling in Broadband Nonlinear Transmitters	CES	EE	Dr. Azzedine Zerguine Dr. Adnan Landolsi Dr. Oualid Hammi
85	RG1113	Automatic Analysis of Documents for Plagiarism Detection and Proper Writing Advising	CCSE	ICS	Dr. El-Sayed Al-Alfy Dr. Radwan Abdel-Aal Dr. Wasfi Al-Khatib
86	RG1114	Characterization and Prediction of Reservoir Heterogeneity and Quality Using Outcrop Analogs for the Palaeozoic Glacial and Fluvial Reservoirs, Saudi Arabia	CES	PETE	Dr. Osman Abdullatif Dr. Mohammad Makkawi Dr. Ahmet Umran Dogan Dr. Gabor Korvin Dr. Khalid Al-Ramadan
87	RG1115	Reservoir Characterization by Active and Passive Seismic Integration	CS	ES	Dr. Aldo Vesnaver Dr. San-Lin Kaka Dr. Abdullatif Al-Shuhail Dr. Giulio Vignoli Dr. Giovanni Mennaro
88	RG1116	Specification for State of the Art Condition Monitoring Laboratories for Petroleum and Petrochemical Industry	CCSE	SE	Dr. Sami El-Ferik Dr. Mohammad Ben Daya Dr. Abdulrahman Shuaib
89	RG1117	Broadband Wireless MIMO Channels: Measurements and Characterization”	CES	EE	Dr. Asrar Shaikh Dr. Ali Mugaibel Dr. Wajih Abu Alsaud Dr. Saad Al-Ahmadi
90	RG1118	Effect of climate change on water resources in Saudi Arabia	CES	CE	Dr. Shakhawat Chowdhury Dr. Muhammad Al-Zahrani Dr. Mohammad Hussain Essa

S. No	Project No.	Project Title	College	Dept	Investigators
91	RG1119	Evaluation of Quaternary Cements for Improving Concrete Durability in the Arabian Gulf Environment	CED	ARE	Dr. Hamoud Ahmad Dehwah Prof. Mohammed Maslehuddin Dr. Salah Al-Dulaijan
92	RG1120	Cooperative Distributed Blind Spectral Sensing for Wireless Broadband Cognitive Radio	CES	EE	Dr. Asrar Sheikh Dr. Mohammad Deriche Dr. Adnan Landolsi Dr. Wassam Mesbah Mr. Ahmar Shafi
93	RG1121	Effective Planning and Scheduling of Shutdown Maintenance	CCSE	SE	Dr. Umar Al-Turki Dr. Salih Duffuaa Prof. Mohammad Ben Daya

APPROVED PROJECTS DURING FALL SEMESTER, 2011-2012

Sr. No.	Project #	Name of the PI	Title of the project
1.	IN111001	Prof. Bekir Sami Yilbas, ME	Distinguished Professor Award
2.	IN111002	Prof. Mohammad Abuelmatti, EE	Distinguished Professor Award
3.	IN111003	Prof. Magdi Mahmoud, SE	Distinguished Professor Award
4.	IN111004	Prof. Shaikh Asrof Ali, Chemistry	Distinguished Professor Award
5.	IN111005	Dr. Mohamed Deriche and Dr. Mohamed Mohandes	A license plate recognition system with Arabic support for GCC Region
6.	IN111006	Dr. Muhammad Asad Sadi	The Dynamics of <i>Nitaqat</i> to Boost Nationalization of Labor Market in Saudi Arabian Private Sector: Drivers and Barriers within the Service Industry
7.	IN111007	Dr. Rakesh Tomar Mr. Mohammad Hamdan Hashem	Investigation and Correlation of Blood Glucose with Physical Exercise
8.	IN111008	Dr. F.D. Zaman Dr. Ashfaq H. Bokhari Dr. M. Yousuf	A Study of Tumor Model with a Treatment Profile
9.	IN111009	Dr. Boubaker Smii	Feynman graph representation of the transition density of the Levy Ornstein-Uhlenbeck process
10.	IN111010	Dr. Rajai Alassar	Hagen-Poiseuille Flow in Semi-Elliptic Microchannels
11.	IN111011	Dr. Fazlul Hoque Miah and Dr. Ahmed Ali Califa	Rationality of Survey-Based Interest Rate Expectations
12.	IN111012	Dr. Muhammad Islam Mustafa	Asymptotic Behavior of some delay hyperbolic Thermoelastic Systems
13.	IN111013	Dr. Moataz Ahmed and Dr. Mohamed Alshayeb	Automatic Messages Planning in Sequence Diagrams: Consistency Analysis of Use Cases against Class Diagrams using Design by Contract
14.	IN111014	Dr. Naser Al-Aqeeli and Prof. C. Suryanarayana	Synthesis of Novel Metastable Phases from Immiscible Metals
15.	IN111015	Dr. Izhar Ahmed Dr. Soliman Al-Homidan Mr. Shamsuddin Khan	Optimality Conditions and Duality in Mathematical Programming

Sr. No.	Project #	Name of the PI	Title of the project
16.	IN111016	Dr. Mohammad Alshayeb and Dr. Moataz Ahmed (ICS)	Object-Oriented Class Stability Metrics Validation
17.	IN111017	Dr. Jameleddine-Hassine (ICS) Dr. Daniel Amyot (Univ of Ottawa, Canada, Consultant)	Empirical Validation of Goal-Oriented Models
18.	IN111018	Dr. Robert Opoku (Mgt & Mkt)	Perceptions of Mobile Phone Usage Behavior in Public Places among Young Saudi Adults
19.	IN111019	Dr. Mohammad H. Omar and Dr. Anwar H. Joarder (Math & Statistics)	Joint Distribution of Sample Variances under Bivariate T-Population
20.	IN111020	Dr. Mohammad Enamul Hossain and Dr. Abdulaziz Al-Majed (Pete)	Investigation of Canola Oil as an Environment Friendly Drilling Fluid
21.	IN111021	Dr. Rakesh Tomar, Dr. Varghese Anthony and Dr. Abdul Hameed Al-Ameer (Physical Education)	Perception of KFUPM Faculty and Students towards Physical Education Activity, Obesity, Smoking and Knowledge of Cardiovascular Disease: A Descriptive Study
22.	IN111022	Dr. Varghese C. Anthony and Dr. Rakesh Tomar (Physical Education)	Participation Motives of KFUPM Students Towards Physical Activity and Sports
22.	IN111023	Dr. Wael H. Ahmed Dr. Hassan Badr, and Dr. Amro Al-Qutub of ME Dept.	Developing a Multi-Stage Airlift Pump Operating under Continuous Multiphase Flow Operating Conditions
23.	IN111024	Dr. Mohammad Kafini, DCC Dr. Salim Messaoudi, Math	Global Nonexistence for Some Nonlinear Wave Systems
24.	IN111025	Dr. Hassan Badr	Bookwriting project
25.	IN111026	Dr. Ashraf Farahat, Prep Year Physics and Dr. Emad Ramadan, ICS Dept.	Plasma-Gas Interaction in the Micro Thrusters of Miniatured Satellites

JUNIOR FACULTY RESEARCH PROJECTS

1.	JF111001	Dr. Ali T. Awami (EE) Dr. Mohammad Abido (Consultant)	Tools for Integrating Wind Energy in Power Grid Operations
2.	JF111002	Dr. Mohamed A. Mahmoud Dr. Abdulaziz Al-Majed (Consultant)	New Model to Predict Formation Damage due to Sulfur Deposition in Sour Gas Wells
3.	JF111003	Dr. Abdulaziz Barnawi (COE) Dr. Tareq Sheltami (COE, Consultant)	Energy-Efficient MAC Protocols for Low-Power Wireless Sensor Networks

RESEARCH GROUP PROJECTS

1.	LRG1201-1 LRG1201-2	Dr. Abbas A. Naqvi, Physics Dr. M.A. Gondal Mr. M. Rasheed Mr. Khateeb-ur-Rehman Mr. Dastageer of Physics Dept. and Dr. Anvarhusain Isab, Chemistry	Comparison of Detection Sensitivities of Prompt Gamma- Ray Neutron Activation Analysis and Laser Induced Breakdown Spectroscopy Techniques for Analysis of Toxic Elements Ag, Br, Cd, Cr, Cl, Gd, Hg, Ni and V in Liquid and Solid Samples
2.	RG1202-1 RG1202-2	Dr. A.H. Abdur-Rahim Dr. Mohammad Abido, EE Dept.	Smart Control of Variable Speed Wind Systems for Efficiency and Performance Improvement
3.	RG1203-1 RG1203-2	Dr. Than Htun Maung, Chemistry Dr. Abdulaziz Al-Jalal, Physics Dr. Khaled Gasmi, Physics	Excited-State Proton Transfer Kinetics of Naphthalene Derivatives
4.	RG1204-1 RG1204-2	Dr. Bekir Sami Yilbas, ME Dr. Ahmet Sahin, ME	First and Second Law Performance Analysis of Thermoelectric Power Generator Under Volumetric Constraint
5.	RG1205-1 RG1205-2	Dr. Mahmoud Kassas Dr. Ibrahim El-Amin Dr. Chokri B. Ahmed Dr. Said A.M. Said (ME)	Modeling, Simulation and Performance Assessment of Variable Frequency Drives for Air Conditioning System
6.	RG1206-1 RG1206-2	Dr. Abdulmohsen Al-Hammad, ARE Dr. Mohammad Hassanain, ARE Dr. Salih Duffuaa, SE	Development of Maintenance Management Standards for Facilities of Large Public Organizations in Saudi Arabia
7.	RG1207-1 RG1207-2	Dr. Mohammad Abido, EE Dr. Abu H. Abdur Rahim, EE Dr. M. Hassan, EE	Dynamic Analysis, Control and RTDS Implementation of Microgrids

**4. RESEARCH PROPOSALS SUBMITTED DURING
THE FALL SEMESTER OF 2011-2012 UNDER REVIEW**

Project code	Title	PI Department	Investigators
IP111-CASS-04	Plasma – Gas Interaction in the Microthrusters of Miniaturized Satellites	Physics	Dr. Ashraf Farahat Dr. Emad Ramadan
IP111-CASS-06	A Study On The Effect Of Fitness Exercises On Obese Males of King Fahd University Of Petroleum and Minerals, Saudi Arabia	Physical Education	Dr. Prof. Syed Ibrahim Dr. Kaukab Azeem Mr. Hassan Al Moslim
IP111-CASS-22	Investigation and correlation of blood glucose with physical exercise	Physical Education	Mr. Mohammed Hamdan Hashem and Dr. Mohammad Hussain Al-Qahtani
IP111-CASS-23	Perception Of KFUPM Faculty and Students Towards Physical Activity, Obesity, Smoking and Knowledge of Cardiovascular Disease: A Descriptive Study	Physical Education	Dr. Rakesh Tomar Dr. Varghese C Antony Dr. Abdul Hameed Al Ameer
IP111-CASS-29	Participation Motives of KFUPM Students Towards Physical Activity and Sports	Physical Education	Dr. Varghese C Antony Dr. Rakesh Tomar
IP111-CCSE-05	Object-Oriented Class Stability Metrics Validation	Information and Computer Science	Dr. Mohammad Alshayeb Dr. Moataz Ahmed
IP111-CCSE-09	Empirical Validation of Goal-Oriented Models	Information and Computer Science	Dr. Jameleddine Hassine Prof. Daniel Amyot
IP111-CCSE-20	Discovering Overlapping Function Modules in Biological Networks	Information and Computer Science	Dr. Emad Ramadan Dr. Adel Ahmed Dr. Ashraf Farahat
IP111-CCSE-25	Automatic Messages Planning in Sequence Diagrams: Consistency Analysis of Use Cases against Class Diagrams using Design by Contract	Information and Computer Science	Dr. Moataz A. Ahmed Dr. Mohamed AlShayeb
IP111-CCSE-32	Embracing Robustness Analysis and Diagrams to Improve Software Development	Information and Computer Science	Dr. Mohamed El-Attar Prof. Mahmoud Elish Prof. Sajjad Mahmood,
IP111-CCSE-34	Visual Serving and Identification of Industrial Manipulators Under Nonlinearity and Uncertainty	Systems Engineering	Dr. Amar Khoukhi

Project code	Title	PI Department	Investigators
IP111-CCSE-16	r-partite Edge Covers of Graphs	Computer Science	Dr. Sajjad Mahmoud, Mr. Muhammad Ali Khan and Dr. Mohamed Ridha Alaimia, Math Dept.
IP111-CES-08	Distribution parameter and drift velocity for two-phase flow in a small diameter pipe	Mechanical Engineering	Dr. Abdelsalam Al-Sarkhi, Mechanical Engineering Prof. Wael Ahmed Prof. Meamer El-Nakla
IP111-CES-13	Developing a Multi-Stage Airlift Pump Operating under Continuous Multiphase Flow Operating Conditions	Mechanical Engineering	Dr. Wael H. Ahmed Prof. Hassan Badr Prof. Amro Al Qutub
IP111-CES-15	Synthesis Of Novel Metastable Phases From Immiscible Metals	Mechanical Engineering	Dr. Nasser Al-Aqeeli Prof. C. Suryanarayana
IP111-CES-18	A License Plate Recognition System with Arabic Support for The GCC Region	Electrical Engineering	Dr. Mohamed Deriche Dr. Mohamed Mohandes
IP111-CES-21	Plantwide Control System Design for the Vinyl Acetate Monomer Process	Chemical Engineering	Dr. Mohammad Shamsuzzoha Dr. Abdallah Al-Shammari Dr. Izhar Ahmad
IP111-CES-27	Control Of Wind-Blown Sands in Saudi Arabia	Civil Engineering	Dr. Naser Al-Shayea
IP111-CES-30	Investigation of Canola Oil as an Environment Friendly Drilling Fluid	Petroleum Engineering	Dr. M. Enamul Hossain Dr. Abdulaziz Al-Majed,
IP111-CIM-02	Perceptions of Mobile Phone Usage Behavior in Public Places among Young Saudi Adults	Management and Marketing	Dr. Robert A. Opoku
IP111-CIM-17	A Survey of Management Accounting Practices in the Saudi Arabian Manufacturing Sector	Accounting	Dr. Haider Madani, Prof. Mirghani N. Ahmed, Prof. Zahirul Hoque
IP111-CIM-24	Applying the Animosity Model in Foreign Products Purchase: Evidence from an Emerging Nation	Management and Marketing	Dr. Mohammed Sadiq Sohail, Dr. Robert Opoku
IP111-CIM-28	Rationality of Survey-Based Interest Rate Expectations	Finance and Economics	Dr. Fazlul Hoque Miah, Dr. Ahmed Ali Khalifa

Project code	Title	PI Department	Investigators
IP111-CIM-33	The Dynamics of <i>Nitaqat</i> to Boost Nationalization of Labor Market In Saudi Arabian Private Sector: Drivers and Barriers Within the Service Industry	Management and Marketing	Dr. Muhammad Asad Sadi
IP111-CS-01	Hagen-Poiseuille Flow in Semi-Elliptic Microchannels	Department of Mathematics & Statistics	Dr. Rajai Alassar
IP111-CS-03	Extended blow up region	Dammam Community College	Dr. Mohammad Kafini,
IP111-CS-07	Joint Distribution of Sample Variances under Bivariate T-Population	Department of Mathematics & Statistics	Dr. Mohammad H. Omar, Prof. Anwar H. Joarder
IP111-CS-10	Feynman graph representation of the transition density of the Levy Ornstein-Uhlenbeck process	Department of Mathematics & Statistics	Dr. Boubaker Smii
IP111-CS-11	Global nonexistence for some nonlinear wave systems	Dammam Community College	Dr. Mohammad Kafini Prof. Salim Messaoudi
IP111-CS-12	A Study of Tumor Model with a Treatment Profile	Department of Mathematics & Statistics	Dr. F. D. Zaman Prof. Ashfaq H. Bokhari Prof. M. Yousuf
IP111-CS-14	Asymptotic behavior of some delay hyperbolic thermoelastic systems	Department of Mathematics & Statistics	Dr. Muhammad Islam Mustafa
IP111-CS-19	A Kalman Filter Estimator for Bilinear Systems	Department of Mathematics & Statistics	Dr. Mohamed El-Gebeily Dr. Jaafar Al-Mutawa Prof. Ravi Agarwal,
IP111-CS-26	Development of novel analytical techniques for the determination of trace level emerging contaminants	Chemistry	Dr. Chanbasha Basheer Prof. Amjad Ashfaq Shaikh
IP111-CS-31	Towards single-molecule magnets with nonlinear optical properties. Synthesis and characterization of polynuclear complexes based on new push-pull derivatives of 2-(hydroxymethyl)pyridine	Chemistry	Dr. Mohammed Fettouhi Prof. Bassam El Ali
IP111-CS-35	On the Performance of Different Linear Profile Methodologies	Department of Mathematics & Statistics	Dr. Muhammad Riaz

**5. JUNIOR FACULTY GRANT PROPOSALS RECEIVED
IN THE FALL SEMESTER OF 2011-12 UNDER REVIEW**

Project code	Title	PI Department	Investigators
JP111-CCSE-03	Energy-efficient MAC Protocols for Low-power Wireless Sensor Networks	Computer Engineering	Dr. Abdulaziz Barnawi, Dr. Tareq Sheltami,
JP111-CES-01	Tools for Integrating Wind Energy in Power Grid Operations	Electrical Engineering	Dr. Ali T. Al-Awami
JP111-CES-02	A Study to Maintain QoS in Weather-Impacted Satellite Networks	Electrical Engineering	Dr. Kamal Harb Prof. Samir H. Abdul-Jauwad
JP111-CCSE-04	Implementing Design Patterns as Reusable Components using Parametric Aspects	Computer Science	Dr. Khalid Aljasser Dr. Moataz Ahmed-Consultant
JP111-CES-05	New Model to Predict Formation Damage due to Sulfur Deposition in Sour Gas Wells	Petroleum Engineering	Dr. Mohamed Mahmoud and Dr. Abdulaziz Al-Majed

**BOOKWRITING PROPOSALS RECEIVED
IN THE FALL SEMESTER OF 2011-12 UNDER REVIEW**

Project code	Title	PI Department	Investigators
BWP111-CES-01	Pumping Machinery Theory and Practice	Mechanical Engineering	Dr. Hassan M. Badr, Dr. Wael H. Ahmed,
BWP111-RI-02	Introduction to Practical Scanning Electron Microscopy	Research Institute	Dr. Anwar Ul-Hamid,

**6. SABIC AND FAST-TRACK PROPOSALS RECEIVED FOR FUNDING
DURING THE FALL SEMESTER OF 2011-2012**

Project code	Title	PI Department	Investigators
SF111-CCSE-12	A Hybrid Computational Framework for Software Development Effort Estimation	Information and Computer Science	Dr. Mahmoud Elish Dr. Tarek Helmy Dr. Mohamed El-Attar
SF111-CCSE-17	Investigation of Two New Attacks on Tor Protocol	Information and Computer Science	Dr. Sami Zhioua
SF111-CCSE-20	A New and Efficient Class of Optimization Algorithms Based on Swarm Intelligence	Systems Engineering	Dr. Lahouari Cheded Dr. M. Faizan Mysorewala Mr. Syed Zeeshan Rizvi, Mr. Muhammad Saqib Sohail
SF111-CES-01	Hydrodynamics Modeling of a Three Phases (Gas-Liquid-Solid) Circulating Fluidized Bed Riser Using Artificial Neural Network and Adaptive Neural Fuzzy Interference Systems	Chemical Engineering	Dr. Shaikh Abdur Razzak Dr. Mohammad Mozahar Hossain Dr. Syed Masiur Rhman
SF111-CES-03	Development of Hybrid Concrete Construction Eliminating Traditional Steel Reinforcement	Civil Engineering	Dr. Abul Kalam Azad Mr. Ibrahim Y. Hakeem
SF111-CES-04	A Programmable Digitally Controlled Radio Frequency Feed Network	Electrical Engineering	Dr. Mohammad S. Sharawi Dr. Oualid Hammi
SF111-CES-09	Predicting Thermal Conductivity of Nanocomposites Using a Modified RVE Approach	Mechanical Engineering	Dr. Khaled Al-Athel Prof. Abul Fazal M. Arif
SF111-CES-10	Weighted Sum Rate Maximization in Half-duplex Cooperative Systems	Electrical Engineering	Dr. Wessam Mesbah Prof. Timothy N. Davidson
SF111-CES-11	Development of Optimization Guidelines for Extrusion Die Profiles with Improved Service-Life	Mechanical Engineering	Dr. Syed Sohail Akhtar Prof. Abul Fazal M. Arif
SF111-CES-14	Energy and Exergy Analysis of Solar Power Plants	Mechanical Engineering	Dr. Ahmet Z. Sahin

Project code	Title	PI Department	Investigators
SF111-CES-15	Laser Surface Treatment of Phosphorous Bronze	Mechanical Engineering	Dr. Bekir Sami Yilbas, Dr. Syed Sohail Akhtar, Mr. B. J. Abdul Aleem
SF111-CES-16	Novel Technique for Measuring the Dielectric Constant and the Conductivity of Substances Through Open-End Waveguide Radiating Into Cavity Resonator	Electrical Engineering	Dr. Essam E. Hassan Prof. HassanA. Ragheb
SF111-CES-18	Radiation From Axial Slot on a Conducting Circular	Electrical Engineering	Dr. Hassan Ragheb Prof. Essam Hassan
SF111-CES-19	Low-Complexity Bayesian Estimation of Ultra-Wideband (UWB) Channel	Electrical Engineering	Dr. Tareq Y. Al-Naffouri, Dr. Ali H. Muqaibel Mr. Ahmed Abdul Quadeer
SF111-CES-22	Low-Complexity Blind Equalization for SISO Systems with General Constellations	Electrical Engineering	Dr. Tareq Y. Al-Naffouri Dr. Mohammad S. Sharawi Mr. Muhammad Saqib Sohail
SF111-CES-23	Study of combined heat and mass transfer from composite annular and pin fins	Mechanical Engineering	Dr. Sulaman Pashah Prof. Abul Fazal M. Arif, Prof. Syed M. Zubair, Mr. M. Anis
SF111-CES-24	A Low-Complexity Automatic Digital Modulation Classifier	Electrical Engineering	Dr. Mohamed Deriche, Mr. Syed Zeeshan Rizvi
SF111-CES-26	Practical Implementation of Compressive Sensing on Ultra Wideband Systems	Electrical Engineering	Dr. Ali Muqaibel Dr. Tareq Y. Al-Naffouri
SF111-CES-28	Development of a Balanced Humidification-Dehumidification Desalination System	Mechanical Engineering	Dr. Mostafa H Elsharqawy Prof. Mohamed A. Antar
SF111-CES-30	Electrochemical investigations on the corrosion behavior of Si-containing stainless steel Alloys	Mechanical Engineering	Dr. Ihsan Ul Haq Toor, Dr. Fida Hassan Mr. Faheemuddin Mr. Murtuza

Project code	Title	PI Department	Investigators
SF111-CES-31	Competitive TiO ₂ Mediated Photocatalytic Treatment of Wastewater Contaminated with Selenite, Selenate and Thiocyanate	Civil Engineering	Dr. Muhammad S. Vohra and Dr. Mohammad Al-Suwaiyan
SF111-CIM-02	Place of Knowledge Management with Risk Management For Information Technology Projects In Saudi Organization	Accounting Management & Information System	Dr. Amine Nehari Talet, Dr. Razali Mat Zin
SF111-CIM-05	Asymmetric Information, Volatility Spillover and Global Hedging	Finance and Economics	Dr. Ahmed A.A.Khalifa, Prof. Edoardo Otranto
SF111-CIM-13	Adoption of Audit Software in GCC Countries: A Cross-Country Comparison	Accounting	Dr. Haider Madani, Mr. Muhammad Islam, Dr. Muhammad Razi
SF111-CIM-27	Blood Supply Chain Network Optimization	Management	Dr. Prof. Basheer Khumala, Dr. Malick Ndiaye Mr. Illias Abdulkareem Musliyar
SF111-CS-06	Nanostructures Creation in Lithium Niobate Single Crystals by Swift Heavy Ions	Physics	Dr. Ayman Sherif El-Said, Dr. Stefan Facsko
SF111-CS-07	Detoxification of chlorinated organic compounds using nano catalyst	Chemistry	Dr. Basheer Chanbasha Dr. Amjad Ashfaque Shaikh
SF111-CS-08	Stability in some systems of thermoelasticity type III with delay	Department of Mathematics & Statistics	Dr. Salim Messaoudi, Dr. Mohammed Kafini, Dr. Muhammad Islam Mustafa
SF111-CS-21	Valuation of American Options with Stochastic Volatility under Regime-Switching	Department of Mathematics & Statistics	Dr. Muhammad Yousuf, Prof. A. Q. M. Khalig (Consultant) Dr. R. H. Liu (Consultant 2)
SF111-CS-25	Classification of static spherically symmeetric static spacetimes by their Noether Symmetries	Department of Mathematics & Statistics	Dr. Ashfaque H. Bokhari, Prof. F. D. Zaman, Prof. A. H. Kara
SF111-CS-29	Enhancing the Performance of Control Charting Schemes	Department of Mathematics & Statistics	Dr. Muhammad Riaz

**7. LIST OF RESEARCH GROUP PROPOSALS SUBMITTED FOR FUNDING
DURING THE FALL SEMESTER OF THE ACADEMIC YEAR 2011-2012**

Project code	Title	PI Department	Investigators
RG111-CES-01	Smart Control of Variable Speed Wind Systems for Efficiency and Performance Improvement	Electrical Engineering	Dr. A.H. Abdur-Rahim Prof. M.A. Abido
RG111-CES-02	Dynamic Analysis, Control and RTDS Implementation of Microgrids	Electrical Engineering	Dr. M. A. Abido Prof. A. Abdur-Rahim Dr. M. Hassan
RG111-CES-03	Stochastic Charging of Electric Vehicles	Electrical Engineering	Dr. Ali Al-Awami Dr. Eric Sortomme
RG111-CES-04	First and Second Law Performance Analysis of Thermoelectric Power Generator Under Volumetric Constraint	Mechanical Engineering	Dr. Prof. Bekir S. Yilbas, Prof. Ahmet Z. Sahin

8. PUBLICATIONS IN REFEREED JOURNALS REPORTED AFTER JULY 2011

College of Engineering Sciences

Civil Engineering Department

1. "Effect of the Key Mixture Parameters on Tortuosity and Permeability of Concrete," **Azad, A. K., Ahmad, S. and F. Loughlin, K. F.** Accepted for publication in the Journal of Advanced Concrete Technology, Japan Concrete Institute (Japan), 2011-12.
2. "Heterotrophic Bacteria in Drinking Water Distribution System: A review," **Chowdhury, S.**, Journal of Environmental Monitoring and Assessment, DOI: 10.1007/s10661-011-2407-x, Oct 2011, In press.
3. "Letter to the Editor: On Risk Assessment," **Chowdhury S.**, Journal of Hazardous Materials, DOI: 10.1016/j.jhazmat.2011.09.047), Aug. 2011, In press.
4. "Understanding Exposure of Contaminants for Risk Analysis," **Chowdhury S. and Manuel R.**, Advances in Environmental Research, Vol. 6, July 2011, pp. 413-428.
5. "Corrosion Protection Provided by Chemical Inhibitors to Damaged FBEC Bars," **Al-Dulaijan, S. U., Maslehuddin, M., Shameem, M., Ibrahim, M. and Al-Methel, M.** Construction & Building Materials, Vol. 29, No. 10, November 2011, pp. 487-495.
6. "Removal of Thiocyanate from Synthetic Wastewater Using TiO₂ Mediated Photocatalytic Degradation Process," **Vohra, M. S.**, Fresenius Environmental Bulletin, 20 (5A), 2011, p. 1308-1313.
7. "Estimation of Minimum Detectable Concentration of Chlorine in the Blast Furnace Slag Cement Concrete," **Naqvi, A. A., Maslehuddin, M. , Garwan, M.A., Nagadi, M. M., Al-Amoudi, O. S. B., Khateeb-Ur-Rehman, M. R.** Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, Vol. 269, 2011, pp. 1-6 .
8. "Detection Efficiency of Low Levels of Boron and Cadmium with a LaBr₃:Ce Scintillation Detector," **Naqvi A. A., Al-Anezi, M. S., Kalakada, Z., Isab, A. A., Khateeb-ur-Rehman, M. R., Khiari, F. Z., Garwan, M. A., Al-Amoudi, O. S. B., and Maslehuddin, M.** Nuclear Instruments and Methods in Physics Research, Section A, in press (DOI information 10.1016/j.nima.2011.10.010).
9. "Detection of Chloride in Reinforced Concrete Using a Dual Pulsedlaser-Induced Breakdown Spectrometer System: Comparative Study of the Atomic Transition Lines of Cl I at 594.85 and 837.59 nm," **Gondal, M. A., Dstageer, M., Maslehuddin, M., AlNehmi, A. J. and Al-Amoudi, O. S. B.**, Journal of Applied Optics, Vol. 50, Issue 20, 2011, pp. 3488-3496.
10. "Detection of Sulfur in the Reinforced Concrete Structures Using a Dual Pulsed LIBS System," **Gondal, M. A., Dstageer, M., Maslehuddin, M., AlNehmi, A. J. and Al-Amoudi, O.S.B.**, Journal of Optics and Laser Technology, in press.
11. "Performance of Blended Cement Concretes Prepared with Constant Workability," **Al-Amoudi, O.S.B., Maslehuddin, M., Ibrahim M., Shameem M., and Al-Mehthel, M.H.** Cement and Concrete Composites, Vol. 33, No. 1, 2011, pp. 90-102.

12. "Development of a Dual Pulsed LIBS System for Detection of Sulfur in the Reinforced Concrete Structures," **Gondal, M.A., Dastageer, A., Maslehuddin, M., Al-Nehmi, A. J. and Al-Amoudi, O. S. B.,** Journal of Optics and Laser Technology, in press.
13. "Literature Review on Cement Kiln Dust Usage in Soil and Waste Stabilization and Experimental Investigation," **Rahman, M. K., Rehman, S., and Al-Amoudi, O. S. B.,** International Journal of Environment and Waste Management, Vol. 7, No. 1, April 2011, pp. 77-87.
14. "Stabilization of Sandy Soils in the Eastern Province in the Kingdom of Saudi Arabia, using Cement Kiln Dust," **Al-Amoudi, O. S. B., and Abdullah, J. M. S.,** Building Technology, Issue 23, 2011 (1432H), pp. 50-56 (in Arabic).
15. "Sensitivity Enhancement at 594.8 nm Atomic Transition of Cl for Chloride Detection in the Reinforced Concrete Using LIBS," **Gondal, M.A., Dstageer, M., Maslehuddin, M., AlNehmi, A. J. and Al-Amoudi, O. S. B.,** Journal of Environmental Science and Health, Part A, Vol. 46, Issue 2, 2011, pp. 198-203.

Chemical Engineering Department

1. "Effect of Glycerol on the Physical and Thermal Properties of Starch/PVA Blends," **Sreekumar P. A., Al-Harthi, M. A. and De S. K.,** Journal of Applied Polymer Science, 123 (2012), 135-142.
2. "Effect of Phenol Functionalization of Carbon Nanotubes (CNT) on Properties of Natural Rubber Nanocomposites," **Selvin, T. P., Abdullateef A., Al-Harthi, M. A., De S. K. , Bandyopadhyay S., Basfar, A. A., Atieh M. A.,** Journal of Applied Polymer Science Vol. 124 (2012) pp. 2370-2376 DOI: 10.1002/app. 35274
3. "Effect of –COOH Functionalized Carbon Nanotubes on Mechanical, Dynamic Mechanical and Thermal Properties of Polypropylene Nanocomposites," **Girei, S. A., Thomas, S. P., Atieh, M. A., Mezghani, K., De, S. K., Bandyopadhyay, S., and Al-Juhani, A.,** Journal of Thermoplastic Composite Materials (2011) DOI: 10.1177/0892705711406159
4. "Effect of Phenol Functionalized Carbon Nanotube on Mechanical, Dynamic Mechanical and Thermal Properties of Isotactic Polypropylene Nanocomposites," **Thomas, S. P., Girei, S. A., Mezghani, K., Al-Juhani. A., De, S. K., Bandyopadhyay, S. And Atieh, M.A.,** Polymer Engineering & Science Vol. 52 (2012) pp. 525-531, DOI: 10.1002/pen.22113.
5. "Natural Rubber Nanocomposites with Functionalized Carbon Nanotubes: Mechanical, Dynamic Mechanical and Morphology Studies," **Abdullateef, A. A., Thomas, S. P., Al-Harthi, M. A., De, S. K., Bandyopadhyay, S., Basfar, A. A. and Atieh, M. A.,** Journal of Applied Polymer Science, (2011) DOI 10.1002/app.35021.
6. "Electrical Properties of Natural Rubber Nanocomposites: Effect of 1-Octadecanol Functionalization of Carbon Nanotubes," **Thomas, S. P., Abdullateef, A. A., Al-Harthi, M. A., Atieh, M. A., De, S. K., Rahaman, M., Chaki, T. K., Khastgir, D. and Bandyopadhyay, Sri.,** Journal of Materials science Vol. 47 (2012), pp. 3344-3349, DOI 10.1007/s10853-011-6174-4.

7. "Removal of Sulfur Dioxide by Slurry of Jordanian Oil Shale Ash," **Harahsheh, A., Shawabkeh, R., Harahsheh, M. and Batiha, M.**, Energy Sources, 2011, 34(1), 90.
8. "Enhancement of Surface Properties of Oil Fly Ash by Chemical Treatment," **Shawabkeh, R., Khan, M., Al-Juhani, A., Ul-Hamid, A. and Hussein, I.**, Applied Surface Science, 2011, 258(5), 1643.
9. "Chemical Modification of Waste Oil Fly Ash for Improved Mechanical and Thermal Properties of Low Density Polyethylene Composites," **Khan, M., Al-Juhani, A., Shawabkeh, R., Ul-Hamid, A and Hussein, I.**, Journal of Polymer Research, 2011, 18(6), 2275
10. "Effect of Chemical Modification of Oil Fly Ash and Compatibilization on the Rheological and Morphological Properties of Low-Density Polyethylene Composites," **Khan, M., Al-Juhani, A., Ul-Hamid, A., Shawabkeh, R. and Hussein, I.**, Journal of Applied Polymer Science, 2011, 122(4), 2486.
11. "Kinetic Study of the Effect of Amine Based Corrosion Inhibitor in Reducing the Corrosion Rate of 1018 Carbon Steel in Sea Water Solution," **AL-Baker, N., Shawabkeh, R. and Rihan, R.**, Corrosion Engineering Science and Technology, 2011, 46(7), 767.

Electrical Engineering Department

1. "Performance of CDMA-Based Multi-hop Wireless Networks in Nakagami Fading," **Abdellatif, and S. Zummo, S.**, Arabian Journal on Science and Engineering (AJSE), December, 2011.
2. "Optimized Power Allocation for Layered-Steered Space-Time Codes," **Salim, A., Zummo, S., Al-Ghadhban, S. and Ping-Cheng Yeh**, Springer Wireless Personal Communications, published online, DOI: 10.1007/s11277-011-0441-1, September 2011.
3. "A New Union Bound on the Error Probability of Coded OFDM Systems in Wireless Environments," **Zummo, S., Hassan, M. and Ping-Cheng Yeh**, Springer Wireless Personal Communications, Vol. 60, no. 2, pp. 307-320, September 2011.
4. "An Active Tri-Band (AMPS/PCS/GPS) Antenna with Enhanced Cellular to GPS Isolation for Automotive Applications," **Aloi, D. N. and Sharawi M., S.**, Microwaves and Optical Technology Letters, Wiley, Vol. 53, No. 8, pp. 1764-1767, August 2011.
5. "An 800 MHz 2x1 Compact MIMO Antenna System for LTE Handsets," **Sharawi, M. S., Iqbal, S. S. and Faouri, Y. S.**, IEEE Transactions on Antennas and Propagation, Vol. 59, No. 8, pp. 3128-3131, August 2011.
6. "Coordinating Vehicle-to-Grid Services with Energy Trading," **Al-Awami, A. T. and Sortomme, E.**, IEEE Transactions on Smart Grid – Special Issue on Transportation Electrification and Vehicle-to-Grid Applications, Early Access, 2011.
7. "Coordinated Trading of Wind and Thermal Energy", **Al-Awami, A. T. and El-Sharkawi, M. A.**, IEEE Transactions on Sustainable Energy, Vol. 2, No. 3, pp 277-287, July 2011.

8. "Dynamic Integration and Control of Fixed-Speed Wind Generation System with Multimachine System," **A.Rahim, A. H. M. and Al-Baiyat, S. A.,** Journal of Power Electronics & Power Systems, Volume 1, Issue 2, pp. 1-9, 2011.
9. "Multiobjective evolutionary finance-based scheduling: individual projects within a portfolio," **Elazouni, A. and Abido, M. A.,** Automation in Construction, Vol. 20, No. 7, pp. 755-766, 2011.
10. "Analyze DE-MZMs with multicarrier RF inputs," **Abuelma'atti, M. T.,** Microwaves & RF, Vol. 50, ED Online ID #23687, pp. 86+, September 2011.
11. "A note on mathematical modeling of power amplifier/loudspeaker nonlinearity in acoustic echo cancellers," **Abuelma'atti, M. T.,** Journal of the Audio Engineering Society, Vol. 59, pp. 745-748, 2011.
12. "Design of Narrow Band Decimation Filter for Sigma Delta Modulator," **Hassan, E. E. and Ragheb, H.,** Arabian Journal for Science and Engineering (AJSE), No. 7, Vol. 36, pp. 1287-1296, November 2011.
13. "Aperture Stacked Microstrip equal/unequal Power Divider," **Sheikh, S. I. M., Taiwo, S. and Sharawi, M. S.,** Microwave and Optical Technology Letters (MOTL), ISSN: 0895-2477, Accepted (MPO-11-0650), October 2011.

Mechanical Engineering Department

1. "Thermal Stresses in Thick Walled Cylinders Subjected to a Periodic Moving Heat Source," **Alzaharnah, I.,** AIP Conference Proceedings, Volume 1315, pp. 739-744 (2011).
2. "Thermal Stresses in Thick Walled Cylinders due to a Periodic Moving Heat Source : Effect of Material Properties," **Iyad Alzaharnah, I.,** Advanced Materials Research Vol. 445 (2012), pp 627-631.
3. "Flexural Characteristics of Tapered Bar in Relation to Taper Angle Measurements, " **Alzaharnah, I. and Yilbas, B.,** Advanced Materials Research Vol. 445 (2012), pp 395-399.
4. "Influence of Carbon Nanotube (CNT) on the Mechanical Properties of LLDPE/CNT Nanocomposite fibers," **Mezghani K. Farooqui M., Furquan S., and Atieh M.,** Materials Letters, v65, August 2011, p3633-3635.
5. "Optimizing the Curing Process of Epoxy-Clay Nanocomposites," **Al-Qadhi, M., Merah N., Mezghani K.,** Key Engineering Materials, v471-472, July 2011, p 415-419.
6. "Long Term Environmental Effects on Physical Properties of Vinylester Composite Pipes, **Mezghani, K.,** Polymer Testing, v31, October 2011, p76-82.
7. "Optimization of Pipe Repair Sleeve Design," **Arif, A. F. M., Al-Nassar, Y. N., Al-Qahtani, H., Khan, S. M. A., Anis, M., Eleiche, A. S., Inam, M., Al-Nasri, N. and Al-Muslim, H. M.,** in press; ASME Journal of Pressure Vessel Technology.

8. "A Model for Calculating Geometry Factors for a Mixed-mode I-II Single Edge Notched Tension Specimen", **Albinmousa, T. Merah, J. N. and Khan, S. M. A.**, Technical Note, Eng. Fracture Mech., vol. 78, pp. 3300-3307, 2011.
9. "Evaluation and Operation of Fog Water Collection in Asir Region in the Kingdom of Saudi Arabia," **Abualhamayel, H. I. and Gandhidasan, P.**, Final Report, KACST Project No. AR-26-25, November 2011, 314 pages.
10. Comment on: "Droplet Entrainment Correlation in Vertical Upward Co-current Annular Two-phase Flow", by **Sawant, P., Ishii, M. and Mori, M.**, Nuclear Engineering and Design 238 1342-1352, Al-sarkhi, A. and Sarica, C., Nuclear Engineering and Design, 241, 3357-3358, (2011).
11. "Mott-Schottky Analysis of Passive Films on Si Containing Stainless Steel Alloys," **Toor, I.H.** Journal of The Electrochemical Society, Volume 158, Number 11, (2011).
12. Second Law Analysis of Reverse Osmosis Desalination Plants: An Alternative Design Using Pressure Retarded Osmosis, **Sharqawy, M. H., Zubair, S. M. and Lienhard, J.H.**, Energy, Energy 36, 6617-6626., 2011.
13. "On Exergy Calculations of Seawater with Applications in Desalination Systems," **Sharqawy, M. H., Lienhard, J.H., Zubair, V. S. M.**, Int. J. of Thermal Science 50, 187 – 196, 2011.
14. "On Thermal Performance of Seawater Cooling Towers," **Sharqawy, M.H., Lienhard, J.H., Zubair, V. S. M.**, ASME J. of Engineering for Gas Turbines and Power 133(4),43001 – 43007, 2011.
15. "Trigeneration: a Comprehensive Review Based on Prime Movers," **Al-Sulaiman, F.A., Hamdullahpur, F., Dincer, I.**, International Journal of Energy Research, Vol. 35, 2011, pp 233–258.
16. "Greenhouse Gas Emission and Exergy Assessments of an Integrated Organic Rankine Cycle with a Biomass Combustor for Combined Production of Cooling, Heating and Power," **Al-Sulaiman, F. A., Hamdullahpur, F. and Dincer, I.**, Applied Thermal Engineering, Vol 31, 2011, pp 439-446.
17. "Exergy Modeling of a New Solar Driven Trigeneration System," **Al-Sulaiman, F.A., Dincer, I. Hamdullahpur, F.**, Solar Energy, Vol 85, issue 9, 2011, pp 2228-2243.
18. "Performance Comparison of Three Trigeneration Systems Using Organic Rankine Cycles," **Al-Sulaiman, F. A., Hamdullahpur, F., Dincer, I.**, Energy, Vol.36, issue 9, 2011, pp 5741-5754.
19. "Experimental investigation of Air-Oil Slug Flow Using Capacitance Probes, Hot-Film Anemometer, and Image Processing," **Ahmed, W. H.**, International Journal of Multiphase Flow, Vol. 37, No. 8, pp. 876-887, 2011.
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College of Industrial Management

Department of Accounting & MIS

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Department of Architecture

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9. RESEARCH PAPERS PRESENTED AT CONFERENCES REPORTED AFTER JULY 2011

College of Engineering Sciences

Civil Engineering Department

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2. "Performance of Reactive Powder Concrete Produced using Fine Quartz Sand," **Ahmad, S., Maslehuddin, M. and Azad, A. K.**, Proceedings of 7th Central European Congress on Concrete Engineering 2011, Balatonfured, Hungary, 22-23 September 2011, pp. 147-150.
3. "Performance Tests of a Portable Neutron Generator using PGNAA Technique," **Naqvi, A.A., Kalkada, Z., Al-Anezi, M. S., M. Khateeb-ur-Rehman, M. R., Maslehuddin, M. and Al-Amoudi, O.S.B.**, 13th International Conference on Modern Trends in Activation Analysis (MTAA-13), Texas A&M University College Station, Texas, USA, 2011.
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Chemical Engineering Department

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2. "Synthesis of Copper Nanomaterials and Application for Reduction of CO₂ to Hydrocarbons," **Shawabkeh, R.**, 2nd International Conference on Nanotechnology: Fundamentals and Applications, Ottawa, Canada, July 27-29, 2011.
3. "Synthesis and Characterization of Iron-doped Titania Nanoparticles and Application for Wastewater Treatment," **Shawabkeh, R.**, Ninth AES-ATEMA'2011 International Conference, Montreal, Canada: August 1-5, 2011.

Electrical Engineering Department

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4. "Environmental Effects on Polymer Insulators", **I.O.Habiballah**, 19th International Conference on Composites or Nano Engineering, Shanghai, China, 24-30 July, 2011.
5. "A Non-iterative Channel Estimation and Equalization Method for TDS-OFDM Systems," **Sohail, M. S. and Quadeer, A. A.**, International Wireless Communications and Mobile Computing Conference (IWCMC), Turkey, July 2011.
6. "Impulsive Noise Estimation and Cancellation in DSL Using Orthogonal Clustering," **Al-Naffouri, T. Y., Quadeer, A. A. and Caire, G.**, IEEE International Symposium on Information Theory (ISIT), Russia, July 2011.
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9. "Text Mining with Information Extraction in Career Counseling," **Ullah, R. and Abdul-Jauwad, S. H.**, ICIIC 2011, Hong Kong, November 2011.
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11. "On Saudi Aramco's Efforts in Renewable Energy Sources and the Smart Grid," **Ghannam, S., Al-Shahrani, B., Essa, A., Al-Dubaikel, F., and Al-Awami, A. T.** Innovative Smart Grid Technologies - Middle East 2011, Jeddah, Saudi Arabia, December 2011.
12. "Modeling and Control of Doubly Fed Wind Generator with Super-capacitor Energy Storage Systems," **A. Rahim, A. H. M. and Nowicki, E. P.**, International Science and Technology Conference (ISTEC 2011), Istanbul, December 2011.
13. "Transmission Line Parameter Identification in SEC Network Using Synchronized Phasor Measurements," **Al-Mohammed, A. H., Abido, M. A. and Mansour, M. M.**, Proceedings of the 7th GCC CIGRE International Conference, GCC Power 2011 Conference & Exhibition, (GCC-Cigre 2011), Kuwait, November 21-23, 2011.
14. "Optimal PMU Placement for Power System Observability Using Differential Evolution," **Al-Mohammed, A. H., Abido, M. A. and Mansour, M. M.**, Proceedings of the 11th International Conference on Intelligent Systems Design and Applications (ISDA 2011), Cordoba, Spain, November 22-24, 2011.
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21. "Stability Enhancement of a Power System with Wind Generation and STATCOM," **El-Amin, I. M.** and **Abido, M. A.**, IEEE PES Innovative Smart Grid Technologies (ISGT-EUROPE 2011), Manchester, UK, December 5-7, 2011.
22. "Distributed Generation Planning Using Greedy Heuristic Approach," **Al-Yami, I.** and **El-Amin, I.M.**, 2nd International Conference on Electric Power and Energy Conversion Systems (EPECS 2011), Sharjah, UAE, November 15-17, 2011.
23. "Cost of Residential Power Outages: A Saudi Arabian Study Case," **El-Amin, I. M.** and **Al-Malki, T.**, 20th GCC-CIGRE Symposium, Kuwait, November 20-23, 2011.
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29. "Ultra Wideband Wall Compensation for Through-wall Tracking and Imaging," **Iya, N., Muqaibel, A. H. and Johar, U.,** IEEE International Conference on UWB Communications, ICUWB 2011, Bologna, Italy.
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Mechanical Engineering Department

1. "Aspects of Efficient University-Industry R&D Interaction: Implications & Requirements for Strategy Development: Global Model or Unique Anomaly?" **Alzaharnah, I. and Al-Sulaiman, F.,** 11-14 July 2011 Stanford University Human Sciences and Technologies Advanced Research Institute Palo Alto, California, USA. (Published online: http://www.leydesdorff.net/th9/Paper-117.00_O-146.pdf)
2. "Challenges in the Production of Nanocomposite Fibers Made of Polyethylene Terephthalate and Carbon Nanotubes (PET/CNT)," **Mezghani, K. Furquan, S., Farooqui, M., Patel, F. and Atieh, M.,** International Advanced Materials Technologies Conference, October 17-19, 2011, Riyadh, Saudi Arabia.
3. "Optimization of Pipe Repair Sleeve Design," **Arif, A. F. M., Al-Nassar, Y. N., Al-Qahtani, H., Khan, S. M. A., Anis, M., Eleiche, A. M., Inam, M., Al-Nasri, N. I. and Al-Muslim, H. M.,** ASME PVP, Design & Analysis of Piping & Piping Components II, July 17-21, 2011, Baltimore, Maryland, USA.
4. "Effect of High Oil Viscosity on Slug Liquid Holdup in Horizontal Pipes," **Kora C., Sarica, C., Zhang, H.-Q., Al-sarkhi, A. and Alsafran, E. M.,** The Canadian Unconventional Resources Conference, Calgary, Alberta, Canada, 15-17 November, 2011.
5. "Fabrication of Microporous Ceramic Layer by Suspension-Sedimentation and Sintering for Filtration Applications," **Patel, F., Nouari, S. and Laoui, T.,** Proceedings of the Advanced Materials Technologies Conference 2011, Oct 17-19, 2011, KACST, Riyadh, Saudi Arabia

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8. "Design Requirements in Software and Engineering Systems," **Eleiche, A. M., Ahmad, I., and Elish, M. O.,** Presented at APIEMS 2011 Conference (The 12th Asia Pacific Industrial Engineering and Management Systems Conference), held in Beijing, China, October 14-17, 2011.
9. "Thermal Performance Evaluation of Seawater Cooling Tower," **Sharqawy, M.H., Lienhard J.H. V and Zubair, S.M.,** Proceedings of International Mechanical Engineering Congress and Exposition IMECE-2011, Denver, Colorado, USA, November 11 – 17, 2011.
10. "Status of Humidification Dehumidification Desalination Technology," **Narayan, G. P., McGovern, R. K., Thiel, G. P., Miller, J. A., Lienhard, J.H. V, Sharqawy, M.H., Zubair, S.M. and Antar M.A.,** International Desalination Association Journal, World Water Congress, Perth, Australia, September 4 – 9, 2011 (**best research paper award**).
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Petroleum Engineering Department

1. "Cementing at High Pressure Zones in KSA Discovering Mystery behind the Pipe," **Al-Dossary, A., Al-Majed, A., Hossain, M. E., Rahman, M. K., Jennings, S. and Riyadh, B.**, SPE 142421, presented at the 2011 17th Middle SPE Middle East Oil & Gas Show and Conference, held in Manama, Bahrain, 20–23 October 2011.
2. "Effect of Nanosilica on Cement Hydration under High Temperature and Pressure," **Rahman, M. K., Kim, J., Al-Majed, A. and Taha, M.**, 4th International Symposium on Nanotechnology in Construction, 2012.
3. "New Model to Predict Formation Damage due to Sulfur Deposition in Sour Gas Wells," **Mahmoud, M. and Al-Majed, A.**, The North Africa Technical Conference and Exhibition, Cairo, Egypt, 20-22 February 2012, SPE 149535, 2012.
4. "Drilling Fluid: State of The Art and Future Trend," **Apaleke, A., Al-Majed, A. and Hossain E.**, The North Africa Technical Conference and Exhibition, Cairo, Egypt, 20-22 February 2012, SPE 149555, 2012.

Aerospace Engineering

1. "Aircraft Family Concept for High Subsonic Transport Aircraft," **Prasetyo Edi.**, 2nd International Conference on Design and Product Development, Montreux, Switzerland, December 29-31, 2011.

College of Sciences

Chemistry Department

1. "Effect of Catalytic Cracking on the Chemistry of Different Fractions of Heavy Residue," **Siddiqui, M. N.**, 2nd International Laboratory Technology Conference and Exhibition, Doha, Qatar, October 10-12, 2011.
2. "Copper(I) Iodide Dimethyl Sulfide Catalyzed 1,4-Addition of Alkenyl Groups to α,β -Unsaturated Carbonyl Compounds," **El-Batta, A.**, 43rd Western Regional Meeting of the American Chemical Society, Pasadena, USA, November 10-12, 2011.
3. "Rate Accelerated Wittig Reactions in Water: A Suitable Medium for Alkene Synthesis Employing Stabilized Ylides and Aldehydes," **Bergdahl, M., Dambacher, J., Jiang, C., El-Batta, A. and Cooksy, A. L.**, 43rd Western Regional Meeting of the American Chemical Society, Pasadena, USA, November 10-12, 2011.

4. "Effectiveness of E-Learning in the Chemistry Laboratory: Case Study," **Saleh, T.A.**, International Conference of E-learning and Distance Education (eLi 2011), Riyadh, Saudi Arabia, Full paper in proceeding.
5. Development of Automated Liquid-Phase Microextraction-Gas Chromatography/Mass Spectrometry," **Lahey, C.,M., Basheer, C., Loo, L. C. and Lee, H. K.**, 59th American Society for Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics. Denver, CO, USA. From 5.-9. June 2011.
6. "Novel Analytical Method Development Using Electrical Potential," **Basheer, C.**, American Chemical Society 241st National Meeting, Anaheim (CA From 27-31 March 2011.
7. "Miniaturized Analytical Techniques for Environmental and Reaction Engineering Applications" **Basheer, B.**, 2nd international Laboratory technology conferences and Exhibition, Qatar, 8-12-Oct-2011.

Earth Sciences Department

1. "Deep-water Agglutinated Foraminifera in Paleogene emipelgic Sediments of the Magura Basin in the Sucha Beskidzka Area – Variegated Shales of the Labowa Shale Formation," **Cieszkowski, M., A., Waikowska, A. and Kaminski, M.A.**, In: Bak, M., **Kaminski, M.A.** & Wałkowska A. (eds), 2011. Integrating Micropaleontological Records from Oceans and Epicontinental Seas. Grzybowski Foundation Special Publications, 17.

b. Abstracts/Extended Abstracts Presented at Conferences

1. "Direction and Color of Microtremors," **Vesnaver, A., Baradello, L., Brunetti, F. Kaka, S. I. and Nieto, D.**, GNGTS Expanded Abstracts, 30, 454-456, Trieste, Italy, 2011.
2. "Low Frequency in Depth?" **Vesnaver, A., Kaka, S.I.**, Nieto, D. and Baradello, L., Expanded Abstracts, EAGE Workshop on Passive Seismic, Athens, PAS-20, 2011.
3. "Accuracy Analysis Micro-Earthquake Hypocenter in a CO₂ Sequestration Experiment," **Vesnaver, A., and Menanno, G.**, CO₂ International Workshop, KACST, Riyadh, 2011.
4. "Microtremor Measurements Over a Non-Producing Reservoir in Dhahran, Saudi Arabia," **Popoola, A. and Kaka, S. I.**, AGU Fall Meeting, 5-9 December 2011, The Moscone Convention Center, San Francisco, California, Abstract control #1186024
5. "3D polarization analysis of surface and borehole microseismic data," **Vesnaver, A., Menanno, G., Kaka, S.I.** and Jervis, M., Expanded Abstracts, SEG International Exposition and Eighty-First Annual Meeting (San Antonio, Texas, 2011), Reference No. 475.
6. "3D Tomographic Orientation of Borehole Sensors," **Menanno, G. Vesnaver, A. and Jervis, M.**, EAGE/SEG Summer Research Workshop, 1-2 September 2011, Trieste, Italy (oral presentation).
7. "Accuracy Analysis for the Hypocenter Estimate in a Microseismic Survey," **Vesnaver, A., Menanno, G. and Jervis, M.**, Geo 2012 Conference.

8. "Modal Identification and Extraction of Rayleigh Waves by Means of Quaternion SVD and Group Velocity Curves," Sajeve, **A.**, Menanno, **G.** and Mazzotti, **A.**, 73rd EAGE Conference & Exhibition, Vienna, Extended Abstract P095 (poster).
9. "Holocene Marine Palaeoenvironments in the Cabo Tamar Area, Estrecho de Magallanes, Chile (53°S)," Godoi, **M. A.**, Gibbard, **P. L.** Kaminski, **M. A.**, Quezada, **L.** and Arevalo, **M.**, INQUA Meeting, 2011.
10. "The First Record of Pliocene-Pleistocene Dysoxic Benthic Foraminiferal Assemblages in the Bering Sea, Initial Results from IODP Expedition 323," Kaminski, **M. A.**, Kender, **S.** and Ciurej, **A.**, EGU Abstracts, 2011.
11. "Millennial Scale Ice Rafting and Productivity Changes in the Bering Sea during Marine Isotope Stage 22 (~900 ka), Mid-Pleistocene Transition," Kender, **S.**, Kaminski, **M. A.**, EGU Abstracts, 2011.
12. "Integrated Foraminiferal and DBiostratigraphy of the Upper Cretaceous in the Southwestern Barents Sea and Palaeoenvironmental Implications," Setoyama, **E.**, Król, **W.**, Tyszk, **J.**, Kaminski, **M. A.**, International Conference on the Biostratigraphy of Offshore Norway, Stavanger Norway, December 2011.
13. "Foraminifera and Calcareous Nannofossils from the Lower Jurassic Rosso Ammonitico Umbro-Marchigiano Unit, Marche, Italy," Cetean, **C.G.**, Setoyama, **E.**, Balc, **R.**, Tyszka, **J.**, Kaminski, **M. A.**, In: Bak, M., Kaminski, M. A., Wałkowska, A. (eds), 2011. Integrating Micropaleontological Records from Oceans and Epicontinental Seas. Grzybowski Foundation Special Publications, 17, 82.
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17. "The Life Cycle of *Enzia* (Foraminifera) in the Turda Salt Marsh (Romania)," Telespan, **A.**, Kaminski, **M. A.**, Balc, **R.**, Filipescu, **S.**, Varga, **I.**, In: Bak, M., Kaminski, M.A., Wałkowska, A., (eds), 2011. Integrating Micropaleontological Records from Oceans and Epicontinental Seas. Grzybowski Foundation Special Publications, 17, 133.
18. "OPEN DISCUSSION: eForams – old ideas behind and new ideas ahead," Tyszka, **J.**, Setoyama, **E.**, Topa, **P.**, Cetean, **C. G.** and Kaminski, **M. A.**, In: Bak, M., Kaminski, M. A. and A. Wałkowska (eds), 2011. Integrating Micropaleontological Records from Oceans and Epicontinental Seas. Grzybowski Foundation Special Publications, 17, 134.

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20. "Advances in Borehole Gpr Data Interpretation for Hydrological Purposes," **Cassiani, G., Rossi, M., Vignoli, G., Deiana, R. and Binley, A. M.,** European Geoscience Union General Assembly 2011, Wien, Austria.
21. "Hydro-Geophysical Techniques for Groundwater Characterization: The Link Between Measurements and Modeling," **Cassiani, G., Deiana, R., Camporese, M., Salandin, P., Vignoli, G., Rossi, M., and Perri, M. T.,** Geological Society of America Annual Meeting and Exposition, 2011, Minneapolis, USA.
22. "Caratterizzazione Del Sito Test Di Turriaco Mediante Metodologie Geofisiche Integrate," **Gervasio, I., Brancatelli, G., Della Vedova, B., Boaga, J., Vignoli, G., Cassiani, G., Forte, E. and Dazzan, E.,** GNGTS Expanded Abstracts, Trieste, Italy, 2011.
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24. "A Comparison Between Zop and Vrp Techniques: Emphasis on Possible Guided Waves in the Vrp Configurations," **Rossi, M., Vignoli, G., Cassiani, G. Deiana, R., and Binley, A.,** GNGTS Expanded Abstracts, Trieste, Italy, 2011.
25. "Erionite and Mesothelioma: Karain 'Meso-village' vs. Karlik 'Non-meso village', Cappadocia, Turkey," **Dogan, A. U., Dogan, M.,** Geological Society of America (GSA) Rocky Mountain (63rd Annual) and Cordilleran (107th Annual) Joint Meeting, Salt Lake City, Utah, USA, May 18-20, 2011. Geological Society of America Abstracts with Programs, v.43, no.4, p.75.
26. "Mesothelioma Inducing Minerals in Cappadocia: Complete Mineral Characterization by SEM-EDS-XRD," **Dogan, A. U.,** GEOMED 2011 IV. International Conference on Medical Geology, September 20-25, 2011, Bari, Italy, Book of Abstracts, p. 37.
27. "The highly Carcinogenic Erionite Mineral and the Need for a Risk Assessment in Italy," **Cavallo, A., Rimoldi, B., Dogan, M., and Dogan, A. U.,** GEOMED 2011 IV. International Conference on Medical Geology, September 20-25, 2011, Bari, Italy, Book of Abstracts, p. 21.
28. "Preliminary Investigations of Some Fibrous Zeolites which may Cause Adverse Health Effects: A Case Study from Volcanic Rocks of Northern Italy," **Mattioli, M., Dogan, A. U., Dogan, M., Marco, C., Renzulli, A., Rimoldi, B., and Tibaldi, A.,** GEOMED 2011 IV. International Conference on Medical Geology, September 20-25, 2011, Bari, Italy, Book of Abstracts, p. 215.
29. "The Effects of Colemanite on Testicular in Rats," **Ginis, Z., Dogan, M., Dogan, A. U., Delibasi, T., Delibasi, N., Albayrak, A., Yesilyurt, A.,** GEOMED 2011 IV. International Conference on Medical Geology, September 20-25, 2011, Bari, Italy, Book of Abstracts, p. 192.

30. "Erionite and Mesothelioma: Proposed Rules for Quantitative Erionite Characterization," **Dogan, A. U.,** Geological Society of America (GSA) Annual Meeting, Minneapolis, Minnesota, USA, October 9-12, 2011. Geological Society of America Abstracts with Programs, Vol.43, No.5, p. 418.
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32. "Quantitative Characterization of Erionites and Species Description: Examples from Cappadocia and Oregon Erionites," **Dogan, A. U., and Dogan, M.,** NIEHS Erionite Workshop, North Carolina, USA, October 12, 2011.
33. "Reservoir Characterization: A Science of Scaling & Universality," **Korvin, G.,** 2nd KFUPM Annual Research Day, 10th May, 2011
34. "Phase Transitions during Computation – Some Unconventional Thoughts," **G. Korvin,** Numerical Analysis & Optimization: The Theory and Applications, KFUPM, December 18-19, 2011. (Invited Talk)

Department of Mathematics & Statistics

1. "Nonsmooth Minimax Programming with (φ, ϱ) -invex Functions," **Ahmad, I.,** Annual International Conference on Operations Research and Statistics, Penang, Malaysia, ISBN:978-981-08-8407-9, 2011, pp.168-173. ISBN:978-981-08-8407-9
2. "Random Ishikawa Iteration Scheme of Two Random Operators," **Khan, A. R. and Domlo, A. A.,** International Conference of Applied and Engineering Mathematics Imperial College, London., 2011, pp. 165-169.
3. "On Maximal Closed Ideals in Topological Algebras of Continuous Vector-valued Functions over Non-Archimedean Valued Fields, in Contemporary Mathematics," **Katsaras, A. K., Khan, L. A. and Khan, A. R.,** vol. 551, 11th International conference on P-adic Functional Analysis, 2011, pp. 135-141.
4. "Compression-Ignition Engine Performance and Emissions in Single and Dual Fuelling Modes with Sustainable Fuels," **Korakianitis, T., Namasivayam, A. M., Crookes, R. J., Imran, S., Ihracska, B., Diez, A. and Malik, N. A.,** Power and Energy Systems and Applications (PESA 2011), 714-130. doi: 10.2316/P.2011.714-130
5. "Stability in a System of a Thermoelasticity with Second Sound," **Messaoudi, S.A.,** International conference on Differential and difference equations, Ponta Delgada, Portugal, July 4-8, 2011.
6. "Colorings and Nowhere Zero Flows of Graphs in Terms of Berlekamp's Switching Game", **Schauz, U.,** British Combinatorial Conference, in Exeter, (July 2011).
7. "Anti-Codes in Terms of Berlekamp's Switching Game", **Schauz, U.,** Fq 10 (July 2011), in Ghent.

Physics Department

1. "Preparation and Band Gap Shift of Nano-structured Metal Oxides and their Activity in Disinfection of Water Using Laser Induced Photo-catalysis," **Gondal, M. A., Dastageer M. A. and Khalil, A.,** 8th International Conference on High-Capacity Optical Network and Enabling Technologies (HONET), sponsored by IEEE, Riyadh (Oct 19-21,2011) Saudi Arabia.
2. "Nano Scale Titania Thin Film Morphology and Optical Study on Patterns of Self-assembled Monolayers," **Rao, S. G., Gondal, M. A. and M. A. Dastageer,** 8th International Conference on High-Capacity Optical Network and Enabling Technologies (HONET), sponsored by IEEE, Riyadh (Oct 19-21,2011) Saudi Arabia.
3. High Sensitive Detection of NO Using Laser Induced Photo Acoustic Spectroscopy," **Gondal, M. A., Khalil, A. A. I., Suleman, N.,** 2nd International Conference on Laboratory Technology (LABTECH), Doha, Qatar (10-12, Oct, 2011).
4. "Determination of Trace Metals in Zamzam Water Using Dual Pulsed Laser Induced Breakdown Spectroscopy," **Gondal, M. A., Dastageer M. A. and Al-Adel, F.F.,** 2nd International Conference on Laboratory Technology (LABTECH), Doha, Qatar (10-12 Oct 2011).
5. "Laser Induced Photo-catalytic Conversion of CO₂ into High-value Hydrocarbons Using Nano-structured Metal Oxide Catalysts", **Gondal, M. A., Ali, M. A., Salman, M., Dastageer, M. A. and Chandbasha, B.,** 2nd International Conference on Laboratory Technology (LABTECH), Doha, Qatar (10-12, Oct, 2011).
6. "XPS Studies of Laser Induced Surface Modification of Vanadium Phosphate Glass Samples," **Khattak, G., Gondal, M. A. and Mekki, A.,** 2nd International Conference on Laboratory Technology (LABTECH), Doha, Qatar (10-12, Oct, 2011).
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College of Applied & Supporting Studies

General Studies Department

1. "Voicing Africa in Mainstream Intercultural Communication Research: Voices from South Sudan," **Sadig, H. B.**, Proceeding of the Annual Convention of the National Communication Association, New Orleans, LA, November 17, 2011.

College of Computer Science & Engineering

Information & Computer Science

1. "Performance Modeling of Intel and Portland Compilers Using Westmere-Based Infiniband HPC Cluster," **Al-Mulhem, M. and AlShaikh, R.**, The 2011 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'11), July 18-21, 2011, Las Vegas USA, pp 869-874.
2. "Requirements Specification of Context-Aware Pervasive Systems," **Mahmood, S., Al-Mulhem, M.**, Proceedings of the 2011 International Conference on Computer Science and Engineering, Shanghai, China, 2011, pp. 156 – 159.
3. "Complexity Analysis and Playing Strategies for Ludo and its Variant Race Games," **Alvi, F., and Ahmed, M.**, IEEE Conference on Computational Intelligence and Games (CIG), Seoul, South Korea, Aug 31-Sept. 3, 2011, pp.134-141
4. "A Comparative Study of PVD-Based Schemes for Data Hiding in Digital Images," **El-Alfy, E.-S. M. and Al-Sadi, A.**, Proc. of the 9th ACS/IEEE International Conference on Computer Systems and Applications, (AICCSA 2011), Sharm El-Sheikh, Egypt, December 27-30, 2011.
5. "Migrating Functional Requirements in SSUCD Use Cases to a More Formal Representation," **El-Attar, M., Miller, J.** 6th International Conference on Software Engineering Advances, Barcelona, Spain. 2011. (Best Paper Award)
6. "UseCaseDiff: An Algorithm for Differencing Use Case Models," **El-Attar, M.**, 9th ACIS International Conference on Software Engineering, Research, Management and Applications, Baltimore, Maryland, USA. 2011.
7. "Use Case-Based Effort Estimation Approaches: A Comparison Criteria," **Kamal, M. W., Ahmed, M., El-Attar, M.**, 2nd International Conference on Software Engineering and Computer Systems, Pahang, Malaysia. 2011.
8. "Improving Quality in Misuse Case Models: A Risk-Based Approach," **El-Attar, M., Ahmed, I.**, 4th ACIS International Conference on Computer and Information Science, Sanya, Hainan Island, China. 2011.
9. "A Systematic Approach to Assemble Sequence Diagrams from Use Case Scenarios," **El-Attar, M.**, International Conference on Systems Engineering and Modeling, Shanghai, China. 2011.

10. "Design Requirements in Software and Engineering Systems," **Eleiche, A., Ahmad, I. and Elish, M.,** Proceedings of 12th Asia Pacific Industrial Engineering and Management Systems Conference, Beijing, China, 2011, pp. 343-353.

Computer Engineering Department

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2. "A Trust-based Mechanism for Protecting IPv6 Networks against Stateless Address Auto-Configuration Attacks," **Baig, Z., Adeniyi, S.,** 17th IEEE International Conference on Networks (ICON), Singapore, 14-16 December, 2011.
3. "EDoS-Shield - A Two-Steps Mitigation Technique against EDoS Attacks in Cloud Computing," **Sqalli, M. H., Al-Haidari, F. and Salah, K.,** The 4th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2011), Melbourne, Australia, December 5-7, 2011.
4. "A Selective Parameter-based Evolutionary Technique for Network Intrusion Detection," **Baig, Z., A., Khan, S., Ahmed, S. and Sqalli, M.,** The 11th International Conference on Intelligent Systems Design and Applications (ISDA), Córdoba, Spain, November 22-24, 2011.
5. "An Entropy and Volume-based Approach for Identifying Malicious Activities in Honeynet Traffic," **Sqalli, M., H., Firdous, S. N., Baig, Z., A. and Azzedin, F.,** The International Conference on Cyberworlds, Banff, Alberta, Canada, October 4-6, 2011.
6. "Identifying Scanning Activities in Honeynet Data using Data Mining," **Sqalli, M.H., Arshad, S., Khalaf, M. and Salah, K.,** The 3rd International Conference on Computational Intelligence, Communication Systems and Networks (CICSyN 2011), pp. 178-183, Bali, Indonesia, July 26-28, 2011.
7. "The Recursive Time Synchronization Protocol for Wireless Sensor Networks," **Muhammad Akhlaq, Tarek Sheltami,** to appear IEEE Sensors Applications Symposium, University of Brescia, Italy, February 7-9, 2012
8. "Detecting Forged Acknowledgements in MANETs," **Kang, N., Shakshuki, E. M. and Sheltami, T. R.,** IEEE International Conference on Advanced Information Networking and Applications (AINA), pp. 488-494, 2011.
9. "Self-Adaptive Routing for Ambient-Oriented Wireless Sensor Networks," **Daabaj, K., Sheltami, T. and Mouftah, H.,** "The International Conference on Ambient Systems, Networks and Technologies (ANT-2010), Paris, France, November 8-10, 2010, pp. 42-52.
10. "Routing Prediction of Probabilistic Mobility Model using Extreme Learning Machine for Ad-Hoc Networks," **Rahil, M. R., Sheltami, T., Ghouti, L. and Mahmoud, A.,** The International Conference on Ambient Systems, Networks and Technologies (ANT-2010), Paris, France, November 8-10, 2010, pp. 165-172.

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13. "Adaptive Power Allocation Algorithm to Support Absolute Proportional Rates Constraint for Scalable OFDM Systems," **Mahmoud, A. S., Al-Rayyah, A. Y. and Sheltami, T. R.**, the IEEE 71st Vehicular Technology Conference, Taipei, Taiwan, 16–19 May 2010, pp. 200-203.
14. "Comparative Performance Study for Integrated 3G/WLAN Networks Using Mobile IP, SIP, and m-SCTP Protocols," **Mahmoud, A., Al-Helali, A., Abu-Amara, M., Al-Kharobi, T. and Sheltami, T.**, the IEEE 71st Vehicular Technology Conference, Taipei, Taiwan, 16–19 May 2010, pp. 1-5.
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Systems Engineering Department

1. "Design and Development of an NI SBRIO Robotic Platform-based Field Mapping System: A Senior Design Project Experience," **Mysorewala, M. F., Cheded, L., Bouchrit, M. A. A., Messaoudi, A., and Deriche, M.**, 2nd IEEE-sponsored International Conference on Advancement in Computing Technology, Jeju Island, Korea, Nov. 29-Dec. 1, 2011.

College of Industrial Management

Department of Accounting & MIS

1. "Data Perturbation Methods Implementation Using Matlab," **Al-Ahmadi, M. S.**, The 16th IBIMA conference on Innovation and Knowledge Management: A Global Competitive Advantage, 29-30 June 2011 in Kuala Lumpur, Malaysia.
2. "Saudi Arabia Stock Prices Forecasting Using Artificial Neural Networks," **Sunday, O.O, Al-Ahmadi, M. S, Elshafei, M., and Fallatah, Y. A.**, The Fourth International Conference on the Applications of Digital Information and Web Technologies (ICADIWT 2001), August 4-6, 2011, University of Wisconsin-Stevens Point, USA.

Department of Management & Marketing

1. "Males and Females Views on Trust in Electronic Banking Services in Saudi Banks," **Mahdi, M.O.S.**, Proceedings of the Global Business and Social Science Research Conference (GBSSRC), Beijing, China, June 20-21, 2011.

2. "The Antecedents of Relationship Marketing and Customer Loyalty: A Conceptual Framework to Determine Outcomes, International Conference on E-business, **Sadiq, S. M.**, (2011). Management and Economics- ICEME 2011, December 28-30, 2011, in Dubai, UAE. ICEME 2011
3. "Self Directed Expatriates in Saudi Arabia: An Analysis of Historic, Social, Economic and Cultural Contexts," **Qazi, J.**, Business and Information 2011, Bangkok, Thailand.
4. "Males and Females Views on Trust in Electronic Banking Services in Saudi **Banks**," **Mahdi, M. O. S.**, Proceedings of the Global Business and Social Science Research Conference (GBSSRC), Beijing, China, June 20-21, 2011.
5. "Can Functional Performances of HRM Be Improved With the Adoption of IT?" Paper presented at the global business, economics and finance research conference, **Razali, M.Z.**, London, July 2011.

10. BOOKS PUBLISHED AND CONTRIBUTIONS

Mechanical Engineering Department

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General Studies Department

1. "Communication Technologies in the Arsenal of Al Qaeda and Taliban: Why the West Is Not Winning the War on Terror," **Sadig, H. B.** In R. S. Fortner and P. M. Fackler (eds.), Handbook of Global Communication and Media Ethics, VII. Boston: Blackwell (with Roshan Noorzai and Hala Guta), 2011, pp. 602-625.
2. "Peace Communication in Sudan: Toward Infusing New Islamic Perspectives." **Sadig, H. B.** In R. S. Fortner and P. M. Fackler (eds.). Handbook of Global Communication and Media Ethics, VII. Boston: Blackwell (with Hala Guta), 2011, pp. 953-972.

Information & Computer Science Department

- [1] أساسيات أمن الشبكات: معايير وتطبيقات. السيد الأنفي، رضوان عبد العال، علاء الدين أمين، مكتبة العبيكان 2011 (مترجم).

Systems Engineering Department

1. Identification of Linearized Models and Robust Control of Physical Systems Invited book Chapter. To appear in book titled "Robust Control/ Book 2", R. Doraiswami, **L. Cheded** edited by Prof. Andrzej Bartoszewicz (ISBN 978-953-307-195-4), Published by InTech in July 2011.

Chemistry Department

1. "Synthesis of Carbon Nanotube-Metal Oxides Composites" **Gupta, V. K. and Saleh, T. A.**, in the book under the working title "Carbon Nanotubes - From Research to Applications", ISBN 978-953-307-500-6. ISBN 978-953-307-500-6, Publication date: July 2011.

Earth Sciences Department

1. "Integrating Micropaleontological Records from Oceans and Epicontinental Seas," **Bak, M., Kaminski, M. A., Waśkowska, A.**, (eds), 2011. Grzybowski Foundation Special Publication, 17, 144 pp.

Accounting & MIS Department

1. "A System for Teaching Entity Relationship Modeling," **Eid, M. I. and Daud, A.**, Inventor's Copyright Certificate, The US Copyright Registrar, August 2011.

11. TECHNICAL REPORTS

Electrical Engineering Department

1. "Study of the Impact of Dynamic Interaction of Wind Systems with Multimachine Power System", **A.Rahim, A. H. M., El-Amin I. M. and Abido, M. A.**, KFUPM Research Group Project RG1006-1 and RG 1006-2, November 2011.

Mechanical Engineering Department

1. "Evaluation and Operation of Fog Water Collection in Asir Region in the Kingdom of Saudi Arabia," **Abualhamayel, H. I. and Gandhidasan, P.**, Final Report, KACST Project No. AR-26-25, November 2011, 314 pages.

ICS Department

1. "Adaptive Error Recovery for Transient Faults in Elliptic Curve Scalar Multiplication," **Alkhoraidly, A. and Hasan, M. A.**, CACR Technical Report 2011-23, University of Waterloo, July 2011.

Computer Engineering Department

1. "Detection of Question /Answer Segments in Arabic Audio Lectures," Al Khatib, W. G. and **Cheded, L.**, Final Report for the research project funded by KFUPM Fast Track, Nov. 2011.
2. "Fault Diagnosis Using An Integrated Hybrid Soft Computing And Model-Based Approaches," **Khoukhi, A. and Cheded, L.**, **KFUPM Fast Track/SABIC** research project Final report submitted Aug. 31, 2011.

Earth Sciences Department

1. Hydrogeology and Economic Feasibility of Coastal and Inland Sabkhas, Eastern, Saudi Arabia. **Al-Shaibani, A. M., Al-Amoudi O. S. B. Al-Shuhail A. A., AlRamadan K. A. and Wood, W.W.**, KACST ARP-26-83 Final Report (accepted).

Department of Mathematics & Statistics

- 1 "Sequential Testing of Two Independent Samples of Cronbach Alpha Coefficient," **Omar, M. H.**, Technical Report No.421, (2011).
- 2 "The Cumulative Distribution Function of the Ratio of Correlated Sample Variances," **Omar, M. H., Joarder, A. H. and Riaz, M.**, Technical Report No.422 (2011).
- 3 "Some Moment Characteristics of the Ratio of Correlated Sample Variances," **Omar, M. H. and Joarder, A.H.**, Technical Report No.423, (2011).
- 4 "Polynomial Solutions of Certain Differential Equations Ain Physics" **Azad, H., Laradji, A., and Mustafa, M.T.**, Technical Report No. 424 (September 2011).

Physics Department

1. “Applications Of Nanoscale Materials (Metal Oxides) Using Laser Induced Photo-Catalytic Process,” **Gondal, M. A.**, Final report: NSTP Project # 08-NAN93-4, (Oct 2011)
2. “Development of Technologies For Deep Desulfurization of Fuel Oils,” **Gondal, M.A.**, Annual report: KACST # DRP-4-25, (2011)
3. “Laser Approach to Metal Nanoalloys, Its Optimization & Search for Novel Alloy Nanostructures Materials,” Internal project # IN090025, Semi-annual report, **Gondal, M.A.** (2011)
4. “Development of Laser Induced Breakdown Spectrometer for the Determination of Chloride and Sulfate Concentration in Concrete Structures for Assessment of Reinforcement Corrosion,” **Gondal, M. A.**, Center of Corrosion Core project # 1 Semi-annual report, (2011).
5. “Photo-catalytic Conversion of Carbon Dioxide into Methanol Using Nano-catalysts,” Internal project # Rg1011-1 & Rg1011-2, Semi-annual report, **Gondal, M. A.** (2011).
6. “Synthesis and Optical Characterizations of Hybrid Nano-Structures Using Advanced Laser Based Techniques,” **Gondal, M. A.**, Internal project # Rg 1103-1 & Rg 1103-2, Semi-annual report, (2011).

12. INTERNAL LECTURES AND SEMINARS OFFERED BY KFUPM FACULTY

Chemical Engineering Department

1. Speaker : Dr. S.K. De
 Topic : Polymer Chemistry in the Service of Humanity
 Venue : Yanbu Industrial College, Yanbu
 Date : November 19, 2011

Electrical Engineering Department

1. Speaker : Mr. Yanal Shaher Al-Faouri
 Topic : Simple Microwave Technique to Monitor 3-phase Petroleum Carrying Pipeline
 Date : January 2, 2012
2. Speaker : Mr. Syed Asim Hussain
 Topic : Nonlinear Controller Design for a UAV System
 Date : January 2, 2012
3. Speaker : Mr. Mohammad Khalifa
 Topic : Resources Allocation for Femtocells
 Date : January 2, 2012
4. Speaker : Mr. Eyas Al-Suhaibani
 Topic : Current-mode Analog Computational Circuits
 Date : January 2, 2012
5. Speaker : Dr. Norman Mariun
 Topic : Rotor Fault Condition Monitoring Techniques for Induction Machine
 Date : December 28, 2011
6. Speaker : Dr. Ayman Shabra
 Topic : Application of Continuous-Time Delta Sigma Modulation in Low Power Systems
 Date : December 28, 2011
7. Speaker : Mr. Naveed Iqbal
 Topic : Seamless Mobility in Heterogenous Networks
 Date : December 20, 2011
8. Speaker : Engr. Durga
 Topic : MEMS/NEMS Solution
 Date : December 20, 2011

9. Speaker : Dr. Bahattin Karagozoglu
Topic : Biomedical Engineering: Education, Research and Challenges
Date : December 14, 2011
10. Speaker : Mr. Sameir Deif
Topic : Migration to Moodle
Date : December 14, 2011
11. Speaker : Dr. Des McLernon, University of Leeds
Topic : Overview of Research/Teaching with Faculty of Engineering
(The University of Leeds)
Date : November 28, 2011
12. Speaker : Dr. Des McLernon, University of Leeds
Topic : Physical Layer Security in Multiple Antenna Systems
Date : November 28, 2011
13. Speaker : Dr. Mohammad Taher Abuel'Maati
Topic : Recent Development in Nanoelectronic Devices and Circuits
Date : November 15, 2011
14. Speaker : Dr. Redha M. Radaydeh
Topic : Adaptive Transmission Schemes and Interference Management for Wireless Networks
Date : October 25, 2011
15. Speaker : Dr. Sheikh Sharif Iqbal
Topic : 4-Layer Folded Microstrip Power Divider for Array Antennas
Date : October 18, 2011
16. Speaker : Mr. Zahi Matar
Topic : NI Machine Vision System and LabView Applications
Date : October 11, 2011
17. Speaker : Dr. Ali Miqaibel
Topic : Characterization of Obstructed Through Wall Propagation
Date : October 4, 2011
18. Speaker : Dr. Mohammad S. Sharawi
Topic : Electrically Small Antennas for 4G Handsets
Date : September 20, 2011

Mechanical Engineering Department

1. Speaker : Mr. Mamon Haroub
Topic : Acoustic Noise Control Using Multiple Expansion Chambers
Date : October 02, 2011
2. Speaker : Mr. Mohammad R. Farooqui
Topic : Influence of Carbon Nanotube (CNT) on the Mechanical Properties and Processibility of Polyethylene Teraphthalate (PET)/CNT Nanocomposite fibers
Date : October 30, 2011
3. Speaker : Mr. Abdullah Khalil
Topic : Synthesis and Wear Behavior of Aluminum 6061 Alloy Reinforced with Carbon Nanotubes
Date : November 29, 2011
4. Speaker : Mr. Abdulrahman Almerbati
Topic : Thermal Stress Analysis in Thermoelectric Power Generator
Date : December 11, 2011
5. Speaker : Mr. Shaik Pervez Ahmed
Topic : Modeling of a Combined Ion Transport Membrane (ITM) – Porous Oxygen Transport Reactor: Towards a Spatially Uniform Temperature ITM
Date : December 11, 2011
6. Speaker : Mr. Naseer Ahmad
Topic : Design and Development of PV (Photovoltaic) Based Smart Energy Harvesting System
Date : December 20, 2011
7. Speaker : Mr. Asif Matin
Topic : Enhancement of Biofouling Resistance of RO Membranes by a Novel Surface Modification Technique
Date : January 01, 2012

Invited Lectures/Seminars

“A New Approach In Modeling Of An Annular Two-Phase Flow” and “High Pressure Test Facility Construction Update”, **Al-Sarkhi, A.**, Seventy Seventh Semi-Annual Advisory Board Meeting of Tulsa University Fluid Flow Project on October, 25th-26th, 2011, Tulsa University, Tulsa, OK, USA

Aerospace Engineering Department

1. Speaker : Dr. Farooq Saeed
Topic : Status of Anti-Icing Collaborative Research with Bombardier Aerospace
Date : August 2011

General Studies Department

1. Speaker : Dr. Hisham Khogali
Topic : How to Market your Qualities and Skills to Employees?
Date : Tuesday, December 13, 2011
Venue : Building 20, Room 103
2. Speaker : Dr. Hisham Khogali
Topic : Adaptation Skills
Date : Sept 4-6, 2011
Venue : Building 60
3. Speaker : Dr. Hisham Khogali
Topic : Self-Motivation Skills
Date : Monday, November 21, 2011
Venue : Building 24, Room 120
4. Speaker : Dr. Haydar B. Sadig
Topic : Why Social Studies and Humanities are Vital for a Technical University Degree
Date : Tuesday, October 25, 2011
Venue : Building 14, Room 108
5. Speaker : Dr. Ahmed Bendania
Topic : Arabic Translation of Self-consciousness Scale
Date : Tuesday, November 29, 2011
Venue : Building 14, Room 108
6. Speaker : Dr. Christopher P. Garris
Topic : Global Perceived Self-Greatness: Cross-culturally Exploring the Prevalence and Process of the Better-than-average effect
Date : Monday, December 20, 2011
Venue : Building 14, Room 108

Chemistry Department

1. Speaker : Dr. Guodong Liu presented, NSTIP Consultant
Title : Nucleic Acid-Based Lateral Flow Biosensors for Point-of-Care Biomedical and Environmental Applications
Date : December 25, 2011

2. Speaker : Dr. Ayman Sayed Hamed El-Sayed
Title : Future of Dental Research and the Use of New Technologies in Dentistry:
The Contribution of Chemistry
Date : December 27, 2011

Invited Lecturers/Seminars by Departmental Faculty

1. Speaker : Dr. Alexis Nzila
Title : Investigation on the mechanisms of drug resistance in Infectious Micro-organisms: the Example of Malaria Parasite
Date : October 09, 2011.
2. Speaker : Dr. Assad Al-Thukair
Title : Utilization of Satellite Images in Monitoring Spatial and Temporal Changes of Algal Mats along the Red Sea Shoreline.
Date : October 18, 2011.

Earth Sciences Department

1. Speaker : Dr. Mike Kaminski
Topic : Micro-diamonds at the Cretaceous/Paleogene Boundary in Italy:
Date : September 20, 2011
2. Speaker : Dr. Giovanni Menanno
Topic : Deconvolution of multicomponent seismic data by means of quaternions:
Theory and preliminary results
Date : November 29, 2011
3. Speaker : Dr. Abdullah Al-Shuhail
Topic : Seismic Applications in CO₂ Sequestration: Overview, Examples & Considerations
Date : April 19, 2011

Department of Mathematics & Statistics

Lecturers/Seminars by Math Faculty:

Regular Seminars

1. Speaker : Dr. Salim Messaoudi
Topic : Uniform Decay in a System of Thermoelasticity with Second Sound
Date : Tuesday, September 20, 2011
2. Speaker : Dr. Monther Alfuraidan
Topic : Antipodal Distance-transitive Covers with Primitive Quotient at Diameter Two
Date : Tuesday, October 4, 2011

3. Speaker : Dr. Salim Belhaiza
 Topic : New Hybrid Variable Neighborhood-Tabu Search Metaheuristic for the Site Dependent (Heterogenous Flleet) Vehicle Routing Problem
 Date : Tuesday, October 11, 2011
4. Speaker : Dr. Othman Echi
 Topic : Door and Submaximal Compactifications
 Date : Tuesday, October 25, 2011

Visitor's Seminars

1. Speaker : Prof. Sergio Albeverio
 (Institute of Applied Mathematics, Bonn Univ. Germany)
 Topic : Infinite Dimensional Integrals, Asymptotics, and Applications
 Date : Tuesday, September 27, 2011
2. Speaker : Prof. Alain Goriely
 (Dir. Oxford Centre for Collaborative Applied Mathematics Institute, Univ. Oxford (1)
 Topic : Mathematical Biology in the Last Mille the New One
 Date : Sunday, November 20, 2012
3. Speaker : Prof. Alain Goriely
 (Dir. Oxford Centre for Collaborative Applied Mathematics Institute, Univ. Oxford (2)
 Topic : Instability and Bifurcation in Nonlinear Elasticity and Anelasticity
 Date : Sunday, November 22, 2012
4. Speaker : Dr. Hichem Chtioui (KAU)
 Topic : On the Prescribed Scalar Curvature on S^n
 Date : Tuesday, December 6, 2011
5. Speaker : Dr. Fazal Mohamed (Univ., Witwatersrand, South Africa)
 Topic : Symmetries and Integrability of the Remarkable Fourth-Order Euler-Bernoulli Beam Equation
 Date : Tuesday, December 13, 2011
6. Speaker : Dr. Jan P. Hogendijk (Math. Dept. Univ. Utrecht, Netherlands)
 Topic : Plenary Talk Scientific Computing in Medieval Islamic Civilization
 Date : Monday, December 19, 2011
7. Speaker : Dr. Fazal Mohamed (Univ., Witwatersrand, South Africa)
 Topic : Symmetry and Linearization
 Date : Sunday, December 25, 2011
8. Speaker : Dr. Boubaker Sadallah (Dept. Math. Ecole Normale Superieure, Algeria)
 Topic : The Heat Equation in Some Singular Domains
 Date : Sunday, January 01, 2012

9. Speaker : Prof. Mohamed Amine Khamsi (Dept. Math. Univ. Texas, El Paso)
Topic : Convergence of Random Products of Mappings in Metric Spaces
Date : Tuesday, January 3, 2011

Statistics Seminar

1. Speaker : Dr. M. Hafidz Omar
Topic : Shrinkage Estimation of Kurtosis Parameter
Date : Sunday, December 25, 2011

Ph.D. Thesis Defense

1. Speaker : Mr. Mohammed Mogib Al-Shahrani
Topic : Optimal control of singular differential systems
Date : Wednesday, December 14, 2011

Students Seminar (Math 599)

1. Speaker : Mr. Ramzi Al-Shaikh
Topic : Impulsive Control Theory
Date : Sunday, December 25, 2011
2. Speaker : Mr. Mohammed Jamal Maqatif
Topic : Boundary Control of Parabolic PDEs
Date : Wednesday, December 28, 2011
3. Speaker : Mr. Kassimu Mpungu
Topic : Symmetries and Solutions of the Wave Equation on Tours
Date : Sunday, January 1, 2012
4. Speaker : Mr. Usamah S. Al-Ali
Topic : Symmetry Analysis of the Wave Equation on a Spherically Symmetric Space
Time
Date : Sunday, January 1, 2012

Workshop Day-2012

A "Mathematics Workshop Day-2012" was held on Tuesday, January 3, 2012. The Distinguished Chair Professors / Adjunct Professors and our faculty members also gave talks in their areas of specialization. The workshop was successfully adjourned at 3:30 p.m.

Commutative Algebra Weekly Seminar (Organizer: Dr. S. Kabbaj),
(Seminars given by the following faculty members)

1. Speaker : Mr. A. Ben-Obaid
Topic : Classification of Prime ideals in Prufer Domains (1)
Date : Sunday, October 09, 2011

2. Speaker : Mr. A. Ben-Obaid
Topic : Classification of Prime Ideals in Prufer Domains (2)
Date : Sunday, October 16, 2011
3. Speaker : Dr. I. Al-Rasasi
Topic : On the Korselt Set of Squarefree Composite Numbers
Date : Sunday, October 23, 2011
4. Speaker : Dr. Othman Echi
Topic : The Korselt set of the Product of Two Distinct Prime Numbers
Date : Sunday, November 20, 2011
5. Speaker : Mr. K. Adarbeh
Topic : Injective Modules and Fp-injective Modules over Valuations Ring (1)
Date : Sunday, November 27, 2011
6. Speaker : Dr. J. Abuihlail
Topic : Exact Sequences of Commutative Monoids
Date : Sunday, December 04, 2011
7. Speaker : Mr. K. Adarbeh
Topic : Injective Modules and Fp-injective Modules over Valuations Rings (2)
Date : Sunday, December 11, 2011
8. Speaker : Dr. A. Mimouni
Topic : Tight Closure (1)
Date : Sunday, December 18, 2011
9. Speaker : Dr. A. Mimouni
Topic : Tight Closure (2)
Date : Sunday, December 25, 2011

Invited Lectures / Seminars:

1. "Sobolev spaces, Elliptic Equations and Evolution Equations," **Messaoudi, S. A.,** A series of 3 lectures on PDE's, Dammam Girls' College, Dhahran, S.A., (December 2011).

International Conference at KFUPM

1. An International Conference, Titled: "Numerical Analysis and Optimization – Theory and Application" (NAOTA) was held on 18 and 19 December 2011 at KFUPM. The distinguished Chair Professors and Adjunct Professors of the department presented their talks as follows:
2. **Professor Ian Sloan,** "Lifting the Curse of Dimensionality–Porous Flow as a High Dimensional Problem."

3. **Professor B. Mordukhovich**, “Generalized Newton's Method Based on Graphical Derivatives.”
4. **Professor Jan P. Hogendijk**, “Plenary Talk on Scientific Computing in Medieval Islamic Civilization.”
5. **Professor R. Triggiani**, “Min-Max Theory for Single or Coupled PDEs, Control / Disturbance on the Boundary or at the Interface.”
6. **Professor I. Lasiecka**, Long time Behavior of Solutions to Flow-structure Interactions Arising in Flows of Gas.
7. **Professor S. Kara**, “Stability of Galerkin Approximations Schemes.”
8. **Dr. K. Mustapha**, “Feature of hp-Discontinuous Galerkin Methods for Solving a Class of Nonlocal Time Dependent Problems.”
9. **Dr. S. Belhaiza**, “New Hybrid Variable Neighborhood-Tabu Search Metaheuristic for the Site Dependent Vehicle Routing Problems.

Physics Department

1. Nanostructured ZnO: Synthesis and Applications,” **Tabet, N. A., Qatar Foundation**, 22 Sept (2011).
2. “Photovoltaic’s”, **Gondal, M.A.**, 36th International Nathiagali Summer College (INSC), Pakistan (4-8th July, 2011).
3. “Characterization of Nano Materials Using Laser Induced Breakdown Spectroscopy,” **Gondal, M. A., National Center for Physics** (NCP), Islamabad, Pakistan (July 21,2011).
4. “Laser Induced Photocatalysis for Production High Value Hydrocarbons and Hydrogen,” **Gondal, M. A., National Center for Physics** (NCP), Islamabad, Pakistan (July 25,2011).
5. “Advanced Technologies for Waste Water Treatment,” **Gondal, M.A.**, Institute of Environmental Sciences and Engineering (IESE), National University of Science and Technology (NUST), Islamabad, Pakistan (July 27, 2011).
6. “Treatment of Malignant Tumors Using Novel Nano Engineered Photocatalysts and Laser Radiations,” **Gondal, M. A.**, Research Institute, King Faisal Specialist Hospital, Riyadh (Nov 9, 2011).
7. “Cancer Treatment using Photodynamic Therapy supplemented by Photo-Catalysis Process,” **Gondal, M. A.**, Pakistan Institute of Engineering & Applied Sciences(PIEAS) Islamabad, Pakistan (29 July, 2011).
8. “Electronic Enhancement of a-Si:H via Engineering Thin-Film Stress (Stress Mitigation of Hole Traps in Amorphous Silicon,” **Tabet, N., Al-Sunaidi, A., Said, S., Johlin, E., Mueller, T., Simmons, C., Winkler, M., Choi, H., Grossman, J. and T. Buonassisi,** KFUPM-MIT Workshop on Clean Water and Energy, 8-10 January 2012.

Seminars by Department Faculty

1. Speaker : Dr. Amjad Khalil
 Title : Removal of *E. coli* Bacteria from Water Using Modified Carbon Nanotubes (CNTs) with and without Heating Effect of Microwave Radiation
 Date : Sunday, 18 September, 2011
2. Speaker : Dr. A. A. Naqvi
 Title : Response Comparison of Lanthanum Halide and BGO Scintillation Detectors for Low Energy Gamma Rays
 Date : Sunday, 2 October, 2011
3. Speaker : Dr. Jihad Al-Sadah
 Title : Prospects in Medical Ultrasound Beam Forming
 Date : Sunday, 9 October, 2011
4. Speaker : Dr. Jihad Al-Sadah
 Title : Recent Developments in Medical X-ray Tubes
 Date : Sunday, 23 October, 2011
5. Speaker : Esam Gunaïd Abdo Al-Nahari
 Title : 1-Synthesis and Characterization of Zinc Oxide (ZnO) Nanopowders Doped with Copper by Microwave Assisted Polyol Method
 Date : Sunday, 02 January 2012
6. Speaker : Faris Al-Matoug
 Title : Calibration of a PGNA Setup to Detect Carbon and Hydrogen in B Samples
 Date : Sunday, 02 January 2012

EXTERNAL SPEAKERS

1. Speaker : Dr. Zbigniew Ficek
 The National Centre for Maths. and Physics, Riyadh
 Title : Dipole-dipole Blockade and E in a Two-Atom System
 Date : Sunday, 16 October, 2011
2. Speaker : Dr. Udo Schwingenschloegl
 King Abdullah University of Science & Technology
 Title : Substrate and Intercalation Effects on Graphene and Silicene: A First Principles Perspective
 Date : Sunday, 13 November, 2011
3. Speaker : Dr. F.Kh. Abdullaev
 CFTC, Lisbon University, Physical-Technical Institute, Tashkent, Uzbekistan
 Title : Solutions: from Basics to Applications
 Date : Sunday, 20 November, 2011

4. Speaker : Dr. Mohammad I. Awadallah
Quality Control Services Co. Ltd, Al-Khobar
Title : NDT, Teaching, Training and Research
Date : Sunday, 27 November, 2011

5. Speaker : Mr. Mushtaq Mahmood, Saudi Aramco, Dhahran
Title : Volcanoes of Harrat Khaybar
Date : Sunday, 11 December, 2011

6. Speaker : Prof. Irfan Siddiqi, University of California, Berkley, USA
Title : Continuous High-Fidelity Monitoring of a Superconducting Qubit:
From Quantum Jumps to Feedback
Date : Sunday, 11 December, 2011

7. Speaker : Prof. Irfan Siddiqi, University of California, Berkley, USA
Title : Continuous High-Fidelity Monitoring of a Superconducting Qubit:
From Quantum Jumps to Feedback
Date : Sunday, 11 December, 2011

8. Speaker : Prof. Irfan Siddiqi, University of California, Berkley, USA
Title : Continuous High-Fidelity Monitoring of a Superconducting Qubit:
From Quantum Jumps to Feedback
Date : Sunday, 11 December, 2011

13. SEMINARS OFFERED BY OUTSIDE SPEAKERS IN THE UNIVERSITY

Electrical Engineering Department

1. Speaker : Dr. Abdelsalam Al-Sarkhi
 Topic : A New approach in Modeling of An Annular Two-Phase Flow and High Pressure Test Facility Construction Update
 Venue : Tulsa University, Tulsa, Oklahoma, USA
 Date : October 25-26, 2011
2. Speaker : Prof. Bahattin Karagozoglu
 Topic : Biomedical Engineering: Education, Research and Challenges
 Venue : King Abdulaziz University, Jeddah
 Date : December 14, 2011

Petroleum Engineering Department

1. Speaker : Dr. Fabrice Pairoys, Schlumberger Dhahran Carbonate Research
 Topic : A Multi-Physics Approach for Monitoring a Wettability Alteration on Carbonates during Aging
 Date : November 29, 2011
2. Speaker : Mr. Andrea Valori, MR Research Scientist, Schlumberger Dhahran Carbonate Research
 Topic : Nuclear Magnetic Resonance in the Oil Industry
 Date : December 12, 2011
3. Speaker : Dr. Ahmed Gmira, Research Scientist, Schlumberger Dhahran Carbonate Research
 Topic : Atomic Force Microscopy: A Tool to Investigate Wettability Alteration
 Date : December 18, 2011

Earth Sciences Department

1. Speaker : Mr. Bernie Patterson, Managing Director, AES International
 Topic : Earth Science's Technological Innovations and the Environment
 Date : October 25, 2011
2. Speaker : Dr. Robert Riding, U. of Tennessee
 Topic : Algal Mat Deposits
 Date : November 15, 2011
3. Speaker : Prof. Tariq Al-Khalifa, KAUST
 Topic : Seismic Imaging: Kirchhoff, Beam, WEM, RTM, Anisotropy
 Date : November 22, 2011

4. Speaker : Dr. Steve Franks, RockFluid Systems Inc.,
 Topic : Clastic Diagenesis
 Date : May 2, 2011

5. Speaker : Eiichi Setoyama, Polish Academy of Sciences
 Topic : Late Cretaceous Paleobiography of the Arctic Seaways
 Date : May 9, 2011